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DO ATLETA AO COMBATENTE: DESAFIOS DO DESEMPENHO HUMANO NO SÉCULO XXI

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A *Revista de Educação Física / Journal of Physical Education* é uma publicação para divulgação científica do Exército Brasileiro, por meio do Centro de Capacitação Física do Exército (CCFEx), do Instituto de Pesquisa da Capacitação Física do Exército (IPCFEx) e da Escola de Educação Física do Exército (EsEFEx).

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EDITORIAL

Caro leitor,

Apresentamos as “*Saudações SIAFISIANAS*”, por meio da publicação dos **Anais do 21º Simpósio Internacional de Atividades Físicas do Rio de Janeiro (SIAFIS RJ)** – “*Do Atleta ao Combatente: desafios do desempenho humano século XXI*”, um dos mais tradicionais fóruns científicos do Brasil na área da Capacitação Física, que busca discutir assuntos atuais, de interesse para o Exército Brasileiro, com as comunidades científicas nacional e internacional.

Esta vigésima primeira edição, que tem como realizadores o Departamento de Educação e Cultura do Exército (DECEX) e o Centro de Capacitação Física do Exército (CCFEx), além do Instituto de Pesquisa da Capacitação Física do Exército (IPCFEx), amplia as perspectivas para os momentos atual e futuro, reforçando o aspecto da promoção da saúde em toda a sociedade e buscando o contínuo desenvolvimento da operacionalidade das Forças Armadas no desempenho humano e esportivo.

Nesta, publicamos quatro artigos originais e um de revisão sistemática. Na área da Psicologia do Esporte, o artigo “*Representações Sociais das Aulas de Krav Maga no Colégio Militar de Brasília*” – examinou os fatores motivacionais da prática do Krav-maga em adolescentes. Em Aspectos Metodológicos do Treinamento Físico e Esportivo, o artigo “*Efeito agudo da autoliberação miofascial em músculos antagonistas no volume total de treino e índice de fadiga de músculos agonistas: estudo experimental*” examinando o desempenho em força muscular de membros superiores e o artigo “*Efeitos do treinamento pliométrico em crianças e jovens adolescentes: uma revisão integrativa*” buscou examinar os benefícios desse tipo de treinamento no desenvolvimento de crianças e adolescentes.

Além desses, em Fisiologia do Exercício, o artigo “*Caracterização de desempenho físico e demanda psicofisiológica de militares submetidos a cursos de Operações Especiais: um estudo descritivo*” examinou aspectos necessários para a preparação e para o desempenho desses especialistas militares. E, finalmente, o estudo intitulado “*Prevalência de risco elevado de doença coronariana segundo diferentes indicadores antropométricos em militares do Exército Brasileiro: um estudo populacional*” investigou o estado nutricional de militares relacionado a indicadores preditivos de doença coronariana em uma amostra populacional representativa de todo o Exército Brasileiro.

Ainda, trouxemos a nossos leitores, em nossos suplementos, além dos anais do 21º SIAFIS, os anais da conferência da Associação Internacional do Ensino Superior de Educação Física, o AISEP-2023.

Desejo a todos uma excelente leitura!

Rafael Pinheiro – Cel
Diretor do Instituto de Pesquisa da Capacitação
Física do Exército (IPCFEx)
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Artigo Original

Original Article

Representações Sociais das Aulas de Krav Maga no Colégio Militar de Brasília

Social Representations of Krav Maga Classes at the Military School of Brasília

João Batista de Andrade Neto^{§1} PhD

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Resumo

Introdução: O Krav Maga é a modalidade de luta com maior aderência entre os alunos do Colégio Militar de Brasília em comparação às demais modalidades de lutas ofertadas. Como fenômeno social contemporâneo, tornou-se um importante elemento na práxis do processo ensino-aprendizagem, contribuindo com os objetivos educacionais.

Objetivo: Identificar as representações sociais dos pais, responsáveis e alunos, sobre as aulas de Krav Maga no Colégio Militar de Brasília (CMB), fazendo uso do aporte da Teoria das Representações Sociais.

Métodos: De modo voluntário, participaram da pesquisa 94 indivíduos, sendo: 44 adultos, pais ou responsáveis com idade entre (44,2 ± 60,1), e 50 alunos, adolescentes, com idade entre (14,6 ± 17,6), de ambos os sexos. Para a análise de conteúdo dos grupos focais e núcleos centrais, fez-se uso de viés prototípico e do software Alceste IraMuTeQ 0.7 alpha 2 2020 para Microsoft Windows.

Resultados: Para os pais e responsáveis, o Krav Maga deve ser capaz de estimular a disciplina, desenvolver a defesa pessoal e mediar conflitos. Em contrapartida, para os alunos, a modalidade promoveu benefícios fisiológicos, psicológicos e cognitivos.

Conclusão: Observou-se que as aulas de Krav Maga ministradas no CMB foram capazes de promover benefícios fisiológicos (força, coordenação motora, flexibilidade, agilidade etc.), psicológicos e cognitivos (concentração, raciocínio, disciplina e respeito), convergindo com os objetivos educacionais traçados para o Sistema Colégio Militar do Brasil.

Pontos Chave

- O Krav Maga é a modalidade de luta com maior aderência dentre as demais ofertadas no Colégio Militar de Brasília.
- Os pais e responsáveis consideraram como uma modalidade capaz de estimular a disciplina, desenvolver a defesa pessoal, mediação de conflitos e segurança, estimulando o desenvolvimento do respeito e autoconfiança.
- Para os alunos promoveu benefícios fisiológicos, psicológicos e cognitivos, convergindo com os objetivos educacionais almejados pelo Sistema Colégio Militar do Brasil.

Palavras-chave: sociologia do esporte, educação física escolar, psicologia escolar, lutas, krav maga.

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Afiliações: ¹Universidade de São Paulo-USP, Programa de Pós-graduação em Ciências da Saúde aplicadas ao Aparelho Locomotor, Faculdade de Medicina de Ribeirão Preto – SP.

Abstract

Introduction: Krav Maga is the fighting modality with the greatest adherence among students at the Colégio Militar de Brasília compared to other fighting modalities offered. As a contemporary social phenomenon, it has become an essential element in the praxis of the teaching-learning process, contributing to educational objectives.

Objective: To identify the social representations of parents, guardians and students regarding Krav Maga classes at the Colégio Militar de Brasília (CMB), using the contribution of the Theory of Social Representations.

Methods: On a voluntary basis, 94 individuals participated in the research, including: 44 adults, parents or guardians aged between (44.2 ± 60.1), and 50 students, teenagers, aged between (14.6 ± 17.6), of both sexes. For the content analysis of the focus groups and central nuclei, we used a prototypical bias and the Alceste IraMuTeQ 0.7 alpha 2 2020 software for Microsoft Windows.

Results: For parents and guardians, Krav Maga should be able to encourage discipline, develop self-defense and mediate conflicts. On the other hand, for students, the modality promoted physiological, psychological and cognitive benefits.

Conclusion: It was observed that the Krav Maga classes taught at CMB were able to promote physiological benefits (strength, motor coordination, flexibility, agility, etc.), psychological and cognitive benefits (concentration, reasoning, discipline and respect), converging with the objectives educational plans designed for the Military College System of Brazil.

Key Points

- Krav Maga is the fighting modality with the greatest adherence among the others offered at the Colégio Militar de Brasília.
- Parents and guardians considered it a modality capable of stimulating discipline, developing personal defense, conflict mediation and security, encouraging the development of respect and self-confidence.
- For students, it promoted physiological, psychological and cognitive benefits, converging with the educational objectives sought by the Brazilian Military College System.

Keywords: sociology of sport, school physical education, school psychology, fights, krav maga.

Representações Sociais das Aulas de Krav Maga no Colégio Militar de Brasília

Introdução

O Krav Maga é a modalidade de luta com maior aderência entre os alunos do Colégio Militar de Brasília (CMB), quando comparada a outras atividades de lutas ofertadas nas aulas de Educação Física(1). Além disso, a busca pela defesa pessoal, pelo condicionamento físico e pela melhoria de saúde tem ganhado destaque como norte de adesão e prática desta modalidade, segundo Andrade Neto *et al.*(2)

Uma das marcas da sociedade contemporânea é a busca pela diversificação para a prática de exercícios físicos. No Brasil, segundo dados da última

investigação suplementar da Pesquisa Nacional por Amostra de Domicílios(3): práticas de esportes e atividades físicas, referentes às práticas de esportes e atividade física, as atividades relacionadas às lutas e artes marciais correspondem a 70% das intenções da população acima dos 15 anos de idade.

Nesse contexto, o Krav Maga como método de treinamento tem ganhado destaque especial entre as lutas, com origens recentes na cultura judaica, estando entre as modalidades israelenses com maior número de praticantes no mundo(4), sendo reconhecida pela simplicidade no processo ensino-aprendizagem e pelos valores humanos ofertados(5).

No entanto, em meio à crescente prática, o conhecimento científico dali produzido ainda é limitado, não acompanhando sua ascensão, pouco se sabendo sobre sua metodologia, seus princípios filosóficos e suas influências psicossociais sobre o desenvolvimento cultural nas sociedades onde se faz presente(6).

É natural que, inicialmente, a difusão do Krav Maga possa ser interpretada simplesmente como luta, arte marcial ou prática de atividade física(4,6). A começar pela escrita e pronúncia dos termos aqui utilizados sem acentuação: Krav (luta) Maga (contato), em sentido lato traduzido do hebraico “luta de contato” ou “combate próximo”, os quais, apresentam estruturas sensivelmente distintas, tanto em teoria quanto em prática, conforme reflexão conceitual e sistemática das narrativas sobre o tema, sintetizadas por Andrade Neto e Papoti(7).

No entanto, é preciso considerar que tal desenvolvimento trata-se de uma manifestação socioespacial e cultural via criação e circulação de representações sociais, de um novo e contemporâneo estilo de vida, quase uma crença, religião(6,7). Nesse contexto, tem-se muita controvérsia, polêmica, ilações e interesses comerciais, indo muito além de um simples método de defesa pessoal(7,8).

Para melhor entendimento destas manifestações, mostra-se útil o aporte da Teoria das Representações Sociais (TRS) de Moscovici(9) e Jodelet(10), que as definem como possibilidades de restabelecer a importância do conhecimento do senso comum, do saber popular, do conhecimento que emerge das relações no cotidiano, enraizadas e fortalecidas pelos significados sociais dos grupos de pertença dos sujeitos, conforme entendimento de Camargo *et al.*(11).

As TRS interagindo com o campo da educação, mostram-se importantes elementos na práxis do processo ensino-aprendizagem, valendo-se de atenta observação pelos professores e agentes de ensino, para o entendimento do olhar que seus alunos têm sobre o mundo e a consequente a adequação do conteúdo

formal em seu planejamento de ensino(12,13).

Para a compreensão de uma dada realidade, faz-se necessário identificar o modo como os sujeitos (no presente estudo, os pais ou os responsáveis e os alunos) identificam, compreendem e explicam uma nova situação: a oferta das aulas de Krav Maga no CMB – um produto em construção, passivo de estudos.

Assim, para melhor compreender o construto social do ensino de Krav Maga nas aulas de Educação Física Escolar para crianças e adolescentes, face à escassa literatura sobre o tema, o presente estudo buscou identificar as representações sociais dos pais, responsáveis e dos alunos sobre o significado das aulas de Krav Maga no CMB.

Métodos

Desenho de estudo e amostra

Com delineamento metodológico descritivo, transversal e qualitativo, fez uso de análises qualitativas de dados primários, buscando aproximar-se do fenômeno via levantamento de informações que, sem dúvida, podem levar o pesquisador a melhor conhecer o tema, de acordo com Thomas *et al.*(14). Este estudo é parte de uma tese de doutorado desenvolvida pelo Programa de Pós-Graduação em Ciências da Saúde Aplicadas ao Aparelho Locomotor, Faculdade de Medicina de Ribeirão Preto da Universidade de São Paulo/USP.

Foram convidados para participar do estudo todos os alunos de Krav Maga do CMB e seus pais/responsáveis.

Aspectos éticos

O presente estudo foi previamente aprovado pelo Comitê de Ética e Pesquisa (CEP) da Escola de Educação Física e Esporte de Ribeirão Preto da Universidade de São Paulo (EEFERP-USP), sob o registro CAAE: 40025420.7.0000.5659, Parecer nº 4.579.829, bem como, pelo Diretor de Ensino do CMB.

Todos os participantes e responsáveis foram orientados em relação aos procedimentos da pesquisa, ao passo que os adultos assinaram o Termo de

Consentimento e Livre Esclarecido (TCLE) e, os indivíduos menores de 18 anos de idade, os pais/responsáveis assinaram o Termo de Assentimento Livre Esclarecido (TALE).

Variáveis de estudo

O presente estudo adotou como variável as representações sociais de pais, responsáveis e alunos, de modo que a variável desfecho foi a importância das aulas de Krav Maga para a formação dos alunos que a praticam no CMB.

Procedimento experimental

Admitindo que as representações sociais “[...] se referem a um fenômeno social e a uma teoria científica que se propõe a explicá-lo” segundo Oliveira *et al*(14), que as práticas sociais são um dos substratos que sustentam a constituição, manutenção e funcionamento de uma representação social, tomamos como ponto de partida uma perspectiva plurimetodológica para análise e apreensão do fenômeno investigado, pelo qual se busca atingir os objetivos propostos no presente estudo, tendo por referência a abordagem das representações sociais de Moscovici(8,9)

Os dados foram coletados por meio de um questionário semiestruturado com base no teste de comportamento, formado por questões abertas e fechadas associadas a uma questão de evocação livre de palavras, aplicado intencional e exclusivamente a pais e responsáveis. Onde se buscou identificar o significado da participação nas aulas de Krav Maga para a formação dos alunos(7).

O questionário se baseou em três questões norteadoras: a primeira uma tarefa da evocação e classificação das palavras e expressões surgidas a partir do termo indutor; a segunda teve relação com a estatística descritiva da amostragem, levantando dados referentes à faixa etária, sexo e escolaridade; e, a terceira tratou da significação de uma frase estímulo (Figura 1).

A tarefa de evocação livre ou associação livre de palavras se deu a partir da palavra-estímulo “Krav Maga”. Consistiu em solicitar aos pais e/ou responsáveis que

citassem seis palavras ou expressões que viessem à mente, sobre o significado da participação dos discentes (filhos) nas aulas de Krav Maga, em prol da formação educacional concernente. Tal instrumento foi desenvolvido pelo Laboratório de Psicologia do Esporte e da Atividade Física da Faculdade de Educação Física da Universidade de Brasília (FEF-UnB) (15). Para os alunos, foi empregada uma entrevista semiestruturada sugerida por Thomas *et al.* (14), composta de uma dissertação livre com o tema: “Qual a importância das aulas de Krav Maga na sua vida?”.

Análise estatística

Após coletados os questionários e as consequentes respostas, foram tratados e cadastrados no Microsoft Excel. Posteriormente, foram importados para análise estatística com base no algoritmo do ALCESTE, o software IRaMuTeQ 0.7 alpha 2 2020 para Microsoft Windows – um programa computacional de código aberto (gratuito), desenvolvido pelo pesquisador francês Pierre Ratinaud(16). Ancorado no software estatístico R e na linguagem computacional Python, o IRaMuTeQ é uma ferramenta de apoio à investigação científica qualitativa que possibilita a organização de grande volume de dados textuais, o gerenciamento e o tratamento estatístico de textos, entrevistas ou questionários abertos, otimizando o tempo de análise textual(16).

Para melhor compreensão da evocação livre das palavras evocadas nas respostas dos pais e/ou responsáveis, adotou-se a análise prototípica (também denominada análise de evocações ou quatro casas) sugerida por Vergés(17). Tem-se aí uma técnica que se aplica a respostas de associação livre, ou seja, frases e expressões curtas fornecidas a um estímulo indutor referente ao objeto de representação social – no caso em tela, as “aulas de Krav Maga”.

Também na análise das respostas dos alunos, fez-se uso da ferramenta de análise textual qualitativa do software IRaMuTeQ, composto pelos gráficos da Nuvem de Palavras, a fim de destacar as principais palavras evocadas, identificando o agrupa-



Universidade de Brasília
Faculdade de Educação Física
Laboratório de Psicologia do Esporte e da Atividade Física

Representações Sociais do Krav Maga

Objetivo

Identificar as representações sociais dos pais e responsáveis sobre o significado das aulas de Krav Maga no Colégio Militar de Brasília para a formação de seus filhos.

Orientações

- Procure responder de maneira natural e espontânea.
- Não tenha receio de expressar sua opinião.
- As suas respostas serão mantidas em completo sigilo.
- Obrigado pela colaboração.

1 - Escreva as seis primeiras palavras ou expressões que melhor explicam

Qual é o significado da participação nas aulas de Krav Maga para a formação de seu(ua) filho(a)?

Responda o mais rápido possível.

| _____

| _____



2 – Releia as respostas e marque as 3 mais importantes nos espaços indicados pela seta

A seguir, conte-nos um pouco mais sobre você.

3 – Idade | | anos 4 – Sexo | | Masculino | | Feminino

4 – Você pratica ou praticou alguma arte marcial? | | Sim | | Não

5 – Você pratica ou praticou alguma modalidade esportiva? | | Sim | | Não

6 – Explique, com suas próprias palavras, qual é, na sua opinião o significado da frase abaixo:

Quem luta, não briga!

Obrigado pela colaboração

Figura 1 – Questionário de evocação distribuição espacial não linear dos dados para melhor dimensão espacial.

mento de modo organizado e estruturado, permitindo, assim, visualizar que algumas dessas palavras foram apresentadas com tamanhos distintos, dada sua relevância(16,17).

Por fim, fez-se uso da Análise de Similitude, com base na Teoria dos Grafos – um método considerado um campo da Matemática que investiga as associações entre os objetos de um conjunto definido, ajudando na especificação e compreensão da conexão entre os termos, permitindo diferenciar os seguimentos comuns, bem como as particularidades do corpus investigado, conforme as variáveis ilustrativas (descritivas) identificadas na análise(17,18).

Resultados

Participaram da presente pesquisa de conveniência, 94 voluntários distribuídos em dois grupos: o primeiro, com $n=44$, composto por adultos, pais ou responsáveis de alunos, sendo: $n=21$ (47,7%) do sexo masculino, e $n=23$ (52,3%) do sexo feminino, com idade entre $(44,2\pm 60,1)$, todos com Ensino Superior completo; e, o segundo, com $n=50$, composto de alunos do Ensino Médio, adolescentes de ambos os sexos, distribuídos equitativamente (n e sexo), com idade compreendida entre $(14,6\pm 17,6)$ anos, todos voluntários e matriculados nas aulas de Krav Maga do CMB, no ano de 2021.

De modo a ilustrar os dados coletados no presente estudo, para melhor compreensão, a Tabela 1 e as Figuras 2, 3 e 4, a seguir, apresentam os resultados das análises textuais obtidas junto aos partícipes.

Na Tabela 1, mediante a perspectiva teórico-metodológica adotada, pressupõe-se que os elementos considerados mais importantes pelos partícipes da pesquisa representam os prototípicos da representação social, distribuídas em classes de seis palavras.

As representações elencadas pelos pais e responsáveis sobre o tema indutor “Quem luta, não briga” podem ser evidenciadas nos dados apresentados no gráfico de similitude da Figura 3, uma vez que tais sujeitos se posicionam entre a realidade do cotidiano

violento da sociedade e suas preocupações com a formação de seus filhos, destacando os supostos benefícios da prática do Krav Maga no CMB.

A complexidade da análise das narrativas e representações evocadas pelos alunos praticantes das aulas de Krav Maga no CMB pode ser evidenciada no gráfico de similitude apresentado na Figura 4.

Discussão

Conforme evidenciado na Tabela 1, por meio da análise prototípica de evocação livre de palavras referente à resposta da questão 1, foi possível identificar a estrutura representacional a partir dos critérios de frequência e ordem de evocação das palavras provenientes do tema “Escreva as seis primeiras palavras ou expressões que melhor explicam qual é o significado da participação nas aulas de Krav Maga para a formação de seu(ua) filho(a)? Responda o mais rápido possível”. Neste sentido, o diagrama de quatro quadrantes ali evidenciado representa as quatro dimensões da estrutura das Representações Sociais.

Assim, o primeiro quadrante (superior esquerdo) indica as palavras que provavelmente se referem aos elementos mais evocados e que seriam os prováveis indicadores do núcleo central da representação dos pais e/ou responsáveis sobre as aulas de Krav Maga no CMB, com menor ordem média de evocações, a saber: “disciplina”, “defesa pessoal”, “segurança”, “respeito”, “saúde” e “confiança”. O segundo quadrante (superior direito) apresenta a primeira periferia, com as palavras de alta frequência, mas que não foram prontamente evocadas, quais sejam: “responsabilidade”, “autoestima”, “dedicação”, “aprendizado”, “atividade física” e “objetividade”. Na zona contraste (quadrante inferior esquerdo), estão contidos elementos que foram prontamente evocados, porém, com frequência abaixo da média, a saber: “lealdade”, “evitar confusão”, “autocontrole”, “consciência”, “altruísmo” e “valores éticos”. As palavras destes dois quadrantes devem ser consideradas, pois reforçam o núcleo central.

Tabela 1 – Quadrante de distribuições dos pais e responsáveis ao tema “significado da participação nas aulas de Krav Maga para a formação de seu(ua) filho(a)?”

<= 3 ordem média de evocação >= 3					
Núcleo Central			1ª Periferia		
Disciplina	65	3,00	Responsabilidade	38	3,25
Defesa Pessoal	55	2,99	Autoestima	36	3,22
Segurança	53	2,99	Dedicação	35	3,21
Respeito	51	2,98	Aprendizado	34	3,20
Saúde	31	2,96	Atividade Física	33	3,19
Confiança	42	2,9	Objetividade	27	3,09
Freq. <=10			Freq. >=10		
Zona de Contraste			2ª Periferia		
Lealdade	9	2,03	Esforço	7	1,81
Evitar confusão	9	2,03	Coleguismo	7	1,81
Autocontrole	9	2,03	Vontade mental	6	1,55
Consciência	9	2,03	Imunidade	6	1,55
Altruísmo	8	2,07	Empolgação	6	1,55
Valores éticos	8	2,07	Cooperação	5	1,53

Freq.: frequência



Figura 2 – Nuvem de palavras da questão 2: “*Releia as respostas e marque as três mais importantes nos espaços em ordem crescente*”.

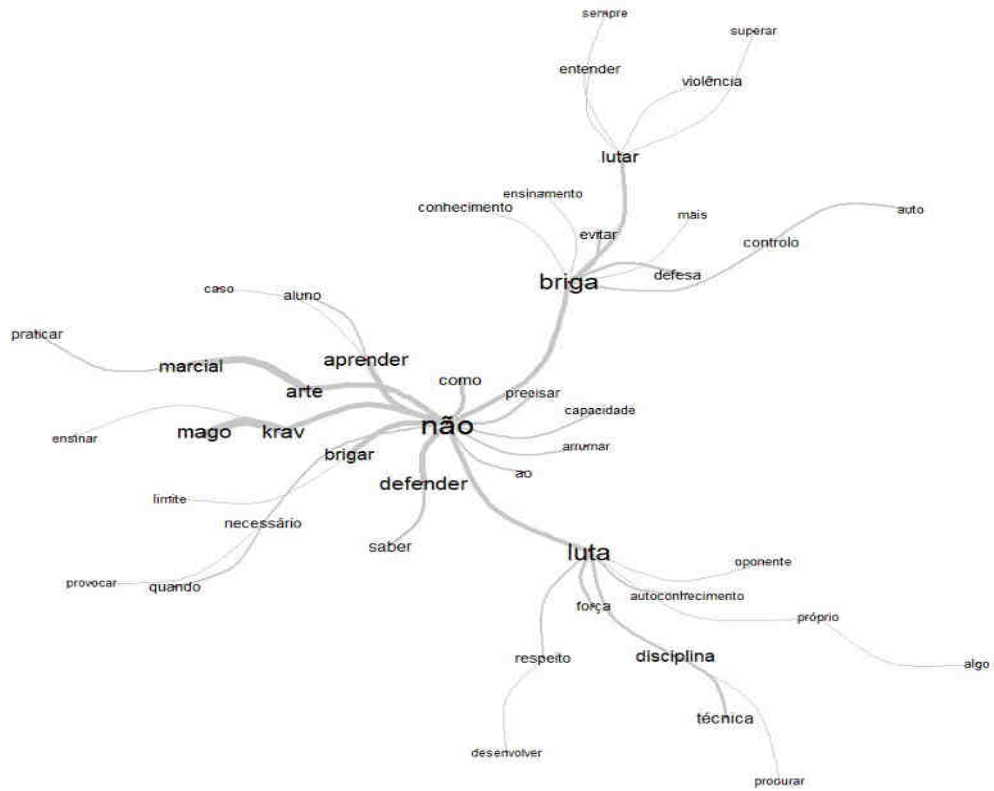


Figura 3 – Análise de similitude das categorias evocadas pelos pais e/ou responsáveis sobre o item 6 do questionário: “Explique, com suas próprias palavras, qual é, na sua opinião, o significado da frase “Quem luta, não briga!””

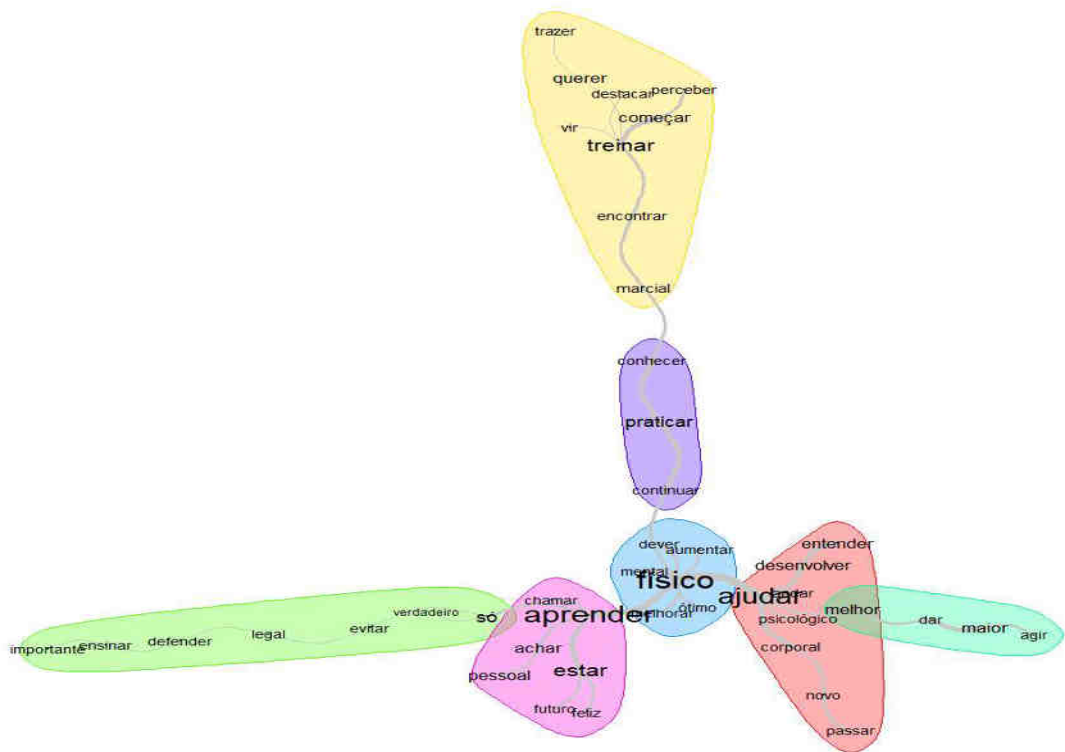


Figura 4 – Análise de similitude das narrativas evocadas sobre o tema “O Krav Maga em minha vida” por alunos praticantes de Krav Maga no Colégio Militar de Brasília

Diante do exposto, o conhecimento compartilhado pelos pais e/ou responsáveis partícipes da pesquisa caracteriza-se por conceber o Krav Maga como uma modalidade de luta capaz de estimular a disciplina e desenvolver a defesa pessoal e as noções de segurança, estimulando o respeito e a confiança, sendo capaz de promover a saúde.

Por fim, a segunda periferia no quarto quadrante (inferior direito) indica os elementos com menor frequência e maior ordem de evocação, quais sejam: “esforço”, “coleguismo”, “vontade mental”, “imunidade”, “empolgação” e “cooperação”, inferindo-se uma crescente preocupação, mesmo que ainda pequena, com a qualidade de vida, pois se ligam diretamente ao contexto da “saúde”, contribuindo holisticamente na construção do conceito ampliado de saúde(18).

Nos resultados apresentados, o Krav Maga parece ser entendido como uma modalidade de luta igual às demais, permeando as representações sociais dos pais e/ou responsáveis sobre as diferentes lutas, não o diferenciando das mais antigas e tradicionais – o que se justifica ao observar sua presença em revistas, canais do YouTube e outras mídias digitais, bem como em canais específicos para as lutas na TV por assinatura. Tornando-se um fenômeno midiático com participação em filmes, novelas e seriados. Atualmente, o Krav Maga é um acometimento presente e até predominante quando do treinamento de tropas especiais das forças de segurança de vários países(7,8).

Para Arruda e Souza(19), a televisão e as mídias sociais alimentam o ideário fictício e a visão equivocada sobre a prática das lutas, pois divulga imagens, por vezes, sensacionalistas sobre as mesmas, com objetivo de conquistar maior audiência a qualquer custo, sobre a lógica da espetacularização, que norteia algumas práticas, sobretudo, os esportes de combate.

Outro responsável pela associação da prática do Krav Maga às forças militares é o fato da modalidade ter sido introduzida no Brasil de forma equivocada sob o discurso “Defesa Pessoal do Exército de Israel”,

induzindo seus praticantes a idealizarem e simular situações desse tipo de combate – o que não condiz com a realidade brasileira. Assim, sua prática, por vezes, tomou o rumo de espetacularização e marketing(6-8).

Corroborando com essas conjecturas e falácias, Lichtenstein e Lichtenstein(20) afirmam que o Krav Maga é a única solução para a violência mundial – o que é potencializado na rede mundial de computadores quando é elencado que a única e verdadeira solução para as famosas confusões e brigas de rua seria, o Krav Maga Caveira (alusão ao símbolo da caveira das Operações Especiais das polícias no Brasil) (método abrigado da modalidade). No entanto, tais propagandas não passam de meios apelativos, midiáticos e sensacionalistas de promoção da modalidade(6).

Contudo, apesar de equivocadas, as definições em comento contribuem para o modelamento e o ideário das representações sociais da modalidade, como uma prática para defesa pessoal, que requer disciplina e promove a segurança – algo que coaduna com a finalidade da mesma, pois um de seus principais objetivos é a segurança pessoal(7).

Para Antunes e Almeida(21), as lutas e artes marciais a partir da segunda metade do século XIX – período que assinala o surgimento do Krav Maga, sofreram um processo drástico de ressignificação, com a introdução da arma de fogo nas práticas militares em países que culturalmente utilizavam as artes marciais como ferramenta de guerra. Logo, o que antes era restrito aos militares, passou a ser ensinado às crianças, aos jovens, aos idosos e às pessoas com deficiência.

É consenso na literatura científica que as novas funções das lutas, das artes marciais e das modalidades esportivas de combate no Brasil e no mundo, tenham por norte a socialização, a promoção da saúde, do lazer e do esporte – o que harmoniza com os resultados aqui apresentados.

Além disso, Serrano(22) destaca que as artes marciais orientais, quando passaram e passam pelo processo de aculturação no Brasil, acabam perdendo parte de sua

essência milenar – religiosidade e tradição – para ingressar em uma lógica ocidental, imediatista, cartesiana e fragmentada dos valores disciplinares herméticos característicos dos povos e das lutas orientais.

Nesse sentido, se for para seguir fidedignamente a disciplina tão difundida por modalidades como, por exemplo, Judô, Karatê e Aikidô, segundo Serrano(22), um “praticante de Krav Maga” não se enquadraria e abandonaria devido às questões normativas culturais – o que é explicado por Andrade Neto(6), pois, o Krav Maga não é uma arte marcial em seu sentido lato, mas sim, um método de treinamento para segurança pessoal, com raízes ocidentais e metodologia totalmente contemporânea.

Já a nuvem de palavras na Figura 2 demonstra que as evocações às quais os pais e/ou responsáveis participantes da pesquisa deram maior destaque remetem aos seguintes aspectos: defesa; disciplina; autoconfiança; responsabilidade; respeito; confiança; saúde; e, segurança – o que já era esperado, pois, o item 2 é um subconjunto das respostas do item 1 do questionário apresentado na Figura 1.

Também ali é possível observar a construção de categorias empíricas do item 1 referentes à importância e às expectativas nas aulas de Krav Maga ministradas no CMB – ambiente formal de ensino. Nesse viés, vale destacar as palavras “defesa”, “respeito” e “disciplina”, inferindo-se a preocupação dos pais e/ou responsáveis participantes com a demanda crescente da violência, principalmente contra mulheres, crianças e adolescentes (23).

Tal fenômeno, conforme explicam Marques *et al.*(24), infelizmente, tem se potencializado pela alteração na rotina dos indivíduos, em ocasião da pandemia do novo Coronavírus (SARS-CoV-2, do inglês *Severe Acute Respiratory Syndrome Coronavirus 2*), causador da COVID-19 (do inglês, *Coronavirus Disease 2019*),

principalmente entre crianças e adolescentes, contribuindo para o aumento dos casos de discriminação, depreciação ou desrespeito em relação à criança ou ao adolescente mediante ameaça, constrangimento, humilhação, manipulação, isolamento, agressão verbal e xingamento, ridicularização, indiferença, exploração ou intimidação sistemática (*bullying*)¹.

Assim, no entendimento dos pais e/ou responsáveis aqui participantes, as atividades físicas promovidas pelas aulas de Krav Maga nas escolinhas esportivas e educação física devem instrumentalizar e solucionar os conflitos gerados. Nessa lógica, Teixeira(25) enfatiza que o papel do educador e agente de ensino é acompanhar atentamente tais descritores, buscando perceber as interferências das múltiplas estruturas internas e viabilizar a construção, com confiança, da identidade do adolescente e de um conhecimento ativo da realidade sociocultural onde está inserido.

Entre os elementos periféricos das representações, tem-se a associação das aulas de Krav Maga no CMB às dimensões de coordenação motora, autocontrole e motivação. Dessa forma, a escola é concebida pelos pais e/ou responsáveis participantes da presente pesquisa como um *locus* do saber e desenvolvimento destas competências, que valorizam as dimensões procedimentais e atitudinais tão debatidas e defendidas por Darido e Rangel(26) e Rufino e Darido(27).

Assim, ao considerar o preconizado no Plano de Sequência Didática Linguagens, Códigos e Suas Tecnologias (PSD), aprovado pela Diretoria de Educação Preparatória e Assistencial (DEPA), a referência central para a configuração dos conhecimentos em Educação Física Escolar (EFE) são as práticas corporais, com enfoques diferenciados nas abordagens metodológicas, com base nos diferentes anos escolares, respeitando as características particulares (desenvolvi-

¹ Nota do editor: bullying - the behaviour of a person who hurts or frightens someone smaller or less powerful, often forcing that person to do something they do not want to do. Em português: intimidação.

Fonte: <https://dictionary.cambridge.org/dictionary/english-portuguese/bullying>

mento motor, desenvolvimento cognitivo, realidade cultural e maturação corporal)(28).

As representações aqui elencadas, de fato, coadunam e contemplam as abordagens metodológicas supramencionadas, ao passo que a categorização apresentada não tem pretensões de universalidade. Trata-se de um entendimento possível, entre outros, sobre as denominações das (e as fronteiras entre as) práticas corporais propostas pelas aulas de Krav Maga e as outrora tematizadas no Sistema Colégio Militar do Brasil (SCMB) para a Educação Física Escolar (EFE), o que a torna possível e compatível para o ensino-aprendizagem na escola(28).

Sobre a Figura 3, ao analisar as evocações e as correspondências das formas lexicais e a conexão entre as palavras em destaque separadamente (“luta”, “não” e “briga”), tem-se a perspectiva de “negação à violência” como atenuante e incentivo à prática do Krav Maga no CMB.

As evocações do termo “luta” estão diretamente ligadas aos termos “oponente”, “autoconhecimento”, “disciplina”, “técnica” e “respeito” – sintetizando que a violência não é prioridade nas lutas e muito menos no Krav Maga, pois tais conceitos estão ligados à busca da superação de fraquezas internas do praticante/lutador(29).

A luta aqui elencada, em sentido lato, diz respeito à oposição e ao confronto e, parcialmente, aos aspectos filosóficos e teológicos que envolvem as artes marciais e outras codificações de regras dos esportes de combate(30). Assim, constata-se que os pais e/ou responsáveis aqui partícipes esperam, na prática de Krav Maga no CMB, que a violência estereotipada na sociedade seja combatida, utilizando a luta como instrumento(30).

Conforme apontado, a representação de negação à violência se evidencia no gráfico ao observar o termo “não” interligando-se diretamente aos termos “brigar”, “defender”, “Krav Maga”, “arte”, “aprender”, “precisar”, “capacidade” e “arrumar briga”, que provavelmente são evocados porque a prática das lutas favorece o exercício do

convívio social e a busca pelo valor de si mesmo, a honra e a negação à violência(31,32). Sobre a questão, Ferreira(33) comenta que a prática das lutas na EFE, promove o desenvolvimento cognitivo do aluno, favorecendo a percepção, o raciocínio, a formulação de estratégias e a atenção.

Como elemento prescritivo e central da representação social do gráfico em comento, o termo “briga” é o que mais se afasta das evocações dos pais e/ou responsáveis partícipes da presente pesquisa, ligando-se diretamente ao termo “não”, seguidos dos termos “controle”, “defesa”, “evitar”, “ensinamento” e “conhecimento”, reforçando os argumentos supramencionados.

Destarte, faz-se necessário enfatizar que o conteúdo lutas aqui representado pelo Krav Maga, visa dentre outras possibilidades, valorizar o desenvolvimento do autocontrole, domínio das emoções como raiva e ódio e a inveja, sempre almejando um caminho de evolução do caráter e responsabilidade social, tão ressaltadas por Mocarzel e Columá(30).

Diante do exposto, o Krav Maga, como modalidade de luta no CMB, é uma prática de atividade física que favorece o desenvolvimento da compreensão real dos desafios da violência cotidiana e possibilita aos alunos instrumentos apropriados para lidar com tal violência ao se depararem com a mesma; ou seja, para os pais e/ou responsáveis aqui partícipes, na aula de Krav Maga do CMB, espera-se que os alunos sejam estimulados a lidar com a “perda” e com a “vitória”, controlando seus impulsos, principalmente, os violentos.

Por fim, na Figura 4, os alunos praticantes das aulas de Krav Maga no CMB se posicionam entre a realidade do cotidiano do treinamento e o ideário compartilhado pelos pais e/ou responsáveis, associado ao discurso moral e midiático inferido às práticas de lutas e artes marciais e seus supostos benefícios.

Nas principais evocações dos pais e/ou responsáveis aqui partícipes emergem as perspectivas de que a aula de Krav Maga seja voltada para o desenvolvimento de

aspectos filosóficos e teológicos que envolvem as lutas e as artes marciais, conforme detalhado na Tabela 1 e nas Figuras 2 e 3, respectivamente. Os alunos, em sua grande complexidade biopsicossocial, ao praticarem Krav Maga, tenderam a perceber os benefícios além luta, demonstrando maior interesse em buscar no treinamento benefícios voltados ao desenvolvimento psicológico e fisiológico.

A análise de similitude das narrativas produzidas considerou como categorias centrais referentes às aulas de Krav Maga na vida dos alunos as evocações “físico”, “aprender” e “ajudar” – coerente com as frequências dessas palavras ao longo da leitura das narrativas, exploradas, a seguir, separadamente.

Observando a categoria “físico”, tem-se a presença de algumas características que poderiam originar subcategorias, como, por exemplo, “praticar” e “treinar”, que apesar de sinônimas, estariam presentes, por exemplo, nos termos “continuar”, “conhecer”, “marcial”, “encontrar”, “começar”, “destacar”, “perceber”, “querer”, entre outros. Tal agrupamento possibilitaria compreender os sentimentos que permearam os processos de ensino-aprendizagem das lutas e do Krav Maga ao longo da trajetória escolar destes alunos(33).

Não obstante, o eixo em questão elucidada um fenômeno comum na adolescência: a preocupação com a aparência física, pois no período maturacional, o foco no desenvolvimento da individualidade, da autonomia e do pertencimento a um grupo de pares se apresenta de modo mais evidente(34).

Na mesma direção, o eixo “aprender” agrupa termos como, por exemplo, “futuro”, “estar feliz”, “pessoal”, “verdadeiro”, “evitar”, “legal”, “defender”, “ensinar” e “importante”, denotando a classificação de pensamento dada por Giron *et al.*(35), onde a habilidade do pensar é construída acreditando que o pensamento auxilia o planejamento futuro, integrando passado, presente e futuro na solução do evento, e desenvolvendo sistemas lógico-

genéricos, que integram fantasias, crenças e memórias.

Do mesmo modo, o eixo “ajudar” cerca-se de evocações mais intrínsecas, como, por exemplo, “psicológico”, “corporal”, “novo”, “desenvolver”, “entender”, “dar o melhor de si”, entre outras, coadunando com a habilidade dos adolescentes de criar opiniões pessoais que constroem, inequivocadamente, sua individualidade e seu padrão moral, aumentando sua capacidade de distinção entre o teórico e o realmente possível, Giron *et al.*(35).

Ao refletir sobre a relevância das recorrências e dos dados aqui apresentados, evidenciando sentimentos positivos e negativos dos alunos em relação aos processos de ensino-aprendizagem que emergem das narrativas analisadas, Saito *et al.*(36) consideram a adolescência um fenômeno psicológico e social, possuidor de diferentes peculiaridades conforme o ambiente social, econômico e cultural no qual se desenvolve o sujeito.

Além disso, foram identificadas mais recorrências (subcategorias) nas narrativas individuais dos alunos (n=50), as quais, se analisadas separadamente, mostram-se capazes de ilustrar uma síntese destes episódios, indo ao encontro da necessidade de um olhar pormenorizado e individualizado das representações sociais das aulas de Krav Maga no CMB.

A seguir, têm-se três destas narrativas produzidas pelos alunos (A):

“Comecei a treinar o Krav Maga numa época difícil para mim, pois passava por problemas psicológicos, nos quais as aulas me ajudaram a superar, comecei a ter mais consciência corporal e fui integrada num ambiente saudável onde pude fazer várias e novas amizades. O Krav Maga me ajudou a usar melhor o meu corpo desenvolvendo minhas habilidades, me deu mais segurança ao andar na rua sozinha, além de entender como agir em situações de risco sem trazer maiores danos a minha saúde. Sempre admirei as artes

marciais, mas nunca havia me identificado, agora encontrei finalmente uma que amo treinar, pois é muito importante na minha vida (narrativa produzida pela Aluna 7 no primeiro semestre de 2021)."

"Na minha vida as aulas de Krav Maga são de extrema importância. Comecei a treinar no meio de 2021 e logo percebi como me fazia bem. Destaco dois pontos que me fizeram ter certeza disso: atividade física maravilhosa aliada a defesa pessoal, é ótimo fazer uma atividade que te deixa saudável, em questão de mente e corpo e que vá te ensinar como se defender. Nas aulas além das incontáveis lembranças boas de irmandade e aprendizado que esta escolinha traz, não posso esquecer da alegria em ensinar do professor (narrativa produzida pelo Aluno 33 no segundo semestre de 2021)."

"O Krav Maga é responsável por diversas mudanças em minha vida principalmente as intelectuais, comportamentais, físicas e corporais. No campo intelectual me preparou para enfrentar os desafios do ensino médio do CMB, ajudando na minha insegurança, controle da ansiedade, teimosia, sofrimento por antecipação e trabalhos sobre pressão. Desta forma, ajudando também na melhora de minhas notas e me mantendo mais focado. Por conseguinte, as mudanças físicas foram cada vez mais visíveis ao longo dos treinos, aumentei os músculos, força, resistência nas corridas, coordenação motora e reflexos. Assim, entendo que as aulas de Krav Maga têm me tornado um adolescente mais responsável e com uma saúde melhor (narrativa produzida pelo Aluno 49 no segundo semestre de 2021)."

As evocações outrora apresentadas diagnosticaram os sentimentos narrados pelos alunos que frequentam as aulas de Krav Maga, propiciando a reflexão sobre

esta importante ferramenta metodológica e suas práticas pedagógicas propostas durante o processo de formação dos adolescentes envolvidos. E ainda, revelaram a importância de aproximar as lutas e, para não dizer a EFE do cotidiano do aluno, para que esses sentimentos de medo e trauma possam ser substituídos por expectativas positivas.

O adolescente, de fato, é um ser "em aberto", uma possibilidade cujas transformações corporais são acompanhadas de outras mudanças radicais do ponto de vista psíquico, quer cognitivo, quer afetivo. Como qualquer ser humano, relaciona-se com o mundo das coisas e das pessoas e, assim, o revela, passando a se orientar em um espaço existencial. Até esse momento, seu raciocínio apoia-se diretamente sobre os objetos e as ações imediatas, organizando-se em conexões indissociáveis com seus conteúdos. Assim, as operações mentais funcionam diretamente ligadas às constatações e representações concretas(37).

Para a DEPA, o ensino de Educação Física no SCMB deve estar de acordo com o que preconiza o Ensino por Competências preconizado para os Colégios Militares (CM)(28). Assim, o planejamento do trabalho desenvolvido nos CM deve levar em consideração os seguintes princípios: aprender a conhecer; aprender a fazer; aprender a conviver; e, aprender a ser.

Portanto, o ensino de Krav Maga já é parte integrante e constituinte da cultura corporal dos alunos do CMB, tendo alguns de seus benefícios categorizados nas evocações aqui elencadas, como, por exemplo, os fisiológicos (força, coordenação motora, flexibilidade e agilidade), os psicológicos e os cognitivos (concentração, raciocínio, disciplina e respeito), convergindo com os objetivos educacionais traçados para o SCMB pela DEPA(28).

Cabe ressaltar, que as análises aqui apresentadas foram empreendidas intencionalmente objetivando melhor compreender um fenômeno específico via representações sociais das aulas de Krav Maga, considerando a pouca ou quase

nenhuma referência literária sobre o tema. Vislumbrando ofertar melhor aporte à práxis educacional desta modalidade, principalmente, quando se pensa nas possíveis alterações fisiológicas, nas mais diversas variáveis metabólicas, hemodinâmicas e neuromusculares, e no desempenho de adolescentes que praticam ou venha a praticar de forma regular o método de treinamento de luta em comento.

Pontos fortes e limitações do estudo

O presente estudo apresentou algumas limitações: inicialmente, por ser ímpar, tendo a modalidade estudada em fase de implantação e adequação didático metodológica. Contudo, espera-se que o mesmo motive novas pesquisas envolvendo a comunidade escolar e que se possa enriquecer ainda mais a literatura a respeito dos representações sociais advindas das práticas das lutas, em especial, do Krav Maga no SCMB.

Conclusão

Em linhas gerais, considera-se que as representações sociais aqui elencadas estão e são continuamente produzidas no universo sociocultural pela significação e teorização da realidade, sendo indispensáveis para melhor percepção, comparação, constatação, agregação e classificação da dinâmica do ensino-aprendizagem do fenômeno Krav Maga.

No correr dos resultados, foi possível observar o perfil e os diferentes elementos representacionais relacionados ao termo “indutor” por parte dos pais e/ou responsáveis por alunos que frequentam as aulas da modalidade no CMB, emergindo holisticamente como possível núcleo central os termos “disciplina”, “defesa pessoal”, “segurança”, “respeito”, “saúde” e “confiança”. Assim, a estrutura das representações sociais exibida no corpus da pesquisa apresenta no grupo partícipe elementos que relacionam fortemente o Krav Maga a uma modalidade de luta capaz de estimular a disciplina, desenvolver a defesa pessoal, a mediação de conflitos e a segurança, estimulando o desenvolvimento

do respeito e da autoconfiança, sendo capaz de promover a saúde.

E ainda, surgiram perifericamente elementos que apontam a relação do Krav Maga como uma possível solução para o combate à violência, indicando que, possivelmente, os pais e/ou responsáveis aqui partícipes, enxergam a modalidade como instrumento de mediação ou prevenção desta. Assim, tal relação surge na periferia da representação, por se tratar de sua parte mais volátil, sujeita à adaptação aos múltiplos contextos da realidade.

Por outro lado, entre os alunos partícipes da presente pesquisa, foi possível observar um número maior de sensações relacionadas ao melhoramento do condicionamento e do desenvolvimento físico, social e psicológico ao termo “indutor”, dada a maior centralidade desses elementos, indicando que a prática vivenciada foi e tem sido uma experiência positiva para os alunos, atentando para os elementos mais fortes evocados por esse grupo, em seu núcleo central, terem sido: físico, aprender, ajudar, praticar e treinar – ligados diretamente às questões de treinamento e condicionamento físico, e não ao combate, à comportamentos violentos ou à luta em si.

Vale ressaltar que tais evocações positivas coadunam com as habilidades dos adolescentes de construir opiniões pessoais de acordo com as vivências sociais e ambientais as quais estão inseridos. Assim, é possível afirmar que as representações sociais em questão enunciam o fenômeno da construção de uma significação simbólica, onde os sujeitos sociais empenham-se em entender e dar sentido à prática de exercícios físicos e seus benefícios para o desenvolvimento e melhoria da saúde.

Portanto, a participação nas aulas de Krav Maga, como parte integrante e constituinte das escolinhas e equipes de treinamento do CMB, foi capaz de promover benefícios fisiológicos (força, coordenação motora, flexibilidade, agilidade, entre outros), psicológicos e cognitivos (concentração, raciocínio, disciplina e respeito),

convergiendo com os objetivos educacionais traçados para o SCMB

Agradecimentos

À Divisão de Ensino, ao corpo de alunos e ao Comando do CMB, que possibilitaram a realização da presente pesquisa. À todos os participantes, que gentilmente cederam seus dados para a elaboração deste importante instrumento de diagnóstico.

Declaração de conflito de interesses

Não há nenhum conflito de interesses em relação ao presente estudo.

Declaração de financiamento

O presente estudo foi realizado sem financiamento.

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Artigo Original

Original Article

Efeito agudo da autoliberação miofascial em músculos antagonistas no volume total de treino e índice de fadiga de músculos agonistas: estudo experimental

Acute Effect of Myofascial Self-Release in Antagonist Muscles on Total Training Volume and Fatigue Index of Agonist Muscles: An Experimental Study

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Resumo

Introdução: A autoliberação miofascial (ALMF) tem sido utilizada com o intuito de atenuar os sintomas da dor muscular tardia, incrementar a amplitude de movimento articular e promover melhoras no desempenho da força muscular.

Objetivo: Verificar o efeito da ALMF de músculos antagonistas no volume total de treino (VTT) e no índice de fadiga (IF) em homens treinados.

Métodos: Participaram do estudo oito homens recreacionalmente treinados. Estudo do tipo crossover, com entrada aleatória nos dois protocolos experimentais: protocolo tradicional (GPT), com a execução da sessão de treino com intervalo entre as séries sem ALMF; protocolo ALMF (GALMF), com a execução da sessão de treino com intervalo entre as séries com ALMF de antagonistas. A análise estatística foi realizada com o teste T dependente.

Resultados: Não foram observadas diferenças significativas entre os protocolos experimentais no VTT ($p=0,975$) e no IF ($p=0,495$).

Conclusão: A utilização da ALMF de antagonistas, entre as séries de uma sessão de treinamento de força, parece não interferir no VTT e no IF de agonistas.

Palavras-chave: rolo de massagem, recuperação, intra-séries, repetições, supino reto.

Pontos Chave

- A autoliberação miofascial (ALMF) em músculos antagonistas de membros superiores, intra-séries, não interferiu, nem de forma positiva nem negativa, no VTT e no IF de músculos agonistas.
- Tal ausência de efeito foi observada em todas as situações de protocolos
- Os resultados estão em linha com outros estudos prévios.

Abstract

Introduction: Self-myofascial release (SMFR) has been used to alleviate the symptoms of delayed onset muscle pain, increase range of joint movement and promote improvements in muscle strength performan-

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ce.

Objective: To verify the effect of SMFR of antagonist muscles on total training volume (VTT) and fatigue index (FI) in trained men.

Methods: Eight recreationally trained men participated in the study. Crossover study, with random entry into the two experimental protocols: traditional protocol (GPT), with the execution of the training session with an interval between sets without ALMF; ALMF protocol (GALMF), with the execution of the training session with an interval between sets with antagonist ALMF. Statistical analysis was performed using the dependent T test.

Results: No significant differences were observed between the experimental protocols in VTT ($p=0.975$) and IF ($p=0.495$).

Conclusion: The use of ALMF of antagonists, between sets of a strength training session, does not seem to interfere with the VTT and IF of agonists

Key Points

- Self-myofascial release (SMFR) in antagonist muscles of the upper limbs, intra-set, did not interfere, either positively or negatively, in the VTT and IF of agonist muscles.
- Such lack of effect was observed in all protocol situations
- The results are in line with other previous studies.

Keywords: foam roller, recovery, intrasets, repetitions, bench press.

Efeito agudo da autoliberação miofascial em músculos antagonistas no volume total de treino e índice de fadiga de músculos agonistas: estudo experimental

Introdução

A força muscular trata-se de uma capacidade física, que compõe o conjunto de elementos da aptidão física, a qual é descrita como a capacidade do sistema neuromuscular em produzir tensão com o intuito de superar uma dada resistência(1). Assim, o treinamento para aumentar a força, ou simplesmente, treinamento de força (TF) tem sido comumente utilizado com o objetivo de promover melhoras na aptidão física e no desempenho da força muscular(1,2).

A auto liberação miofascial (ALMF) é a técnica caracterizada pela execução de repetidos, utilizando o próprio peso corporal em movimentos sobre o *foam roller*¹ (FR). , Esse tipo de exercício / terapia localizada tem sido habitualmente usado com o intuito de atenuar os sintomas da dor muscular tardia, incrementar a amplitude de movimento articular e promover melhoras no desempenho da

força(4–8). Nesse sentido, há estudos que mostraram que a ALMF, quando aplicada nos músculos antagonistas, pode promover melhoras no desempenho da força de músculos agonistas(9,10).

Observa-se que há controvérsias na literatura sobre os efeitos do uso do FR na liberação miofascial em relação ao desenvolvimento de força muscular. Por um lado, algumas evidências recentes mostraram que a ALMF pode promover efeitos deletérios em desempenho da força muscular(8,9), potência muscular e tempo sob tensão(10). Por outro lado, a ALMF pode não interferir, nem de forma positiva nem negativa, no desempenho da força(11).

Um estudo conduzido em mulheres *recreacionalmente* treinadas (n=25; média de idade de 27,7±3,56 anos), observou-se que três séries de 60 ou 120 segundos de ALMF intra-séries, aplicadas nos músculos antagonistas, de forma aguda, promoveram efeitos deletérios no desempenho de

¹**Nota do editor:** *foam roller* – rolo de massagem, desenvolvido para liberação miofascial.

Fonte: Wiewelhove et al.(3)

repetições no exercício cadeira extensora(11). Salvini *et al.*(6)observaram, em homens treinados (n=9; média de idade de 23,5±2,4 anos), que três séries de 30 segundos de ALMF de músculos agonistas e antagonistas, realizadas imediatamente antes do início da sessão de treino, não interferiram, nem de forma positiva nem negativa, no volume total de treino (VTT) e no índice de fadiga (IF) no exercício cadeira extensora. Santana *et al.*(10)compararam três protocolos de ALMF (aplicado nos músculos: agonista, antagonista e em ambos) com o treinamento de força tradicional (sem ALMF), em 20 homens treinados (30,35±6,56 anos). Os resultados mostraram que o número total de repetições na cadeira extensora foi significativamente maior na sessão agonista/antagonista com FR, em relação à sessão de treinamento tradicional.

Sendo assim, parece que o volume de ALMF intra-séries, o grupamento muscular e o nível de treinamento dos participantes pode influenciar, de forma distinta, o VTT e o IF.

Para ajudar a esclarecer o fenômeno no TF, o objetivo do presente estudo foi investigar os efeitos agudos da ALMF intra-séries, aplicada nos músculos antagonistas, no VTT e no IF nos músculos dos membros superiores (exercício supino reto), em homens treinados. Considerou-se a hipótese de que o protocolo experimental composto por exercícios de ALMF de músculos antagonistas promoverá melhoras no VTT e no IF dos músculos agonistas, se comparado ao protocolo experimental sem exercícios de ALMF.

Métodos

Desenho de estudo e amostra

O presente estudo *quasi*-experimental teve um delineamento randomizado e contrabalanceado, do tipo *crossover*. A amostra foi composta por oito homens *recreacionalmente* treinados, com 30-50±5,89 anos de idade; 86,37±10,26 kg de massa corporal; 176,12±2,38 cm de estatura e 27,85±3,31 kg/m² de Índice de Massa Corporal (IMC), e selecionados por con-

veniência. Foram estabelecidos os seguintes critérios de inclusão: a) Não ter lesões osteomioarticulares que comprometam a realização dos protocolos experimentais; b) Ser praticante de TF há no mínimo 6 meses, com frequência semanal mínima de duas sessões; c) Ter idade entre 18 e 45 anos. Da mesma forma, foram considerados como critérios de exclusão: a) Apresentar exame positivo para covid-19 nos últimos seis meses; b) Utilizar recursos ergogênicos ou medicamentos em prol da saúde ou do desempenho; c) Par-Q positivo.

Aspectos éticos

Todos os sujeitos assinaram um termo de consentimento livre e esclarecido (TCLE), antes da participação no estudo e após serem informados sobre os objetivos da pesquisa, que foi realizada de acordo com as normas éticas previstas na resolução 466/102 (Conselho Nacional de Saúde, 2012).

Variáveis de estudo

As variáveis dependentes foram: desempenho de força de membros superiores no VTT e IF no exercício supino reto, e a variável independente foi a ALMF no intervalo entre as séries da sessão de TF. Idade, massa corporal, estatura e IMC foram as covariáveis utilizadas para caracterização da amostra.

Procedimento experimental

Foram realizadas cinco visitas na academia Performance (Vila Isabel, Rio de Janeiro-RJ) com intervalos de 48 horas entre elas (Figura 1). Nas três primeiras visitas, foram realizados os seguintes procedimentos: a) Preenchimento do TCLE e do Par-Q; b) Medidas antropométricas; c) Familiarização com os protocolos experimentais; d) Teste e reteste de 10 RM. Nas demais visitas, foram realizados os protocolos experimentais. Além disso, todas as visitas foram realizadas no mesmo período do dia (entre 09:00h e 12:00h); e todos os indivíduos foram orientados a não realizar exercícios físicos e a não ingerir bebidas alcoólicas com pelo menos 48h de antecedência aos testes. Neste estudo, do tipo *crossover*, a entrada foi aleatória nos dois protocolos experimentais: protocolo

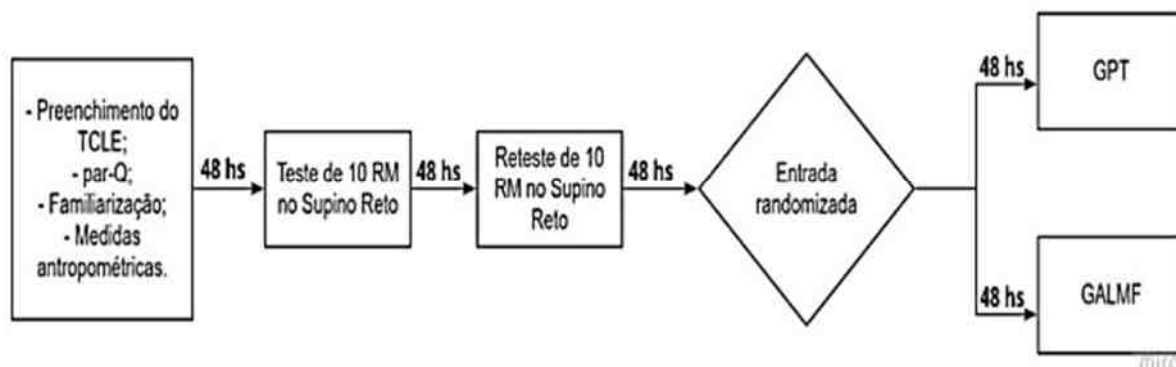


Figura 1 – Fluxograma do procedimento experimental.

Legenda: **TCLE:** Termo de Consentimento Livre e Esclarecido; **Par-Q:** avaliação de aptidão para a realização de atividade física; **10RM:** 10 repetições de exercício contra-resistência em carga máxima; **GPT:** grupo protocolo tradicional; **GALMF:** grupo autoliberação miofascial.

tradicional (GPT), com a execução da sessão de treino com intervalo entre as séries sem ALMF; protocolo ALMF (GALMF), com a execução da sessão de treino com intervalo entre as séries com ALMF de antagonistas.

Teste de 10 Repetições Máximas (10 RM)

Inicialmente, foi realizado um protocolo de aquecimento composto por uma série de quinze repetições e carga de 20% da massa corporal(15). Posteriormente, após intervalo de cinco minutos, foram realizadas até três tentativas com intervalos de cinco minutos entre elas, e caso a carga não fosse encontrada até a terceira tentativa, um novo teste seria realizado 48 horas após. O teste foi interrompido mediante as seguintes condições: quando um indivíduo chegava à falha concêntrica na décima repetição; ou quando mais de dez repetições fossem realizadas. Após 48 horas, um novo teste de 10 RM foi realizado com o intuito de garantir a reprodutibilidade do teste, sendo considerada a maior carga encontrada nos dois dias(16,17). Além disso, visando reduzir a margem de erro dos testes, foram adotadas as seguintes estratégias: a) Foram fornecidas instruções padronizadas referentes a execução do exercício proposto; b) O avaliador estava atento quanto à amplitude movimento articular e à técnica de execução do exercício proposto;

c) Estímulos verbais foram utilizados com o intuito de manter o nível de motivação elevado, durante todo o teste(16). Visando minorar os erros de medida, foram adotados os seguintes procedimentos de padronização do movimento, os indivíduos foram posicionados, inicialmente, em decúbito dorsal; tronco em extensão e posicionado sobre um banco; cotovelos em flexão de aproximadamente 90°; ombros em abdução horizontal de aproximadamente 90°; e a barra apoiada sobre o tórax a aproximadamente 3 cm acima do processo xifoide. Em seguida, o avaliado realizou uma adução horizontal dos ombros associada a uma extensão plena dos cotovelos(10,18).

Autoliberação Miofascial (ALMF)

Em princípio, os sujeitos foram posicionados: em decúbito dorsal; braços cruzados atrás da cabeça; tronco em extensão; joelhos e quadris em flexão de aproximadamente 90°; somente os pés e os glúteos apoiados sobre o solo; e o FR posicionado sob a região dorsal, entre o final da coluna torácica e início da coluna lombar (Figura 2). Em seguida, foram realizadas três séries de 30 segundos de rolamentos sobre o FR, no sentido craniocaudal (Figura 3), com intervalos de 15 segundos entre as séries(6,19). Além disso, foi utilizada uma cadência de 30

b.p.m, controlada com o auxílio de um metrônomo (*Metronome Beats - Stonekick*, versão 5.3.1); e foi utilizado um FR (*LiveUp®*) com 54,5 cm de comprimento x 15 cm de largura, denso e sem ranhuras(13).



Figura 2 – Posição inicial na autoliberação miofascial (ALMF)



Figura 3 – Posição final na autoliberação miofascial (ALMF)

Volume de Treinamento Total (VTT)

O VTT foi calculado pelo produto da carga (componente de intensidade), medido pelo melhor desempenho entre o teste e o reteste de 10 RM, e o número de repetições (componente de volume) em cada série da sessão de TF no exercício supino reto(20).

Índice de Fadiga (IF)

O IF foi mensurado com o intuito de analisar o percentual de redução no desempenho de repetições ao longo das três séries. Assim, o IF foi calculado com o auxílio da seguinte fórmula: $IF = (\text{número total de repetições realizadas na terceira série} / \text{número total de repetições realizadas na primeira série}) \times 100$ (21)

Análise estatística

O tratamento estatístico foi realizado no software SPSS versão 2.0 (Chicago, IL, USA). Inicialmente, foi realizado o teste de normalidade de Shapiro-Wilk. Com a normalidade dos dados não rejeitada, foi

utilizado o teste t para amostras dependentes para determinar se ocorreram diferenças significativas entre os protocolos experimentais em relação ao VTT e ao IF. Para todas as análises inferenciais, a significância estatística considerada foi para o valor de $p \leq 0,05$.

Resultados

Na Tabela 1, são apresentados os valores de média e desvio padrão do VTT e do IF. Como resultado, não foram observadas diferenças significativas entre os protocolos experimentais no VTT ($df=14$; $p=0,975$) e no IF ($df=14$; $p=0,495$).

Tabela 1 – Valores de média e desvio padrão do volume total de treino (VTT) e do Índice de Fadiga (IF) em cada protocolo

Protocolo	VTT (Kg)	IF (%)
GPT	5.298,11 ± 681,00	53,87 ± 9,49
GALMF	5.287,80 ± 636,53	50,59 ± 9,21

Legendas: VTT, Volume Total de Trabalho; GPT: Protocolo Tradicional; GALMF: Protocolo Auto Liberação Miofascial.

Discussão

O principal achado do presente estudo foi que a ALMF em músculos antagonistas de membros superiores, intra-séries, não interferiu, nem de forma positiva nem negativa, no VTT e no IF de músculos agonistas. Assim sendo, tais resultados corroboram algumas evidências prévias que observaram que a ALMF intra-séries em antagonistas não promoveu efeitos deletérios no desempenho da força muscular e no IF de músculos agonistas(11–13).

Em estudo similar, Salvini *et al.*(6), investigaram os efeitos agudos da ALMF de músculos de membros inferiores agonistas e antagonistas no desempenho da força muscular de agonistas. Nesse estudo, o protocolo de ALMF foi composto por três séries de 30 segundos, realizadas imediatamente antes do início de uma sessão de TF, os resultados foram em linha com os do presente estudo: não houve influência significativa, quer seja positiva ou negativa, no

desempenho de repetições e no IF no exercício cadeira extensora, em homens treinados. Na mesma direção, estão os resultados de Silva *et al.*(22) que investigaram o efeito agudo da ALMF, intra-séries, de músculos dos membros inferiores agonistas no desempenho de repetições no exercício cadeira extensora. Assim, a sessão de ALMF foi composta por uma série de 60 segundos, aplicada imediatamente antes do início de cada uma das duas séries, realizadas até a falha concêntrica, no exercício cadeira extensora. Como resultado, foi observado que a ALMF intra-séries de músculos agonistas não interfere, nem de forma positiva nem negativa, no desempenho da força muscular, em homens treinados.

Na literatura científica, alguns mecanismos neuromusculares são descritos como prováveis responsáveis pelas alterações agudas no desempenho da força muscular, após a realização de uma sessão de ALMF(6,10). Assim, dentre tais mecanismos, a alteração na sensibilidade dos fusos musculares e um aumento da atividade reflexa dos órgãos tendinosos de Golgi podem ser considerados os mecanismos de maior relevância(23).

Nesse contexto, em uma determinada articulação, músculos agonistas e antagonistas são recrutados, de forma concomitante e sincronizada, com o intuito de melhorar a eficiência e precisão de uma determinada tarefa motora e aumentar a estabilidade articular(24–26). Assim, tem sido sugerido que a ALMF de músculos antagonistas pode promover melhoras no desempenho da força de agonistas(10). Além disso, há de se destacar que a fâscia muscular, tecido conjuntivo que envolve e integra toda a estrutura corporal, quando tensionada, sofre alterações na sua rigidez e plasticidade, e que o volume de ALMF pode estar associado a magnitude das alterações agudas no desempenho da força muscular(4,5,7,27,28). Não obstante, alguns autores sugerem que não há evidências

significativas dos efeitos do rolo de espuma (ALMF) nas alterações tixotrópicas² da fâscia e que esses efeitos sobre o desempenho, amplitude articular e redução da dor parecem ser mais associados a ativação dos sistemas moduladores da dor e reflexos induzidos pela redução do tônus muscular(3,29).

Oportuno destacar que a literatura apresenta diferentes exercícios, amostras, agrupamentos musculares e volumes de ALMF o que, possivelmente, pode explicar as controvérsias observadas no tema(6,11,12,22). É plausível que um volume de ALMF, intra-séries, maior do que o utilizado no presente estudo promova alterações neuromusculares agudas nos músculos antagonistas e, consequentemente, interferir, de forma positiva, no VTT e no IF de músculos agonistas. Sugere-se, portanto, que outros estudos sejam conduzidos com uma amostra semelhante à esta, experimentando outros volumes de ALMF.

Pontos fortes e limitações do estudo

O ponto forte do presente estudo foi examinar os efeitos da ALMF nos músculos dos membros superiores o que é notadamente um enfoque original, tendo em vista que só foram encontrados na literatura investigações realizadas nos membros inferiores. Além disso, o exercício escolhido, supino reto, é muito utilizado nas academias e por atletas que visam desenvolver força de membros superiores, aumentando a possibilidade de aplicação prática dos conhecimentos gerados. Por fim, utilizar o Índice de Fadiga como indicador de desempenho no TF, foi uma estratégia que permitiu observar melhor, com valores de percentuais, o comportamento de resistência à fadiga em ambos os grupos experimentais.

O presente estudo apresenta algumas limitações, tais como: utilizar apenas indivíduos do gênero masculino e ter sido realizado em uma sessão de TF composta por um único exercício. Portanto, sugere-se

²**Nota do editor:** tixotrópico – qualidade da tixotropia. Tixotropia: fenômeno que faz diminuir a viscosidade de certos líquidos ao serem agitados.

Fonte: <https://michaelis.uol.com.br/moderno-portugues/busca/portugues-brasileiro/tixotropia/>

a realização de futuros estudos que utilizem indivíduos do gênero feminino, em uma sessão de TF composta por mais exercícios.

Conclusão

A utilização da ALMF de antagonistas entre as séries parece não interferir, nem de forma positiva nem negativa, no VTT e no IF de agonistas. Portanto, essa pode ser uma boa estratégia a ser utilizada em academias e centros de treinamento quando houver o objetivo de, além das adaptações ao TF, tentar ganhar amplitude de movimento articular e recuperação nos músculos antagonistas, em uma mesma sessão de treino, sem gasto adicional de tempo da sessão e efeitos deletérios no desempenho da força muscular nos músculos agonistas.

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Não há nenhum conflito de interesses em relação ao presente estudo.

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Artigo Original

Original Article

Efeitos do treinamento pliométrico em crianças e jovens adolescentes: uma revisão integrativa

Effects of Plyometric Training in Children and Young Adolescents: An Integrative Review

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Resumo

Introdução: Na atualidade é possível observar que existe uma constante exposição a fatores de risco que podem levar a doenças cardiovasculares e, também, metabólicas em crianças e adolescentes. Nesse sentido, o Treinamento Pliométrico (TP) que tem como base o ciclo alongamento-encurtamento (CAE) surge como uma opção segura e eficaz na melhora da aptidão física, composição corporal e do desempenho físico dessa população.

Objetivo: Apresentar uma revisão da literatura acerca dos efeitos do TP em crianças e jovens adolescentes, evidenciando os resultados sobre diferentes capacidades físicas do desempenho humano.

Métodos: A pesquisa foi realizada entre os meses de setembro de 2021 e janeiro de 2022 usando as bases de dados PubMed, Scielo, Google Acadêmico e Portal Capes e foram utilizados os seguintes termos: "treinamento pliométrico", "treinamento físico", "crianças", "adolescentes". Além dos booleanos "AND" e "OR".

Resultados e Discussão: Inicialmente, foram encontrados 1.346 artigos, e após todo o processo de seleção e elegibilidade restaram sete estudos, dos quais, dois (28,57%) foram realizados na população feminina. O TP mostrou benefícios no desempenho da agilidade, velocidade, saltos e desempenho técnicos esportivos, nas respostas cardiovasculares e neuromusculares em crianças e adolescentes. Contudo, mais protocolos precisam ser examinados e aplicados na população feminina.

Conclusão: Concluiu-se que o TP é um método seguro e eficaz para melhoras as capacidades físicas em crianças e adolescentes. Além de ser aplicável e promover maior variabilidade de repertório neuromusculares e motores.

Palavras-chave: treinamento, pliometria, condicionamento físico, crianças.

Abstract

Introduction: Currently, it is possible to observe that there is constant exposure to risk factors that can lead to cardiovascular and metabolic diseases in children and adolescents. In this sense, Plyometric Training

Pontos Chave

- O Treinamento Pliométrico (TP) mostrou benefícios no desempenho da agilidade, velocidade, saltos e desempenho técnicos esportivos.
- Além de benefícios cardiovasculares e neuromusculares.
- Mais protocolos precisam ser aplicados e examinados na população feminina.

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(PT), which is based on the stretch-shortening cycle (SSC), appears as a safe and effective option for improving physical fitness, body composition and physical performance in this population.

Objective: To present a brief review of the literature on the application of plyometric training as a safe and effective option for improving physical fitness, body composition and physical performance in children and adolescents.

Methods: The research took place between the months of September 2021 and January 2022 using the databases PubMed, Scielo, Google Scholar and Portal Capes using the following terms: "plyometric training", "physical training", "Children", "Adolescent". In addition to the booleans operators "AND" and "OR".

Results and Discussion: 1,346 articles were, initially found, and after the entire selection and eligibility process, seven studies remained, of which two (28,57%) were conducted in the female population. PT showed benefits in the performance of agility, speed, jumping and technical sports performance, in cardiovascular and neuromuscular responses in children and adolescents. However, protocols need further investigation, and it should be applied on female population.

Conclusion: PT is a safe and effective method for improving physical capabilities in children and adolescents. In addition to being applicable and promoting greater variability in neuromuscular and motor repertoire.

Keywords: training, plyometrics, fitness, children.

Key Points

- Plyometric Training (PT) showed benefits in the performance of agility, speed, jumping and technical sports performance.

- In addition to cardiovascular and neuromuscular benefits.

- More protocols need to be applied and examined in the female population.

Efeitos do treinamento pliométrico em crianças e jovens adolescentes: uma revisão integrativa

Introdução

O excesso de peso em crianças e adolescentes pode ser diminuído e prevenido alcançando-se bons níveis de aptidão física, o que deve ser estimulado para aumentar o repertório motor e neuromuscular(1). Neste sentido, o controle dos níveis corretos de aptidão física passa a ter grande importância para que se alcance os benefícios necessários ao corpo para se ter uma saúde em dia, para serem evitadas doenças e na busca pelo desenvolvimento do condicionamento cardiorrespiratório, assim como melhora resistência da força, força máxima e potência muscular(2).

Um método específico que ganhou notoriedade por promover melhorias sobre diversos parâmetros da aptidão física de crianças e adolescentes foi a pliometria ou Treinamento Pliométrico (TP)(3-5). A eficácia do TP baseia-se na utilização do ciclo do alongamento e encurtamento que ocorre quando uma ação excêntrica, produzida

durante o alongamento do músculo, é imediatamente seguida por uma contração concêntrica do músculo, produzida durante seu encurtamento(6). Esse evento estimula um acúmulo de energia elástica no músculo e, associado ao processo de ativação do reflexo miotático, por meio do estiramento, promove máxima potência de movimento(7).

A participação regular de crianças em um programa de TP pode ajudar a fortalecer os ossos, e facilitar o controle de peso, reduzindo assim os riscos de lesões(8). Isso parece ser extremamente importante, principalmente para jovens atletas do sexo feminino que apresentam maior incidência de lesão nos joelhos(8). Mesmo com o aumento na produção de estudos acerca do TP em crianças e adolescentes, ainda há escassez de estudos que tratem do TP em crianças pré-púberes e com baixa competência motora. Além disso, revisões sobre o TP têm mostrado que mais estudos necessitam ser feitos para que mais

evidências possam gerar resultados mais conclusivos(9-12).

Nesse sentido, o presente estudo teve como objetivo realizar uma revisão da literatura acerca dos efeitos do TP em crianças e jovens adolescentes, evidenciando os resultados sobre diferentes capacidades físicas do desempenho humano.

Métodos

Desenho de estudo e amostra

O presente estudo caracterizou-se como um estudo de revisão integrativa da literatura, realizada nas bases de dados: PubMed / MedLine, Scielo, Google Acadêmico e Portal Capes, buscando estudos que tenham usado o TP como meio de intervenção e que tenham investigado seus efeitos em crianças de até 15 anos de idade.

Os critérios de inclusão no estudo foram: a) Estudos publicados limitação de publicação; b) Estudos em que a população estudada fosse de crianças e adolescentes; c) Estudos que evidenciassem os efeitos do TP. Os critérios de exclusão foram: a) Estudos que analisassem ação medicamentosa; b) Ano de publicação e c) estudos que sem protocolos de TP e estudos repetidos. Foram excluídos os estudos que não atenderam esses requisitos. A pesquisa foi realizada entre os meses de setembro de 2021 e janeiro de 2022.

Para a pesquisa nas bases de dados, foram utilizados os seguintes termos, baseados na consulta aos Descritores em Ciências da Saúde (DeCS): TP, Treinamento Físico, Crianças e Adolescentes. Foram usados também os termos em inglês “*plyometric training*”, “*children*”, “*performance*”, e para isso foram utilizados os operadores booleanos *AND* (entre descritores) e *OR* (entre sinônimos).

Resultados e Discussão

Inicialmente foram identificados 1.346 artigos. Após a exclusão por título, restaram

72 estudos, em seguida, 11 estudos foram excluídos por serem duplicados restando 61 artigos. Todos os 61 artigos tiveram seus títulos lidos e seus resumos analisados, em seguida 54 estudos foram excluídos pelos critérios de exclusão de tipo e desenho de estudo, chegando ao final o total de 7 estudos selecionados para análise nesta revisão (Figura 1). Os estudos estão apresentados na Tabela 1.

Dentre os estudos selecionados, observou-se que cinco autores realizaram intervenções mistas(5,13-15, 19). Ou seja, o TP foi associado a outro método de treinamento, no caso, ao treinamento técnico-tático da modalidade, como por exemplo, treinamento específico de ginástica, basquete, futebol e natação respectivamente. Os outros dois estudos(16-18) realizaram apenas o TP como meio de intervenção, sem associação a outros métodos.

Outro ponto a ser observado foi a baixa quantidade de estudos realizado no sexo feminino, pois, dentre os sete estudos selecionados, apenas dois estudos aplicaram na população feminina, no qual em um estudo usaram exclusivamente ginastas do sexo feminino e outro examinaram os efeitos o TP em 34 atletas de basquetebol, no qual 21 eram meninas e apenas 13 eram meninos, os outros seis estudos contaram apenas com participantes do sexo masculino(13,14).

O período de intervenção também variou entre estudos. Um estudo aplicou um regime de seis semanas de intervenção(14), outro estudo realizou o TP durante sete semanas(19). Três estudos realizaram oito semanas de intervenção(5,13,15). Outros dois estudos aplicaram o TP durante 12 semanas(16,18). Com relação ao método de estudo, todos os estudos utilizaram modelo experimental não comparativo(5,13,15-19). Apenas um estudo que utilizou dois grupos experimentais na comparação(14).

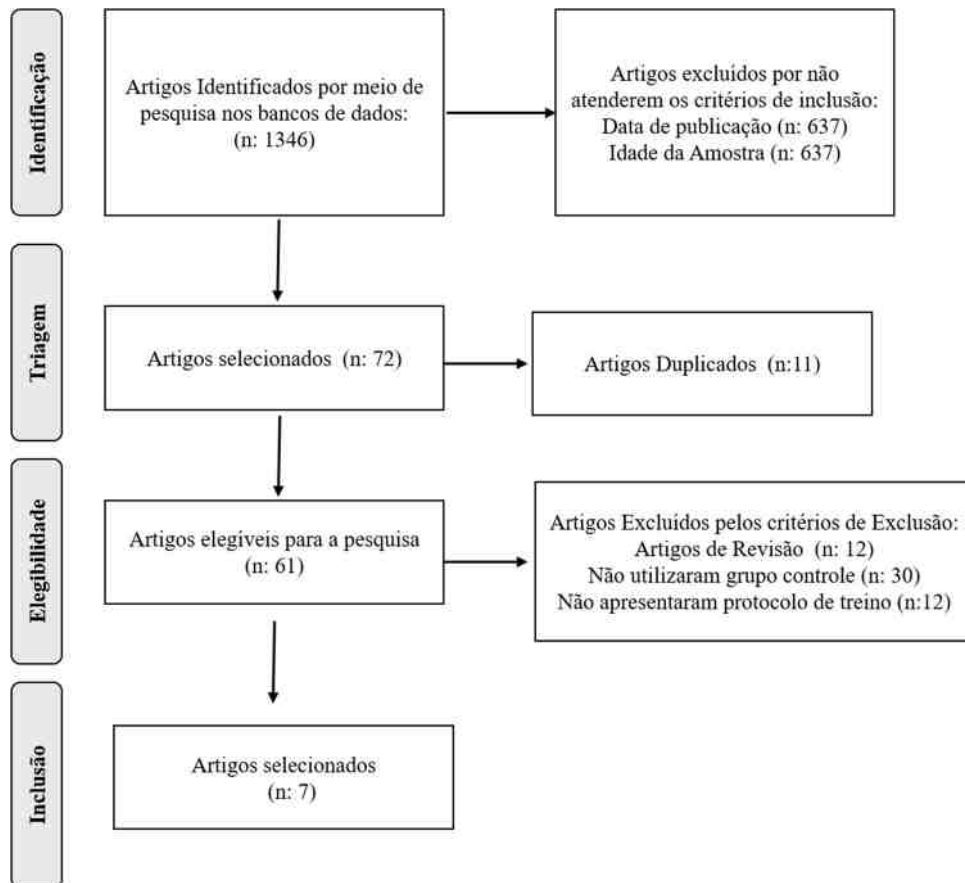


Figura 1 – Fluxograma do processo de seleção dos estudos

Desempenho em agilidade

A maioria dos estudos avaliou a aplicação do TP sobre a agilidade e mudança de direção (COD – *change of direction*)(4,13,16,18,19). Para avaliar a COD, diferentes testes podem ser utilizados como os testes de *sprint* (corridas de curta distância) com distâncias de 5m e 10m(13), analisadas pelo *t-test*(4) e pelo Teste do Quadrado de 4x4, proposto pela Bateria de testes PROESP-BR (2016)(16,17) e através do *Illinois Agility Test* (IAT)(19).

Os resultados apontados por cinco estudos que analisaram os efeitos do TP sobre a agilidade mostraram melhoras significativas nos grupos treinados após o período de intervenção(5,13,16,18,19). Esses achados foram corroborados por outro estudo que analisaram a agilidade de atletas adolescentes de futebol após oito semanas de intervenção com TP sobre superfícies estáveis(20). Outro estudo não observou melhora significativa nos seus

resultados em jovens atletas de futebol(22). De acordo com os autores, o nível de treinamento, regime e protocolo de treinamento pode ter interferido nos resultados. No entanto, um estudo de revisão sistemática mostrou efeito importante na agilidade de atletas de voleibol que realizaram o TP de alto e baixo volume durante oito semanas(21).

Nesse sentido, parece necessária a elaboração de sistematização temporal do protocolo de TP para que se possa identificar o melhor protocolo para se alcançar efeitos sobre a agilidade.

Desempenho em velocidade de deslocamento

Os estudos de Almeida *et al.*(16), Bogdanis *et al.*(13), Negra *et al.*(5) Nobre *et al.*(18) e Ramirez-Campillo *et al.*(19) avaliaram os efeitos do TP sobre a velocidade de deslocamento. Todos avaliaram a velocidade máxima (linear) a partir do teste

Tabela 1 - Artigos selecionados para revisão, autores, título do artigo, características da amostra e tipo de intervenção.

Autores	Título do Estudo	Sexo/Idade	Tipo de Intervenção	Amostra
Almeida <i>et al.</i> (16)	Plyometric training increases gross motor coordination and associated components of physical fitness in children.	Meninos 7-9 anos	Pliometria	116 Escolares
Bogdanis <i>et al.</i> (13)	Effect of Plyometric Training on Jumping, Sprinting and Change of Direction Speed in Child Female Athletes.	Meninas 7-9 anos	Pliometria + Exercícios Técnicos da Ginástica.	50 Ginastas
Correia <i>et al.</i> (14)	The effect of plyometric training on vertical jump performance in young basket athletes.	Meninos e Meninas 14-15 anos	Pliometria + Treino Técnico-Tático do Basquete	34 Jogadores de Basquete
Negra <i>et al.</i> (5)	Short-Term Plyometric Jump Training Improves Repeated-Sprint Ability in Prepuberal Male Soccer Players.	Meninos 12-12 anos	Pliometria + Treino Tático-Técnico do Futebol	24 Jogadores de Futebol
Nobre <i>et al.</i> (18)	Twelve Weeks of Plyometric Training Improves Motor Performance of 7- to 9-Year-Old Boys Who Were Overweight/Obese: A Randomized Controlled Intervention.	Meninos 7-9 anos	Pliometria	59 Escolares com Sobrepeso/Obesidade
Ramirez-Campillo <i>et al.</i> (19)	Effects of Plyometric Training on Physical Performance of Young Male Soccer Players: Potential Effects of Different Drop Jump Heights.	Meninos 13-14 anos	Pliometria + Treino Tático de Futebol	39 Jogadores de Futebol
Sammoud <i>et al.</i> (15)	The Effects of Plyometric Jump Training on Jumping and Swimming Performances in Prepubertal Male Swimmers.	Meninos 10-11 anos	Pliometria + Treinos Específicos da Natação	26 Nadadores

de velocidade de 20m. Bogdanis *et al.*(13) incluíram em suas análises, além desse, o teste de velocidade de 10m. Os resultados mostram um consenso, com exceção do estudo de Ramirez-Campillo *et al.*(19) que encontrou melhoras pequenas em velocidade. Após o período de intervenção, todos os outros estudos observaram maior incremento significativo sobre o desempenho nessa capacidade física após a realização de um período de TP. Os resultados corroboraram os achados de Chaabene e Negra(23); Granacher *et al.*(20) que observaram resultados significativos sobre a velocidade em jogadores adolescentes de futebol masculino após oito semanas de intervenção. Fath *et al.*(24) observaram melhoras nos testes de *sprint* de 5m, 10m e 20m, em jogadores jovens de voleibol, após 16 semanas de intervenção de TP, associado ao treinamento de força. Chelly *et al.*(25) observaram que o TP com duração de oito semanas melhorou a velocidade em jogadores adolescentes de handebol. Idrizovic *et al.*(26) observaram que o TP, associado ao treinamento de voleibol, durante três meses (12) semanas, com apenas 2 sessões por semana, promoveu melhoras significativas sobre diversos parâmetros da aptidão física; entre eles a velocidade avaliada no teste de 20m.

Os resultados encontrados mostraram os efeitos do TP nos testes de velocidade, porém, os resultados não foram significativos em todos os estudos, mostrando que mesmo com a maioria dos estudos mostrando ótimos resultados, os estudos ainda não mostram um consenso sobre esses efeitos.

Desempenho sobre Saltos

Dentre os sete estudos selecionados para esta revisão, quatro(5,13,14,15) avaliaram os efeitos do TP sobre desempenho dos saltos (verticais/horizontais).

Almeida *et al.*(16) e Nobre *et al.*(17) avaliaram o desempenho do salto apenas com o teste de impulsão horizontal (*standing long jump*: SLJ), os resultados indicam que o grupo treinado obteve melhoras significativas no salto.

Bogdanis *et al.*(13) investigaram os efeitos do TP associado ao treinamento da ginástica em jovens atletas, os testes usados para avaliar os saltos verticais foram o (*countermovement jump*: CMJ) com uma e duas pernas, *drop-jump* (DJ) e *squat-jump* (SJ) e para saltos horizontais foi utilizado o SLJ. Os resultados mostraram melhoras nos saltos DJ, SJ e SLJ em ambos os grupos, evidenciando que o TP não foi responsável por induzir esses resultados. Porém, no grupo treinado, houve aumento sobre o CMJ unipodal e bipodal, provavelmente, devido a introdução do TP.

Correia *et al.*(14) avaliaram o efeito do TP sobre saltos verticais SJ e CMJ (*countermovement jump*: CMJ), porém, algo interessante nesse estudo é que ele examinou os efeitos sobre um grupo masculino e um grupo feminino. Melhoras significativas foram observadas nos dois grupos em ambos os testes, porém, o grupo feminino teve uma resposta melhor no CMJ comparando-se com o SJ.

Negra *et al.*(5) e avaliaram o efeito do TP associado ao treinamento de futebol no desempenho do salto em jovens jogadores de futebol através do teste de impulsão vertical DJ, com alturas de 20cm e 40cm, foram observados resultados significativos no grupo treinado em ambos os testes. Ramirez-Campillo *et al.*(19) também avaliaram o desempenho dos saltos após um período de intervenção de TP (em diferentes alturas DJ20cm e DJ40cm) associado ao treinamento de futebol em jovens jogadores, o CMJ foi usado para avaliar a potência, os resultados mostraram melhorias significativas no desempenho do salto após sete semanas de treinamento.

Resultados semelhantes foram encontrados por McKinlay *et al.*(27) que examinaram os efeitos do TP em jovens jogadores de futebol distribuindo-os em três grupos: TP, treinamento de força e grupo controle. Observou-se que o TP promoveu melhorias significativas na força e no desempenho do salto em comparação com os outros grupos. Resultados semelhantes foram observados por Matavulj *et al.*(28) que avaliou a altura da queda (DJ50cm e DJ100cm) no desempenho do salto vertical

de jovens atletas de basquete. Houve aumentos no desempenho do salto, tanto na altura de 50cm como na de 100cm, sendo que houve aumentos na força dos extensores do quadril e na razão de desenvolvimento da força dos joelhos foram maiores após o treinamento.

Sammoud *et al.*(15) observaram que jovens nadadoras ao realizarem oito semanas de TP, associado ao treino de natação conseguiram melhorar seus desempenhos no teste de saltos verticais (CMJ) e horizontais (SLJ), porém, ressalta que mais estudos correlacionando TP e natação são necessários. Resultados semelhantes também foram encontrados no estudo de Trajković *et al.*(29) que analisaram os efeitos do TP associado ao treinamento de voleibol em jogadoras de 17 anos (± 6 meses), após cinco semanas de intervenção os resultados mostraram que o grupo treinado obteve melhoras significativas no SJ e CMJ.

Adicionalmente, Eraslan *et al.*(30) observaram, em recente estudo de revisão, investigando a relação do TP com desempenho de atletas, demonstraram evidências moderadas que o TP aumenta o desempenho no salto, tendo sugerido que tais conclusões também se aplicam a crianças e adolescentes. Os estudos apresentados exibiram boas evidências que o TP melhora o desempenho nos saltos.

Desempenho sobre demais habilidades

Ramirez-Campillo *et al.*(19) examinaram a potência do chute, avaliando a maior distância possível. Os resultados mostraram que o TP melhorou significativamente esta variável. Resultados semelhantes foram registrados por Ramirez-Campillo *et al.*(19) que avaliaram o efeito do TP de baixo volume e alta intensidade em jovens jogadores de futebol. Os autores observaram que após sete semanas de treinamento, houve aumento no desempenho do chute.

Sammoud *et al.*(15) usaram testes específicos da modalidade para avaliar o desempenho na natação. Ao final do período de intervenção foi visto que o TP combinado com o treinamento regular da

natação induziu pequenas melhorias no teste Crawl de 50m, no teste de deslizamento frontal de 15m e 25m, porém, declínios triviais foram observados no teste de deslizamento frontal de 50m. Nesse sentido, ainda há controvérsias sobre os benefícios do TP sobre aspectos específicos da natação.

Os estudos de Almeida *et al.*(16) e Nobre *et al.*(18) observaram os efeitos do TP sobre a coordenação motora, a bateria de testes alemã KTK (*Körperkoordination Test für Kinder*)(16,18) foi utilizada para mensurar e avaliar os resultados. Após 12 semanas de TP, em ambos os estudos o desempenho na coordenação motora foi melhorado. Esses resultados são de grande importância visto a escassez de estudos que avaliem o efeito do TP sobre a coordenação motora.

Dentre os sete estudos selecionados para integrar esta revisão, o estudo de Nobre *et al.*(18) foi o único que avaliou o efeito do treinamento pliométrico sobre componentes antropométricos relacionados à saúde cardiovascular em crianças. Os resultados mostraram que o grupo treinado apresentou redução das dobras cutâneas e aumento da massa livre de gordura, redução na circunferência de coxa e panturrilha. Houve redução da resposta sistólica tardia, ao final da intervenção, redução diastólica ao fim de cada seção de treino e a frequência cardíaca também foi reduzida em resposta ao TP. Esse estudo tem uma grande importância visto que ainda não existem estudos que tenham focalizado os efeitos do TP sobre as respostas cardiovasculares em crianças, tornando necessária a produção de mais estudos no tema.

Observou-se, ainda, que existem estudos com dificuldades de sistematização do regime de treinamento na população infanto-juvenil, sendo exibidos poucos estudos analisando o desempenho nos praticantes do sexo feminino e estudos experimentais relacionando o TP às fases de desenvolvimento biológico.

Pontos fortes e limitações do estudo

Os pontos fortes do estudo cercam o levantamento das possibilidades quanto a

facilidade de aplicação do método de TP, engajamento dos praticantes, facilidade estrutural e logística para aplicação do TP, não necessitando de materiais e locais complexos para sua aplicação e avaliação e a capacidade do método atender as necessidades motoras e neuromusculares, assim como, de melhorar os aspectos de condicionamento do desempenho humano.

Outro aspecto importante foi destacar a relevância da incorporação do TP ao ambiente escolar, uma vez que é o período de maior possibilidade de encorajamento e engajamento desses praticantes.

Conclusão

As pesquisas têm evidenciado benefícios do TP na melhoria da saúde, do desempenho esportivo, no desenvolvimento de diversas capacidades físicas, adaptações fisiológicas e aspectos neuromusculares em crianças e adolescentes. Além disso, o TP mostra-se ser um método seguro e eficaz para a estruturação de estratégias de treinamento que podem ser aplicáveis nesse tipo de população. Nesse sentido, a adequação do regime de treinamento, planejamento e monitoramento do treinamento respeitando as fases de desenvolvimento da criança e do adolescente é de extrema importância.

Declaração de conflito de interesses

Não há nenhum conflito de interesses em relação ao presente estudo.

Declaração de financiamento

Estudo conduzido sem financiamento.

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Artigo Original

Original Article

Caracterização de desempenho físico e demanda psicofisiológica de militares submetidos a cursos de operações especiais: um estudo descritivo

Characterization of the Physical Performance and Psychophysiological Demand of Military Personnel Submitted to Special Operations Courses: A Descriptive Study

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Resumo

Introdução: Cursos de operações especiais (OpEsp) possuem como objetivo proporcionar aos instruídos conhecimentos que os capacitem a desempenhar funções de operadores especiais. Entretanto, os cursos de OpEsp podem não apresentar condições de fornecer intensidade e volume de carga de treinamento de forma sistemática e progressiva aos indivíduos ao longo do curso.

Objetivo: Caracterizar o desempenho físico e a demanda psicofisiológica dos alunos de cursos de OpEsp a fim de identificar o perfil e o impacto da carga de trabalho imposta pelo programa de treinamento.

Métodos: Estudo descritivo cuja análise concentrou-se na literatura acerca das alterações observadas em parâmetros fisiológicos, de desempenho físico e psicofisiológicos em OpEsp.

Resultados: Dentre os desafios impostos aos participantes do curso, está a necessidade de adaptações constantes, que requerem preparação física e psicofisiológica para enfrentarem as demandas específicas dos cursos de OpEsp. Tais demandas, por vezes, são desafios quanto ao desempenho e podem, ainda, representar riscos à saúde do militar, por vezes levando o indivíduo a deixar de concluir o treinamento.

Conclusão: Com vistas à otimização do desempenho, bem como a prevenção de lesões aos instruídos dos cursos de Forças de Operações Especiais (FOpEsp), é necessária a integração de várias áreas do conhecimento a fim de proporcionar a melhor preparação dos futuros especialistas, considerando aspectos como desempenho físico, nutrição, descanso, sono, dor, fatores cognitivos/psicológicos e adaptação a desafios ambientais. Ao combinar essas medidas,

Pontos Chave

- São altas as demandas operacionais e físicas dos integrantes das Forças de Operações Especiais (FOpEsp) no contexto da guerra moderna.
- Durante cursos de Operações Especiais (OpEsp) há impacto sobre o desempenho físico, variáveis psicofisiológicas e lesões musculoesqueléticas.
- Identificação de características associadas ao desempenho bem-sucedido em ambientes mental e fisicamente estressantes contribuir para aprimorar iniciativas de recrutamento, retenção ou melhoria de desempenho para candidatos dos cursos de OpEsp.

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é possível obter uma visão holística do instruendo, contribuindo para o sucesso nos programas de treinamento intensivo.

Palavras-chave: psicofisiologia do exercício, desempenho humano, desempenho cognitivo, aptidão física, militares.

Abstract

Introduction: Special operations courses (SOp) aim to provide trainees with knowledge that enables them to perform functions as special operators. However, SOp courses may not be able to provide intensity and volume of training load in a systematic and progressive manner to individuals throughout the course.

Objective: To characterize the physical performance and psychophysiological demands of SOp course students to identify the profile and impact of the workload imposed by the training program.

Methods: Descriptive study whose analysis focused on the literature about the changes observed in physiological, physical performance and psychophysiological parameters in SOp.

Results: Among the challenges imposed on course participants is the need for constant adaptations, which require physical and psychophysiological preparation to face the specific demands of SOp courses. Such demands are sometimes performance challenges and can also pose risks to the soldier's health, sometimes leading the individual to fail to complete training.

Conclusion: With a view to optimizing performance, as well as preventing injuries to trainees in Special Operations Forces (SOpF) courses, it is necessary to integrate several areas of knowledge to provide the best preparation of future specialists, considering aspects such as physical performance, nutrition, rest, sleep, pain, cognitive/psychological factors and adaptation to environmental challenges. By combining these measures, it is possible to obtain a holistic view of the trainee, contributing to success in intensive training programs.

Key Points

- The operational and physical demands on members of the Special Operations Forces (FOpEsp) are high in the context of modern warfare.
- During Special Operations (SOp) courses there is an impact on physical performance, psychophysiological variables and musculoskeletal injuries.
- Identification of characteristics associated with successful performance in mentally and physically stressful environments contribute to improving recruitment, retention or performance improvement initiatives for candidates for SOp courses.

Keywords: exercise psychophysiology, human performance, cognitive performance, physical fitness, military personnel.

Caracterização da performance física e demanda psicofisiológica de militares submetidos a cursos de operações especiais: um estudo descritivo

Introdução

A preparação das Forças de Operações Especiais (FOpEsp) envolvem demandas operacionais e físicas. Isso se explica face a situações presentes em missões de longa duração, como reconhecimento especial em ambientes hostis, que requerem permanência prolongada em campo, infiltrações e *exfiltrações* sem apoio logístico. As atividades operacionais contínuas são uma

característica distintiva das FOpEsp e são frequentemente aplicadas em ações diretas, realizadas em locais politicamente sensíveis ou hostis por períodos de dias a semanas(1,2).

As operações especiais (OpEsp) dependem de proficiência técnica e habilidades especializadas de pequenas unidades para garantir respostas militares eficazes e flexíveis, evitando a escalada de crises e

conflitos(3). As FOpEsp enfrentam missões variadas e imprevisíveis que requerem alta capacidade física, incluindo força, potência, resistência e alta tolerância a fadiga. Suas operações abrangem desde atividades aeróbicas prolongadas típicas de grandes deslocamentos até tarefas anaeróbicas intensas e curtas em situações de emboscadas ou *exfiltrações* rápidas. A deficiência na capacitação física especializada pode impactar não somente a estratégia operacional, mas também a integridade fisiológica do operador(4). Nesse contexto, os cursos de OpEsp têm como propósito aprimorar o desempenho técnico e físico dos militares, simulando cenários extremos enfrentados em missões reais. As atividades de preparação envolvem fases extenuantes com atividades prolongadas, privação de sono, cargas intensas de trabalho físico, mental e emocional. Infelizmente, essa combinação leva à perda de desempenho em tarefas de alta demanda energética(5), redução da resistência(6), diminuição da força e potência muscular(7,8), perda de massa corporal e massa magra(9,10), e maior suscetibilidade a lesões musculoesqueléticas(11).

O objetivo do presente estudo foi caracterizar o desempenho físico e a demanda psicofisiológica dos alunos de cursos de OpEsp a fim de identificar o perfil e o impacto da carga de trabalho imposta pelo programa de treinamento.

Métodos

A análise se concentrou na literatura acerca das alterações observadas em parâmetros fisiológicos, de desempenho físico e psicofisiológicos, decorrentes dos rigorosos e variados estressores físicos, mentais e emocionais presentes nos cursos de OpEsp. O objetivo formulado para este estudo teve o intuito de identificar aspectos que favoreçam a otimização do treinamento, melhorar taxas de conclusão de cursos operacionais, facilitar a recuperação pós-curso e reduzir incidências de lesões.

Impacto dos cursos de Operações Especiais (OpEsp) sobre o desempenho físico

Durante operações, há registros de déficits calóricos variando de 2.500 a 4.500 kcal/d em operadores especiais(11–20). Essa situação pode ser ainda mais acentuada durante cursos de OpEsp, quando o objetivo é avaliar a tolerância a múltiplos estressores. Em um estudo realizado durante o Curso de Comandos do Exército da França, Guezennec *et al.*(14) observaram um gasto energético diário variou entre 8.000 e 10.000 kcal/d. Esse cenário pode levar a mudanças prejudiciais na composição corporal, especialmente, a perdas de massa magra(8) devido ao déficit crônico de energia, face à restrição de ingesta calórica, o que pode impactar o desempenho físico(15,16,21,22).

Um estudo conduzido por Nindl *et al.*(16) em alunos do *U.S. Army Ranger Training Course*, envolvendo restrição calórica e treinamento intenso por oito semanas, revelou prejuízo em várias características fisiológicas relacionadas a desempenho físico: diminuição da massa corporal (-8,1% a -14,3%), massa magra (-2,6% a -8,8%), massa gorda (-22,5% a -63,4%), força (-20,7%), potência (-22,7%) e salto vertical (-18,7%). Outro estudo conduzido por Nindl *et al.*(8), também com o *U.S. Army Ranger Training Course*, encontrou alterações semelhantes: salto vertical (-16%), potência explosiva (-21%), potência máxima de levantamento (-20%), massa corporal (-13%), massa magra (-6%) e massa gorda (-50%). Esses resultados demonstraram que essas mudanças fisiológicas têm impactos no desempenho físico ao término do curso.

Hamarsland *et al.*(23) investigaram o impacto Curso de Seleção das Forças Especiais da Marinha da Noruega sobre marcadores de desempenho físico. O curso caracterizava-se por atividade física intensa, restrição calórica e privação de sono. Observaram uma diminuição de 5,3kg (6%) na massa corporal total, 1,9kg (2,4%) na massa muscular esquelética e 2,1kg (38%) na massa gorda. Além disso, os desempenhos no salto contramovimento e

na isometria máxima do *leg press* caíram aproximadamente de 30% a 20%, respectivamente. Em um estudo em alunos do Curso de OpEsp da Marinha da Itália, Malavolti *et al.*(9) encontraram reduções significativas nas variáveis de composição corporal: peso corporal ($1,65 \pm 2,3\text{kg}$), massa magra ($4 \pm 1,4\text{kg}$) e massa gorda ($1,7 \pm 2,12\text{kg}$) em um período de nove meses. Dhahb *et al.*(24), em sua pesquisa em Comandos da Guarda Nacional da Tunísia, observaram uma diminuição substancial na massa corporal de todos os participantes ($-4\% \pm 1\%$).

Sporiš *et al.*(25) avaliaram os efeitos do Curso de OpEsp das Forças Armadas da Croácia sobre a aptidão física dos operadores. Após um treinamento de nove semanas, constatou-se um esgotamento significativo nos participantes concluintes, demonstrado pela redução no desempenho físico nas variáveis testadas que incluíram salto em distância, flexões, abdominais, barra, impulso do banco, corrida de 3.200m e corrida de 300 jardas.

Demanda psicofisiológica

Na primeira década do século XXI, pesquisas científicas abordaram o impacto do estresse agudo na função cognitiva de operadores especiais, mostrando que a exposição a esse tipo de estresse pode levar a alterações significativas nas habilidades perceptivas, de aprendizado e executivas(26–28). Os que ingressam em unidades de OpEsp enfrentam estressores extremos que desafiam a resistência mental, física e emocional. Estudos indicam que o sucesso nessas unidades requer características únicas, como uma "vontade incomum de alcançar o sucesso" e uma notável capacidade de persistir diante de adversidades significativas sem depender de apoio externo(1). Nesse contexto, a literatura mostra que um perfil psicofisiológico específico e flexível é essencial para os integrantes das unidades de OpEsp(29), de modo que seus membros sejam preparados para lidar com diversas ameaças no combate(1,3,4,6,7). Enquanto o treinamento é crucial para prontidão(30,31), a estrutura psicológica ideal capacita os combatentes a responderem ao estresse com eficácia(32),

evitando riscos para os militares(33) e destacando a necessidade de preparação psicológica(29,34).

Lieberman *et al.*(35) analisaram estados afetivos e desempenho cognitivo, visual e psicomotor em alunos do curso U.S. Navy SEAL, durante a "Hell Week" – um período intensamente estressante de treinamento com privação de sono e estresse ambiental, físico e psicológico. Eles observaram que quase todos os parâmetros cognitivos (vigilância visual de varredura, tempo de reação visual de quatro opções, teste de correspondência com a amostra, e teste de aquisição repetida) e de humor avaliados sofreram degradação substancial. Em outra pesquisa, Lieberman *et al.*(26) em operadores especiais do *U.S. Army Rangers* e candidatos ao *U.S. Navy SEAL*, a função cognitiva, durante as atividades estressantes de treinamento operacional, foi gravemente prejudicada, incluindo aspectos como tempo de reação, vigilância, atenção e memória. O estado de humor também foi severamente afetado, indicando que o impacto no estado mental geral se relaciona à eficácia operacional.

Hormeño-Holgado and Clemente-Suárez(36) investigaram a resposta psicofisiológica de militares durante o Curso de Seleção de OpEsp das Forças Armadas da Espanha. O treinamento provocou intenso estresse e respostas físicas, levando a aumentos na percepção subjetiva de fadiga (24,4%), estresse (15,6%), bem como houve declínio no desempenho cognitivo (36,4%) e perda de motivação (25,9%). Houve também diminuição na força das pernas (-12,5%), alterações em Ph sanguíneo (-8,5%), pico de fluxo expiratório (-11,1%), excitação cortical (-7,1%), composição corporal (-2,0%), peso corporal (-3,1%), massa gorda (-25%) e muscular (-2,9%). Além disso, foram observadas mudanças emocionais, como ansiedade (-51,2%), estado de alerta (-52,4%), tristeza (-70,5%) e tensão (-58,6%) após a conclusão do curso.

Lesões Musculoesqueléticas

As atividades operativas das FOpEsp apresentam demandas variadas para a

realização de suas tarefas, requerendo força, potência, resistência e uma nutrição adequada para sustentar atividades de alta intensidade e/ou moderada e prolongada(8,37). Além de melhorias no desempenho, níveis elevados de aptidão aeróbica e força estão relacionados à redução do risco de lesões musculoesqueléticas(38–40). Minimizar tais lesões é crucial para garantir prontidão tática e eficácia operacional das FOpEsp(41). Nesse contexto, o treinamento físico é essencial para otimizar o desempenho das FOpEsp, no entanto, muitas lesões nessas tropas estão relacionadas ao próprio treinamento no decorrer do curso(42–44). Marchas e corridas são parte crucial do treinamento, e déficits no $VO_{2máx}$ podem se caracterizar como um fator de risco para lesões durante essas atividades. Aprimorar o $VO_{2máx}$ não só amplia a capacidade operacional, mas, também, contribui para reduzir a fadiga, diminuindo o risco de lesões musculoesqueléticas(45).

Operadores especiais e alunos do *U.S. Naval Special Warfare SEAL* enfrentam treinamentos físicos rigorosos que frequentemente resultam em lesões musculoesqueléticas, causando impacto significativo em sua saúde. Lesões no ombro e na parte inferior das costas são frequentes entre operadores especiais, enquanto os alunos do *SEAL Qualification Training* sofrem com lesões por uso excessivo nas extremidades inferiores. Alunos de cursos de OpEsp estão particularmente suscetíveis a lesões, com altas taxas de ocorrência. As lesões mais comuns afetam tornozelos, joelhos e região lombar, resultando principalmente em entorses, distensões, fraturas e dores agudas. Atividades como corrida, levantamento e traumas diretos são causas comuns de lesões, frequentemente relacionadas ao treinamento físico intenso(46–48).

No estudo de Linenger *et al.*(49) em alunos do curso *U.S. Navy SEAL*, as lesões por uso excessivo representaram mais de 90% das lesões, principalmente na extremidade inferior. Isso indica que o treinamento físico intenso e prolongado resulta em alta incidência de lesões

musculoesqueléticas. Dijkma *et al.*(47) encontraram que um em cada quatro militares que abandonam o treinamento de elite das Forças Armadas da Holanda o fazem devido a lesões musculoesqueléticas.

Treinamento Físico

Para o sucesso das OpEsp há a demanda de um condicionamento físico abrangente para que as tarefas de alta exigência sejam enfrentadas a contento. É consensual que um programa de treinamento eficaz deve ser específico para as demandas individuais(38–40). A fisiologia humana se adapta a estímulos específicos; se o treinamento não se alinhar com as demandas físicas da tarefa almejada, as adaptações fisiológicas não otimizarão o desempenho(50). Na criação de programas de treinamento, uma análise minuciosa da tarefa é vital. Essa análise fornece a base para profissionais de desempenho humano projetarem programas adequados que otimizem o desempenho(51).

O *Warrior Model for Human Performance Optimization* (HPO) desenvolvido por Sell *et al.*(52) descreve uma abordagem baseada em evidências para otimizar o desempenho e prevenir lesões nas FOpEsp. O modelo envolve seis etapas que incluem: Vigilância de Lesões, Análise da Tarefa e Demanda, Preditores de Lesão e Desempenho Ideal; Desenho e Validação de Intervenções; Integração e Implementação do Programa; Monitorar e Determinar a Eficácia do Programa. Isso garante que os recursos das FOpEsp se alinhem com as exigências operacionais, permitindo um desempenho bem-sucedido e seguro.

A implementação de um protocolo de treinamento periodizado é crucial para otimizar os resultados de curto e longo prazo, mantendo a saúde dos operadores das FOpEsp(53–55). Diferentes tipos de periodização, como linear, em blocos e não linear, têm mostrado impactos positivos na força, potência e massa muscular(53,55–59). Um estudo conduzido por Solberg *et al.*(60) com operadores especiais do *Norwegian Navy Special Operations Command* aplicou um protocolo de periodização linear seguido por um não linear, resultando em melhorias

significativas na mobilidade ($19\pm 9\%$), força abdominal ($25\pm 16\%$), força da parte superior do corpo ($6\pm 9\%$), salto em distância ($3\pm 6\%$), barra ($24\pm 31\%$), agilidade ($2\pm 4\%$), $VO_{2\text{máx}}$ ($2\pm 3\%$), massa gorda ($-25\pm 31\%$) e massa muscular ($1\pm 3\%$).

O estudo de Colosio *et al.*(61) analisou o programa de treinamento de Rangers do Exército da Itália para determinar as causas de evasão. Dos participantes, 41% abandonaram o programa: 60% por razões pessoais, 30% por motivos médicos e 10% por razões técnicas. O estudo recomendou focar na motivação, autoeficácia e resiliência na seleção, além de práticas de preparação física gradual e tratamento médico adequado para reduzir evasões por razões pessoais, médicas e técnicas.

Eisenger *et al.*(62) usaram abordagens qualitativas e quantitativas para determinar os requisitos de aptidão física nas FOpEsp da Áustria. Capacidade aeróbica, força, resistência de força e resistência anaeróbica foram identificados como principais requisitos. Winters *et al.*(63) sugeriram a inclusão de exercícios focados na capacidade aeróbica e força do manguito rotador do ombro para melhorar o desempenho após o *Individualized Training Course* (ITC) do *Marine Raider Training Center's* (MRTC's). Pemrick(64) revelou que operadores *Rangers* focam principalmente na resistência aeróbica em seus programas de condicionamento físico, mas falta atenção a velocidade, força, flexibilidade e coordenação, necessárias em combate.

Conclusão

O objetivo do presente estudo foi caracterizar o desempenho físico e a demanda psicofisiológica dos alunos de cursos de OpEsp a fim de identificar o perfil e o impacto da carga de trabalho imposta pelo programa de treinamento para a formação dos novos especialistas. Os achados presentes na literatura identificaram características associadas ao desempenho bem-sucedido em ambientes mental e fisicamente estressantes, caracterizados por incerteza e imprevisibilidade, contri-

buindo para aprimorar iniciativas de recrutamento, retenção de alunos ou melhoria em desempenho de candidatos militares que se inscrevem para cursos de OpEsp.

O perfil psicofisiológico identificado na literatura para o especialista em OpEsp é específico e flexível, sendo apontado como essencial para os integrantes das unidades de OpEsp, de modo que seus membros estejam preparados e prontos para lidar com diversas ameaças presentes no combate. Nesse cenário, a estrutura psicológica ideal capacita os combatentes a responderem ao estresse com eficácia, evitando riscos, reduzindo, em última instância, a morbidade e a mortalidade, e contribuindo para o sucesso da missão. Nesse sentido, identificar elementos que contribuam para ou defendam contra déficits induzidos pelo estresse pode levar ao desenvolvimento de soluções que auxiliem na prevenção de baixas durante cursos de OpEsp e missões reais. A otimização do desempenho e a prevenção de lesões são cruciais para as FOpEsp, o que requer a colaboração de várias disciplinas para lidar com questões como desempenho físico, nutrição, descanso, sono, dor, fatores cognitivos/psicológicos e adaptação ao ambiente. Dessa forma, é possível obter uma visão mais holística ao combinar essas medidas. Assim sendo, os achados deste estudo permitiram identificar pontos de possíveis necessárias adequações no ambiente de treinamento a fim de se aprimorar a preparação, aumentar os índices de conclusão e reduzir lesões durante a realização dos cursos.

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Artigo Original

Original Article

Prevalência de risco elevado de doença coronariana segundo diferentes indicadores antropométricos em militares do Exército Brasileiro: um estudo populacional

Prevalence of High Risk for Coronary Heart Disease According to Different Anthropometric Parameters in Brazilian Army military personnel: A Population-Based Study

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Resumo

Introdução: A obesidade pode ser considerada como um fator limitador do desempenho profissional, com destaque para a carreira militar, a qual tem na higidez e na manutenção da aptidão física requisitos essenciais para o desempenho em suas tarefas.

Objetivo: Comparar a prevalência de risco elevado de doença coronariana (REDC), estimada por pontos de corte específicos a partir dos indicadores antropométricos: Índice de Massa Corporal (IMC), Índice de Conicidade (Índice C), circunferência de cintura (CC), Índice Indicativo da Gordura Corporal (IGC) e razão cintura-estatura (RCEst) em militares do Exército Brasileiro (EB).

Métodos: Estudo transversal, com amostra aleatória populacional, composta por 49.414 militares do sexo masculino, categorizados por faixa etária. A prevalência de REDC foi estimada por cada indicador antropométrico. As diferenças entre as médias foram examinadas pela análise de variância de Kruskal-Wallis (H) com análise *post hoc* do teste de Mann-Whitney (U). Para todas as análises o nível de confiança adotado foi de 95%.

Resultados: Houve prevalência elevada de REDC segundo todos os indicadores antropométricos examinados, em todas as faixas etárias, exceto na de até 20 anos de idade, sendo que se observou aumento na prevalência conforme aumentava a faixa etária, sendo que todas as faixas acima de 30 anos exibiam prevalência igual ou superior a 50%.

Conclusão: A prevalência elevada na população de estudo indica que há necessidade de intervenção em saúde no âmbito do EB incentivar mudanças em hábitos saudáveis como nutrição e nível de atividade física promovendo a saúde e a medicina preventiva. Os resultados foram discutidos.

Palavras-chave: antropometria, risco cardiovascular, risco de doença coronariana, saúde, militares.

Pontos Chave

- Todos os indicadores antropométricos mostraram alta prevalência de risco elevado para doença coronariana (REDC).
- Houve prevalência elevada de REDC em todas as faixas etárias, exceto na de até 20 anos de idade.
- Para uma população de estudo fisicamente ativa os resultados foram preocupantes.

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Abstract

Introduction: Obesity can be considered as a limiting factor for professional performance, with is emphasized for the military career. That is because for military personnel best performance health and physical fitness are essential requirements.

Objective: To compare the prevalence of elevated risk of coronary heart disease (HRCHD) using anthropometric indicators: Body Mass Index (BMI), Conicity Index (C Index), waist circumference (WC), Indicative Body Fat Index (IGC)) and waist-to-height ratio (WHtR) in Brazilian Army (EB) soldiers.

Methods: Cross-sectional study, with a random population sample, consisting of 49,414 male military personnel, categorized by age group. Based on cutoff points established for EB military personnel, the prevalence of REDC was estimated by each anthropometric indicator. To evaluate the differences between the means between the groups, the non-parametric Kruskal-Wallis (H) analysis of variance test was used and as a post hoc analysis, the Mann-Whitney (U) test. For all analyzes the confidence level adopted was 95%.

Results: There was a high prevalence of REDC according to all anthropometric indicators examined, in all age groups, except for those up to 20 years of age, and an increase in prevalence was observed as the age group increased, with all groups over 30 years showed a prevalence equal to or greater than 50%.

Conclusion: The high prevalence in the study population indicates that there is a need for health intervention within the scope of EB to encourage changes in healthy habits such as nutrition and level of physical activity, promoting health and preventive medicine. The results were discussed.

Keywords: anthropometry, cardiovascular risk, coronary heart disease risk, health, military personnel.

Key Points

- All anthropometric indicators showed a high prevalence of elevated risk for coronary heart disease (HRCHD).
- There was a high prevalence of REDC in all age groups, except those up to 20 years of age.
- For a physically active study population, the results were alarming.

Prevalência de risco elevado de doença coronariana segundo diferentes indicadores antropométricos em militares do Exército Brasileiro: um estudo populacional

Introdução

Estudos epidemiológicos em condúzidos ao redor do mundo, em diversas populações têm relatado dados alarmantes em relação à obesidade, pois, trata-se de uma doença crônica, considerada uma epidemia, que relaciona ao desenvolvimento de diversos outros agravos à saúde(1), inclusive, estão associados à mortalidade por todas as causas(2). Segundo a Organização Mundial da Saúde (OMS)(3), pelo menos 2,8 milhões de pessoas morrem todos os anos devido ao excesso de peso ou à obesidade. Outrora associada a países de renda elevada, a obesidade, atualmente, é também prevalente em países de baixa e média rendas.

No Brasil, dados da Pesquisa Nacional de Saúde(4) demonstram que entre os anos 2013 e 2019, a prevalência de sobrepeso e de obesidade, entre os homens, a variação de sobrepeso foi de 55,5 para 57,5 e de obesidade foi de 16,8 para 21,8. Entre as mulheres, a variação de sobrepeso foi de 58,2 para 62,6 e de obesidade foi de 24,4 para 29,5. Observa-se que cerca de 80% da população brasileira se encontra sob risco aumentado para as várias doenças relacionadas à obesidade. Trata-se de um dos maiores problemas de saúde das sociedades contemporâneas, pois, a obesidade associa-se a diversas outras doenças crônico-degenerativas, a sintomas e agravos em saúde mental, além de doenças cardíacas e metabólicas, apneia do sono e certos tipos de cânceres(5-7).

Determinados segmentos sociais possuem características peculiares. A questão da obesidade pode ser considerada até mesmo como um fator limitador do desempenho profissional, como é o caso do profissional militar, que tem na higidez e na manutenção de sua aptidão física um requisito primordial para suas atividades do dia a dia. O Índice de Massa Corporal (IMC) elevado, no pessoal militar das Forças Armadas aumenta uso dos serviços de saúde(8). Estudos demonstraram que a baixa aptidão física em militares obesos se configura como um forte preditor de lesão(9).

A adiposidade geral, representada pelo IMC, tem se mostrado associada a todas as causas de mortalidade, ao mesmo tempo em que os cientistas questionam a adequação dessa avaliação(2). Assim sendo, surgiram diversos outros indicadores e marcadores que utilizam medidas antropométricas para estimar a gordura corporal, sua distribuição e os marcadores associados a riscos para doenças cardiometabólicas, dentre eles: a circunferência da cintura (CC) e a razão cintura/estatura (RCEst). Nesse sentido, Cunha e Waissmann(10) afirmaram que a avaliação, do estado nutricional dos integrantes das Forças Armadas é extremamente relevante, pois, relaciona-se tanto à operacionalidade quanto à saúde da tropa.

O objetivo do presente estudo foi comparar a prevalência de risco elevado de doença coronariana (REDC), estimada por pontos de corte específicos a partir dos indicadores antropométricos: Índice de Massa Corporal (IMC), Índice de Conicidade (Índice C), circunferência de cintura (CC), Índice Indicativo da Gordura Corporal (IGC) e razão cintura-estatura (RCEst) em militares do Exército Brasileiro (EB).

Métodos

Desenho de estudo e amostra

Estudo observacional transversal, com amostra populacional, utilizando dados secundários do Projeto TAF 2001 – Aptidão Física e Risco de Doença Cardíaca

Coronariana no Exército Brasileiro do Instituto de Pesquisa da Capacitação Física do Exército (IPCFEx), dos diversos postos e graduações. A população do Exército Brasileiro (EB), naquele ano, contava com 147.000 mil militares.

Os critérios de inclusão foram estar na ativa e apto para o serviço. Os critérios de exclusão foram: 1) Transferência de militar; 2) Ausência de militares em trabalhos fora da própria sede; 3) Trânsito de profissionais transferidos de unidade; 4) Desligamento do serviço ativo; 5) Afastamento por doenças e/ou lesões; 6) Dados apresentados de forma incompleta ou ilegíveis; e 7) Vontade expressa dos sujeitos de não participarem no projeto.

O processo de amostragem foi, conforme descrito por Martinez e dos Anjos(11), do tipo aleatória, por conglomerados, totalizando 36 guarnições, com 130.868 militares elegíveis para o estudo.

Aspectos éticos

Todos os que concordaram em participar do estudo assinaram o Termo de Consentimento Livre e Esclarecido e todos os preceitos que regem a pesquisa científica envolvendo seres humanos presentes nas Resoluções nº 466 e nº 510 do Ministério da Saúde foram observados.

Variáveis de estudo

A variável desfecho foi o REDC e as variáveis de exposição foram os indicadores antropométricos Índice de Massa Corporal (IMC)(14), circunferência de cintura (CC)(15), razão cintura-estatura (RCEst)(16), Índice de Gordura Corporal (IGC)(17,18) e Índice de Conicidade (Índice C)(19), além de idade.

Indicadores antropométricos e risco elevado de doença coronariana (REDC)

Em avaliações antropométricas que objetivam estimar o REDC, a literatura indica que a população em cada estudo e as metodologias apresentam-se de forma variada, podendo ser identificados diferentes pontos de corte na estimativa(2,12). Na consecução do objetivo deste estudo, de comparar os principais indicadores antropométricos de

obesidade na estimativa do REDC, foi realizado um estudo prévio por Cunha e Waissmann(10), a fim de serem identificados os pontos de corte específicos de cada parâmetro para a população militar das Forças Armadas(10). Os autores utilizaram como método para a análise o escore de risco de Framingham(13). O escore de risco para doença coronariana de Framingham trata-se de uma equação que prevê o risco de doença coronariana em dez anos, a partir de um conjunto de fatores de risco que inclui: idade, sexo, colesterol

total, colesterol HDL e PA sistólica(12,13). Assim, de acordo com Cunha e Waissmann(10), para a classificação dos indicadores antropométricos: IMC(14), CC(15), RCEst(16), IGC(17,18) e Índice C(19), calculados segundo as respectivas fórmulas apresentadas no Quadro 1 que, também, apresenta os pontos de corte para REDC especificamente determinados para a população militar do EB a partir dos resultados de sensibilidade e especificidade, por Cunha e Waissmann(10).

Indicadores	Fórmulas	Refs.	Ponto de corte	Sens (%)	Esp (%)
IMC	$\frac{\text{massa corporal (kg)}}{\text{estatura (m}^2\text{)}}$	14	25	87,8	68,8
CC	<i>perímetro da cintura</i>		90	83,8	57,4
RCEst	$\frac{\text{perímetro da cintura}}{\text{estatura}}$	15	0,51	85,1	65,1
IGC	$\frac{0,004(PAbdo)^2 - 0,036(\text{massa corporal}) - 13,862}{\text{estatura (m)}}$	16	8	90,5	75,0
Índice C	$0,109 \sqrt{\frac{\text{Massa Corporal (kg)}}{\text{Altura (m)}}}$	17	1,23	78,4	59,4

Quadro 1 – Indicadores antropométricos, fórmulas de cálculo, pontos de corte do risco coronariano elevado e valores de sensibilidade e especificidade de Cunha e Waissmann(10).

Resultados do estudo de Cunha e Waissmann(10) para determinação dos pontos de corte específicos para a população militar do Exército Brasileiro. **Refs.**: referências; **Sens.**: sensibilidade; **Esp.**: especificidade; **IMC**: Índice de Massa Corporal; **CC**: circunferência de cintura; **RCEst**: razão cintura-estatura; **IGC**: Índice de Gordura Corporal; **Índice C**: Índice de Conicidade

Procedimentos experimentais

As medidas antropométricas avaliadas para a estimação dos indicadores foram realizadas como se segue.

Massa Corporal Total – foi medida uma vez em balança mecânica (Filizola) com precisão de 100g. O militar subiu no centro da balança descalço e apenas trajando o calção do uniforme previsto para o treinamento físico, de costas para o avaliador e para a régua de resultado.

Estatura Corporal – foi mensurada uma única vez na mesma balança, utilizando a toesa com precisão de 0,5cm. A medida foi tomada da plataforma da balança até o

vórtex da cabeça. O sujeito estava completamente ereto e com a cabeça em um plano horizontal paralelo ao solo (Plano de Frankfort).

Perímetro do Abdômen – foi medido com uma fita inelástica graduada em centímetros, aplicada levemente na superfície cutânea de forma a ficar justa, porém não apertada, estando o militar de pé e relaxado em apneia após expiração. Foram realizadas mensurações em duplicata utilizando-se a média das medidas das análises.

Circunferência da Cintura – procedimento semelhante ao anterior, sendo

medido com a mesma fita, no nível do ponto mais estreito entre o último arco costal e a crista ilíaca.

Para todas as medidas foram realizadas mensurações em duplicata utilizando-se a média das medidas das análises.

Depois de coletados os dados, a população de estudo foi dividida nas seguintes categorias de faixa etária: 1) Até 20 anos; 2) De 21 a 30 anos; 3) De 31 a 40 anos; 4) De 41 a 50 anos; e 5) 51 anos e mais, para classificação do risco do REDC.

Análise estatística

Foram apresentadas as estatísticas descritivas (frequência absoluta, média e desvio padrão) e foi estimada a prevalência de REDC total e por faixa etária. Foi considerada como alta a prevalência acima de 20%. Para avaliar as diferenças entre as médias entre os grupos foi utilizado o teste não-paramétrico de análise de variância de Kruskal-Wallis (H) e, complementarmente, o teste de Mann-Whitney (U) para verificar os grupos que diferiam. Foram utilizados os aplicativos PASW Statistics 18 (IBM SPSS) e Microsoft Excel do Office 2007. Para todas as análises o nível de confiança adotado foi de 95%.

Resultados

Dos 130.868 elegíveis para participar do estudo, a amostra por conglomerados foi composta de 95.757 militares, dos quais 73.547 foram retirados das análises pelos critérios de exclusão (Figura 1). Assim, a população de estudo constituiu-se de 49.414

homens, com média de idade de $22,52 \pm 7,38$ anos, massa corporal $72,67 \pm 9,52$ kg e estatura $1,73 \pm 0,06$ m. A Tabela 1 exibe as características e a prevalência de REDC na população de estudo.

Os resultados agregados da população de estudo, como um todo, não demonstraram REDC, segundo nenhum dos indicadores antropométricos. Todavia, para estimar a prevalência dos casos de REDC, o exame dos dados tratou da avaliação de cada indivíduo para a identificação dos casos na população de estudo, para, então, se estimar a prevalência.

Os resultados quanto à prevalência de REDC, estimada por cada parâmetro antropométrico, segundo faixa etária, apresenta-se na Tabela 2.

A variação da prevalência de REDC de acordo com os indicadores antropométricos, nos grupos etários, foi a seguinte: no grupo até 20 anos, de 6,40 (CC) e 16,90 (IMC); no grupo de 21 a 30 anos no grupo de 21 a 30 anos, de 18,80 (CC) a 36,40 (IMC); no grupo de 31 a 40 anos, de 38,60 (CC) a 55,20 (IGC); no grupo de 41 e 50 anos, de 51,80 (CC) a 65,90 (RCEst); e no grupo de 51 e mais anos, de 60,80 (CC e IMC) a 75,50 (ICG).

A análise de variância de Kruskal-Wallis (H), seguida do teste post hoc Mann-Whitney (U), revelaram que todos os grupos eram diferentes entre si quanto aos indicadores antropométricos avaliados ($p < 0,05$) (Figura 2).

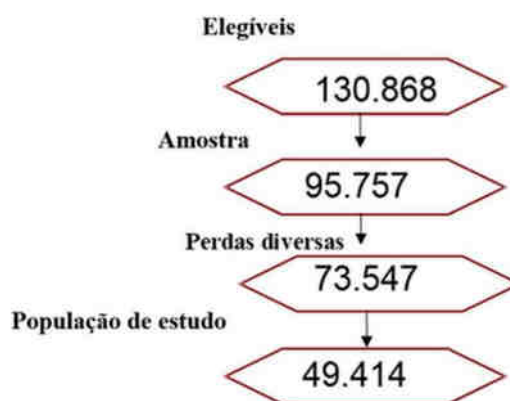


Figura 1 – Fluxograma do processo de seleção e amostra do Exército Brasileiro.

Tabela 1 – Características da população de estudo (n=49.414)

Variáveis	Amostra (n=49414)			
	μ	σ	Mín	Máx
<i>Característica</i>				
Idade (anos)	25,52	± 7,38	18	61
Massa corporal (kg)	72,67	± 9,52	56	141
Estatura (m)	1,73	± 0,06	1,57	2,05
<i>Indicadores antropométricos</i>				
IMC (kg.m ⁻²)	24,14	± 2,84	16,48	44,62
CC (cm)	83,72	± 7,80	62	142
RCEst	0,48	± 0,05	0,38	0,82
IGC	6,80	± 2,96	0,08	33,67
Índice C	1,19	± 0,07	0,74	1,68

μ : média; σ : desvio padrão; IMC: Índice de Massa Corporal; CC: circunferência de cintura; RCEst: razão cintura-estatura; IGC: Índice de Gordura Corporal; Índice C: Índice de Conicidade.

Tabela 2 – Prevalência de risco elevado de doença coronariana (REDC), estimada por cada parâmetro antropométrico, segundo faixa etária em militares do Exército Brasileiro (EB) (n=49.414)

Faixa etária / Indicadores	Casos REDC		Prev. REDC	Faixa etária / Indicadores	Casos REDC		Prev. REDC
	n	%			n	%	
<i>Até 20 anos (n=17.286)</i>				<i>Índice C</i>			3.706 45,50
IMC	2.923	16,90		<i>41 a 50 anos (n=2.331)</i>			
CC	1.110	6,40		IMC (kg.m ⁻²)	1.421	61,00	
RCEst	1.716	9,90		CC (cm)	1.208	51,80	
IGC	2.193	12,70		RCEst	1.537	65,9	
Índice C	2.423	14,00		IGC	1.639	70,3	
<i>21 a 30 anos (n=21.382)</i>				<i>Índice C</i>			1.496
IMC	7.775	36,40		<i>51 anos e mais (n=2.331)</i>			
CC	4.026	18,80		IMC (kg.m ⁻²)	166	60,80	
RCEst	5.676	26,60		CC (cm)	166	60,80	
IGC	6.680	31,30		RCEst	196	71,80	
Índice C	5.251	24,60		IGC	206	75,50	
<i>31 a 40 anos (n=8142)</i>				<i>Índice C</i>			202 74,00
IMC	4.385	53,90		IMC: Índice de Massa Corporal; CC: circunferência de cintura; RCEst: razão cintura-estatura; IGC: Índice de Gordura Corporal; Índice C: Índice de Conicidade.			
CC	3.143	38,60					
RCEst	4.057	49,80					
IGC	4.492	55,20					

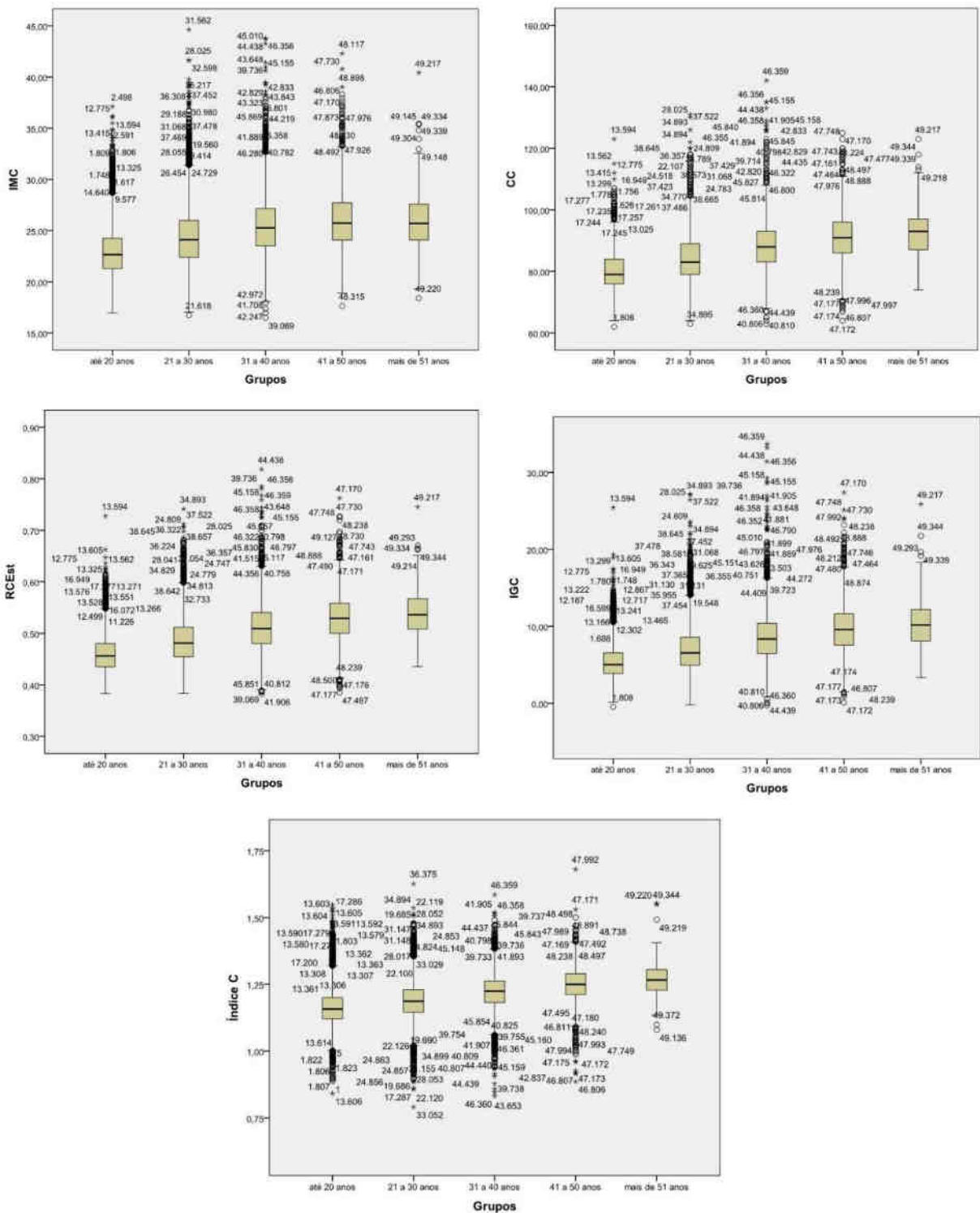


Figura 2 – Distribuição dos indicadores antropométricos segundo grupo de faixa etária em militares do Exército Brasileiro (n=49.414).

IMC: Índice de Massa Corporal; CC: circunferência de cintura; RCEst: razão cintura-estatura; ICG: Índice de Gordura Corporal; Índice C: Índice de Conicidade.

Discussão

Os principais achados do presente estudo referem-se à estimativa populacional no EB quanto à prevalência de REDC segundo faixas etárias. As menores prevalências estavam no grupo etário até 20 anos. Todos os demais grupos apresentaram alta prevalência (>20%) de REDC. Observou-se que a prevalência aumentou conforme a faixa etária abrangia idades maiores. Estes resultados revestem-se de grande relevância, pois, idade é um fator de risco independente para doenças cardiovasculares e o avançar da idade associa-se a diversos outros fatores de risco para esse tipo de doença(20). Além disso, o exame do estado nutricional da tropa é importante tanto sob o aspecto operacional quanto do aspecto da saúde para militares, pois, indicadores antropométricos como o IMC elevado, associado à obesidade abdominal ou da parte superior do corpo, têm sido relacionados a doenças cardiometabólicas, as quais apresentam altas taxas de morbidade e mortalidade(1).

As prevalências estimadas de acordo com cada indicador antropométrico, dentro de cada faixa etária foram distintas (Tabela 1). Outros estudos longitudinais, examinaram o desempenho desses indicadores em outras populações(18,21–24) e os pontos de corte foram aproximados aos utilizados neste estudo(10).

Inicialmente, nesta discussão, é importante ressaltar que a população militar se trata de um contingente originário da população brasileira, de todas as regiões, predominância étnica e classes sociais, podendo, por conseguinte, ser considerada como comparável à população brasileira, fisicamente ativa em idade laboral produtiva. Nesse contexto, observa-se que considerar apenas um dos indicadores antropométricos isoladamente pode representar uma estimativa enviesada. Considerando-se, primeiramente, o IMC, a literatura mostra que é um método apropriado para determinar o estado nutricional na população em geral que, todavia, não avalia a massa gorda e a massa magra(25,26). Por esse motivo, avaliação do IMC é menos precisa para atletas e

peças fisicamente ativas que possuam mais massa magra. Haun *et al.*(27) compararam, em 968 indivíduos de ambos os sexos, no Brasil, os indicadores: Índice C, razão circunferência cintura/quadril (RCCQ), RCEst, CC, IMC em relação ao REDC e concluíram que os indicadores de obesidade abdominal foram melhores do que o IMC. Resultados em concordância com outros estudos que indicaram que a RCEst foi o melhor indicador antropométrico preditivo para REDC(23,28–30). Liu *et al.*(21) em estudo prospectivo (n=44.048), na China, também apontaram a RCEst como o melhor indicador, não só para doenças cardiovasculares, como também, para dislipidemia e hiperglicemia e, ainda, apontaram que a CC foi o melhor preditor para pressão arterial anormal. A RCEst também tem sido avaliada como o melhor preditor para risco de doenças metabólicas(31).

Outra consideração importante sobre o IMC na literatura diz a respeito Identificação de obesidade e risco cardiovascular em populações étnica e racialmente diversas como é o caso do Brasil(32).

Ainda que o IMC deva ser utilizado com cautela no aspecto da avaliação individual, é importante considerar os resultados de estudos longitudinais, como os de Held *et al.* (22) que demonstraram, em estudo com de 3-5 anos de seguimento (n=15.828), em pacientes cardíacos, que mortalidade por todas as causas e por doença cardiovascular, as taxas mais baixas foram para o IMC variando entre 25 a 35kg/m², enquanto um IMC baixo (20kg/m²) ou muito alto (≥35kg/m²) foram fortes marcadores de risco para mau prognóstico. O estudo de Framingham, que baseou as estimativas de risco para a população de estudo, pressupõe um poder preditivo para os próximos 10 anos do indivíduo em relação ao risco de doença coronariana(19,33), daí a relevância da utilização desse tipo de marcador na população em geral.

Neste estudo, foram encontradas altas prevalências de REDC em todas as faixas etárias à exceção da até 20 anos de idade.

Tais resultados indicam a necessidade de ações no sentido de incentivar os integrantes do EB a modificarem hábitos que podem estar relacionados a tais medidas antropométricas, como nutrição e nível de atividade física. Isto porque, como indicaram Jayedi *et al.*(2), os índices de gordura central (CC, RCCQ, RCEst, relação cintura-coxa, o índice de adiposidade corporal e o índice A de forma corporal A, independentemente da adiposidade geral, foram positiva e significativamente associados com um risco maior de mortalidade por todas as causas. Os autores concluíram que medidas de adiposidade central poderiam ser utilizadas em conjunto com o IMC a fim de se utilizar uma abordagem complementar para determinar o risco de morte prematura.

Face às considerações feitas nesta discussão, examinando os resultados quanto à RCEst, observa-se que 71,80% dos integrantes do EB acima de 51 anos; 65,9% entre 41 e 50 anos; 49,80% entre 31 e 40 anos; e 26,60% entre 21 e 30 anos, apresentavam-se com REDC, que indica fortemente a necessidade de atenção destacada em toda a população fonte: o EB. É importante que sejam implementadas ações para promover hábitos saudáveis (alimentares e de atividade física) nos integrantes da Força e que, uma vez que as avaliações de circunferência da cintura e de estatura são tomadas anualmente, por ocasião da realização do Teste de Avaliação Física (TAF), sejam realizados estudos longitudinais, de coorte a fim de que se elucidar os valores preditivos dos indicadores aqui apresentados.

O presente estudo examinou indicadores antropométricos em relação a risco cardiovascular, entretanto, diversos outros agravos devem ser contemplados em análises futuras, pois, tais indicadores estão consistentemente relacionados a desfechos como: diabetes tipo 2(2), disfunção renal(34), insuficiência cardíaca(35), câncer no pâncreas(36), no pulmão(37), de mama(38), alterações neuromusculares do nervo simpático(39) e o corpo de vidências cresce a cada dia. Sendo assim, outros estudos de desenho longitudinal devem ser

conduzidos para se conhecer a relação desses indicadores com a incidência de agravos à saúde no EB.

Pontos fortes e limitações do estudo

Os pontos fortes do estudo referem-se ao delineamento amostral que consistiu em processo aleatório com um tamanho amostral satisfatório para que a população de estudo se configurasse em representativa do universo amostral, no caso o EB.

Além disso, utilizar pontos de corte na estimativa de REDC especificamente desenvolvidos para o universo populacional foi outro importante fator de relevância destacada a fim de favorecer novas pesquisas em saúde do pessoal militar do EB.

Uma limitação do estudo foi que os pontos de corte carecem de estudos longitudinais, de preferência com seguimento de 10 anos para se estimar a incidência de doença coronária e, por conseguinte, ser possível a análise quanto à correspondência dos preditores calculados e apresentados no presente estudo.

Conclusão

O objetivo deste estudo foi comparar a prevalência de risco elevado de doença coronariana (REDC), estimada por pontos de corte específicos para os militares do EB, a partir dos indicadores antropométricos: IMC, Índice C, CC, IGC e RCEst.

De acordo com a literatura, o indicador que apresenta melhor valor preditivo para REDC é a RCEst, neste estudo, observou-se que a prevalência de REDC foi elevada segundo todos os indicadores antropométricos examinados, em todas as faixas etárias, exceto na de até 20 anos de idade. Além disso, houve aumento na prevalência conforme aumentava a faixa etária.

Concluiu-se que a prevalência de REDC na população de estudo aponta para a necessidade de intervenção em saúde no âmbito do EB a fim de se incentivar mudanças em hábitos saudáveis como nutrição e nível de atividade física promovendo a saúde e a medicina preventiva.

Outros estudos de desenho longitudinal devem ser conduzidos de preferência com seguimento de 10 anos para se estimar a incidência de doença coronária e, por conseguinte, ser possível a análise quanto à correspondência dos preditores calculados e apresentados no presente estudo e, além disso, conhecer a relação desses indicadores com a incidência de outras doenças cardiometabólicas no âmbito do EB.

Declaração de conflito de interesses

Não há nenhum conflito de interesses em relação ao presente estudo.

Declaração de financiamento

Pesquisa realizada sem financiamento.

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Centro de Capacitação Física do Exército (CCFEx), Urca, Rio de Janeiro, RJ, Brasil

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Resumos

Análise do desgaste fisiológico na primeira sessão de treinamento físico militar operacional em soldados do exército brasileiro

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Introdução: As sessões de Treinamento Físico Militar Operacional são exercícios projetados para desenvolver capacidades físicas necessárias para o Teste Físico Operacional, teste que avalia a prontidão operacional das tropas da Força de Prontidão. Tem como base exercícios específicos focados no combate real.

Objetivo: Investigar o desgaste fisiológico medido por lactato sanguíneo durante a primeira sessão do TFMO em soldados do Exército Brasileiro.

Métodos: Este estudo quantitativo transversal avaliou 10 soldados da Bateria Estácio de Sá ($19,1 \pm 1,44$ anos; $70,8 \pm 10,9$ kg). É uma pesquisa que faz parte de um projeto maior conduzido pelo IPCFEx e pela EsEFEx. Foram coletados lactato sanguíneo antes e após a primeira sessão do TFMO. Foi aplicado o Teste de Shapiro-Wilk nos dados coletados, onde foi verificado que os dados eram aderentes à normalidade. Dessa forma, foi utilizado o teste T dependente, com o software SPSS versão 27 ($p < 0,05$).

Resultados: Os valores de lactato antes e pós sessão de TFMO foram significativamente diferentes, $t(9) = 2,7$, $p = 0,024$, sendo que o lactato

pré ($2,58 \pm 0,27$ mmol/L) foi menor que o lactato pós ($3,93 \pm 1,22$ mmol/L).

Conclusão: pode-se verificar que a sessão de TFMO gerou um desgaste fisiológico estatisticamente significativo nos militares que o realizaram. Mesmo sendo uma análise aguda, o resultado pode ser um indicativo que o conjunto de várias sessões desse tipo de treinamento pode promover adaptações na capacidade funcional dos militares.

Palavras-chave: Desempenho Físico Funcional; Planejamento Operacional; Saúde Militar; Lactato.

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Associação do perímetro da cintura e percentual de gordura com pressão arterial de docentes universitários: dados preliminares

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Introdução: O acúmulo de gordura na região abdominal está associado com alterações metabólicas às quais podem potencializar a ocorrência de hipertensão arterial (HA)¹.

Objetivo: Associar perímetro da cintura (PC) e percentual de gordura total (%G) com pressão arterial (PA) de docentes universitários.

Métodos: Estudo transversal, com amostra de docentes da UFRJ. Até o momento, 102 professores realizaram avaliações antropométricas/composição corporal e aferiram a PA. Utilizou-se pontos de cortes validados para classificar obesidade abdominal (mulheres:PC≥80cm; homens:PC≥90cm)² e HA (PA≥140x90mmHg)³. Aplicou-se teste de regressão linear múltipla (p<0,05).

Resultados: Os participantes apresentam média de idade de 48,6±10,3 anos, IMC de 25,2±4,2 kg/m², %G de 27,3±6,5%, sendo maioria do sexo feminino (n=70, 68,5%), com obesidade abdominal (n=64, 62,7%) e normotensos (n=93; 91,2%). Constatou-se tendência de correlação entre PC e PA sistólica (β=0,213;IC95%-0,005;0,431;p=0,055), correlação entre %G e PA sistólica (β=0,503;IC95%0,151;0,909;p=0,007), bem como, do PC e %G com PA diastólica (β=0,263;IC95%0,149;0,440;p=0,004; β=0,664;IC95%0,361;0,967;p<0,001, respectivamente) após ajuste por idade e sexo.

Conclusão: O PC e %G parecem ser associados com PA de docentes universitários, indicando necessidade de atenção no controle da adiposidade corporal neste público.

Palavras-chave: adiposidade; pressão arterial; docentes universitários.

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Associação entre diferentes indicadores de obesidade, de risco cardiovascular e suas prevalências em militares do Exército Brasileiro

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Introdução: Os militares são utilizados em situações de prontidão operativa e, para isso, devem possuir hígidez física.

Objetivo: Avaliar a prevalência de obesidade segundo os Índices de Massa Corporal (IMC) e Adiposidade Corporal (IAC), além do Índice de Conicidade (IC) como marcador de risco cardiovascular e suas associações em militares do Exército Brasileiro (EB).

Métodos: Estudo transversal com 125 militares, alunos de uma escola de especialização, sexo masculino (38,5 ± 2,3 anos), fisicamente ativos. Para análise dos dados, normalidade pelo teste de Shapiro-Wilk, estatística descritiva: média, desvio padrão e distribuição de frequência (%). E na estatística inferencial, a correlação de Pearson. Nível de significância p ≤ 0,05.

Resultados: Foram observadas associações significativas entre o IMC X IAC (r = 0,786; p < 0,001), IMC X IC (r=0,503; p=0,001) e IAC X IC (r=0,443; p < 0,001). Os indivíduos portadores de obesidade foram: IMC=19,2% (24), IAC=47,2% (59) e IC= 34,4% (43) com risco cardiovascular.

Conclusões: Foram encontradas associação significativa e forte entre o IMC e o IAC, e significativa moderada entre o IMC, IAC e o IC. Devido à sua facilidade de uso, o IAC tem sido empregado como um preditor não apenas do risco cardiovascular e da estimativa do % de gordura corporal, mas também demonstrou ser eficaz na predição da síndrome metabólica, que pode facilitar sua aplicabilidade nas diferentes organizações militares.

Palavras-chave: obesidade; parâmetros antropométricos; doenças crônicas; militares.

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Associação entre o tempo de atividade física e Síndrome de Burnout em docentes universitários: dados preliminares

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Introdução: Estresse tem sido evidenciado com frequência na vida de docentes, podendo, levar ao esgotamento emocional e síndrome de Burnout.

Objetivo: Associar o tempo de atividade física (AF) habitual de docentes universitários com síndrome de Burnout.

Métodos: Pesquisa transversal, realizada com professores da UFRJ. Esta contou, até o momento, com participação de 102 professores, contudo apenas 91 responderam o questionário JBEILI para avaliar síndrome de Burnout, e o Questionário Internacional de Atividade Física. Aplicou-se teste de regressão linear múltipla ($p < 0,05$).

Resultados: Os docentes ($n=91$) apresentavam idade de $48,6 \pm 10,3$ anos; sendo 62(68,1%) do sexo feminino, 46(50,5%) com

sobrepeso/obesidade e 63(69,2%) fisicamente ativos. Foi verificado que 18(19,8%) professores não tem Burnout/apenas possibilidade de desenvolvê-la; 58(63,7%) estão na fase inicial e 15(16,5%), provavelmente, estão com Burnout. Não se verificou correlação entre tempo de caminhada e AF vigorosa com escore de Bournout, contudo, houve correlação inversa do tempo de AF moderada com o referido escore ajustado por idade, sexo e IMC ($\beta = -0,017$; IC95% -0,033; -0,001; $p = 0,037$).

Conclusão: A prática de AF moderada parece associar inversamente com escore de Burnout, indicando possível benefício da prática habitual desse tipo de atividade para minimizar o esgotamento emocional no trabalho.

Palavras-chave: Bournout; atividade física; professores universitários.

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Avaliação do balanço energético de integrantes do corpo de fuzileiros navais da marinha do Brasil em treinamento operativo

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Introdução: O fornecimento de calorias adequadas para atender as necessidades energéticas diárias do combatente, descritos como atletas táticos, é de suma relevância para diminuir o risco de lesões músculo-esqueléticas, evitar redução da capacidade cognitiva e prejuízo ao sistema imunológico.

Objetivo: Avaliar o balanço energético (BE) de fuzileiros navais durante 24 horas de um treinamento operativo.

Métodos: Compuseram a amostra 30 militares do sexo masculino, idade $24,3 \pm 2,1$ anos e IMC de

23,7±2,5 kg/m² que cumprem o Programa Geral de Adestramento do Corpo de Fuzileiros Navais (CAAE=31725020.4.3001.5256). Na primeira etapa, em laboratório, foram aferidas a taxa de consumo de oxigênio pico (VO₂pico), frequência cardíaca (FC) em repouso e máxima. O treinamento foi realizado na região de Marambaia-RJ, com os militares utilizando um monitor Polar VantageV2 durante 24 horas. A FC foi registrada para base do cálculo do gasto energético (GE) individual diário. Os militares consumiram somente alimentos da ração operativa e as sobras foram pesadas para cálculo do consumo energético (CE) diário. Realizou-se o teste t para comparar GE e CE diário.

Resultados: O GE médio dos participantes em um dia de treinamento operativo foi de 6753,8±1348,7 kcal/dia e do CE foi 2583,7±421,7 kcal/dia, observando-se diferença significativa (p<0,001) entre o GE e CE diário, resultando em BE médio negativo (-4170,2 kcal/d).

Conclusão: O BE negativo de fuzileiros navais em treinamento operativo pode impactar negativamente no desempenho humano operacional e a saúde desses militares. As instâncias superiores estão discutindo ações para a adequação do BE, em atenção à segurança e desempenho do combatente.

Palavras-chave: Palavras chaves: Balanço energético; fuzileiros navais; treinamento operativo.

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Biomarcadores em atletas de endurance submetidos a triathlon: análise de caso

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Introdução: O triathlon é um esporte que desafia os limites físicos do corpo humano. Essa exposição física prolongada e intensa pode afetar a demanda de oxigênio e comprometer o funcionamento de órgãos vitais.

Objetivo: Avaliar os parâmetros colhidos dos Elementos Anormais do Sedimento (EAS) em seis triatletas para investigar as respostas do organismo antes e após uma prova de triathlon endurance.

Métodos: Foram colhidas amostras de urina de seis triatletas – três mulheres e três homens, em dois momentos distintos. O momento inicial consistiu em 24 horas antes da largada da prova e o momento final consistiu no momento após a chegada dos atletas no pódio.

Resultados: Ao analisar os caracteres gerais da urina da amostra percebe-se mudança da cor e do aspecto em ambos os momentos, em razão do nível de hidratação e demanda física dos triatletas. Quanto aos elementos anormais, pode-se destacar níveis de proteínas, glicose, hemoglobina e bilirrubina condizentes ao nível de preparo e hidratação de cada atleta. Em 1/3 da amostra feminina, houve a incidência de hemoglobinúria, no momento após a prova, sugerindo disfunções renais e desidratação. Enquanto os homens seguiram padrões normais desses elementos.

Conclusão: Os dados obtidos sugerem que a performance de um triatleta é ligada diretamente ao treinamento antes da competição e as condições de hidratação e suplementação durante a prova.

Palavras-chave: resistência física, medicina esportiva, biomarcadores, estresse oxidativo.

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3. M.B. S. Faber, S.R.A. José - “Alterações agudas induzidas por uma prova de Triathlon longo em diferentes biomarcadores enzimáticos e da função imune”

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Componentes da tríade do atleta em diversas modalidades olímpicas e de artes marciais

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Introdução: A tríade do atleta, caracterizada por baixa disponibilidade de energia, saúde reprodutiva prejudicada e comprometimento ósseo, é um desafio comum em atletas, especialmente aqueles sob pressão por alto desempenho.

Objetivo: Este estudo transversal visou comparar a prevalência da tríade do atleta (CT) em atletas de esportes olímpicos e artes marciais no Rio de Janeiro.

Método: Trinta e cinco adultos (19 mulheres, 17 homens) de diversas modalidades esportivas foram avaliados. Utilizando absorciometria radiológica de dupla energia (DXA) e antropometria, a composição corporal foi analisada, juntamente com os testes psicométricos BSQ, BITE e EAT-26.

Resultados: Apesar de idades semelhantes, as mulheres dedicaram mais tempo diário ao exercício ($p=0,01$). Homens mostraram maior massa livre de gordura e menor percentual de gordura que as mulheres ($p<0,05$). A prevalência de CT foi alta (42,8%), com mulheres exibindo maior frequência nos testes EAT-26 (22,2%; 0%; $p=0,03$) e BSQ (27,7%; 5,8%; $p=0,08$). Adicionalmente, 16,6% tiveram positividade nos três testes, sem atletas apresentando baixa densidade mineral óssea.

Conclusão: Apesar das diferenças na composição corporal entre os sexos, a elevada prevalência de CT persiste em ambos, com particularidades específicas. Destaca-se a preocupação maior das atletas femininas com a imagem corporal e sintomas de Anorexia Nervosa, enfatizando a necessidade de estratégias direcionadas às particularidades de gênero no contexto esportivo.

Palavras-chave: Comer transtornado; esportes olímpicos; atletas.

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Componentes da tríade do homem atleta em categorias de base de futebol de campo

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Introdução: A pressão estética na nutrição esportiva é constante, sendo a prática regular de atividades físicas crucial para a saúde e autoestima. Contudo, a atenção excessiva à Imagem Corporal (IC) pode levar ao Comer Transtornado (CT), impactando ambos os sexos.

Objetivo: Este estudo quantitativo aborda a prevalência de CT em adolescentes atletas do sexo masculino no futebol de base, correlacionando os dados com a composição corporal.

Método: Avaliações da composição corporal foram feitas por absorciometria radiológica de dupla energia (DXA) e antropometria com balança e estadiômetro digital. Os 149 adolescentes foram divididos em grupos de atividade em campo, com similaridades significativas nas características físicas. A média de exercício e tempo diário de atividade física foi comparada.

Resultados: Na análise da prevalência de CT, determinada pela positividade em pelo menos dois dos questionários (EAT-26, BITE e BSQ), não houve diferença significativa entre grupos com baixa e alta atividade física em campo ($P=0,31$). Os questionários individualmente não mostraram diferenças significativas de positividade para o CT entre os grupos.

Conclusão: A intensidade da atividade física não impacta significativamente na prevalência de CT em adolescentes atletas de futebol de base. Destaca-se a necessidade de abordagens sensíveis à IC nesse grupo, buscando mitigar preocupações excessivas com a imagem corporal e promover um ambiente saudável no contexto esportivo.

Palavras-chave: Comer transtornado; futebol de base; atletas.

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Comportamento do olhar no tiro de pistola: comparação longitudinal entre cadetes homens e mulheres da AMAN, sob diferentes condições de pressão

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Introdução: O comportamento do olhar está associado a processos de percepção, tomada de decisão, execução de movimentos e habilidades visomotoras.

Objetivo: O estudo longitudinal comparou o comportamento do olhar e o desempenho de cadetes homens e mulheres no tiro real de pistola, em condições de baixa e alta pressão.

Método: A pesquisa foi realizada ao longo dos 1º e 2º anos de formação, por meio de quatro coletas. Houve prática controlada de tiro entre as coletas, que ocorreram de 4,5 em 4,5 meses. A amostra foi intencional e contou com 16 homens e 12 mulheres (idade média de $21,5 \pm 1,6$ anos). A tarefa consistiu na realização de duas séries de dez tiros de pistola, sob condições de baixa e alta pressão (manipuladas com carga, tempo de disparo e presença do instrutor). A pesquisa foi conduzida sob uma abordagem pormenorizada do fundamento "acionamento do gatilho", como um movimento duradouro e constante, que requer um faseamento das análises de comportamento do olhar, com ênfase no parâmetro "olho quieto" (OQ).

Resultado: A análise indicou que os (as) cadetes, com o decorrer do tempo e de modo equivalente, tanto em condição baixa como alta de pressão, melhoraram a duração do OQ, a antecipação de início do OQ e a pontuação no alvo. O nível de significância foi determinado em 5%.

Conclusão: Os achados apontam que a prática de tiro de pistola em cadetes homens e mulheres, independentemente da condição de pressão, melhora o desempenho e a atenção visual.

Palavras-chave: Busca visual; Percepção visual; Olho quieto.

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Correlação entre o desempenho no teste físico operacional e o teste de aptidão física em bombeiros militares do Distrito Federal em ambos os sexos

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Introdução: Analisar a relação entre o desempenho em testes físicos e em testes operacionais é primordial para avaliar e prescrever treinamentos para bombeiros.

Objetivo: Analisar a correlação entre o TAF e o teste físico operacional (TFO) em alunos dos cursos de formação do Corpo de Bombeiros Militar do Distrito Federal de ambos os sexos.

Métodos: Foram avaliados 256 alunos (149 homens, 107 mulheres; 65 cadetes, 191 soldados; idade = 31 ± 3 anos; altura = 171 ± 8 cm; massa corporal 72 ± 12 kg) ao longo de três dias. O TAF no primeiro dia incluiu barra dinâmica, estática (apenas mulheres), flexão 4 apoios, natação 100m e corrida (12-min cadetes e 2.400m soldados). O segundo dia consistiu no circuito do TFO com oito tarefas simuladas. No terceiro dia, os soldados realizaram bioimpedância para medir a composição corporal. As correlações foram verificadas por meio do teste de Spearman ou r de Pearson.

Resultados: Massa magra, barra dinâmica, flexão, desempenho na corrida, massa corporal e altura apresentaram forte correlação ($\rho = -0,69$ a $-0,8$; $p < 0,01$) com o TFO. Quando segregados por sexo, as mulheres apresentam forte correlação entre o TFO e a massa magra, barra dinâmica e 12-min ($\rho = -0,6$ a $-0,64$; $p < 0,01$), enquanto os homens apresentaram correlação moderada entre flexão, barra dinâmica e 2.400 m ($\rho = -0,48$ a $-0,56$; $p < 0,01$).

Conclusão: Os resultados indicam correlações moderadas a fortes entre os testes tradicionais e o desempenho em tarefas operacionais de bombeiros.

Palavras-chave: Desempenho ocupacional; gênero; resgate veicular; bombeiro militar; aptidão física.

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Corrida da asa: promoção de saúde e integração entre civis e militares

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Introdução: A corrida de rua é uma atividade histórica do atletismo utilizada como prática de atividade física regular, contribuindo para a promoção de saúde, sendo respeitado o processo de preparação ao longo do tempo.

Objetivo: Descrever estrutura de funcionamento da corrida de rua realizada pela Base Aérea de Salvador (BASV), Força Aérea Brasileira (FAB).

Método: Análise documental. **Resultados:** Em 2023, foi realizada a XXXVIII edição da Corrida da Asa pela BASV em parceria com uma Assessoria Esportiva. Participaram 1.190 pessoas (469 feminino, 710 masculino, 11 pessoas com deficiência). A corrida aconteceu nas distâncias de 5km e 10km, estratificada por geral, civis, militares geral e militares FAB. O percurso privilegiou as instalações da Base Aérea de Salvador. Destaque ao trecho de 2km que levou os corredores bem perto da pista de decolagens do aeroporto de Salvador, além da passagem pelo bambuzal, tradicional local de acesso ao aeroporto. Houve corrida em tropa por militares das forças armadas com canções militares. Em frente ao Prédio do Comando, local de largada e chegada, foi apreciado por todos o hasteamento da bandeira, evidenciando aproximações entre civis e militares.

Conclusão: O processo de estímulo a promoção de saúde por meio da corrida de rua aproximando civis das instalações e rotinas militares contribuiu para potencializar a integração, curiosidades e o convívio possibilitado pelas práticas coletivas, respeitando as individualidades de cada pessoa envolvida no processo.

Palavras-chave: Corrida. Promoção da saúde. Exercício físico.

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Desempenho no teste físico operacional de bombeiros: uma comparação entre sexos e níveis de treinamento

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Introdução: Em geral, homens têm maior aptidão física do que as mulheres. Porém, o nível de treinamento pode influenciar a aptidão física independente do sexo.

Objetivo: Comparar o desempenho no teste de aptidão física (TAF) e teste físico operacional (TFO) entre bombeiros homens e mulheres.

Métodos: Uma amostra de 252 alunos (105 soldados e 41 cadetes homens, 83 soldados e 23 cadetes mulheres; idade = 31 ± 3 anos) foi avaliada em três dias. O TAF no primeiro dia abrangeu barra dinâmica, estática (apenas mulheres), flexão em 4 apoios, natação 100m e corrida (12-min para cadetes e 2.400m para soldados). O segundo dia envolveu o circuito do TFO com oito tarefas simuladas. No terceiro dia, foi mensurada a composição corporal via bioimpedância. Uma ANOVA one-way com post hoc de Tukey comparou as médias entre os grupos.

Resultados: No geral, os homens obtiveram melhor desempenho ($p < 0,001$) que as mulheres em todos os testes. As cadetes femininas apresentaram melhor desempenho ($p < 0,001$) que as soldados femininas em todos os testes, exceto na barra estática ($p = 0,184$). As cadetes femininas superaram os soldados masculinos na natação 100 m (100 ± 11 vs. 117 ± 23 , $p < 0,161$, $d = 1,28$), sem diferença no TFO (494 ± 60 vs. 483 ± 40 seg, $p = 0,81$, $d = 0,22$) e desempenho inferior nos demais testes ($p < 0,001$).

Conclusão: As cadetes, com 6-18 meses de treinamento, apresentaram desempenho semelhante aos recém-incorporados soldados masculinos no TFO e superior na natação.

Palavras-chave: Desempenho ocupacional; gênero; resgate veicular; bombeiro militar; aptidão física.

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Efeito de diferentes amplitudes de movimento na força e hipertrofia de homens moderadamente treinados

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Introdução: Os efeitos da manipulação da amplitude de movimento (ADM) nos exercícios resistidos (ER) permanecem pouco estudados (1, 2).

Objetivo: Comparar diferentes amplitudes dos ER para os membros (inferiores e superiores) na força e hipertrofia de homens moderadamente treinados.

Métodos: O estudo utilizou um delineamento dentro do sujeito onde os membros foram aleatorizados para diferentes condições. Dez homens moderadamente treinados (idade: 22.9±2.5 anos) participaram do estudo. O protocolo teve duração de seis semanas e foi realizado três vezes por semana nas condições:

ADM total (ADMt) (0°-130° flexão de cotovelo e 90°-0° extensão de joelho); b) ADM parcial (ADMp) (50°-100° flexão de cotovelo e 45°-0° extensão de joelho). As cargas foram de 60% de 1RM para cada exercício, sendo realizado três séries de 12 repetições. Para avaliar a força e a hipertrofia, foram utilizados os testes de 1RM e ultrassonografia, respectivamente.

Resultados: Houve efeito do tempo na hipertrofia do quadríceps (p=0.025) e do bíceps (p=0.048). Foi demonstrado que a hipertrofia do bíceps na condição ADMp não obteve aumento significativo (p=0.097). A força do quadríceps e do bíceps aumentou em ambas as condições (p<0.05). Quando comparado as condições a força foi maior na ADMp (p<0.05).

Conclusão: Os achados sugerem que a ADMt parece favorecer a hipertrofia do bíceps, entretanto, a força alcançou melhores resultados com ADMp.

Palavras-chave: Amplitude de Movimento Articular; Hipertrofia do Músculo Esquelético; Força Muscular.

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Equações desenvolvidas e validadas de bioimpedância elétrica para prever composição corporal para atletas – uma revisão breve

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Introdução: Esta revisão teve como objetivo investigar equações de predição da composição corporal com variáveis de bioimpedância elétrica (BIA), específicas aos atletas.

Métodos: Foi utilizada a frase de busca: (“Electrical bioimpedance” OR “Bioelectrical impedance”) AND (“Sports” OR “Athletes”) AND (“Multiple regression” OR “Equations” OR “Validation”) AND (“Resistance” OR “Reactance” OR “Fat mass” OR “Fat free mass” OR “Lean soft tissue” OR “Body assessment”).

Discussão: Nos quatro trabalhos científicos encontrados, as equações utilizavam as variáveis estatura, massa corporal, água corporal total, resistência, reatância e sexo, para definir a massa livre de gordura ou massa gorda. Todos os trabalhos analisados apresentaram a comparação dos resultados obtidos em BIA e Absorciometria de Raios X de Dupla Energia (DXA) para validação das equações. Discutiu-se ainda, a importância do desenvolvimento destas equações pela facilidade de avaliação pela BIA, tempo gasto e custo despendido.

Conclusão: É importante desenvolver uma equação para a população nacional, com variáveis de BIA, que seja usada pela equipe multidisciplinar, para avaliar as modificações corporais e desenvolvimento dos atletas ao longo das fases da periodização.

Palavras-chave: resistência elétrica; gordura subcutânea; ciências da nutrição e do esporte.

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Exercícios físicos como instrumento de preparação para segunda guerra mundial: uma análise sobre a Revista de Educação Física do Exército (1939-1947)

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Introdução: Após o início da 2ª Guerra Mundial (1939), o Brasil, que tinha como presidente Getúlio Vargas, é pressionado por dois grupos de países (Eixo (Alemanha, Itália e Japão) e Aliados (EUA, França, Inglaterra e URSS)), a se posicionar no conflito. Desta forma, em 1944, o Brasil declara aliança aos países Aliados, enviando suas tropas (FEB) para o confronto (Fidelis, 2022).

Objetivo: Analisar na Revista de Educação Física do Exército (REF) (1932-1947) como os exercícios físicos poderiam contribuir na

formação de homens e mulheres fortes, que estivessem aptos para a 2ª Guerra.

Metodos: O estudo adota como opção metodológica para análise das fontes a micro-história, pois esta possibilita compreender as particularidades de um determinado objeto (Barros, 2005), lançando um olhar sobre a prática de exercícios físicos na REF durante a 2ª Guerra.

Resultados: No período de 1939-1947 são publicados 12 exemplares da REF, nos quais são publicadas 8 matérias referentes à preparação através dos exercícios físicos de homens e mulheres para a Guerra.

Conclusões: A partir da presente pesquisa, conclui-se que a formação de homens e mulheres fortes, através dos exercícios físicos, seria capaz de garantir a segurança e o desenvolvimento da nação, também contribuindo para a participação do Brasil na 2ª Guerra Mundial.

Palavras-chave: História da Educação Física; Segunda Guerra Mundial; Exercícios físicos.

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Impacto de cada disciplina no resultado final do pentatlo militar em atletas de elite do sexo masculino

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Introdução: Apesar de o Pentatlo Militar ser um dos mais tradicionais esportes contemplados pelo CISM1, os estudos acerca desse esporte ainda são bastante incipientes, tanto no que se refere a prescrição de treinamento, quanto a seleção de atletas. Uma grande lacuna de conhecimento acerca desse tema se refere a qual das cinco disciplinas do Pentatlo Militar mais impacta o resultado final.

Objetivo: Determinar qual das cinco disciplinas do Pentatlo Militar mais impacta o resultado para atletas de elite do sexo masculino.

Métodos: Após aplicar os critérios de inclusão e exclusão, chegou-se a uma amostra com 294 atletas. Foi realizada uma regressão linear. Foi utilizado o programa IBM SPSS versão 27, com 95% de significância estatística para todos os testes.

Resultado: A disciplina que apresentou maior impacto no resultado final, de acordo com os coeficientes padronizados Beta, foi o cross

country ($\beta = 0,553$), seguida por PPM ($\beta = 0,438$), tiro ($\beta = 0,394$) e PNU ($\beta = 0,394$) e, por último, o lançamento de granada ($\beta = 0,287$).

Conclusão: O desempenho na disciplina cross country correlaciona-se forte e positivamente com VO2Max2 o que indica a predominância do metabolismo aeróbico nessa disciplina. Sendo a mais aeróbica das cinco disciplinas aquela que mais impacta no resultado final, cresce de importância o desenvolvimento das valências físicas mais associadas ao sistema energético aeróbico, sem negligenciar as diversas valências físicas demandadas pelas demais disciplinas.

Palavras-chave: Pentatlo Militar; impacto das disciplinas; resultado final.

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Influência de um período de treinamento físico na aptidão física de militares da escola preparatória de cadetes do exército brasileiro (EsPCEX)

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Introdução: Buscar o aumento gradual dos níveis de aptidão física em todas as fases da carreira militar, especialmente nas fases iniciais, promove saúde contra incidência de doenças e dá suporte para o desempenho de tarefas militares.

Objetivo: Analisar a influência de um período de treinamento físico regular em militares da Escola Preparatória de Cadetes do Exército no aperfeiçoamento da aptidão Física.

Método: Estudo experimental, longitudinal, com a amostra composta por 25 jovens adultas e 15 jovens adultos ($19,5 \pm 1,1$ anos) alunos do Exército Brasileiro, voluntários, com IMC ($21,7 \pm 1,8$ kg/m²), participaram do estudo. Foram realizadas avaliação física inicial e final das medidas antropométricas, da composição corporal, aptidão muscular e cardiorrespiratória por meio de teste de campo. Foi utilizado teste de normalidade dos dados, teste T pareado, tamanho do efeito e intervalo de confiança.

Resultados: Na aptidão muscular de membros superiores e inferiores houve aumento significativo na performance do teste flexão de braços (FB) para ambos os sexos e flexão na barra fixa (FBF) somente para o sexo feminino. Houve diferença significativa no teste de força isométrica máxima de pernas para ambos os sexos e no teste de 10 repetições máximas na cadeira de pressão somente para o sexo masculino.

Conclusão: a conclusão mostra que o treinamento físico regular causou mudanças benéficas na aptidão muscular de membros superiores e inferiores de ambos os sexos.

Palavras-chave: Treinamento físico regular; aptidão física; militares; jovens adultos.

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Promoção de saúde e treinamento físico militar: enlaces necessários

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Introdução: O Treinamento Físico Militar (TFM) da Aeronáutica está estruturado a partir das Normas Institucionais que orientam as atividades para Teste de Aptidão e Condicionamento Físico (TACF), compostos por atividades de resistência muscular e cardiovascular, circunferência de cintura, com metas estratificadas por faixa etária e sexo, realizado duas vezes ao ano.

Objetivo: Relatar as concepções teórico-metodológicas adotadas no Treinamento Físico Militar da Base Aérea de Salvador – BA, a partir de 2022.

Método: Relato de Experiência. **Resultados:** Com o aumento na população mundial de doenças comportamentais, tematizar o processo de Promoção de Saúde nas atividades do TFM emerge como estratégia para ampliar adesão e regularidade nas atividades realizadas duas vezes na semana. A utilização de movimentos dinâmicos e multiarticulares aproxima o militar dos movimentos que contribuem tanto para o processo de alongamento e aquecimento quanto prevenção de lesões, atividades proprioceptivas e coordenativas. Atividades metabólicas em alta intensidade potencializando ciclos de força e potência com peso corporal. O jogo como elemento da cultura em diferentes formas de utilização contribui para conceber o corpo de forma integral valendo-se de jogos que desafiam habilidades motoras, cognitivas e tomada de decisão individuais e coletivas permitindo que o militar se insira na proposta atingindo objetivos de forma indireta no que tange ao desempenho neuromuscular e cardíaco.

Conclusão: Ampliando a concepção do TFM, oportuniza aos militares envolvidos momentos de se conectar com a prática regular de atividade física visando promoção de saúde, ampliando as possibilidades e entendimento dessa importante atividade na rotina militar.

Palavras-chave: saúde militar. Promoção da saúde. Exercício físico.

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Relação da sobrecarga de trabalho e elevadas horas de voo nos pilotos do 1^o/ 7^o esquadrão da aviação de patrulha da Força Aérea Brasileira

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Introdução: O 1^o Esquadrão do 7^o Grupo de Aviação tem por finalidade “executar o preparo e o emprego dos seus meios, com vistas ao cumprimento de Ações de Força Aérea (BRASIL, 2020). Opera a aeronave P-3AM, com autonomia de 16 horas de voo ininterrupto. A Aviação de Patrulha atua nas ações de Patrulha Marítima (AP) e de Busca e Salvamento (BS). A sobrecarga de trabalho e suas consequências fisiológicas refletem na performance de um operador ao desenvolver sua tarefa (HART e STAVELAND (1988). A sobrecarga de trabalho é mensurada através de três perspectivas: escalas subjetivas, medidas de avaliação de performance e medidas psicofisiológicas (ZHENG, 2017).

Objetivo: Relação da sobrecarga de trabalho e elevadas horas de voo nos pilotos do 1^o/7^o GAv. **Método:** Em 2022, participaram 8 homens (34±2,8 anos; 85±14 kg; 176,±0,06 cm; 27,4±4,28 kg/m²). Eles realizaram: medidas antropométricas, Questionário Nórdico de Sintomas Musculoesquelético e o NASA-TLX.

Resultados: O total de horas de voo, 1101,38±336,76 h; horas de voo acumuladas: 1311,63±358,07; total de horas do último ano= 74,41±49,9; tempo de serviço= 17,38±2,72. A sobrecarga NASA-TLX em AP: 1^o Piloto (1P) 5,7±1,9; 2^o Piloto (2P): 5,4±1,4. Em BS: 1P: 7,1±0,9 e 2P: 6,39±1,59. **Conclusão:** A sobrecarga de trabalho e as elevadas horas de voo em pilotos de aeronaves são considerados pontos focais na segurança de voo, pois muitos dos acidentes tem alta correlação com altos níveis de sobrecarga mental.

Palavras-chave: piloto, sobrecarga de trabalho e aviação.

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Relação entre a força relativa e o desempenho na velocidade de sprint em diferentes fases, de soldados do 1ºBPE

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Introdução: O “lanço”, uma ação em Velocidade de Sprint (VS), é uma importante tarefa para o militar em combate(1). Encontrar capacidades físicas que estejam relacionadas ao desempenho de VS pode contribuir com o planejamento do Treinamento Físico Militar.

Objetivo: Verificar a relação entre a Força Relativa (FRel) e o desempenho na Velocidade de sprint (VS) em diferentes fases, de soldados do 1ºBPE.

Métodos: Participaram do estudo 26 soldados do 1ºBPE (21,99 ± 2,13 anos; 82,15 ± 15,39 Kg e 177,72 ± 7,51 cm). Em V1 realizaram medidas antropométricas de massa corporal (MC) e estatura, e o teste de 1RM no agachamento no smithmachine (2). Em V2, intervalo de 48h, realizaram o teste de VS 20m com fotocélulas Speed Test (CEFISE) . A FRel foi calculada pela razão entre o desempenho de 1RM e a MC. O desempenho na VS foi medido pelo tempo (s) nas distâncias de 0-10m e 10-20m (3).

Resultados: Não foi encontrada relação entre a FRel e o desempenho de VS de 0-10m (p = 0,239), mas foi encontrada correlação negativa de magnitude moderada no desempenho de 10-20m (p = 0,030; r = - 0,426).

Conclusão: Foram encontradas evidências que treinar visando ganhos de FRel pode não ser a melhor estratégia visando a fase inicial de aceleração para o desempenho na VS.

Palavras-chave: Correlação de dados; Velocidade máxima; Força muscular.

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Treinamento funcional de alta intensidade: avaliação do impacto nas funções executivas de adultos saudáveis durante a pandemia de covid-19

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Introdução: As funções executivas desempenham um papel crucial na vida cotidiana, permitindo o controle do comportamento e a tomada de decisões(1). Estudos anteriores demonstraram melhorias nas funções executivas com o exercício físico, mas principalmente com intensidades moderadas(2). **Objetivos:** Este estudo teve como objetivo investigar o impacto imediato de uma única sessão de Treinamento Funcional de Alta Intensidade (HIFT) nas funções executivas durante a pandemia.

Métodos: Participaram 19 adultos saudáveis, com idade média de 32 anos, submetidos a uma sessão de HIFT de 6 minutos, envolvendo exercícios de peso corporal. Os testes do Trail Making, Stroop e Blocos de Corsi foram utilizados para avaliar a cognição antes e depois da sessão de HIFT.

Resultados: Os resultados revelaram melhorias altamente significativas (p <0,001) nas funções executivas após a intervenção, incluindo os testes do Trail Making, Stroop e Blocos de Corsi.

Conclusão: O estudo destaca o potencial do HIFT como uma intervenção rápida e eficaz para aprimorar as funções executivas em adultos

saudáveis(3). No entanto, é necessário investigar o efeito a longo prazo do HIFT nas funções executivas em estudos futuros. Em suma, este estudo ressalta a eficácia do HIFT como uma abordagem imediata para melhorar as funções executivas em adultos saudáveis durante a pandemia.

Palavras-chave: Exercício Físico; funções executivas; Exercício; Cognição agudo.

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O efeito da posição de tiro de pé com as duas mãos, no equilíbrio postural

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Introdução: Em um cenário operacional desafiador, o estudo do tiro de pistola e seu impacto no equilíbrio postural é crucial. A pesquisa visa estudar o efeito da base de tiro no equilíbrio postural, fornecendo insights para treinamento e segurança.

Objetivo: Este estudo busca entender como a posição de tiro de pistola afeta o equilíbrio postural, empregando estabilometria.

Métodos: Neste estudo, o método é transversal, quantitativo e descritivo. Serão analisadas variáveis estabilométricas em duas condições: controle e tiro de pistola. A amostra probabilística por conveniência é composta por 28 militares, entre 25 e 35 anos, da EsEFEx. O estudo é voluntário e submetido ao Comitê de Ética em Pesquisa. A coleta de dados ocorre no laboratório de Biociências, com equipamentos específicos, e envolve medição antropométrica e análise estatística descritiva. O procedimento é repetido três vezes com intervalos. A análise

estatística utiliza o programa JASP e testes específicos, com nível de significância de $\alpha = 0,05$.

Resultados: É esperado que após as coletas, seja possível analisar como a posição de tiro influencia o equilíbrio postural; através de uma comparação das variáveis coletadas entre a posição de controle e a posição de tiro estudada.

Conclusão: Este estudo fornecerá informações essenciais sobre o equilíbrio postural no tiro de pistola em militares do EB, podendo estabelecer uma base para futuros estudos de melhorias no tiro tático e desportivo.

Palavras-chave: *Palavras-chave:* tiro de pistola; equilíbrio postural; estabilometria; militares.

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A avaliação segmentada pode ser utilizada na detecção do desempenho no clean and jerk (arremesso)?

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Introdução: O Clean and Jerk é um dos exercícios mais tradicionais nas modalidades de levantamento de peso olímpico (LPO) e no Cross training¹. Deste modo, o arremesso é um estímulo de eficaz no condicionamento de forças propulsivas verticais².

Objetivo: Correlacionar as avaliações segmentadas com o desempenho no Clean and Jerk.

Métodos: Quatorze sujeitos saudáveis treinados em LPO (idade = $32,1 \pm 8,1$ anos; massa corporal = $80,9 \pm 11,04$ kg; estatura = $174,0 \pm 8,4$ cm. No primeiro dia, foram realizadas as avaliações antropométricas seguidas do teste de força máxima no exercício 'Clean Jeark'. A força máxima no 'Clean Jeark' foi realizada seguindo o protocolo³. Foi executado um aquecimento específico, seguido por três a cinco tentativas máximas e intervalo de 5 minutos entre as tentativas. A maior carga obtida nas provas foi considerada para posterior análise. Já na segunda visita, os sujeitos foram submetidos ao teste de Wingate com duração de 30 segundos e teste de prensão manual.

Resultados: mão esquerda = $55,6 \pm 11,8$ kg; mão direita = $55,96 \pm 12,9$ kg; Mão direita + Esquerda

= 111,6 ± 24,8kg. Potência mínima = 359,7 ± 102,5watts; Potência Máxima = 517,98 ± 144,02 watts; Potência Média = 646,8 ± 192,29 watts.

Conclusão: Por apresentar alta correlação, as avaliações segmentadas podem ser utilizadas na avaliação do desempenho do atleta para o exercício de Clean and Jerk.

Palavras-chave: Atleta; treinamento físico; treinamento intervalado de alta intensidade.

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A influência do novo uniforme de combate do Exército Brasileiro sobre a temperatura corporal de militares em esforço físico – estudo piloto

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Introdução: Variações na temperatura corporal podem causar disfunções metabólicas e enzimáticas que afetam o desempenho humano. O uso de um uniforme adequado às atividades militares é essencial para a permanência no combate.

Objetivo: analisar a influência do novo uniforme do Exército Brasileiro (EB) sobre a temperatura central (Tcore) de militares sob esforço físico.

Métodos: Estudo descritivo transversal com oito militares do Curso de Instrutor da EsEFEx, sexo masculino, entre 23 e 35 anos. Foi realizado um teste de esforço ergométrico utilizando o protocolo de rampa em ambiente termoneutro (28 a 24 °C). A Tcore foi coletada pré e pós-teste usando o sensor de temperatura CORE Temp - Green Tag[®]. Os militares usaram o novo uniforme operacional do Exército (gandola, calça, meia e coturno), modelo 9º C2. Os dados serão analisados estatisticamente, com distribuição normal, pelo teste T de Student pareado, com de nível de significância p<0,05.

Resultados: Uma avaliação inicial realizada como estudo piloto com militar de 29 anos: Tcore pré=37,23°C, Tcore pós=38,38°C (aumento 1,15°C). Teste interrompido em 29 minutos a 15,5 km/h na esteira.

Conclusão: A Tcore aumentou gradualmente devido ao calor metabólico. O teste não atingiu a temperatura máxima de interrupção (39°C), indicando boa regulação térmica em ambiente termoneutro. O sensor CORE Temp é prático, não invasivo e ajuda a monitorar a temperatura central em tempo real, beneficiando a saúde dos militares.

Palavras-chave: Termorregulação; Militares; Regulação da Temperatura Corporal; Vestimenta.

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Adequação da ingestão alimentar em militares brasileiros: uma revisão sistemática

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Introdução: A nutrição adequada é relevante a militares dada a necessidade de preservação da saúde e boa operacionalidade.

Objetivo: Caracterizar a ingestão dietética de militares brasileiros.

Métodos: A presente revisão sistemática foi registrada no Prospero (CRD42023454766) e seguiu as diretrizes Prisma. Utilizou-se as bases PubMed e Google Acadêmico das publicações dos últimos 10 anos. Os critérios de elegibilidade seguiram a estratégia Picos: militares da ativa das Forças Armadas e Auxiliares de ambos os sexos, avaliação dietética, comparação da ingestão habitual à recomendada por órgãos competentes, ingestão de macronutrientes por meio de questionários apropriados. A qualidade metodológica foi avaliada pelo instrumento Critical Appraisal of the Health Research Literature: Prevalence or Incidence of a Health Problem.

Resultados: Dos 19.024 estudos encontrados, 6 foram de boa qualidade metodológica,

totalizando 500 participantes e 3 diferentes instrumentos de avaliação dietética. Dentre os revisados, 4 apresentou militares com dietas que não atendiam aos níveis recomendados de consumo energético total sendo que, 3 demonstraram ingestão inadequada de carboidratos, 3 apontaram inadequação para lipídios, estando 2 abaixo e 1 acima do recomendado, e 1 deles apresentou dieta hipoproteica.

Conclusão: A ingestão de macronutrientes por militares brasileiros foi inadequada nutricionalmente, mas existem poucos estudos sobre esta população.

Palavras-chave: nutrição, dieta, macronutrientes, Forças Armadas.

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Análise da ação muscular em uma prova de tiro esportivo

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Introdução: O tiro esportivo é uma modalidade que combina tradição de caça e tecnologia de armas de fogo, tendo crescido em popularidade recentemente, especialmente no Brasil, devido a mudanças legislativas.

Objetivo: Este estudo investiga a ativação muscular durante a prática do tiro esportivo na modalidade pistola, com o intuito de identificar os principais grupos musculares envolvidos na execução de uma prova e descrever um treinamento físico adequado a partir desta classificação.

Métodos: O estudo é de caráter quase-experimental, por meio de abordagem quantitativa, e utiliza a termografia infravermelha para medir a temperatura da pele dos membros superiores e tronco de atletas de alto rendimento das Forças Armadas. A amostra é composta por 5 atiradores do sexo masculino e 6 do sexo feminino. As medições foram realizadas

em três momentos: pré-prova, pós-prova e uma hora após a segunda medição.

Resultados: Os resultados esperados incluem a identificação dos grupos musculares relevantes para a modalidade, através da comparação entre a temperatura de face da pele de cada região antes e após a prova, contribuindo para o desenvolvimento de programas de treinamento mais específicos e objetivos.

Conclusão: Este estudo preenche uma lacuna na literatura relacionada a especificidade motora do tiro esportivo e pode beneficiar atletas e treinadores na busca por um melhor desempenho, diminuição do risco de lesão e bem-estar nessa modalidade.

Palavras-chave: tiro esportivo, ativação muscular, termografia infravermelha, treinamento esportivo.

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Análise da associação entre o estado nutricional e a maturação somática de adolescentes

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Introdução: a obesidade é considerada uma epidemia em vários países industrializados, sendo um dos maiores problemas de saúde das sociedades contemporâneas e relacionada a elevadas prevalências e incidências de diversas doenças, tanto em adultos como em adolescentes. Portanto, observa-se como importante identificar características relacionadas ao sobrepeso e obesidade de forma precoce.

Objetivo: analisar a associação entre o estado nutricional e a maturação somática de adolescentes.

Métodos: revisão narrativa realizada por meio de referências obtidas nas bases de dados Google Scholar, SciELO e PubMed a partir da busca pelas palavras chave: obesidade, obesidade infantil,

adolescentes, crescimento, desenvolvimento infantil, maturação e educação física.

Resultados: o sobrepeso e a obesidade durante infância e adolescência associam-se a efeitos adversos com consequências para a saúde ao longo da vida. Na adolescência, a nutrição inadequada é preocupante, pois nessa fase as necessidades são específicas devido ao estirão de crescimento e às transformações corporais inerentes à puberdade. A maturação somática modera a relação entre adiposidade na infância e adolescência, com maturação anterior associada a um aumento maior da adiposidade.

Conclusão: a associação entre o estado nutricional e a maturação somática de adolescentes torna importante a avaliação dessas variáveis o mais precocemente possível, ressaltando o papel da Educação Física Escolar na promoção da saúde.

Palavras-chave: educação física, promoção da saúde no ambiente escolar, obesidade.

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Análise da resposta termográfica pós-jogo em jogadores profissionais da seleção militar de futebol

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Introdução: A temperatura da pele do corpo humano varia devido ao processo de termorregulação e permite a adaptação às variações ambientais e às demandas metabólicas do organismo. O futebol é um esporte que pode aumentar esta temperatura, principalmente nos

membros inferiores que são submetidos a um estresse maior.

Objetivos: O estudo busca analisar as respostas termográficas nos membros inferiores dos jogadores da Seleção Brasileira Militar de Futebol nos momentos pré e pós-jogo.

Métodos: A pesquisa será quase-experimental, com amostra de 30 atletas da equipe das Forças Armadas que disputam a série B1 do Campeonato Carioca de 2023. Serão realizadas avaliações da composição corporal e aptidão cardiorrespiratória, a coleta de imagens termográficas dos membros inferiores pré (24 horas) e pós-jogo (48 horas); e a avaliação de trabalho de cada jogador para posterior correlação com as imagens termográficas.

Resultados: Os resultados serão analisados utilizando testes estatísticos, incluindo o teste de Shapiro-Wilk, teste T Student dependente ou de Wilcoxon, e testes de correlação de Pearson ou Spearman. O nível de significância adotado será de $p < 0,05$.

Conclusão: Espera-se que os resultados possam contribuir para otimizar o desempenho esportivo da equipe, reduzir os riscos de lesões e melhorar a gestão da carga de treinamento, de modo a ajudar a comissão técnica da equipe a planejar atividades de recuperação e treinamento de acordo com as necessidades individuais dos jogadores.

Palavras-chave: Futebol; Termografia infra-vermelha (TIA); Controle de carga.

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Análise da temperatura do pé de militares do exército brasileiro usando a termografia infravermelha – um estudo piloto

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Introdução: O pé possui elevada importância para termorregulação do corpo e a termografia infravermelha (TIV) é eficaz nessa avaliação, assim um coturno adequado pode contribuir para a saúde e o desempenho dos atletas táticos.

Objetivo: Comparar a temperatura dos pés utilizando coturno de combate do Exército Brasileiro (EB).

Métodos: Estudo piloto com um militar do sexo masculino, 29 anos, massa corporal total 82,85 kg, dominância direita, realizou teste ergométrico com protocolo de rampa em laboratório ambiente termoneutro com novo fardamento do EB e coturno de combate. As imagens termográficas da planta dos pés foram coletadas pré e pós-teste com uma câmera infravermelha Flir E76®. As Regiões de Interesse (ROIs) foram: Hálux-HA, 2 ao 5 dedo-DD, Metatarso 1-M1, Metatarso 2 a 4-M4, Metatarso 5-M5, Arco medial-AM, Arco lateral-AL, Calcâneo interno (CI) e Calcâneo externo-CE no pé direito-D e esquerdo-E. Os dados foram apresentados por meio de estatística descritiva (média e desvio padrão).

Resultados: O teste foi concluído no esforço máximo com 29 minutos, velocidade 15,5 km/h na esteira, ROIs com maior assimetria observadas no pós teste: HA 31,87°C ± 1,73, DD 32,1°C ± 1,19, M1 31,93°C ± 0,58 e AM 32,75°C ± 0,71 todas para o pé direito.

Conclusão: A assimetria observada corresponde ao lado de dominância do participante, podendo influenciar no conforto e desempenho operacional. A análise da temperatura dos pés por meio da TIV pode auxiliar no desempenho do atleta tático.

Palavras-chave: Termografia Infravermelha (TIV); Coturno; Militares, Atleta tático.

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Análise das horas de voo, variáveis neuromusculares e lombalgia nos militares da aviação de patrulha da Força Aérea Brasileira.

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Introdução: A Aviação de Patrulha (AP) tem como missão vigiar e proteger 24 horas por dia, o território nacional (FAB, 2020). Funções a patrulha marítima e busca e salvamento (BUENO, 2018). Os voos com longa permanência da tripulação na posição sentada e elevadas jornadas das etapas entre 5 a 16 horas, nas Aeronaves P- 3AM Órion e P- 95B (FAB, 2020). A lombalgia é uma epidemia global (LANCET, 2023) e é influenciada por longos períodos na posição sentada (MARQUES, 2010). Até o momento, não existem pesquisas sobre lombalgia na AP.

Objetivo: Analisar as horas de voo, variáveis neuromusculares e lombalgia nos militares da AP da FAB.

Método: Participaram 32 homens (34±5,75 anos; 86,56±18,86 kg; 171,43±28,75; 25,47±7,81 kg/m²). Eles realizaram: medidas antropométricas, Questionário Nórdico de Sintomas musculoesquelético, teste de resistência muscular (RML) de extensão de tronco e de força muscular (FM) de tração lombar.

Resultados: O total de horas de voo, AP: 470,81±533,21 h; P- 3AM: 332,03±444,82 h; P- 95B: 130,81±248,65 h. Militares com dor 75% e lombalgia 37%. Relação grupos IMC e dor, o grupo normal (GN)= 62,50%, grupo sobrepeso (GS)= 76,50% e grupo obesidade (GO)= 85,88%. Relação IMC e RML, o GN= 118,4 seg; GS= 98 seg e GO= 71,6 seg. A FM foi 110,42±21,77 kg.

Conclusão: Observamos que o elevado tempo de horas de voo e elevado IMC influenciam na maior prevalência de dores e lombalgia. O IMC elevado apresentou menor força e resistência muscular nos extensores da coluna.

Palavras-chave: dor lombar, força muscular e aviação.

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Análise das métricas de tempo-movimento e percepção subjetiva do esforço evidenciadas nos jogos reduzidos de futebol

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Introdução: O futebol é um esporte popular que requer habilidades técnicas, táticas e físicas. Para melhorar o desempenho, é importante aprimorar fatores como velocidade de reação e aceleração. Os jogos reduzidos (JR) são uma metodologia eficaz de treinamento que imitam situações reais de jogo e o intervalo de recuperação entre as sessões é uma variável que pode interferir no desempenho dos atletas.

Objetivos: A pesquisa busca realizar uma análise das variáveis métricas de tempo-movimento e da PSE no treinamento de JR 8x8+goleiros, para verificar possíveis diferenças entre os tipos de treinamento.

Métodos: A pesquisa será um estudo quase-experimental, com uma amostra de 30 jogadores profissionais da equipe da Seleção Brasileira Militar de futebol que disputam a série B1 do Campeonato Carioca de 2023. Serão realizadas avaliações da composição corporal, aptidão cardiorrespiratória e serão coletados dados em treinamento de JR 8x8+goleiros sendo executado de forma ininterrupta e com intervalo de 3 minutos.

Resultados: Os resultados serão analisados quantitativamente utilizando os testes estatísticos de Shapiro-Wilk, T de Student dependente ou teste de Wilcoxon. O nível de significância adotado será de $p < 0,05$.

Conclusão: Espera-se que os resultados demonstrem uma diferença significativa entre as variáveis métricas de tempo e movimento e PSE nos treinamentos realizados com e sem intervalo, de modo a permitir uma melhor eficácia na execução dos treinamentos pela comissão técnica.

Palavras-chave: Futebol; Performance Esportiva; Treinamento Físico.

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Análise do consumo de cafeína advinda de fontes alimentares e não alimentares entre ciclistas do município de Macaé, RJ

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Introdução: A cafeína, um alcalóide proveniente da xantina, é reconhecida como a substância psicoativa mais consumida no mundo, presente em fontes como café, chá, cacau, mate e diversas plantas. Atualmente tem sido descrita como um importante recurso ergogênico lícito, capaz de aumentar a performance em atletas.

Objetivo: Avaliar o consumo de cafeína advinda de fontes alimentares e não alimentares entre ciclistas do município de Macaé.

Metodos: Onze ciclistas do sexo masculino, com idades entre 18 e 45 anos, foram incluídos na pesquisa. A estimativa do consumo diário de cafeína foi realizada por meio de um questionário validado

Resultados: O consumo de cafeína entre os participantes revelou uma predominância de café (81,8%), seguido por energéticos (27,1%), refrigerantes (18,1%), bebidas prontas (9,09%) e chocolates (27,2%). 36% dos indivíduos não

recorreram a fontes não alimentares para a ingestão de cafeína

Conclusão: Evidencia-se que o consumo de cafeína entre ciclistas foi predominantemente proveniente de fontes alimentares. Apesar de a cafeína ser reconhecida como um importante recurso ergogênico, nota-se que uma parcela significativa dos participantes não faz uso de fontes não alimentares, como suplementos, que também podem contribuir para otimizar a ingestão dessa substância. Esses resultados ressaltam a importância da orientação nutricional para atletas, abordando as diversas fontes de cafeína e as estratégias ideais relacionadas à dose e “timing”.

Palavras-chave: Nutrição no esporte; cafeína; café; ciclismo; performance.

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Análise do desempenho físico de policiais militares com e sem a utilização do equipamento de proteção individual

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Introdução: O desempenho físico em relação à operacionalidade tem sido investigado em

diferentes populações ocupacionais, no entanto, as evidências seguem conflitantes¹.

Objetivo: Sendo assim, o objetivo da presente investigação foi comparar o desempenho em testes de aceleração (sprint de 20 metros) e de capacidade de mudança de direção (Zig-Zag COD) em uma amostra composta por 19 policiais militares do Batalhão de Operações Policiais Especiais (41,58 ± 5,26 anos de idade; 1,75 ± 0,04 metros de altura; 80,71 ± 7,07 Kg de massa corporal sem o uso de EPI; 90,18 ± 7,34 Kg de massa corporal com o uso de EPI).

Métodos: Foram realizadas duas visitas com intervalo de sete dias entre elas. Na primeira visita foram realizados os seguintes procedimentos: 1) preenchimento do par-Q e do termo de consentimento livre e esclarecido; 2) medidas antropométricas; 3) sprint sem EPI; 4) COD sem EPI. Na segunda visita: 1) sprint com EPI; 2) COD com EPI. Para análise inferencial dos dados foi utilizado o Teste de Wilcoxon2 e o nível de significância adotado foi de 5%.

Resultados: Foi observada uma redução no desempenho durante o teste de sprint de 20 metros ($p = 0,000$), porém não foi observada diferença estatisticamente significativa no desempenho durante o teste de COD ($p = 0,324$).

Conclusão: Observa-se que o uso de EPI pode não influenciar negativamente na capacidade de mudança de direção de policiais militares, no entanto, houve um declínio no desempenho durante o teste de sprint de 20 metros.

Palavras-chave: Desempenho físico funcional; Militares; Equipamento de proteção individual.

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Análise do estresse em militares de uma tropa de elite do Exército Brasileiro: aspectos de diferenciação entre veteranos e novatos

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Introdução: As missões de militares de tropa de elite ocorrem mediante exposição a situações de estresse agudo. O estímulo estressor intenso, ao se tornar crônico, é deletério para diversos sistemas biológicos e produz consequências psicológicas que resultam em dificuldade de concentração, perda de memória, alterações de humor e crises de ansiedade.

Objetivo: Realizar análise dos estados psicológicos.

Métodos: Participaram 29 militares, divididos em dois grupos: Novatos e Experientes, distribuídos de acordo com anos de atuação no destacamento de Forças Especiais. Foram aplicados três questionários: Inventário de Sintomas de Estresse (ISS), Escala de Percepção de Estresse (EPS-10) e Questionário de Saúde Geral (QSG-12).

Resultados: No ISS, 22% do grupo Experientes apresentaram sintomas acentuados de stress, no grupo Novatos, 27%. No EPS-10, ambos apresentaram baixo nível de stress. No QSG-12, 67% do grupo Experientes apresentaram sofrimento psicológico significativo, no grupo Novatos, apenas 9%.

Conclusão: Apesar de não haver diferenças significativas nos níveis de estresse, evidenciaram-se altos escores de sintomas de sofrimento psicológico para militares experientes com relação à ansiedade que poderiam ser justificados pela exposição contínua a eventos estressores, regulados pelo tempo de experiência.

Palavras-chave: estresse; coping; tropa de elite; veteranos; habilidades psicológicas.

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Aplicabilidade do cicloergômetro de membros inferiores na fase 1 de pós-operatório de cirurgia cardíaca

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Introdução: A fase 1 da reabilitação cardíaca é caracterizada pelo período hospitalar de recuperação após a cirurgia cardíaca. Nesta fase, os pacientes são estimulados a realizar atividade física de maneira precoce e de progressão gradual. Neste contexto o cicloergômetro surge como uma importante ferramenta auxiliar da reabilitação.

Discussão: a redução da capacidade funcional no período pós-operatório de cirurgia cardíaca é comum, e pode perdurar mesmo após um ano de alta hospitalar principalmente em idosos. Este fato demonstra a importância da atividade física ativa e direcionada no processo de reabilitação cardíaca. Como ferramenta, o cicloergômetro de membros inferiores permite realizar exercícios de baixo impacto ao mesmo tempo em que é possível controlar o nível de sobre carga cardiovascular, através do controle das variáveis hemodinâmicas em associação com a percepção de esforço subjetivo do paciente (Escala de Borg). Prático, de fácil uso e com excelente aceitação, este se apresenta como uma alternativa válida para estimular a modulação autonômica cardiovascular, e assim melhorar o consumo máximo de oxigênio e a tolerância ao exercício desde o primeiro dia de pós-operatório. Importante lembrar que existem situações clínicas bem estabelecidas que contraindicam a mobilização precoce.

Conclusão: o cicloergômetro é uma ferramenta prática, de fácil aplicação e aceitação, com efeito positivo na melhora a capacidade cardiovascular na adaptação gradual às demandas do corpo.

Palavras-chave: cicloergometro, cirurgia cardíaca, reabilitação, fase hospitalar.

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Associação entre lesão musculoesquelética, demanda operacional e exercício físico em pilotos

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Introdução: Em situações de voo, missão ou treinamento, a literatura lista uma série de situações especiais que são impostas aos pilotos, como por exemplo: força da gravidade, vibração da aeronave, interação com inúmeros equipamentos e instrumentos, maior tempo de voo, maior atenção, necessidade de tomada rápida de decisão, muitas horas de voo que consequentemente conduzem o piloto a situações extremas de poucas horas de sono e fadiga mental/física.

Objetivo: levantamento da literatura na tentativa de associar o treinamento físico executado pelos pilotos com as demandas psicofisiológicas e com a percepção da dor, com o intuito de subsidiar futuros estudos na Força Aérea Brasileira.

Método: Elaboração da equação de busca baseada em descritores definidos conforme DeCS e MeSH e seleção de artigos nas bases de pesquisa.

Resultado: foram encontrados o total de 3983 artigos e após leitura do título e resumo foram selecionados 36 artigos que se relacionam com o tema da pesquisa em curso.

Conclusão: destacadas as demandas físicas, fisiológicas e psicológicas, dores e queixas musculoesqueléticas mais prevalentes entre pilotos militares. Ficou evidente que para atender a esta demanda operacional o piloto deve estar preparado fisicamente e emocionalmente, pois as demandas são extremamente altas. Podemos concluir que apesar do treinamento que estes pilotos são submetidos, algumas consequências da atividade de pilotar são inerentes, como a dor cervical e lombar.

Palavras-chave: exercício; piloto; psicofisiológico; dor.

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Associação entre regulação emocional e saúde mental em atletas: uma análise considerando as lesões no esporte.

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Introdução: A saúde mental possui grande influência no bem-estar individual. A regulação emocional é uma importante ferramenta na manutenção do bem-estar subjetivo.

Objetivo: Investigar a associação entre regulação emocional e saúde mental em atletas de alto rendimento, considerado os efeitos das ocorrências de lesão.

Método: Foram recrutados 66 atletas do Exército Brasileiro do Programa de Alto Rendimento de diferentes modalidades (ex.:vôlei, esgrima), com média de idade de 26,51 (DP=5,62) anos e média de tempo de prática na modalidade de 14,83 (DP=5,49) anos. Foram respondidas as versões brasileiras dos instrumentos Mental Health Continuum Short Form - que se organiza nos fatores: bem-estar emocional, físico e social; e Difficulties Emotion Regulation Scale - que tem os fatores: estratégias, não aceitação, impulso, metas, consciência e clareza. Foi realizada a análise de correlação parcial, tendo a ocorrência de lesão nos últimos 3 meses como fator de controle no software JASP.

Resultado: Com controle da ocorrência das lesões, foi identificado que o bem-estar emocional se associa moderada e positivamente à estratégia e clareza; fraca e positivamente à não aceitação, impulso, metas e consciência. Já bem-estar psicológico se associa positiva e moderadamente à consciência e clareza.

Conclusão: É necessário identificar fatores associados ao bem-estar social nos atletas. O bem-estar emocional é, potencialmente, o mais beneficiado pelos estilos positivos de regulação emocional.

Palavras-chave: Saúde mental; Bem estar subjetivo; Regulação emocional; Lesão; Atletas.

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Atividade física e condicionamento cardiorrespiratório: relação com variação de creatina quinase durante treinamento operativo de fuzileiros navais

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Introdução: O aumento dos níveis plasmáticos de creatina quinase (CK) apresenta relação com dano muscular induzido pela atividade física (AF). Contudo, sua prática regular e adequado condicionamento podem provocar menor variação da CK.

Objetivo: Analisar a correlação entre o tempo de AF semanal e o condicionamento cardiorrespiratório (VO₂pico) com a variação da CK, em Fuzileiros Navais, durante treinamento operativo.

Métodos: 39 militares do sexo masculino, participantes de treinamento operativo de quatro dias na região da Marambaia-RJ. CK plasmática foi dosada por kit comercial (Bioclin) nos períodos pré e pós operação. O VO₂pico foi estimado por calorimetria indireta; o tempo de AF semanal pelo Questionário Internacional de Atividade Física. A correlação foi calculada pelo teste de Spearman ($p < 0,05$).

Resultados: Os níveis CK antes e após foram 297,5 U/L (201,2-594,9) e 959,5 (650,4-1677) U/L, respectivamente. Não houve correlação entre o tempo de caminhada ($r = -0,03$; $p = 0,84$) nem da AF de intensidade moderada ($r = 0,11$; $p = 0,47$) com o delta CK. Entretanto, constatou-se correlação inversa entre AF de intensidade vigorosa e VO₂pico com variação da CK ($r = -0,46$; $p = 0,003$) e ($r = -0,40$; $p = 0,01$), respectivamente.

Conclusão: Portanto, militares que realizam maior tempo de AF de intensidade vigorosa e que possuem maior VO₂pico apresentaram menor variação de CK, sugerindo a relevância da preparação física regular para o melhor desempenho em operações.

Palavras-chave: Creatina quinase; Treinamento militar; Aptidão cardiorrespiratória; Atividade física.

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Avaliação cinemática da marcha com protótipo de coturno com inserção de fibra de carbono

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Objetivo: O estudo tem como objetivo avaliar a cinemática do tornozelo e pé durante a fase de propulsão da marcha, comparando coturnos com e sem placa de carbono, a fim de identificar possíveis diferenças no movimento angular do membro inferior. A marcha humana é um foco importante, e a análise cinemática é crucial para esse estudo.

Metodos: Trinta militares do Exército Brasileiro participam do estudo. Marcadores reflexivos são fixados em seus membros inferiores e pelve, enquanto eles marcham em uma pista de 10 metros usando dois tipos de coturnos: um com placa de carbono e outro sem. Câmeras infravermelhas capturam os sinais cinemáticos, que são processados com software especializado da Vicon. As variáveis de interesse incluem ângulos de flexão plantar do tornozelo e extensão da metatarsofalangeana durante a fase de propulsão.

Resultados: O resultado obtido pela amostra de um dos militares que fizeram o teste, foi que o coturno com fibra de carbono possui maior torque (7,085 Nmm/Kg), já os coturnos sem a placa de carbono apresentaram (5,694 e 4,877 Nmm/Kg). Outro resultado obtido foi que a o trabalho realizado pela articulação do tornozelo realizou um menor trabalho com o coturno de placa (5,9º de plantiflexão), em comparação aos coturnos que não possuem placa de carbono (17,6º e 11,5º de plantiflexão).

Conclusão: Espera-se que este estudo forneça informações valiosas sobre as diferenças na cinemática do membro inferior durante a marcha com coturnos com e sem placa de carbono.

Palavras-chave: Marchas, coturno, placa de carbono.

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Avaliação cinemática do tornozelo durante a propulsão da marcha com protótipo de coturno com inserção de fibra de carbono – um estudo de caso

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Introdução: O coturno é o principal calçado usado por militares porém nenhuma melhora o desempenho da marcha. Um protótipo de coturno com placa de fibra de carbono foi construído para verificar sua potencialidade na propulsão durante a marcha.

Objetivo: avaliar a cinemática do tornozelo durante a fase de propulsão da marcha com transporte de carga, comparando coturnos com e sem placa de carbono, a fim de identificar possíveis diferenças no movimento angular do membro inferior.

Métodos: Participou deste estudo de caso um voluntário militar (27 anos; 98 kg; 185 cm; 8 anos de serviço militar). Marcadores reflexivos foram fixados em seus membros inferiores e pelve, enquanto ele caminhou em uma pista de marcha de 10 metros com uma mochila com 20% do peso corporal usando os seguintes modelos de calçado: coturno com solado de poliuretano (PU) com placa de carbono (PUCO); de PU sem placa (PUSP) e outro de borracha de estireno butadieno (SBR). Oito câmeras infravermelhas (Vicon, EUA) capturam os sinais cinemáticos, que foram processados com software Nexus (Vicon, EUA).

Resultados: A marcha com o PUCO teve um ângulo menor de plantiflexão durante a propulsão de 5,9°, comparado a marcha com PUSP (17,6°) e a marcha com o coturno SBR (11,5°).

Conclusão: A plantiflexão foi reduzida com o coturno com da placa de fibra de carbono comparados aos outros sem a placa. Esses resultados são promissores, pois apontam a potencialidade do coturno de fibra de carbono em

armazenar a energia durante a propulsão da marcha.

Palavras-chave: Marcha, Biomecânica, Coturno, Placa de Carbono.

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Avaliação da capacidade aeróbia e de consumo de cafeína entre atletas ciclistas

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Introdução: A identificação da capacidade aeróbia é crucial para atletas, especialmente ciclistas, pois pode influenciar diretamente o desempenho em competições e treinamentos. O consumo habitual de cafeína também é uma variável relevante, sendo uma substância frequentemente utilizada para potencializar a resistência e a concentração durante as atividades físicas.

Objetivo: Investigar a capacidade aeróbia e o consumo habitual de cafeína entre ciclistas de Macaé-RJ.

Métodos: Participaram do estudo 11 atletas de ciclismo de 18 a 45 anos. O consumo de cafeína foi estimado em mg/dia a partir de um questionário validado. Os ciclistas foram classificados quanto a ingestão de cafeína em: baixo consumidor (< 200 mg/dia), moderado (200-400 mg/dia) e alto (>400 mg/dia). Para a mensuração do VO₂máx foi realizado um teste de exercício incremental de carga até a exaustão em um cicloergômetro de frenagem mecânica.

Resultados: Quanto à ingestão diária de cafeína, 36,4% (n=4) foram classificados como baixo consumidores, 9,1% (n=1) como moderados e 54,5% (n=6) como alto consumidores. Enquanto

o $VO_2\text{máx}$ (ml/kg/min.) demonstrou que 45,5%(n=5) apresentaram boa aptidão cardiorrespiratória e 54,6%(n=6) excelente.

Conclusão: Identificou-se que mais da metade dos ciclistas eram classificados como alto consumidores e apresentavam excelente aptidão cardiorrespiratória. Diante disto, sugerimos estudos para identificar a relação entre o consumo de cafeína e capacidade aeróbia.

Palavras-chave: Cafeína; efeito ergogênico; atletas; nutrição esportiva.

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Avaliação da restituição de energia do coturno com e sem placa de carbono no solado

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Introdução: O avanço da tecnologia de calçados esportivos tem tido um grande impacto nas modalidades esportivas, melhorando o desempenho e reduzindo lesões. Um notável avanço é a inclusão de placas de fibra de carbono nas entressolas de tênis de corrida, reduzindo o consumo de energia. No entanto, no contexto militar, os coturnos desempenham um papel fundamental em operações, treinamento e marchas de longa distância.

Objetivo: Este estudo se concentra na avaliação da restituição de energia em coturnos, utilizando placas de fibra de carbono, por meio de testes de compressão mecânica. A hipótese é que os coturnos com essas placas mostrarão maior retorno de energia em comparação com os coturnos tradicionais. Protótipos foram desenvolvidos em colaboração com o Departamento de Educação e Cultura do Exército (DECEX) e o Instituto Brasileiro de Tecnologia do Couro, Calçado e Artefatos (IBTeC).

Métodos: Os calçados serão avaliados por testes mecânicos, usando um molde de pé de tamanho 42 BR, sujeitos a forças da máquina Instron 8874 servo-hidráulica por 20 ciclos de carga e descarga. A força atinge 1120 N, partindo de 606

N, simulando forças encontradas durante a marcha operacional com carga.

Esses testes quantificarão o armazenamento e retorno de energia mecânica nos coturnos. Os resultados podem informar o desenvolvimento de coturnos militares mais eficientes, melhorando o desempenho e o conforto dos militares em atividades operacionais.

Palavras-chave: Coturno, Carbono, Energia.

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Avaliação dinâmica da marcha com protótipo de coturno com inserção de fibra de carbono

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Introdução: A pesquisa se concentra na análise da marcha militar e seu impacto nos membros inferiores, com foco na influência do coturno. A marcha é um movimento complexo afetado por fatores como forças musculares e movimentos articulares. Lesões musculoesqueléticas são comuns entre militares devido à natureza física de suas atividades, muitas das quais envolvem marcha prolongada. O coturno desempenha um papel crucial na prevenção de lesões, e estudos anteriores examinaram seu impacto na marcha.

Objetivo: O estudo teve como objetivo avaliar as variáveis cinéticas do membro inferior durante a marcha usando um protótipo de coturno de poliuretano com placa de fibra de carbono na entressola, e outros dois modelos de coturno.

Métodos: O estudo envolveu 30 militares, com experiência em marcha. Os participantes realizaram testes de marcha com os três tipos de coturnos. As variáveis cinéticas do membro inferior, incluindo momento e potência do tornozelo durante a fase de propulsão da marcha, foram medidas.

Resultados: Os resultados obtidos trouxeram informações sobre o impacto da inserção de fibra de carbono nos coturnos na marcha militar. O coturno com fibra de carbono mostrou menor trabalho mecânico (5,9° de plantiflexão) e maior

torque (7,085 Nm/kg) no tornozelo, comparado aos demais coturnos.

Conclusão: Este estudo contribuirá para uma compreensão mais profunda da marcha militar e pode informar o desenvolvimento de coturnos mais eficazes para uso pelos militares.

Palavras-chave: *Palavras-chave:* coturno; fibra de carbono; marcha.

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Avaliação do consumo energético durante a marcha utilizando coturno com e sem placa de carbono no solado: um estudo de caso

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Introdução: Nos últimos dez anos, houve uma evolução significativa nos calçados esportivos, demonstrando melhorias no consumo energético durante a corrida com tênis de placa de carbono no solado, entretanto poucos estudos propuseram avaliar o consumo energético durante utilização destes calçados.

Objetivo: comparar o consumo metabólico da marcha (VO₂) de três modelos de coturno.

Métodos: Participou deste estudo de caso um policial militar com 35 anos de idade, 180 cm e 76,2 kg. O voluntário foi submetido a caminhada em esteira a 5km/h por 5 min utilizando cada modelo de calçado: coturno com solado de poliuretano (PU) com placa de carbono (PUCO); de PU sem placa (PUSP) e outro de borracha de estireno butadieno (SBR). Para a avaliar o consumo dos volumes de oxigênio e dióxido de carbono consumidos e liberados durante o teste de marcha foi utilizado o analisador de gases Metalyzer/Cortex, (Alemanha). A ordem do teste

foi espelhada para cada modelo de calçado, sendo avaliado duas tentativas. A média do VO₂ obtido foi utilizada para comparar os resultados.

Resultados: O consumo do VO₂ foi menor para o PUCO (12,2 ml/min/kg), seguido pelo coturno SBR (12,7 ml/min/kg) e o coturno com maior consumo para a marcha desse participante foi o PUSP (13 ml/min/kg).

Conclusão: São resultados promissores, pois mostram a viabilidade de aplicação do protocolo de gasto energético para comparação de coturnos diferentes e a potencialidade do coturno com placa de carbono em reduzir o consumo energético da marcha militar.

Palavras-chave: *Palavras-chave:* coturno, fibra de carbono, consumo de oxigênio, marcha, desempenho.

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Avaliação do torque do tornozelo durante a propulsão da marcha com protótipo de coturno com inserção de fibra de carbono – um estudo de caso

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Introdução: Militares são considerados atletas táticos e o calçado pode melhorar sua capacidade operacional. Os materiais mais comuns do solado dos coturnos são de poliuretano (PU) ou de borracha de estireno-butadieno (SBR), que apresentam baixo retorno de energia. A construção de um coturno com mistura de material, incluindo a fibra de carbono, pode melhorar o desempenho em marchas.

Objetivo: O estudo teve como objetivo avaliar o torque do tornozelo durante a propulsão da marcha utilizando três modelos de coturno.

Métodos: Participou desse estudo de caso um voluntário militar (27 anos; 98 kg; 185 cm; 8 anos de serviço). Marcadores reflexivos foram fixados

nos membros inferiores e pelve, enquanto o participante caminhou em uma pista de marcha de 10 metros com uma mochila com 20% do peso corporal usando os seguintes modelos de calçado: coturno com solado PU com placa de carbono (PUCP); de PU sem placa (PUSP) e outro de SBR. Oito câmeras infravermelhas (Vicon, EUA) capturaram os sinais cinemáticos e uma plataforma de força (Bertec, EUA) coletou a força de reação do solo. Os sinais foram processados com software Nexus (Vicon, EUA).

Resultados: O torque no tornozelo durante a propulsão foi de 0,71 Nm/kg com o PUCP, enquanto com o PUSP foi de 0,57 Nm/kg e com o coturno de SBR foi de 0,48 Nm/kg.

Conclusão: A marcha com o coturno com placa de carbono aumentou a propulsão do tornozelo. Estes resultados apontam para uma melhora na propulsão com o coturno com fibra de carbono.

Palavras-chave: *Palavras-chave:* coturno; fibra de carbono; marcha, propulsão.

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Avaliação dos fatores de risco para tríade da mulher atleta na primeira turma de oficiais do Exército Brasileiro

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Introdução: O exercício físico realizado de maneira correta e associado à alimentação adequada pode trazer diversos benefícios. No caso específico das mulheres, promover o ganho de massa óssea e a prevenção da osteoporose pós-menopausa. Por outro lado, mulheres fisicamente ativas podem apresentar a tríade da mulher atleta (TMA), que é um espectro sintomático envolvendo o ciclo menstrual, saúde óssea e disponibilidade de energia.

Objetivo: Este trabalho teve como objetivo avaliar o efeito dos fatores de risco, isoladamente ou combinados, para a TMA, na primeira turma a ingressar nos estabelecimentos de Ensino Militar Bélico do Exército Brasileiro.

Método: Foi realizado um estudo longitudinal, observacional, com 24 militares, ao longo dos cinco anos de formação. Todas as avaliações foram realizadas nas dependências do Centro de Capacitação Física do Exército (CCFEx) – Rio de Janeiro – RJ.

Resultados: Ao final do estudo, 24% das participantes apresentaram risco para desenvolver comportamentos alimentares restritivos, 45,8% apresentaram transtornos menstruais e 37,5% apresentaram ao menos um episódio de fratura por estresse.

Conclusão: A preparação física militar e a alimentação disponibilizada minimizaram os efeitos deletérios da TMA nas militares estudadas. Porém, por se tratar de um estudo pioneiro, entendemos que há necessidade de mais trabalhos que relacionem os efeitos deletérios da TMA nas militares das forças armadas e auxiliares do Brasil.

Palavras-chave: Tríade da mulher atleta, fratura por estresse, RED-S.

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Bruxismo em militares: prevalência e exercícios de alongamento muscular como opção terapêutica

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Introdução: Militares são expostos a tensões físicas e psicológicas, favorecendo distúrbios estomatognáticos como o bruxismo, que não se limita à disfunção motora por também envolver aspectos sensoriais e comprometimento proprioceptivo. O bruxismo pode prejudicar o bem-estar e a qualidade de vida.

Objetivo: investigar sua prevalência em militares e o potencial terapêutico dos exercícios de alongamento dos músculos mastigatórios em seu tratamento. Prevalências de bruxismo em adultos da população geral variaram de 8% a 31,4%. Estudos com militares relataram prevalências mais altas, variando de 7,8% a 69%, provavelmente, devido às características culturais e demográficas das populações estudadas e às discrepâncias nas metodologias empregadas. Em pilotos e policiais militares, as prevalências foram muito superiores à média observada em militares e na população geral.

Resultados: Exercícios de alongamento dos músculos mastigatórios podem ser benéficos como parte de tratamento interdisciplinar. Esses exercícios aliviam a tensão muscular e a dor, contribuindo para restauração da propriocepção e, possivelmente, reduzindo a frequência de episódios dessa distúrbio.

Conclusão: militares aparentam demonstrar maior suscetibilidade ao bruxismo em comparação a outros grupos, pois a maioria dos estudos revelou taxas de prevalência que se aproximam ou excedem o limite superior do intervalo da população geral. Ademais, exercícios de alongamento dos músculos mastigatórios podem auxiliar no tratamento do bruxismo.

Palavras-chave: bruxismo; militares; prevalência; exercícios de alongamento muscular.

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Capacidade aeróbia em jovens atletas de handebol feminino

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Introdução: A capacidade aeróbia no handebol tem grande importância no jogo. É capacidade que o corpo tem de permanecer realizando esforço físico por um longo período de tempo. O handebol apresenta predominância do metabolismo aeróbio.

Objetivo: Comparar a capacidade aeróbia de jovens atletas de handebol do sexo feminino de acordo com suas posições.

Métodos: Estudo seccional com 19 jogadoras de handebol (7 armadoras, 6 pontas, 3 pivôs e 3 goleiras). Foi realizada uma análise descritiva da amostra, com valores reportados em média e desvio padrão. Para avaliação da capacidade aeróbia foi utilizado o teste de Yo-YoIR1. A análise estatística obtida através de ANOVA para amostras independentes e Pós Hoc de Bonferroni.

Resultados: idade: 16,6±0,8(anos), peso: 66,0±10,5(kg) e estatura: 165,0±7,0(cm). Foi verificado que armadoras e pontas apresentaram valores de VO₂pico maiores que goleiras e pivôs (p<0,05). Não houve diferença significativa entre armadoras e pontas. Não houve diferença significativa entre goleiras e pivôs. Os valores de VO₂pico obtidos foram: Armadoras (46,3±4,1 ml.O₂-1.kg-1), Pontas (46,9±4,5 ml.O₂-1.kg-1), Goleiras (44,4±3,1 ml.O₂-1.kg-1) e Pivôs (43,4±4,2 ml.O₂-1.kg-1).

Conclusão: Armadoras e pontas apresentaram maiores valores de VO₂pico que goleiras e pivôs. Esses resultados podem estar relacionados às características das posições durante o jogo, armadoras e pontas tendem a percorrer maiores distâncias e a realizarem mais sprints que goleiras e pivôs.

Palavras-chave: Atletas; exercício aeróbico e treinamento físico.

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Comparação da força e potência muscular entre militares recrutas com e sem histórico de lesões musculoesqueléticas

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Introdução: As lesões musculoesqueléticas (LME) são um dos principais problemas de saúde enfrentados por militares nas Forças Armadas pelo mundo. Dentre os diversos fatores de risco para o surgimento de uma LME, estão a história prévia de uma LME e déficits em alguns componentes do condicionamento físico, como a força e a potência muscular.

Objetivo: O objetivo do estudo foi comparar a força e potência muscular de membros inferiores entre militares com e sem histórico de LME.

Métodos: 145 militares (Idade = 19 anos, altura = 174 cm, massa = 66,6 kg) recrutas, servindo no CCFEx e IME, foram divididos em um grupo com histórico de dois anos de LME prévia (GC; n=70) e outro grupo sem histórico de LME (GS; n=75). Foi utilizado o teste isométrico mid-thigh pull (IMTP) para verificar a força muscular, sobre a plataforma do dinamômetro T.K.K. 5002 (Takei, Japão). A potência foi medida através do salto vertical contra movimento (CMJ), onde a plataforma de salto Elite Jump System (S2 Sports, São Paulo, Brasil) coletou os dados. Foi usado o Teste t de Student para amostras independentes no software JASP versão 0.16.3 (JASP Team 2022).

Resultados: Não houve diferença significativa na força (GC: 122,2 ± 20,3 vs GS: 124,3 kg ± 26,6, p = 0,601), nem na potência de membros inferiores (GC: 34,2 ± 5,5 cm vs GS: 33,8 ± 4,5 cm, p = 0,690).

Conclusão: A força muscular e potência de MMII parece não ser influenciada pela história

prévia de LME, em militares recrutas do IME e CCFEX, do ano de 2023.

Palavras-chave: *Palavras-chave:* força muscular; lesão musculoesquelética; potência muscular.

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Comparação da força muscular respiratória de indivíduos fisicamente ativos e inativos com lesão medular

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Introdução: A fraqueza ou paralisia dos músculos respiratórios ocasionadas pela lesão medular (LM) pode comprometer a função pulmonar e reduzir a tolerância ao esforço. Em paralelo, o sedentarismo e baixos níveis de atividade física podem agravar este quadro (Soumyashree & Kaur, 2020).

Objetivo: Comparar o perfil da força muscular respiratória (FMR) de indivíduos fisicamente ativos e inativos com LM.

Métodos: Estudo seccional com a participação de 7 homens com LM fisicamente ativos (FA; idade = 42 ± 8 anos) e 7 sedentários ou insuficientemente ativos (IA; idade = 47 ± 9,0 anos). O nível de atividade física foi investigado pelo questionário International Physical Activity Questionnaire (IPAQ) na versão curta. Para

avaliação da FMR foram realizadas medidas de pressão inspiratória máxima (PI_{máx}) e pressão expiratória máxima (PE_{máx}) através de manovacuometria.

Resultados: Na avaliação da PI_{máx}, o grupo FA apresentou média = $-147,1 \pm 30,4$ (unidade de medida) e o grupo IA = $-118,6 \pm 49,1$ cmH₂O ($p=0,20$). A PE_{máx} do grupo FA foi = $130 \pm 42,4$ cmH₂O e o grupo IA = $100,4 \pm 45,5$ cmH₂O ($p=0,756$).

Conclusão: Embora sem significância estatística – fato este que pode estar associado ao tamanho amostral, o grupo FA tendeu a apresentar maiores valores médios de PI_{máx} e PE_{máx}, possivelmente como resposta adaptativa crônica à prática de atividade/ exercícios físicos.

Palavras-chave: Esporte adaptado; Lesões da medula espinhal; Pressões respiratórias máximas.

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Comparação de protocolos para estimativa de percentual de gordura

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Introdução: Equações generalizadas são usadas para estimar a densidade corporal e o %G em pessoas de diferentes grupos etários, capacidade física e composição corporal. Neste estudo, comparamos duas equações de cálculo do %G usando três dobras cutâneas.

Objetivo: Comparar o percentual de gordura (%G) obtido por duas equações e determinar as dobras cutâneas (DC) mais correlacionadas com os protocolos.

Métodos: Participaram 457 militares do sexo masculino, peso $79,9 \pm 11,3$ kg; altura: $175,5 \pm 0,06$ cm; IMC: $25,9 \pm 3,2$ kg/m²; gordura corporal: G1 $10,8 \pm 4,6$ %; G2 $11,1 \pm 3,8$ %; G3 $16,9 \pm 4,9$ %; G4 $17,8 \pm 4,7$ %. Foram realizados os testes estatísticos: t test, ANOVA one way e correlação de Pearson, sendo utilizado o programa Sigma Plot 11. Dividimos em quatro grupos, sendo: G1 imc <25 1978; G2 imc <25 1985; G3 imc ≥ 25 1978 e G4 imc ≥25 1985.

Resultados: O coeficiente de Spearman indicou correlações moderadas e fortes entre as DC e os dois protocolos. O %G obtido pela equação de 1985 apresentou valor superior ($15,8 \pm 5,2$,

$p<0,05$, $n = 457$) contra a equação de 1978 ($14,6 \pm 5,4$, $p<0,005$, $n = 457$).

Conclusão: O protocolo de 1985 apresentou um maior %G para os mesmos indivíduos, porém ao analisar o %G por grupos de igual IMC viu-se que as duas equações fornecem medidas sem diferenças estatísticas significativas. Observou-se correlações fortes e moderadas entre dobras cutâneas e os dois protocolos.

Palavras-chave: Palavras chaves: composição corporal; índice de massa corporal; dobras cutâneas.

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Término da carreira desportiva – estudo de caso de sucesso.

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Introdução: É frequente verificar na literatura a referência a casos de ex-atletas que experienciaram muitas dificuldades na transição e na vida pós-carreira. Mas será que a retirada desportiva leva sempre a casos negativos?

Objetivo: Analisar um caso de sucesso de retirada desportiva, recorrendo para o efeito ao Modelo Desenvolvimentista da Carreira Desportiva (Wylleman e Lavallee, 2004)

Métodos: Estudo de caso, de modelo qualitativo, de uma ex-atleta brasileira de natação (40 anos; 28 de carreira competitiva, 20 deles integrando a seleção brasileira), participante em 3 Jogos Olímpicos, 12 campeonatos mundiais, medalhista em 4 Jogos Pan-americanos, 6 títulos em campeonatos Sul-americanos e 10 em campeonatos brasileiros; para além de recordista sul-americana em 4 provas. Foi realizada uma entrevista semiestruturada, adaptada do questionário “Retirement from Sports” (Alfermann, Stambulova & Zemaityte (2004), com um total de 50 itens subdivididos em 6 partes (dados biográficos gerais, dados biográficos desportivos, sucessão de eventos pré-retirada desportiva, período transitório e de

enfrentamento, relações psicossociais e consequências da carreira desportiva. A duração da entrevista foi de 90 minutos e inteiramente transcrita (10.671 palavras em 19 páginas). Foi utilizada a Análise de Conteúdo com o auxílio do programa Nvivo, versão 11.

Resultados: A análise dos dados evidenciou que a vida desportiva e extra-desportiva dessa ex-atleta foi pautada por muita disciplina, planejamento e organização, realizando um curso superior com 23 anos e iniciando uma atividade laboral paralela com 28 anos e beneficiando de irrestrito apoio de uma família estruturada. A atleta retirou-se no auge, sem lesões e voluntariamente, com a principal intenção de ter filho, optando por realizar um gradual destreinamento e participando de programas de ajuda para tal. Atualmente faz parte do Comitê Olímpico Brasileiro (COB) e contribui com sua experiência no desenvolvimento esporte nacional.

Conclusão: Este caso constitui-se como um exemplo de transição positiva, com a atleta a não se deixar iludir pela sua notoriedade e a construir paulatinamente a sua autonomia, o que lhe permitiu desfrutar dos momentos finais da sua carreira e manter uma boa relação e gratidão ao desporto.

Palavras-chave: término carreira desportiva; carreira dupla.

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Comparando os manuais: o treinamento de combate corpo a corpo no Exército Brasileiro e no corpo de fuzileiros navais dos Estados Unidos

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Introdução: O militar, por conta de seus atributos profissionais, pode vir a estar em situações nas quais tenha que travar um combate corpo a corpo. Nesse sentido, estar munido de um conhecimento teórico-prático pode fazer toda a diferença tanto para salvaguardar a vida do

militar, de companheiros, bem como ao cumprimento de missões.

Objetivo: Comparar os manuais de combate corpo a corpo do Corpo de Fuzileiros Navais Americanos e do Exército Brasileiro, buscando encontrar diferenças e similaridades entre as publicações e apontando complementos caso existam lacunas.

Métodos: Utilizou-se o método comparativo, possibilitando ao pesquisador explicar coisas conforme suas semelhanças e diferenças, convergências e disparidades.

Resultados: A comparação aponta que os manuais têm grandes similaridades, contudo estão ausentes do manual do Exército Brasileiro os temas: a) retenção e contra retenção de armamento; b) desarmamento de agressor portando arma de fogo; c) técnicas de aprisionamento com algemas; d) uso de baionetas em diversas condições; e) luta no solo em várias situações; f) sistematização do conhecimento por meio da hierarquização do aprendizado (faixas) e treinamento contínuo.

Conclusão: Os resultados apontam para uma lacuna específica quanto a técnicas ausentes e ainda e a falta de uma sistematização do conhecimento por meio da hierarquização do aprendizado do treinamento marcial de forma contínua.

Palavras-chave: Artes Marciais; Fuzileiros Navais; Militar.

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Composição corporal e força muscular de idosas praticantes de exercício físico

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Introdu  o: O envelhecimento   um processo progressivo, caracterizado por altera  es morfol gicas, funcionais, bioqu micas e psicol gicas. Dentre estas, observa-se o ac mulo de gordura corporal, a perda de massa muscular e da for a, fen meno conhecido como obesidade sarcop nica (OS). A obesidade pode estar associada   redu  o de massa muscular (sarcopenia) e da capacidade de produ  o de for a (dinapenia). N  obstante, a pr tica de exerc cios f sicos parece se associar negativamente   OS.

Objetivo: Avaliar a composi  o corporal e a for a muscular de idosas praticantes de exerc cio f sico.

M todos: Este estudo transversal avaliou 66 mulheres (69,3 ± 5,61 anos; 156 ± 0,06 cm; IMC 28,3 ± 5,36; %G 42,8 ± 7,06; MM 23,5 ± 3,43 kg), praticantes de treinamento resistido e hidrogin stica por no m nimo 6 meses, com avalia  es antropom tricas, da composi  o corporal (bioimped ncia OMRON HBF-514C®) e da for a muscular (dinam metro JAMAR®). As vari veis apresentaram distribui  o normal pelo teste Shapiro-Wilk. Foi realizada a an lise descritiva dos dados e o teste de correla  o de Pearson com n vel de signific ncia de p<0,05.

Resultados: observou-se correla  o positiva entre a MM e a for a (R=0,259; p=0,038), e correla  o inversa entre a for a e o IMC (R=-0,303; p=0,014) e o %G (R=-0,254; p=0,041).

Conclus o: No grupo avaliado, as atividades f sicas, desempenhadas h  pelo menos, 6 meses, contribuíram para prote  o da massa muscular e da for a dos efeitos delet rios do envelhecimento.

Palavras-chave: envelhecimento; exerc cio f sico; promo  o da sa de; obesidade; for a muscular.

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Considera  es da inclus o de aulas baseadas em *Functional Fitness Training* na educa  o f sica escolar: uma revis o integrativa

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Introdu  o: A disciplina de educa  o f sica (EF) na escola tem como objetivo estimular os alunos a se movimentarem e desenvolverem suas habilidades motoras, promovendo assim o desenvolvimento psicomotor e a compreens o do pr prio corpo. A pr tica de exerc cio f sico desempenha um papel importante em um estilo de vida saud vel (EVS). Um programa de treinamento (trein.) de EF   projetado para alcan ar tanto objetivos gerais de sa de quanto condicionamento f sico individual.

Objetivo: analisar os efeitos do *Functional Fitness Training*, especialmente em rela  o aos aspectos do condicionamento f sico, psicol gico e motivacional, como uma possibilidade nas aulas de EF.

M todos: revis o integrativa realizada por meio de refer ncias obtidas nas bases de dados Portal de peri dicos CAPES e PubMed a partir da busca pelos descritores “CrossFit”, “High-intensity functional training”, “Motivation”, e “School Physical Education” utilizando operadores booleanos AND e OR.

Resultados: ampliar a divulgação e explicação sobre a metodologia do trein. para superar preconceitos infundados, além de melhorar os aspectos relacionados à EVS e comportamento psicossocial dos estudantes.

Conclusão: O envolvimento efetivo do professor de EF é fundamental para incentivar a participação dos alunos na prática regular da atividade física, independentemente da modalidade escolhida, sendo uma possibilidade de combater a obesidade, o sedentarismo e melhoras em diversos aspectos relacionados à saúde.

Palavras-chave: Educação Física Escolar; Estudo do funcionamento do corpo humano; Aspectos psicológicos.

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Correlação entre a experiência prévia dos atletas com o resultado na travessia Flamengo-Urca 2022

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Introdução: Este estudo investiga a preparação prévia ou não de nadadores para a Travessia Flamengo Urca, uma desafiadora prova de natação em águas abertas (AA) presente nas atividades do Curso de Instrutores da Escola de Educação Física do Exército.

Objetivo: Examinar os resultados obtidos entre atletas experientes e atletas não experientes na Travessia Flamengo Urca 2022.

Métodos: A amostra da pesquisa abrangeu um total de 99 participantes referente a edição da prova realizada em 2022 e separados em 2 grupos distintos, aqueles que já tinham experiência em outros eventos de nado em águas abertas com distância igual ou superior a 2000m e aqueles que não tinham. A metodologia de

análise abrangeu medidas de tendência central para descrever os dados e testes estatísticos para avaliar a normalidade dos dados e a homocedasticidade.

Resultados: Por fim os dados foram processados através do teste “Mann-Whitney”, que indicou diferenças significativas ($U=1672,00$, $p<0,01$, $rb=0,429$) entre os atletas que já nadaram provas de águas abertas ($Md=51,475$) e aqueles que não ($Md=62,920$).

Conclusão: Os nadadores que possuíam experiência prévia apresentaram melhores resultados na Travessia Flamengo Urca 2022 com tamanho efeito significativo.

Palavras-chave: Natação em Águas Abertas; Travessia Flamengo Urca; Curso de Instrutores; Escola de Educação Física do Exército; Atletas.

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Correlação entre frequência e sessões de treinamento funcional sobre as respostas fisiológicas de militares do batalhão logístico de fuzileiros navais

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Introdução: O Batalhão Logístico de Fuzileiros Navais é uma Organização Militar da Marinha do Brasil de altíssima operacionalidade. Faz-se necessário que seus militares mantenham uma rotina de treinamento específica.

Objetivos: analisar a frequência média de treinamento e respostas fisiológicas adaptativas ao treinamento.

Métodos: 20 militares foram voluntários, mas apenas 11 permaneceram no estudo para reavaliação, que foi composta por: avaliação pré-participação (APP), período de intervenção e reavaliação. Foram medidas a estatura, massa corporal total (MCT), relação cintura-quadril (RCQ), glicemia em jejum e pressão arterial sistólica e diastólica em repouso. Para o período de intervenção, fizeram 8 sessões de treinamento, durante 4 semanas.

Resultados: Média de frequência de treinamento: 3,27 sessões/militar. Os valores obtidos, pré e pós-intervenção, foram, respectivamente: massa corporal total (kg): 88,9 e 88,3; glicemia de jejum (mg/dL): 105,2 e 102,4; pressão arterial sistólica (mm/Hg) = 135,6 e 136;

Pressão arterial diastólica= 80,9 e 79,9; RCQ: 0,89 e 0,88. Foram notadas melhoras nas médias gerais de RCQ, MCT, glicemia de jejum e pressão arterial diastólica dos militares.

Conclusões: Novas análises antropométricas e fisiológicas serão necessárias a fim de verificarmos as adaptações crônicas a um período de treinamento, alinhavados com um método de intervenção que permita aos militares lograrem uma maior frequência de treinamento.

Palavras-chave: Treinamento funcional; Respostas fisiológicas; Frequência de treinamento.

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Dessemelharidades do estado de humor e percepção de desempenho no tiro esportivo em atletas do Exército Brasileiro

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Introdução: O tiro esportivo é um esporte que sofre muita influência dos estados emocionais do atleta. A avaliação dos estados de humor permite acompanhar não apenas o risco de overtraining, mas a condição emocional do momento.

Objetivo: O objetivo do presente estudo foi avaliar as dessemelhanças dos estados de humor e percepção do desempenho dos atletas de tiro esportivo do Exército Brasileiro.

Métodos: O presente estudo trata-se de uma pesquisa transversal e exploratória, aprovada pelo CEP-CCEFx (parecer 6.043.182). Participaram da pesquisa 22 atletas, que disputaram as provas de seleção para o Campeonato Mundial de Tiro de 2023. Cada atleta respondeu a Versão brasileira da BrunelMoodScale e um questionário demográfico. Foi realizada análise de cluster hierárquico, com distância euclidiana ao quadrado e método de agrupamento de Ward no software SPSS.

Resultados: Em relação à percepção de desempenho e as variáveis do estado de humor, apenas os índices vigor e raiva se mostraram ser menos dessemelhantes. Desta forma, são mais

próximos da percepção do desempenho e, por isso, possuem mais influência do que os demais.

Conclusão: O vigor e a raiva são variáveis do estado de humor mais próximas à percepção do desempenho, e por isso, devem ser acompanhadas com maior rigor pela equipe técnica.

Palavras-chave: Atletas; estado de humor; eficiência; percepção de desempenho; tiro esportivo.

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Disciplina determinante do pentatlo militar para atletas de elite do sexo feminino

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Introdução: O pentatlo militar é um esporte composto por cinco disciplinas que somadas formam a pontuação geral dos atletas. Conhecer a importância de cada disciplina pode ser um fator determinante para focar durante o treinamento e obter melhores resultados na competição.

Objetivo: o objetivo do presente estudo foi revelar o grau de importância de cada disciplina no resultado final das atletas de elite do sexo feminino.

Métodos: O presente estudo trata-se de uma pesquisa transversal, exploratória e observacional, e, uma vez que os dados são públicos, não necessita aprovação do CEP/CONEP. Foram selecionadas para compor a amostra apenas atletas que obtiveram mais de 5000 pontos de pentatlo na pontuação geral nos campeonatos mundiais entre 2015 e 2019. Os dados foram submetidos a uma regressão linear múltipla no software SPSS.

Resultados: A média da Granada foi muito aquém das demais disciplinas. Os coeficientes padronizados beta revelados pela regressão formaram a seguinte sequência: Granada (0,483), Pista de Natação Utilitária (0,441), Pista de Pentatlo Militar (0,408), Cross Country (0,347) e Tiro (0,316).

Conclusão: A granada teve grau de importância maior em relação as outras disciplinas, podendo estar associada ao baixo desempenho geral nessa disciplina, que pode ser explicado por uma falta de controle de movimento e força dos membros superiores na maioria das atletas do sexo feminino.

Palavras-chave: Pentatlo militar; feminino; disciplina determinante.

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Efeito do treinamento muscular inspiratório no desempenho de atletas de alto rendimento

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Introdução: o papel do treinamento muscular inspiratório diafragmático na modulação do metaborreflexo é um tema de crescente interesse, especialmente entre atletas de alto desempenho. Esses componentes exercem um papel crucial na regulação da resposta fisiológica durante o exercício intenso.

Discussão: o treinamento muscular inspiratório atua diretamente no aumento da tolerância ao exercício devido produzir maior resistência muscular respiratória à fadiga. Neste processo, receptores diafragmáticos aferentes tipo III (mecanoceptivo) e IV (quimioceptivo) se tornam menos sensíveis ou menos responsivos aos estímulos (contração diafragmática e metabólitos) gerados durante o exercício. Isto implica na redução da resposta simpática, e assim na diminuição da sobrecarga cardiovascular (menor pressão arterial, frequência cardíaca e resistência vascular periférica) e maior oferta de oxigênio aos músculos periféricos. A recomendação de treino é: usar uma resistência de 50-60% da Pimáx, realizar 30 repetições com ênfase na inspiração, podendo ou não descansar a cada 10 repetições por até 30 segundos, 2 vezes

ao dia (importante respeitar um repouso mínimo de 6 horas entre as sessões).

Conclusão: o treinamento muscular inspiratório demonstra ser uma atividade complementar do atleta, pois além de melhorar a força e resistência muscular diafragmática à fadiga, através da modulação do metaborreflexo, também favorece uma melhor resposta cardiovascular durante a prática do exercício.

Palavras-chave: treinamento muscular inspiratório; metaborreflexo; desempenho desportivo.

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Efeitos da intensidade do exercício aeróbio nas respostas afetivas

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Introdução: As respostas de afetividade variam de acordo com a intensidade do exercício. De acordo com a teoria de Ekkekaris, P (2016), as pessoas tendem a fazer atividades que geram prazer e evitam o desprazer. Face a isso, vê-se a importância de investigar os efeitos da intensidade do exercício aeróbio na valência afetiva em intensidade moderada e vigorosa.

Objetivo: Esse estudo objetivou comparar os efeitos da intensidade do exercício aeróbico na valência afetiva em intensidade moderada e vigorosa.

Método: Para isso, foi realizada uma revisão de literatura, utilizando a base de dados: Pubmed Foram selecionados quatro artigos científicos.

Resultados: Em três dos quatro artigos a afetividade foi avaliada de forma positiva em exercícios de intensidade leve e moderada e de forma negativa em exercícios de alta intensidade. Em mulheres inativas com sobrepeso e peso normal os resultados foram os mesmos, ou seja, ambas relataram um afeto positivo em atividades leves e moderadas e um afeto negativo com atividades vigorosas e de alta intensidade. Em relação ao prazer, apenas um artigo relatou esse objetivo em sua metodologia e chegaram a conclusão que HIIE é menos agradável, porém mais divertido do que o MICE, mas semelhante ao VICE durante e pós-exercício, o que deixa claro uma lacuna entre o prazer e a afetividade.

Conclusão: Os resultados convergem para que que o exercício aeróbio de intensidade moderada gere afetos mais positivos comparado com o de intensidade vigorosa.

Palavras-chave: *Palavras-chave:* Exercício aeróbio. Intensidade. Respostas afetivas.

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Efeitos da suplementação de aminoácidos de cadeia ramificada na resposta imunológica: uma revisão sistemática

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Introdução: Os aminoácidos de cadeia ramificada (BCAA) fornecem nitrogênio e carbono para glutamina que é de vital importância para a integridade do sistema imunológico, mas seus efeitos ainda são mal compreendidos.

Objetivo: o efeito da suplementação de BCAA no sistema imunológico.

Métodos: Esta revisão seguiu as diretrizes do PRISMA e registrada no PROSPERO #CRD42023454773. Utilizou-se as bases de dados Medline e Google Acadêmico. Os critérios de elegibilidade foram: homens e mulheres saudáveis, suplementação com BCAA ou placebo, estudos controlados randomizados com desenhos paralelo ou cruzado, contagem total de leucócitos, linfócitos e monócitos. Valores representados originalmente em gráficos foram extraídos pelo software PlotDigitizer 3.0. O risco de viés foi avaliado pela ferramenta risk of bias 2.0 Cochrane.

Resultados: Foram identificados 3472 estudos, mas quatro atenderam aos critérios de elegibilidade, apresentando também boa qualidade metodológica e baixo risco de viés. Dois estudos mostraram que a suplementação de BCAA foi capaz de prevenir a redução dos níveis de glutamina e linfócitos observada no grupo placebo, enquanto três pesquisas demonstraram significativo aumento nos níveis de linfócitos, neutrófilos e leucócitos no grupo BCAA.

Conclusão: A suplementação de BCAA parece ser útil para preservar a função imunológica após a prática de exercícios, porém deve ser considerada com cautela, dada a carência de estudos sobre o assunto.

Palavras-chave: suplementos dietéticos, BCAA, imunidade.

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Efeitos do core training e suas variáveis para a potência muscular de jogadores de futebol: uma revisão integrativa

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Introdu o: Melhorar o desempenho muscular   essencial para atletas de futebol, pois a for a muscular desempenha papel fundamental na capacidade de realizar movimentos explosivos e eficientes durante as partidas. Neste contexto, o treinamento do core (m sculos centrais do tronco) tornou-se uma estrat gia promissora para melhorar a pot ncia muscular de jogadores de futebol.

Objetivo: verificar os efeitos de programas de treinamento que utilizam t cnicos de Core Training no desempenho muscular de jogadores de futebol.

M todo: revis o integrativa realizada por meio de refer ncias obtidas nas bases de dados: Scopus, Peri dicos CAPES e PubMed, com os descritores “soccer players”, “football players” “soccer athletes”, “trunk exercises”, “core training”, “core exercises”, “core stability” “core strength”, “instability”, “surfaces”, “muscle power”, “athletic performance”, “muscle activity”, “physical activity”, “strength measurements”, “potential muscular”, “muscular strength”, com os operadores l gicos AND e OR.

Resultados: o treinamento adequado e regular do core, pode melhorar a for a, estabilidade e controle dos m sculos do tronco, resultando em melhor desempenho de chutes, corridas e saltos.

Conclus o: Com base na revis o da literatura e na an lise dos estudos dispon veis, pode-se

concluir que o treinamento de core training traz benef cios significativos para a pot ncia muscular dos jogadores de futebol.

Palavras-chave: *Palavras-chave:* explos o; for a muscular; desempenho atl tico; estabilidade.

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Effects of high-intensity interval training versus moderate-intensity continuous training in adults aged 60 years and over: a systematic review

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Introduction: High-Intensity Interval Training (HIIT) is a type of aerobic training with effects similar or superior to Moderate-Intensity Continuous Training (MICT) in older people. However, there is no consensus on the prescription of training variables (frequency, intensity, type, and duration of exercise - FIIT) for this population.

The aim of this review was to analyze the impact of the HIIT versus MICT on cardiorespiratory fitness, cognitive function and quality of life in older adults.

Discussion: It was not possible to identify a consensus on the optimal combination of FITT variables that produces the best responses of the HIIT in health indicators in the elderly. Of the 29 studies included in this review, 13 applied 4 stimuli (above 90% HRpeak) of 4 minutes, alternating with 3 minutes of rest. All 13 studies

reported similar or superior effects of HIIT compared to MICT, especially in terms of cardiovascular aspects. It is important to note that protocols involving stimuli of 10 to 30 s also showed effective results for HIIT compared to MICT in the outcomes studied.

Conclusion: HIIT showed similar and superior effects compared to MICT on the investigated outcomes. Despite some converging points in the prescription of training frequency and duration of interventions, other variables showed high variation. Furthermore, the heterogeneity and manipulation of FITT variables prevented consistent inferences about the effects of HIIT on the investigated outcomes.

Palavras-chave: Aging; Endurance training; High-intensity interval training; Prescription.

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Elaboração de preparação com alimentos fontes de nutrientes e compostos bioativos antioxidantes para praticantes de atividade física

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Introdução: O exercício físico aumenta o consumo de oxigênio, levando à maior produção

de radicais livres. Entretanto, o exercício regular também resulta no aumento de funções do sistema antioxidante endógeno. Nesse contexto, evidências apontam que suplementos antioxidantes são importantes para atletas com carências nutricionais, mas não melhoram o desempenho de indivíduos nutricionalmente saudáveis e inibem adaptações fisiológicas.

Objetivo: Elaborar uma preparação adequada aos atletas, que forneça macro e micronutrientes, além de antioxidantes.

Métodos: Foram consideradas recomendações nutricionais da Academy of Nutrition and Dietetics e American College of Sports Medicine, and Dietitians of Canada (2016) para atletas de diferentes modalidades e níveis de atividade. Foram utilizadas bases da gastronomia e realizados testes, objetivando qualidade sensorial da preparação. A composição nutricional foi estimada pela Tabela Brasileira de Composição de Alimentos (TBCA). A receita consiste em biscoitos de cacau e café com ingredientes como leite de vaca, café, manteiga, açúcar refinado, farelo de aveia, farinha de trigo, cacau em pó, amido de milho, gema de ovo e castanha do Brasil. A preparação apresenta antioxidantes como, selênio e retinol, além de compostos bioativos.

Resultados: Testes sensoriais procederam com aceitação quanto à aparência, sabor e consistência. Alimentos antioxidantes, ajudam atletas no alcance das suas necessidades nutricionais, além de melhorar o desempenho e a saúde.

Palavras-chave: Atletas; Antioxidantes; Nutrição; Dietética.

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Fortalecimento das articulações do joelho por meio de treinamento de força em pessoas idosas com cisto de Baker: estudo de casos

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Introdução: Treinamentos de força podem ser utilizados para diversos indivíduos, sejam eles seres saudáveis, sedentários, constatados com algum quadro clínico de doença crônica ou não, idosos e, em muitos casos estes exercícios são indicados para reabilitação de algum grupamento muscular ou de articulações. Existem alguns testes específicos, como por exemplo, o teste de 1RM, onde é possível medir a condição física de força máxima atual, dentro da limitação de cada pessoa e, a partir deste, é possível elaborar um programa de treino individualizado para o praticante testado. Estudos recentes mostram que o treinamento básico ajuda na melhoria da qualidade de vida e controle de doenças.

Objetivo: Este trabalho visa estabelecer uma relação entre o treinamento de força e uma pessoa idosa com Cisto de Baker DEMANGE (2011), a fim de se obter possíveis resultados positivos.

Métodos: Abordam-se aqui, então, conceitos importantes sobre treinamento de força, prescrição e aplicação de treino a partir de teste específico (teste de 1RM), Cisto de Baker, métodos de condução da pessoa estudada em questão durante o tempo programado.

Resultados: Houve uma comparação sobre uma possível evolução que possa vir que se pode através do teste de 1RM comprar os ganhos de força e por um feedback benéficos para a mesma.

Conclusão: Houve ganhos de força.

Palavras-chave: Treinamento de força; cisto de Baker; teste de 1 RM.

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Imagem e insatisfação corporal em atletas masculinos de fisiculturismo: uma revisão narrativa

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Introdução: A imagem corporal pode ser compreendida pela imagem do nosso corpo que formamos em nossa mente, podendo ser influenciada por fatores que circundam os indivíduos e alteram suas perspectivas de belo pelos padrões que são impostos pela indústria e veículos midiáticos, construindo assim uma grande insatisfação corporal daqueles que não se adequam aos padrões estéticos construídos. O fisiculturismo é uma modalidade a qual se sustenta no volume, na definição e na simetria muscular.

Objetivo: Descrever estudos científicos acerca da imagem corporal e fisiculturismo com foco na insatisfação corporal de atletas masculinos de fisiculturismo.

Métodos: Trata-se de uma revisão narrativa da literatura, a busca foi realizada no dia 19 de maio de 2023 no acervo “Scopus” com os descritores “Body image”, “Body *satisfaction*”, “Bodybuilding” e “m*n”, resultando em sessenta e um trabalhos dos quais quatro foram selecionados dentro dos critérios de elegibilidade para a construção da discussão.

Resultados: A insatisfação corporal possui diversas dimensões podendo ser induzida por fatores sociais, comportamentais e alimentares; afetando os atletas e os seus comportamentos na busca por uma melhor estética.

Conclusão: Há uma relação da insatisfação corporal com transtornos alimentares e distúrbios de imagem. Ademais, a busca por massa muscular e comportamentos extremos visando estética são bons parâmetros para compreender a insatisfação corporal.

Palavras-chave: Body Image; Body *satisfaction* ; Bodybuilding ; m*n.

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Incidência e características de lesões musculoesqueléticas em militares recrutas

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Introdução: As lesões musculoesqueléticas (LME) representam uma ameaça significativa para a saúde e aptidão de militares, prejudicando a capacidade de combate das Forças Armada pelo mundo.

Objetivo: Descrever a incidência, gravidade, mecanismo, atividade e região do corpo de lesões em militares recrutas do EB, durante os 6 meses iniciais do serviço militar obrigatório.

Métodos: Coorte prospectiva onde foram acompanhadas as LME autorrelatadas, sofridas por 33 militares nos 6 meses iniciais. A incidência foi calculada como o percentual de militares com LME. A gravidade foi definida pelo número de dias que os militares não puderam realizar suas atividades habituais sem restrições. O mecanismo foi identificado como sendo agudo ou por sobrecarga. A atividade em que ocorreu a lesão foi dividida em treinamento físico militar, instrução militar ou fora do ambiente militar.

Resultados: Durante o período de acompanhamento foram relatadas 33 novas lesões. A maioria delas, ocorreram durante o TFM (n= 22, 66,7%), de gravidade leve com recuperação entre 1 e 7 dias (n=19, 57,6%). A incidência de LME foi de 24,2%. Mais da metade dessas lesões foram causadas por sobrecarga de atividade (n= 18, 54,5%). Os membros inferiores foram as regiões mais acometidas (n= 27, 81%), sendo o joelho com a maior proporção delas.

Conclusão: Este estudo fornece informações essenciais sobre a etiologia e gravidade de LME em recrutas do EB, podendo estabelecer uma base para futuros estudos de prevenção de lesões.

Palavras-chave: exercício físico; lesões musculoesqueléticas; incidência; militares.

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Incidência e características de lesões musculoesqueléticas em militares recrutas

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Resultados: Durante o período de acompanhamento houve 33 indivíduos lesionados. A maioria ocorreu durante o treinamento físico militar (n= 22, 66,7%), de gravidade leve com recuperação entre 1 e 7 dias (n=19, 57,6%). A incidência de LME foi de 24,2%. Mais da metade foram causadas por sobrecarga de atividade (n= 18, 54,5%). O membro inferior foi a região mais lesionada (n= 27, 81%), sendo o joelho a articulação mais acometida.

Conclusão: Este estudo fornece informações essenciais sobre a etiologia e gravidade de LME em recrutas do EB, podendo estabelecer uma base para futuros estudos de prevenção de lesões.

Palavras-chave: exercício físico; lesões musculoesqueléticas; incidência; militares.

Referências:

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Influence of hiirt with fixed and self-selected recovery intervals on physiological and enjoyment responses

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Introduction: Recovery-interval strategies may influence physiological and psychological responses to high intensity interval resistance training(HIIRT).

Objective: Compare intensity and psychological outcomes during all-out effort HIIRT performed with fixed(FRI) and self-selected(SSRI) recovery intervals.

Methods: Sixteen trained males (27.2±4.1years; 84.5±8.9kg; 55.8±7.1 mL.kg⁻¹.min⁻¹) performed two HIIRT sessions with four rounds of four exercises, in a randomized and counterbalanced order. Exercises were performed for 20s each round, at an all-out intensity and interspersed with FRI(10s) or SSRI(15.3±7.9s). Relative heart rate(%HRmax), oxygen uptake(%VO₂Peak), training volume and enjoyment: Physical Activity Enjoyment Scale(PACES) were assessed.

Results: FRI and SSRI elicited similar relative average intensity($p>.05$) (%HRmax:88.1±3.5%vs.87.6±3.0%;%VO₂Peak: 55.3±7.4%vs.54.1±8.1%). The number of repetitions similarly decreased in SSRI and FRI from rounds 1 to 4 (~15%; $p < .006$), with no difference of total volume across conditions (FRI: 358.6 ± 32 reps vs. SSRI: 357.5±28.2 reps; $p =.89$). PACES was lower with FRI than SSRI(102.8±15.8vs.109.2±13.2; $p =.04$).

Conclusion: Relative intensity and total repetitions were not influenced by recovery intervals, while overall training session enjoyment was favored in SSRI vs. FRI. For this reason, implementing SSRI may be a useful strategy to increase enjoyment while maintaining intensity and volume in all-out effort HIIRT sessions.

Palavras-chave: circuit-based exercise; cardiorespiratory fitness; energy metabolismo; exercise recovery; high-intensity interval training.

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Influência da carga de treinamento nos marcadores bioquímicos e temperatura da pele no treinamento em circuito: uma revisão narrativa

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Introdução: Visando o desenvolvimento da resistência muscular de seus militares, o Exército Brasileiro (EB) criou uma nova versão da Pista de Treinamento em Circuito (PTC). Considerando poucos estudos sobre efeitos agudos na carga de treinamento (CT) da PTC e sua relação com marcadores bioquímicos de dano muscular indireto, combinados com medida de temperatura da pele (Tsk) por imagens de Termografia Infravermelha (TIV) das regiões musculares recrutadas, este trabalho teve como objetivo a revisão da literatura sobre o tema.

Discussão: Danos musculares induzidos por sobrecarga do exercício liberam proteínas e enzimas da célula para o sangue, como Creatinaquinase (CK), Lactato Desidrogenase (LDH), Lactato (Lac), Mioglobina (Mb), Aspartato Aminotransferase (AST) e Alanina Aminotransferase (ALT). A TIV identifica áreas do corpo pela resposta térmica na Tsk, devido à redistribuição do aporte sanguíneo cutâneo, indicando áreas de fadiga e calor que estão relacionadas a microlesões na fibra muscular. Esses marcadores analisados em conjunto se complementam, elucidando a contribuição metabólica adaptativa ao CT.

Conclusão: Os resultados esperados nesta coleta de dados são que marcadores bioquímicos de dano muscular estejam aumentados pós

exercício, e as imagens TIV demonstrem áreas de maior ativação da CT nos segmentos musculares empregados. Esses dados serão utilizados para identificação e planejamento da CT visando melhor desempenho e prevenção de lesões durante treinamento na PTC.

Palavras-chave: Carga de treinamento; Treinamento em circuito; Marcadores bioquímicos; Termografia infravermelha.

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Levantamento do risco cardiovascular associado à dieta e alimentação intuitiva em militares da EsEFEx

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Introdução: Doenças cardiovasculares (DCV) representam importante causa de mortes no Brasil, tornando relevante a adoção de padrões nutricionais saudáveis, bem como uma abordagem também no campo do comportamento alimentar.

Objetivo: Identificar o risco de DCV associado à dieta e levantar os padrões de alimentação intuitiva.

Métodos: Estudo transversal descritivo com todos os alunos de 2023 dos Cursos de Instrutor e Monitor da EsEFEx. 55 militares (27 [24-36] anos e 77 [55-97] kg) responderam aos questionários. Aplicaram-se o questionário de frequência de consumo alimentar simplificado e o de alimentação intuitiva. O primeiro classifica o indivíduo em baixo, médio ou alto risco cardiovascular e o segundo indica o grau de alimentação intuitiva do indivíduo e é composto por quatro domínios: a) Comer por razões físicas em vez de emocionais (EPR), b) Autorização incondicional para comer (UPE), c) Confiança nos

sinais de fome e saciedade (RHSC) e d) Congruência de escolha do alimento do corpo (B-FCC).

Resultados: 73% dos militares indicaram possuir baixo risco de DCV e 22% alto risco, e o alimento que mais influenciou este risco foi o consumo de carne vermelha. A escala EPR obteve mediana 3,6 (1,7-5,0); a UPE, 3,3 (1,8-4,8); a RHSC, 3,6 (1-4,8) e a B-FCC, 4,0 (3,0-5,0).

Conclusão: A maior parte dos alunos estudados relataram ingerir dietas de baixo risco para DCV. Quanto à alimentação intuitiva, destacou-se a subescala B-FCC, que indica a preocupação em buscar alimentos saudáveis.

Palavras-chave: Doenças cardiovasculares; alimentação intuitiva; consumo alimentar.

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Nível de dependência do exercício físico: modificações durante o curso de instrutor da EsEFEx

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Introdução: A dependência do exercício se caracteriza por uma pressão interna do indivíduo em que ele se sente obrigado a realizar atividade física, seja para melhorar índices pessoais seja para alcançar um corpo mais bonito. Um grande perigo dessa dependência é o fato do indivíduo se exercitar mesmo estando lesionado, além de sentir sintomas de abstinência quando impedido de praticar exercício físico.

Desta forma o objetivo geral do nosso estudo foi verificar a variação da dependência do exercício ao longo do Curso de Instrutor de Educação Física da EsEFEx.

Métodos: Participaram do estudo 45 alunos do Curso de Instrutor de Educação Física da turma de 2017 da EsEFEx, todos homens. Um questionário demográfico e a Exercise Dependence Scale foram respondidos pelos participantes no início do curso e ao final do período de classificação. Os resultados foram

analisados com teste de aderência à normalidade (Shapiro-Wilk), e o teste de T-Student e Wilcoxon foram empregados de acordo com a distribuição dos dados. Foi utilizado o teste de correlação de Spearman para analisar as variáveis correlacionadas.

Resultados: A média do escore geral de dependência do exercício decaiu durante o curso de 60,91 para 55,53, devido a queda de alguns fatores que compõem a Exercise Dependence Scale.

Conclusão: as modificações no nível de dependência do exercício durante o curso, considerando a turma como um todo, foi positiva, com a redução da necessidade irracional de fazer exercícios.

Palavras-chave: Educação física, militares, dependência do exercício físico.

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O ensino da natação na revista de educação física do exército (1932-1934)

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Introdução: A partir dos anos de 1930, com a obrigatoriedade da Educação Física nos currículos escolares, surge a necessidade de materiais que orientem a prática pedagógica do professor na escola, clubes, e instituições militares. Em 1932, é criada a primeira revista de Educação Física (Revista de Educação Física do Exército) (Ferreira Neto et al. 2022), na qual é possível verificar imagens que orientam o ensino da natação.

Objetivo: O objetivo da pesquisa é analisar de que forma o ensino das técnicas da natação está presente na Revista de Educação Física do Exército, no período de 1932 até 1934.

Métodos: A presente pesquisa adota a micro-história como opção metodológica para análise das fontes, tendo em vista que esta busca entender as especificidades de um determinado objeto (Barros, 2005), lançando um olhar atento

sobre o ensino e práticas da natação na Revista de Educação Física do Exército (1932-1934).

Resultados: Através da análise dos periódicos publicados entre 1932 - 1934, que totalizam 21 edições, observa-se que as orientações pedagógicas para o ensino e prática da natação, se fazem presentes em 7 números da Revista.

Conclusão: Por meio do estudo das matérias publicadas (1932-1934), referentes ao ensino e prática da natação, conclui-se que os periódicos utilizam imagens para demonstrar a execução correta dos movimentos fora e dentro do meio aquático. Também é possível verificar a utilização de conceitos de fisiologia e biomecânica, para uma boa execução do nado.

Palavras-chave: História da Educação Física; Natação; Ensino.

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Perfil nutricional e parâmetros da composição corporal dos lutadores de jiu-jitsu do bolsa atleta da cidade de Macaé - RJ

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Introdução: Na última década, houve um aumento significativo na popularidade em esportes de combate, principalmente o jiu-jitsu brasileiro. Diversas habilidades físicas são exigidas de um atleta durante uma luta, portanto, precisam estar em excelente condição metabólica para suportar as demandas das competições.

Objetivo: Identificar o consumo alimentar e a composição corporal de atletas de jiu-jitsu do município de Macaé.

Metodologia: Participaram do estudo 17 atletas do sexo masculino, com idades entre 18 e 59 anos. Utilizou-se recordatório de 24 horas para a análise dietética, empregando o Programa WebDiet. Os resultados foram catalogados em um banco de dados e analisados estatisticamente,

com frequência absoluta e relativa para interpretação.

Resultados: A idade média dos atletas foi de 32 ± 10 anos, o peso $84,4 \pm 13,16$ kg, a estatura foi de $1,77 \pm 0,06$ m, o percentual de gordura foi de $16,2 \pm 5,29\%$ e massa magra de $69,4 \pm 10,28$ kg. A média energética obtida foi de $2393 \pm 623,1$ kcal/dia, carboidratos $3,14 \pm 1,2$ g/kg/dia; proteínas $1,73 \pm 38,4$ g/kg/dia e lipídios $0,95 \pm 0,5$ g/kg/dia. Ademais, as refeições pautavam-se em alimentos in natura ou minimamente processados.

Conclusão: O consumo energético total mostrou-se abaixo do esperado para atletas de combate, assim como o consumo de carboidratos, o que pode afetar negativamente o desempenho e a recuperação física. Enquanto a ingestão proteica, lipídica e de alimentos in natura ou minimamente processados estavam adequados.

Palavras-chave: Nutrição; Energia; Macronutrientes; Composição corporal; Atletas de combate.

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Prevalência de dor musculoesquelética em atletas com e sem deficiência

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Introdução: A dor é uma experiência sensorial e emocional desagradável ligada a danos reais ou potenciais. Em atletas, a dor é um evento comum, frequentemente resultante de lesões e de rotina de treinamento.

Objetivo: Investigar a prevalência e a distribuição dor musculoesquelética em atletas com e sem deficiência.

Métodos: Estudo transversal com 29 atletas com e 35 sem deficiência, de esportes individuais e coletivos, recrutados no Centro de Educação Física Almirante Adalberto Nunes. A presença e distribuição de dor musculoesquelética foi investigada com o Diagrama de Corlett (Corlett & Manenica, 1980).

Resultados: 94% dos participantes relataram queixa de dor em alguma área nos últimos 7 dias anteriores ao estudo. As regiões com maior queixa foram: lombar (43,7%), ombro esquerdo (37,5%), cervical (31,3%), e ombro direito (29,7%). Os atletas sem deficiência apresentaram queixas em mais áreas ($7,7 \pm 6,4$ locais) que os atletas com deficiência ($4,1 \pm 5,1$ locais) ($p=0,02$). Entre os grupos com e sem deficiência houve diferenças em termos de frequência de dor nas áreas: coluna cervical ($p=0,028$), coluna torácica ($p=0,011$), perna esquerda ($p=0,035$), perna direita ($p=0,002$), ombro direito ($p=0,047$), tornozelo direito ($p=0,047$), sendo maiores entre os atletas sem deficiência.

Conclusão: A prevalência de dor musculoesquelética foi alta nos participantes, majoritariamente na coluna cervical, lombar e ombro, e os atletas sem deficiência apresentaram mais locais de queixas de dor que os sem deficiência.

Palavras-chave: Dor Musculoesquelética; Esportes para Pessoas com Deficiência; Reabilitação.

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Prevalência de sobrepeso e obesidade em alunos fuzileiros navais

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Introdução: O Brasil enfrenta um aumento nas taxas de sobrepeso e obesidade, afetando também os militares. Este estudo avalia medidas antropométricas e a avaliação nutricional de militares em um Centro de Instrução, no qual um censo nutricional e antropométrico foi realizado há uma década. Em outros países, incluindo o México e estados brasileiros como São Paulo, militares também enfrentam aumento nas taxas de sobrepeso e obesidade, desafiando a ideia de que estão protegidos dessa tendência global.

Objetivo: Verificar se, após uma década, ainda há aumento na prevalência de sobrepeso e obesidade entre alunos de uma organização

militar, especialmente relacionados ao envelhecimento.

Métodos: Pesquisa observacional e transversal com 400 de alunos Fuzileiros Navais, que foram divididos em 5 grupos etários e foram avaliados para atributos antropométricos e de estado nutricional.

Resultados: A mediana do IMC do grupo foi de mediana±desviopadro. Houve aumento significativo no IMC e %G em todas as faixas etárias em 2023.

Conclusão: Os resultados indicam um aumento preocupante no sobrepeso e obesidade entre os militares avaliados, nesse levantamento atual é importante entender o papel da pandemia de COVID sobre dos dados obtidos, assim como novos hábitos surgidos dessa crise global.

Palavras-chave: Obesidade; Prevalência; Sobre-peso; Militares.

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Proposta de um guia de primeiros socorros para os principais acidentes na corrida praticada no treinamento físico militar

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Introdução: Seria útil tanto ao auxiliar quanto o oficial de treinamento físico militar um guia de consulta rápida e orientações assertivas para prestar primeiros socorros em acidentes durante o treinamento físico.

Objetivo: produzir um guia de bolso com os principais tópicos para socorros de urgência na corrida.

Métodos: Inicialmente, fontes foram pesquisadas para identificação dos acidentes, com palavras chaves pertinentes ao tema. A partir desse levantamento, foi feita uma lista de acidentes e cinco médicos do esporte indicaram a probabilidade de cada um ocorrer na corrida, sendo incluídos aqueles apontados por pelo menos 3 especialistas. A confecção das ações de primeiros socorros se baseou no levantamento bibliográfico feito e as propostas de conduta foram avaliadas por dois bombeiros brigadistas e um médico do esporte.

Resultados: Os acidentes mais prováveis de ocorrer na corrida foram: desidratação, distensão muscular, entorse, fratura, bolhas, câimbras, hipertermia, insolação, lesões traumáticas, bolhas, convulsão, dificuldade respiratória, desmaio, escoriação, infarto agudo do miocárdio, luxação, parada cardiorrespiratória, queda de pequena altura. Os procedimentos adequados para cada acidente foram apresentados com texto, esquemas e ilustrações.

Conclusão: Devido à importância dos primeiros socorros, é preciso dominar, difundir e saber aplicar esse conhecimento para poder proporcionar mais segurança e saúde na prática do treinamento físico militar.

Palavras-chave: Socorro de urgência; exercício físico; militares.

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Proposta de um guia de primeiros socorros para os principais acidentes na natação praticada no treinamento físico militar

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Introdução: Para que a prática da natação - atividade prevista no treinamento físico militar - seja segura, medidas de prevenção de acidentes sempre devem ser tomadas. Para isso é preciso conhecer e dominar estas medidas

Objetivo: produzir um guia de bolso com os principais tópicos para prevenção de acidentes e salvamento em meio aquático.

Métodos: Inicialmente, fontes foram pesquisadas para identificação dos acidentes, com palavras chaves pertinentes ao tema. A partir desse levantamento, foi feita uma lista de acidentes e cinco médicos do esporte indicaram a probabilidade de cada um ocorrer na natação, sendo incluídos aqueles apontados por pelo menos 3 especialistas. A confecção das ações de primeiros socorros se baseou no levantamento bibliográfico feito e as propostas de conduta foram avaliadas por dois bombeiros brigadistas e um médico do esporte.

Resultados: Os acidentes mais prováveis de ocorrer na corrida foram: afogamento, bolhas, câimbras, convulsão, hipotermia, infarto agudo do miocárdio e parada cardiorrespiratória. Os procedimentos adequados para cada acidente foram apresentados com texto, esquemas e ilustrações.

Conclusão: Devido ao risco de vida que as atividades no meio aquático oferecem, é preciso prevenir e socorrer adequadamente para poder

proporcionar mais segurança na prática do treinamento físico militar.

Palavras-chave: Socorros de urgência; exercício físico, militares.

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Proposta de um guia de primeiros socorros para os principais acidentes nos exercícios contrarresistidos no treinamento físico militar

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Introdução: É fundamental, principalmente no meio militar, que todos saibam prestar os primeiros socorros em diversas situações, inclusive durante a prática de Treinamento Físico Militar.

Objetivo: identificar riscos e lesões comuns em exercícios resistidos e apresentar técnicas e procedimentos de primeiros socorros, compilados em um guia, que possa auxiliar em ocorrências durante a sessão de Treinamento Físico Militar.

Métodos: Inicialmente, fontes foram pesquisadas para identificação dos acidentes, com palavras chaves pertinentes ao tema. A partir desse levantamento, foi feita uma lista de acidentes e cinco médicos do esporte indicaram a probabilidade de cada um ocorrer nos exercícios contrarresistidos, sendo incluídos aqueles apontados por pelo menos 3 especialistas. A confecção das ações de primeiros socorros se baseou no levantamento bibliográfico feito e as propostas de conduta foram avaliadas por dois bombeiros brigadistas e um médico do esporte.

Resultados: Os acidentes mais prováveis de ocorrer nos exercícios contrarresistidos foram: esmagamento de dedos, bolhas, convulsão, desmaio, fratura (fechada), infarto agudo do miocárdio, parada cardiorrespiratória e trauma na cabeça. Os procedimentos adequados estão apresentados com texto, esquemas e ilustrações.

Conclusão: O manual apresentado compilou abordagens relevantes, visando minimizar ocorrências e, caso ainda assim aconteçam acidentes, mitigar consequências indesejadas.

Palavras-chave: Ferimentos e lesões, acidentes; musculação; exercício físico; militares.

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Regulação emocional e escolha alimentar em militares do exército brasileiro.

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Introdução: Hodiernamente no âmbito Exército Brasileiro há problemas recorrentes de má alimentação que culminam em baixa eficiência operacional e prejuízos para a saúde da tropa. Supõe-se que um dos fatores que conduzem a uma má escolha alimentar é a baixa capacidade de regulação emocional dos militares.

Objetivo: O objetivo deste trabalho foi rastrear como a regulação emocional influencia na escolha alimentar em militares do Exército Brasileiro.

Métodos: O presente estudo tem delineamento quase experimental, aprovado pelo CEP-CCFEX (parecer 6.043.170). A amostra foi composta de 42 militares da EsEFEx. Os participantes responderam a Versão Brasileira da Difficulties Emotion Regulation Scale (DERS) e ao final da pesquisa foram oferecidos alimentos naturais e industrializados. Foi realizada uma análise de regressão múltipla para apreciação dos dados no software JASP versão 17.

Resultados: Para alimentos naturais, os fatores metas e estratégia da escala DERS tiveram influência significativa na escolha do alimento natural. Em outro plano, para os alimentos industrializados, os fatores clareza e estratégia da escala DERS tiveram uma influência significativa na escolha do alimento industrializado.

Conclusão: Ter um bom plano de metas, traçar boas estratégias e ter clareza nos objetivos devem ser cuidados dos militares quanto a regulação emocional para que as escolhas alimentares estejam alinhadas com a saúde e a operacionalidade.

Palavras-chave: Regulação emocional; comportamento alimentar; Saúde Militar.

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Relação das variáveis emocionais e o desempenho na prova prática do curso de monitor de educação física da escola de educação física do exército.

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Introdução: A ansiedade é uma emoção comum que pode afetar a qualidade de vida das pessoas quando excessiva. No esporte, ansiedade pode influenciar o desempenho dos atletas, especificamente em modalidades que requerem um gesto motor refinado, como o Basquetebol.

Objetivo: O estudo visa avaliar como a ansiedade se relaciona com o desempenho em uma prova prática de basquetebol do Curso de Monitor de Educação Física do Exército.

Métodos: O estudo é uma pesquisa quase experimental com corte transversal. Participaram 10 alunos que realizaram a prova de basquetebol e responderam ao questionário CSAI-2. Os dados serão analisados usando análise de regressão linear para identificar a correlação entre ansiedade e desempenho na prova.

Resultados: Os dados são colineares, aderentes a normalidade e homocedásticos ($F(1,8)=3,8$; R^2 ajustado=0,32). Em relação à percepção de desempenho e as variáveis do estado de ansiedade, não houve diferenças estatisticamente significantes entre as variáveis ($p>0.05$).

Conclusão: A prova não foi afetada pela ansiedade dos alunos. Este resultado mostra a importância de considerar aspectos emocionais e psicológicos únicos para cada modalidade, visto a complexidade da relação entre ansiedade e desempenho físico. Além disso, o estudo contou com amostra pequena e homogênea.

Palavras-chave: Ansiedade; Desempenho; Basquetebol.

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Self-selected intervals as effective as fixed intervals in controlling acute responses in high-intensity interval resistance training?

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Introduction: Physical conditioning programs often apply high-intensity resistance training (HIRT), but there is a lack of research investigating the effects of using fixed or self-selected resting intervals between exercises on the performance, relative intensity, and affective perception during this modality of training.

Objective: Compared fixed versus self-selected rest intervals in HIRT sessions on cardiorespiratory responses, number of repetitions, and enjoyment perception in trained men.

Methods: Sixteen trained males (27.1 ± 3.9 years) performed HIRT circuits in randomized order, with 30-s and self-selected recovery interval.

Results: The duration of resting intervals was longer in HIRT performed with fixed than self-selected intervals (14.04 ± 5.82 s; $p < 0.0001$). Both sessions elicited similar relative HRR (79.4 ± 6.2 % vs. 81.6 ± 4.2 %; $p = 0.14$), VO_2R (43.0 ± 12.2 % vs. 47.7 ± 9.6 %; $p = 0.10$), and enjoyment reflected by scores in the PACES questionnaire (107.9 ± 15.1 vs. 109.2 ± 12.8 ; $p = 0.65$). The total number of repetitions (403.4 ± 45.5 vs. 353.1 ± 27.4 ; $p < 0.01$, $ES = 1.3$) and caloric expenditure (154.4 ± 28.6 kcal vs. 121.4 ± 21.6 kcal; $p < 0.001$) were greater in HIRT performed with fixed vs. self-selected intervals.

Conclusion: HIRT performed with fixed and self-selected rest intervals elicited similar relative intensity and enjoyment perception. However, the number of repetitions and caloric expenditure were greater in sessions performed with fixed 30-s.

Palavras-chave: circuit-based exercise; cardiorespiratory fitness; energy metabolism; exercise recovery; high-intensity interval training.

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Termografia infravermelha da face de militares com novo uniforme de combate do Exército Brasileiro – estudo piloto

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Introdução: A vestimenta ideal melhora o funcionamento das funções fisiológicas e a termorregulação está relacionado com a temperatura da face (Ftemp), indicador indireto da temperatura interna do corpo.

Objetivo: Analisar os efeitos do novo fardamento do EB sobre a temperatura da face de militares por meio da termografia infravermelha (TIV).

Métodos: Estudo descritivo correlacional, 7 militares do sexo masculino, alunos do Curso de Instrutores EsEFEx 2023, idade 23-35 anos, coletado em laboratório em ambiente termoneutro. Coleta realizada pré e pós teste ergométrico em esteira, protocolo de Rampa com uma câmera infravermelha FLIR®, modelo Flir E76®, para medir a Ftemp e processamento das imagens pelo software ThermoHuman®. Os militares usaram o novo uniforme operacional do EB (9º C2). A análise dos dados será através de estatística descritiva, distribuição normal, teste T de Student pareado, nível de significância $p < 0,05$.

Resultados: Avaliação inicial do estudo piloto, militar de 29 anos, massa corporal total 82,85 kg, Ftemp pré=33,94°C e Ftemp pós=34,48°C, com um aumento de 0.54°C. O teste foi interrompido no esforço máximo com 29 minutos, com velocidade de 15,5 km na esteira.

Conclusão: A Ftemp aumentou no final do teste em função do calor metabólico gerado. Assim, a TIV pode ser uma excelente ferramenta para avaliação da temperatura interna de forma não invasiva, auxiliando na prevenção da hipertermia

e contribuindo para saúde e operacionalidade dos atletas táticos.

Palavras-chave: *Palavras-chave:* Regulação da Temperatura corporal; Militares; Termorregulação; Temperatura Facial; Termografia Infravermelha.

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Treinamento com Neurofeedback para aprimoramento do desempenho esportivo: uma revisão sistemática

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Introdução: O treinamento com *Neurofeedback* (NFB) é uma técnica que consiste em aplicar determinados exercícios às ondas cerebrais. Trata-se de um método não invasivo, seguro e eficaz(1) utilizado para melhorar estados afetivos e cognitivos(2), que tem sido empregado no esporte de alto rendimento na busca do melhor desempenho.

Objetivo: Identificar na literatura recente evidências dos benefícios do treinamento com NFB aplicado ao esporte de alto rendimento.

Métodos: Estudo de revisão sistemática realizado na base de dados PubMed utilizando os termos “*neurofeedback*” AND “*sports*”. O critério de inclusão foi abordar a aplicação do NFB no esporte. Face à originalidade das recentes descobertas, foram incluídos nesta investigação, estudos de revisão prévios. Os critérios de exclusão foram: 1) Tratar de NFB em relação a outros assuntos que não o desempenho no esporte; e 2) artigos que não se apresentassem em língua portuguesa ou inglesa.

Resultados preliminares: Foram identificados 97 artigos. Os estudos foram ordenados dos mais antigos para os mais recentes, sendo que o primeiro, datou do ano de 2005(2). Inicialmente, foram examinados 45 artigos, dentre os quais, 27 foram retirados das análises pelo critério de exclusão número um. Dos 18 que permaneceram, três eram de revisão sistemática e um comentário. Os resultados examinados apontam

benefícios para o desempenho esportivo de alto rendimento nas mais diversas modalidades(2–8), incluindo: basebol(8), ginástica artística(6) e golf(3). Até aqui, os resultados mostraram mudanças significativas tanto nos parâmetros de treinamento, como em outras bandas de frequência e locais de eletrodos. No geral, as conclusões foram positivas em medidas objetivas e subjetivas.

Palavras-chave: neurociência; neurofeedback; alto rendimento; esporte; EEG.

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Uma proposta de dois minicircuitos como complementação do treinamento físico militar

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Introdução: A Pista de Treinamento em Circuito (PTC) é usada para o desenvolvimento do sistema musculoesquelético. Em dias de treino da aptidão cardiorrespiratória, a PTC é usada para complementação do Treinamento Físico Militar (TFM) de forma não sistematizada. Porém, o treino sistematizado e com objetivos definidos poderão otimizar a melhora da saúde e da capacidade funcional dos militares.

Objetivo: Propor dois minicircuitos na PTC que complementem uma sessão de TFM.

Métodos: Foram confeccionados os minicircuitos com base em uma revisão de literatura e no novo Manual de TFM do Exército Brasileiro. Cada minicircuito será avaliado por profissionais capacitados e voluntários da área de treinamento físico. Os profissionais avaliarão cada exercício do minicircuito por meio do I-CVI (Item – Content Validity Index), para quantificar, em uma escala que varia de 1 a 4, se os exercícios

possuem adequação do conteúdo ao objetivo proposto (pertinência), sequência lógica e especificidade do conteúdo para a valência trabalhada (precisão). Os valores do I-CVI, obtidos após a avaliação, irão compor o S-CVI (Scale – Content Validity Index), que será usado para avaliar a precisão, a pertinência e a lógica de cada minicircuito.

Resultados: Os minicircuitos foram entregues aos avaliadores e encontram-se sob análise e revisão.

Conclusão: Espera-se que os minicircuitos propostos apresentem valores do S-CVI satisfatórios conforme a escala de avaliação.

Palavras-chave: aptidão muscular; sistema musculoesquelético; eficiência de treinamento.

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Uniforme inteligente: os efeitos do novo uniforme do exército brasileiro na temperatura da pele de militares com a termografia infravermelha

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Introdução: O Projeto Combatente Brasileiro definiu a atualização do Uniforme de Combate, entregando uma nova modelagem de camuflado que será de uso obrigatório a todos os integrantes do Exército Brasileiro (EB).

Objetivo: Analisar os efeitos do novo fardamento sobre a temperatura da pele de militares por meio da termografia infravermelha (TIV).

Métodos: Estudo piloto com um militar do sexo masculino, idade 29 anos, massa corporal total 82,85 kg, realizado em ambiente termoneutro. Os dados da temperatura da pele com TIV foram coletados pré e pós teste ergométrico em esteira, utilizando o protocolo de Rampa. As regiões de

interesse (ROIs) analisadas foram pescoço, trapézio, peitoral, costal e abdominal do tronco na vista anterior (VA) e cervical, trapézio, dorsal superior e inferior, rotador externo, lombar externa e central na posterior (VP). O militar estava usando o novo modelo camuflado operacional do EB distribuído pela cadeia de suprimento.

Resultados: O teste foi interrompido no esforço máximo com 28 minutos, com velocidade de 15,5 km na esteira. Através da TIV foi apurado um aumento sensível da temperatura da pele.

Conclusão: Foi observado um aumento gradual na temperatura da pele nas principais ROIs avaliadas e, especificamente, uma assimetria térmica na intercostal VA, rotador externo e dorsal VP. Espera-se por meio deste estudo, garantir que o fardamento seja adequado para permitir a circulação de ar que ajuda a manter a temperatura da pele mais confortável.

Palavras-chave: Regulação da Temperatura corporal; Militares; Termorregulação; Temperatura da Pele; Termografia Infravermelha.

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Uso de suplementos alimentares por atletas táticos sob intenso treinamento físico

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Introdução: Os suplementos alimentares são consumidos com o objetivo de promover benefícios para o corpo humano, assim como auxiliar no desempenho e recuperação muscular após exercícios físicos.

Objetivo: Levantar a prevalência do uso de suplementos alimentares por militares do Exército Brasileiro sob intenso treinamento físico, visando a participação do Curso Básico Paraquedista no ano de 2023.

Métodos: Trata-se de um trabalho original, transversal, de caráter quantitativo e descritivo. A coleta de dados foi realizada por meio virtual na plataforma google forms. O questionário de Muñoz (2008), traduzido e validado para uso no Brasil por Willandino e Da Costa (2022) foi aplicado a todo corpo discente, na tentativa de representar um censo.

Resultados: Responderam ao questionário 39 militares de ambos os sexos, com idade de 28 ± 3 anos, formados há 6 ± 3 anos e sob treinamento físico há 8 ± 5 meses. Quanto ao motivo da suplementação, ressaltaram-se a melhora do desempenho atlético (92,3%) e a prevenção de lesões (76,9%). Os suplementos mais utilizados foram a creatina (94,9%) e produtos à base de proteína (74,4%). Em relação ao tempo de uso da suplementação, 59% dos entrevistados a fazem há seis meses e 71,8% pretendem manter a dosagem durante o curso.

Conclusão: As principais razões que levaram estes atletas táticos a buscarem a suplementação nutricional foi a preocupação com o ganho de massa muscular e força, assim como a prevenção de lesões durante o Curso em questão.

Palavras-chave: suplementos alimentares; treinamento físico; desempenho atlético; exercício físico.

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Utilização de biofeedback de EMG para treinamento da AGSM: resultado piloto

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Introdução: A aeronave F39-Gripen submete os pilotos à altas sobrecargas de força +Gz que podem causar uma redução da irrigação sanguínea na cabeça, o acúmulo de sangue nas extremidades e, consequências fisiológicas como: hipoxia tecidual, blackout e perda de consciência.

A Anti-G Straining Maneuver (AGSM), é uma manobra que associa trocas respiratórias rápidas e vigorosas com a contração isométrica do core, coxa e panturrilha. A execução da AGSM requer uma coordenação motora complexa para ser executada com a devida qualidade. A eletromiografia (EMG) tem se mostrado uma ferramenta de biofeedback que pode ser de grande utilidade na avaliação da fase muscular da AGSM.

Objetivo: O objetivo deste estudo foi testar a EMG como ferramenta de biofeedback para melhorar o padrão de recrutamento muscular durante a AGSM.

Método: 2 cadetes da Força Aérea, sem experiência com a AGSM, foram voluntários. Dados de EMG do gastrocnêmio foram adquiridos (1500 Hz) seguindo os protocolos de SENIAM. Os voluntários realizaram duas sessões de 30s de AGSM com três minutos de intervalo. Somente um voluntário teve acesso ao biofeedback entre as sessões. Os dados foram pré processados e depois foi calculada a área sob a curva RMS (época de 0,5s).

Resultados: Os resultados apontam um aumento importante na área sob a curva do voluntário com biofeedback, o mesmo não foi observado no outro voluntário.

Conclusão: O biofeedback da EMG parece contribuir para um melhor padrão de recrutamento muscular.

Palavras-chave: AGSM; eletromiografia; contração isométrica.

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Validação psicométrica da *The Motivation for Eating Scale (MFES)* para uma amostra de referência de brasileiros

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Introdução: A obesidade é um grave problema social que vêm aumentando. Este fato também acomete os militares. Dados recentes, apontam essa realidade, mostrando que 15% dos integrantes do Exército Brasileiros estão obesos, e cerca de 44% sobrepesados.

Objetivo: validar uma escala que mede o comportamento alimentar das pessoas, constituindo-se, em um meio de geração de dados.

Métodos: Este trabalho tem delineamento metodológico e sua amostra selecionada foi de 792 participantes. A coleta de dados foi feita em ambiente virtual. Os participantes responderam a uma Versão da *The Motivation for Eating Scale*. Foi feita a avaliação descritiva das respostas para cada item do instrumento. Para a determinação da validade do instrumento utilizou-se o método multivariado de análise fatorial confirmatório.

Resultados: O ajuste do modelo estrutural foi obtido na 7ª rotação, indicando ajuste satisfatório dos dados ao modelo teórico proposto. Em relação à confiabilidade interna, todos os fatores tiveram valores de confiabilidade de constructo (CC) adequados. O modelo ajustado da MFES foi submetido aos testes de invariância, com resultados que apontam confiabilidade externa do instrumento.

Conclusão: Foi obtida a validação da escala estudada, proporcionando uma ferramenta que auxiliará profissionais da saúde e, sobretudo, os decisores do Exército Brasileiro que poderão entender com alguma propriedade a influência do comportamento alimentar na obesidade dos militares.

Palavras-chave: Motivação, obesidade e comportamento.

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Velocidade de reação em militares após uma marcha a pé simulada de 12 km com 30 kg, resultados parciais de um estudo controlado

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Introdução: No contexto militar a capacidade de tomar decisões rápidas e seguras é fundamental, especialmente após a realização de marchas a pé com todo o equipamento necessário para uma missão.

Objetivo: Avaliar o impacto de uma marcha a pé simulada de 12km com um transporte de carga de 30kg na velocidade de reação.

Métodos: Participaram do estudo 24 militares do Exército Brasileiro, com idade média de 27,0±2,02 anos, do sexo masculino e com conceito mínimo “B” no Teste de Avaliação Física. Participantes do grupo experimental marcharam fardados em uma esteira ergométrica na velocidade de 5km/h por 12km, com 30kg de carga suplementar e o grupo controle que cumpriu atividades administrativas no mesmo tempo da realização da marcha. Para avaliar a velocidade de reação foi utilizada a tarefa incongruente do “Stroop Test”, aplicada antes e após a marcha/atividade administrativa. Os dados foram analisados com Anova de medidas repetidas mista de dois fatores no software SPSS, com 95% de significância.

Resultados: Não foi encontrada diferença significativa para a velocidade de reação na tarefa incongruente para nenhum dos fatores avaliados (fator momento – pré e pós: p=0,40; fator grupo: p=0,87; interação: p=0,17). Os valores para o grupo experimental foram: 1,22±0,21 (pré) e 1,20±0,20 (pós); e para o grupo controle: 1,17±0,16 (pré) e 1,22±0,90 (pós).

Conclusão: A marcha de 12 km com 30 kg de carga não promoveu alteração no alerta cognitivo em militares bem condicionados.

Palavras-chave: marcha, liderança, militares.

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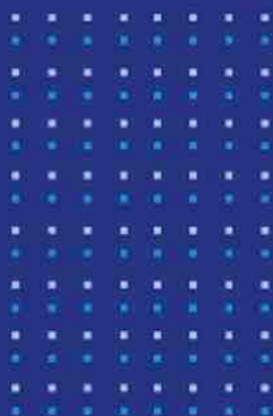


Book of Abstracts AIESEP 2023

AIESEP INTERNATIONAL CONFERENCE 2023

**Emerging Horizons:
Bridging the borders between
Physical Education Research and Practice**

Santiago de Chile
4th - 7th July 2023



Host University:



Organized by:



Greetings from AIESEP

Dear AIESEP Family,

This is a special publication as it emanates from our very first conference in Latin America - in Santiago de Chile. This book of abstracts represents some of the current exciting, high quality and innovative research conducted by AIESEP members in the field of physical education and sport pedagogy on every continent and time zone across the globe. In the spirit of the theme of the conference, this collection of research clearly identifies emerging horizons and bridges the borders between physical education research and practice. We see this collection of work as a powerful opportunity for knowledge transfer across our AIESEP ecosystem of stakeholders, disciplines, generations and cultures. At the heart of the research presented here is our consistent drive to encourage citizens across the world to embrace the joy of human movement for life for people and planet wellbeing. In this way, we believe that this research has the potential to ignite collective action in both policy and praxis to promote effective and sustainable physical and health education, physical activity and sport participation across the lifespan for all.

Fiona Chambers
AIESEP President



Greetings from the Local Organizing Committee

For the Pontifical Universidad Católica it has been a pleasure to receive the AIESEP 2023 International Conference from July 4 to 7. We made every effort to ensure that it was fulfilled with the conferences, parallel sessions, symposiums and papers. We hope that everyone who participated, whether face-to-face or online, has met their learning expectations.

The people of Chile are very friendly, for the same reason at the Conference, they wanted to show our culture and what we do in the university so that Physical Education in the world has a better impact on children and youth.

Jorge Silva
Sports Director
Pontifical Catholic University of Chile

For me, as a career and university, it has been very important to be and be part of the AIESEP 2023 organization.

Speaking the same language called Physical Education, is for each of the students and teachers who are part of this dream, the most important thing that AIESEP gives us.

Constanza Kameid Zapata
Directora Pedagogía en Educación Física y Salud
Pontifical Catholic University of Chile



Greetings from the Scientific Committee

¡Hola participantes y bienvenidos a la Conferencia Internacional AIESEP 2023 en Santiago de Chile!

Welcome delegates to the 2023 AIESEP International Conference in Santiago, Chile.

Our time together will offer many opportunities to take in all the Emerging Horizons as we bridge the borders between physical education research and practice with colleagues from across the globe.

Nuestro tiempo juntos ofrecerá muchas oportunidades para asimilar todos los Emerging Horizons a medida que unimos las fronteras entre la investigación y la práctica de la educación física con colegas de todo el mundo.

Ha sido un absoluto placer para mí presidir el Comité Científico de la conferencia de este año y trabajar con un equipo excepcional para armar el programa de este año. Un agradecimiento especial a Tara Blackshear, Jaime Caracamo, lisahunter, Heidi Jancer y Carla Luguetti por todo su tiempo y trabajo. Disfrute de la variedad de simposios, presentaciones orales, presentaciones de carteles y también tómese un tiempo para ver las sesiones pregrabadas (a las que se puede acceder a través de ConfTool).

It has been my absolute pleasure to chair the Scientific Committee for this year's conference and to work with an exceptional team to put together this year's program. Special thanks to Tara Blackshear, lisahunter, Heidi Jancer, Carla Luguetti, & Jaime Caracamo for all your time and work. Enjoy the variety of symposia, oral presentations, poster presentations and please also make some time to check out the pre recorded sessions (which can be accessed via ConfTool).

Thank you to the steering committee members Gerardo Bielons and Jorge Silva for all the time and effort you've put into making this conference possible. Thank you also to the AIESEP Board for supporting our conference planning. Have a wonderful conference!

Gracias a los miembros del comité directivo Gerardo Bielons y Jorge Silva por todo el tiempo y esfuerzo que han puesto para hacer posible esta conferencia. Gracias también a la Junta de AIESEP por apoyar nuestra planificación de conferencias. ¡Que tengas una maravillosa conferencia!

Jodi Harding-Kuriger, PhD
University of Alberta
Scientific Committee Chair

KEYNOTE SPEAKERS

Elisa Adriana Araya Cortez

Professor of Physical Education, Psychomotricist, Doctor in Educational Sciences, by the Catholic University of Leuven, Belgium, with training in Pikler Pedagogy at the Pikler-Lòczy Institute in Budapest, Hungary.

She has taught undergraduate and graduate courses at different universities in Chile: Universidad Metropolitana de Ciencias de la Educación, Universidad de Santiago de Chile, Universidad del Desarrollo, Universidad Central, and Universidad Católica Silva Henríquez.

Author of several papers and book chapters, as well as educational materials on play and the importance of movement in child development for the Ministry of Education and the National Board of Kindergartens (JUNJI). She has also published materials for the prevention of drug and alcohol abuse in schoolchildren for the National Service for the Prevention and Rehabilitation of Drug and Alcohol Consumption (SENDA).

She developed and taught at the Training Program for Educational Directors and Supervisors in the Republic of Angola, as a consultant associated with the BUREAU INTERNATIONAL EN EDUCATION ET FORMATION (BIEFOR-Belgium). She also participated in the Capitalization Program for the competency-based reform of the post-fundamental education system in Burundi (2022), in the on line training of physical education teacher trainers.

She was the coordinator of the Department of Extracurricular Education of the Ministry of Education, dealing with school physical education policies in the country. She was Director of the Department of Physical Education, Sports and Recreation of the Universidad Metropolitana de Ciencias de la Educación, and is currently its Rector.

Research topics: Play and psychomotricity; educational innovation; school coexistence and classroom climate.

About her lecture: Playing and joy in Physical Education: the will to keep moving

The conference “Playing and joy in Physical Education: the will to keep moving”, addresses the role of adherence to physical activity produced by playing and freely chosen activities. From a gender perspective, it reviews the participation of girls in sports classes and states that the feeling of competition helps to enjoy the practice of physical activity, which in turn produces enjoyment and intrinsic motivation to continue practicing. The fundamental tool of this practice that produces adherence would be the game.

Brian Culp

Brian Culp is a Professor at Kennesaw State University who has published on topics related to youth physical activity and climate, racism, spatial justice, and leadership in higher education. In addition to creating and facilitating opportunities for research and civic engagement, he has helped design funded movement-based community intergenerational programs. A recipient of numerous awards for distinguished contributions to the field of kinesiology, Dr. Culp is a Fellow of the National Association of Kinesiology in Higher Education and has been a Fulbright Scholar in Montreal, Canada. Among his collaborations are organizations such as SHAPE America, Physical Education Health Education Canada, The Centers for Disease Control, the National Board for Professional Teaching Standards, and the National Center for Civil and Human Rights. A member of AIESEP for 17 years, he has recently completed a successful term as Chair of the Department of Health Promotion and Physical Education at KSU. Brian's most recent projects consider the viability of public pedagogy for racial justice based on concepts presented in the recent book *Critical Race Studies in Physical Education*, co-authored with Dr. Tara Blackshear.

About his lecture: The Articulation of Place and Public Pedagogy for Enhancing Global Associations

There has been much discussion about the purpose of place and space over the past decade due to a host of global trends. In thinking of placemaking, we are tasked to understand that endeavors and interactions transcend the material dimension and involves aspects such as sociability, uses, activities, access, connections, comfort, and image, to create bonds between people and a sense of place. Specific topics will include:

Expanding the spatial imaginary in the “new city”

Contemplating public pedagogies and learning opportunities “outside the walls”

Confronting childism for the purpose of improving humanity and justice

The presentation will conclude with implications for professionals to consider placemaking approaches as a means for inquiry, disruption, and reconciliation.

Carolina Kürüf Poblete Gálvez

Carolina Kürüf Poblete Gálvez is a woman indigenous Mapuche, mother and player of the ancient game palin. Academic at the University of Santiago, Chile and associate at the Catholic University of Temuco. She is a Professor of Physical Education and a Doctor in Education. Member of the Pan American Association of Ancestral Games and Sports, Member of the Latin American Council of Games, Sports and Corporal Practices of Indigenous Peoples, and Member of the Indigenous Games Network of the Mercosur Forum.

Her work is focused on indigenous games and sports in contemporary society within formal and informal education, diversity, gender and initial teacher education. She has worked in the curricular development of pedagogical training in physical education at the University of Santiago de Chile and has collaborated in the creation of the new career of Pedagogy in Language and Culture of the Catholic University of Temuco. She has been an evaluator of the National Accreditation Commission for Chilean universities and has recently won an international award of the American Association for Applied Linguistics for their participation in the Congress of Languages 2023, through the Fund to Support Indigenous Language Scholarships.

The academic work carried out by Carolina tries to broaden the look at what are the corporal practices in physical education attending to diversity and history. Beyond innovation plans to improve health status, consider the collective imaginary and meaning that society is giving to body practices under the questions: Have we detached ourselves from the pleasure and territorial identity of games and physical activities by an excess of globality? Do we copy parameters from other latitudes to solve local issues? Or what sense do we give to what we are doing? And therefore, what are we teaching to give meaning and appropriation to bodily practices for the well-being of the people we educate?

About her lecture:

Motricity in tension: The nationalist monoculture, sports globalization and post-colonization for the debate in question.

The objective of this presentation is to share the knowledge of the ancestral games of the southern cone of America. It is a living and revitalizing cultural heritage which demonstrates the cultural tensions within today's society. Specifically, it will talk about the meaning of ancestral corporal practices, the colonial legacies of their circulation and the trappings of sports, recreational monoculture and pedagogical measurement standards of physical education.

Javier Fernández-Río

Javier Fernandez-Rio is currently a Professor in the Educational Sciences Department of the University of Oviedo (Spain). B.S. from the University of Wisconsin-Madison (USA), M.S. from Universidad Autónoma de Madrid-Spanish Olympic Committee (Spain), Ph.D. from Universidad de Oviedo (Spain). His lines of research include pedagogical models, motivation and health. He has co-authored more than 120 articles published in journals included in the Journal Citation Report (JCR) and more than 30 books/chapters. Keynote speaker in more than 40 international scientific conferences. He has participated in more than 50 initial and/or continuous professional training seminars/courses for primary and secondary teachers.

About his lecture: Models-based Practice, Basic Psychological Needs and Meaningful Physical Education. Bright and Dark Sides

The use of pedagogical models has evolved from single-model implementation to a models-based approach. moving away from a content-based physical education (Casey & Kirk, 2021). Its student-centred character has been linked to positive outcomes in the four learning domains (Casey & Goodyear, 2015). However, depending on how pedagogical models are implemented, they can promote or thwart, for example, students' basic psychological needs (Burgueño et al., 2022; Fernandez-Rio & Iglesias, 2021). Therefore, there are bright and dark sides of Models-based Practice that need to be acknowledged to make physical education truly meaningful for all children (Fletcher & Ní Chróinín, 2022).

PRE CONFERENCE SESSIONS

Mapuche Visit with Carolina Kürüf Poblete Gálvez

Global perspectives and developments in Game-Based Approaches: Enhancing the games teaching practices of educators and coaches

The TGfU Special Interest Group is a globally representative group of associations and individuals committed to the promotion and dissemination of scholarly inquiry around game-based approaches to knowing, learning and teaching. The SIG is involved with the organization of international conferences every four year, as well as a one-day symposium prior to AIESEP International Conference. This opportunity is a great time to connect with our own professional learning community!

Early Career Network Workshop

Introduction and context: Academia can have a variety of meanings across contexts and phases of scholars' careers. The purpose of the session is to provide a space for conversation among scholars from diverse countries about the complexities, intricacies, and possibilities of multiple roles in an academic career. We would invite previous Early Career Scholar award winners (formally Young Scholar Award) to participate in and run some of the workshops. The intention is to cultivate a learning community of Early Career Scholars and turn the workshop into a SIG in the future.

Also, the session seeks to offer a basis for networking, especially for welcoming scholars from Latin American countries who are attending the AIESEP conference for the first time. The workshops will be designed as an interactive friendly space where translation to Portuguese and Spanish will be available informally. In this workshop, attendees will have an opportunity to discuss with international scholars about challenges, opportunities, and strategies used to develop academic roles.

Early Years Special Interest Group Pre-conference workshop

Early years SIG published a Special Issue in JECER (Journal of Early Childhood Education Research) focusing on Physical Education in Early Childhood Education in February 2023. In Chile Early Years Special Interest Group will be hosting a celebration (part 2) of this publication, where 43 authors from 13 countries and in 11 articles shared their research.

Part 1 of this celebration was the AIESEP Connect in May, and this Part 2 concludes with 4 more presentations from authors of the Special Issue who are all members of the EY SIG. After presentations also time will be allocated to discuss the next steps of the SIG and how we continue to take the voice of Early Years forwards.



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International Association for Physical Education in Higher Education

Annals of AIESEP Conference 2023
Pontificia Universidad Católica de Chile
July 4 - 7, 2023

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Pre-Conference: Teaching Games for Understanding

Practical session

Designing rich learning environments in (handball-like) games using game balance analysis and gameplay types

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Introduction: In a game based approach modified games are at the heart of a teachers practice. Teachers aim for representative designs and search for exaggeration of tactical problems. Whether a game is representative and whether these tactical problems are indeed experienced by players depends on how they are able to play within the central purpose of the game (i.e., the game principle). The game principle is the most basic challenge of a game allowing it to be categorized into e.g., invasion games or net and wall games. Meaningful games teaching centres the game principle at all times and monitors it for guidance of interventions (Koekoek, Dokman & Walinga, 2023)

Objective: In this practical session participants experience the use of the pedagogical tool *game balance analysis* (digital application for Ipad) and subsequent gameplay types (Walinga & Koekoek, 2023). A digital application used in Dutch Physical Education Teacher Education (PETE) is

used to structure decisions of the teachers regarding observed gameplay.

Methods: During the practical session small, sided handball games are designed by information of the balance in gameplay. Decisions like whether to modify or keep the current game, which phase of the game needs attention, what game-parameters to adjust, when necessary, what tactical input players should get are discussed in practice. According to the practice of teaching this is done from a global to detailed analysis.

Results: Analysis from global to detailed based on the observed balance in the game leads to either the need for further modification of the game (design of a rich learning environment) or leads to the teaching of tactical decision making within a rich learning environment. Additionally, the session shows how digital video feedback (*Videocatch for iPad*) might be of interest in the detailed stages of teaching.

Conclusion: Game balance analysis and subsequent gameplay types are a useful practical pedagogical tool to support teachers in analysing the richness of the learning environment when applying small sided and modified games in physical education.

Keywords: games teaching, game balance analysis, gameplay types, game design

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A global litmus test of games-based teaching and coaching

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Introduction: Game-Based Approaches (GBA) are widely recognized as student-centered and inquiry-based approaches to games teaching and coaching that can promote individual engagement and team learning. As approaches that sit upon constructivist epistemologies, GBAs promote holistic learning by emphasizing learner reflection, complexity thinking and social interaction. Since the first publication on *Teaching Games for Understanding (TGfU)* by Bunker and Thorpe (1982), a growing number of GBA variations have been suggested, sharing similar ideas about game teaching and coaching. However, until today researchers find the implementation of GBAs more challenging than what they would expect.

Objective: Based on this assertion, the aim of this pilot study was to explore the extent of the use of GBAs in different countries across the world.

Methods: After a call from the TGfU SIG Executive Board, twelve GBA experts, and members of the TGfU SIG International Advisory Board (IAB), participated in the study. Each expert was representing a different country Argentina, Australia, Germany, Greece, Ireland,

Italy, Japan, Korea, Netherlands, Portugal, Spain, USA). Participants were asked to complete a self-reflective SWOT analysis (strengths, weaknesses, opportunities, and threats), to examine key structural and contextual aspects of GBA. Participants were free to identify the topics that they thought were inherent in their country-specific applications of GBAs (e.g., PE teaching, sport coaching, teacher/coach education and professional development), and critically reflect on them afterwards. Data were cross analyzed based on the debriefing of the commonalities that were identified across the different topics. A thematic analysis was used to construct themes that would represent a common view of participants' entries per SWOT component.

Results Results indicated that experts approached the SWOT analysis in a similar manner, focusing on topics such as PE teaching and sport coaching, tertiary courses, and professional development programs. The thematic analysis indicated the following themes per SWOT component: academic recognition and pedagogical value (Strengths), theory-practice disconnections and surface pedagogies (Weaknesses), community advocacy and professional networking (Opportunities), narrow mindedness and rigid mentalities (Threats).

Conclusion: Results support findings raised in previous research examining the development and dissemination of GBAs. Using Bourdieu's concepts of *field* (GBAs as a discrete field), and *doxa* (shared opinions and beliefs that bind experts together) as a heuristic to interpret our findings, we understand that our participants' perceptions of the value and logic of GBAs was obtained more through their shared academic affiliation with GBAs and less via their espoused GBA variant. We thus advocate for the adoption of a shared framework to GBA use, as modified game-practice that sets the base for developing thoughtful, creative, intelligent, and skillful players.

Keywords: physical education, sport, game-based learning, doxa

Symposia

Symposium 1: Social and Emotional Learning in physical education, teacher education and service-learning youth activity programs

Students' Perspectives of social and emotional learning in a high school physical education program

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Introduction: Students' perspectives have rarely been asked for by school-based researchers. Even though more studies have recently begun to explore what students think, believe, and feel about Physical Education (PE) at secondary level (Enright & O'Sullivan, 2010, Howley et al 2022, Dyson et al, 2009), still there has been limited amount of empirical evidence on students' viewpoints and experiences in real-time school contexts.

Objective: The purpose of this study was to explore students' understandings and experiences of SEL during PE high school classes.

Methods: SEL can be defined as "the process through which children and adults acquire and effectively apply the knowledge, attitudes, and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions" (CASEL, 2015, p. 5). This study is grounded in the social constructivists' view of knowledge. In social constructivism, it is highly important to provide interactive opportunities with students where they can continuously communicate with their peers and teachers and engage their existing knowledge in this process to generate new understandings (Koekoek et al., 2009). Using a qualitative case study design (Merriam, 1998; Stake, 2013), this study was implemented in an alternative high school setting over one school semester for five months. It was conducted as part of a larger study exploring teachers' and students' understandings and experiences of SEL. Forty-two students participated in focus group interviews (N=16) and individual interviews, (N=5) after the PE course, lasting approximately 45–70 min each. During these interviews, students were asked to reflect on their experiences and understandings of SEL prior to and during their physical education course. Inductive and deductive data analysis with constant comparisons were

implemented in this study (Saldaña, 2013). Peer debriefing with code and re-code strategies were constantly conducted to establish trustworthiness in this study.

Results: Four themes were generated from data analysis: Think about it more in depth; You can say how you feel; Care and support; and Different levels of buy-in.

Conclusion: These findings suggest that students' perspectives can make a significant contribution to our understanding of SEL in PE. This research represented students voice of 42 high school students, which provides a unique insight into students' knowledge and experiences of SEL during PE high school classes.

Keywords: social and emotional learning; high school, physical education

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Social and emotional learning of multi-semester volunteers in a co-curricular, physical activity-based service-learning program

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Introduction: Co-curricular service-learning opportunities, including those integrated into physical activity environments (PACCSL), can enhance college students' civic engagement and commitment to service (Carson & Raguse, 2014; Richards et al., 2015). Less is known about their influence on university students' social and emotional learning (SEL), which is increasingly considered important to enhance students' experience of academy (Corcoran et al., 2018).

Objective: We sought to understand how participating in PACCSL influenced the SEL of university student who engaged for at least two semesters.

Methods: Across five semesters, 14 university students volunteered to participate in the PACCSL two to four times. The PACCSL engaged volunteers in the implementation of an 11 week sport for development program (Lyras & Welty Peachey, 2011) that taught youth social and

emotional learning skills through physical activity. Data sources included interviews conducted each semester, participant reflection journals, and program observations. A multiphase, collaborative approach to qualitative analysis was used (Richards & Hemphill, 2018).

Results: The volunteers' SEL was examined through the Collaborative for Academic, Social, and Emotional Learning (CASEL; Collaborative for Academic, Social, and Emotional Learning, 2019) framework. Self-awareness was facilitated through activities prompting reflection, such as regular journaling. These activities also fostered self-management as participants applied strategies learned intentionally outside the program. Relationship skills were developed through reflection in a social environment that supported mutual SEL. Debriefing conversations also focused on responsible decision-making and fostered social awareness as participants discussed programming for youth and sociocultural differences and similarities present.

Conclusion: Aligned with previous research, engaging in prolonged PACCSL appears to have advantages relative to developmental skill acquisition. As identified in this study, that includes SEL. This is significant as the COVID-19 pandemic and other social challenges have highlighted the need to better support university student SEL.

Keywords: social and emotional learning; civic engagement; higher education

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Lessons learned teaching about and through social and emotional learning in physical education teacher education: a self-study

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Introduction: The majority of SEL research to date has been on students; however, Teachers are pivotal in the SEL process (Schonert-Reichl et al., 2015). Students' SEL is directly influenced by their teachers' own social emotional competence (Jones & Bouffard, 2012). Students acquire SEL skills more readily when teachers can model them effectively (Bridgeland et al., 2018). Yet, teaching by example can be a difficult ask for teachers who have not consciously engaged with their own education on SEL (Talvio, 2014). Unfortunately, little attention is given to the social and emotional development of teachers. Teachers often receive no formal training in the importance of social and emotional competencies and pedagogies (Onchwari, 2010) nor is SEL consistently included in initial teacher education programs (State, et al., 2011; Schonert-Reichl, et al., 2015).

Objective: This study explored lessons learned from one teacher educator's first experience teaching SEL in a health and physical education teacher education program.

Methods: Drawing on self-study methodology informed by LaBoskey's five characteristics (2004), this project explores one teacher educator's first experience teaching SEL in a PETE context across one extended academic term. Data were collected through reflective journals, critical friend discussions and teaching materials.

Results: Results indicate three main lessons learned which include: (1) *the importance of SEL being taught not caught*. This theme captures an emphasis on how I was *actually* teaching SEL beyond providing experiences where SEL skills are required. (2) *students lacked content knowledge*. PSTs' ability to plan for SEL was limited by their SEL knowledge, and (3) *SEL requires a programmatic approach*. Once is not enough; PSTs were just beginning to catch on to some of the concepts and approaches.

Conclusion: This research highlights the need for SEL to be incorporated as a part of PETE programs in ways that support pre-service teachers in the development of their own SEL

competencies and knowledge as well as strategies for teaching SEL in movement contexts. We offer practical suggestions to support teacher educators' enactment of SEL.

Keywords: social and emotional learning; pedagogy of teacher education; teacher education.

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“Jumping into the dark”: A teacher educator’s self-study of enacting social and emotional learning in physical education teacher education

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Introduction: The importance social and emotional learning (SEL) plays in contributing to young peoples' developmental outcomes is well established in the research. Physical education may be a space to support the teaching of/for SEL. Despite this, there appears to be little to no

research conducted on the teaching of SEL in preparing pre-service teachers for the teaching of/for SEL.

Objective: This research aims to explore how one teacher educator, who has little experience in the teaching of/for SEL, engaged in developing a pedagogy for teacher education informing the practice of teaching the teaching of SEL.

Methods: Self-study of teacher education practice guided this research (Loughran, 2006). Dylan's self-study was supported and challenged using critical friends in a community of learners. Data was collected over a 10-week period and included weekly reflective diaries and recorded critical friend meetings. Data was analysed through a 'live' coding technique which allowed for the capturing of emotions and feelings. We drew on the framework of emotionality (Ahmed, 2009) to validate emotions and feelings as meaningful data in shaping a pedagogy of teacher education.

Results: The findings were captured in three categories: (i) The emotional work of developing a pedagogy of teacher education; (ii) The importance of content knowledge in pedagogical content knowledge of SEL; and (iii) Becoming comfortable in the uncomfortable of teaching the teaching of SEL.

Conclusion: Loughran (2006) argues the importance of understanding one's own professional identity and recognising one's emotions and feelings in the process of learning and teaching about teaching. While this was challenging and uncomfortable, the 'jump in the dark' (i.e., teaching something new – SEL – while in the process of learning and teaching about teaching) was supported by the community of learners. This presentation provides considerations for teacher educators who want to embark on their own journey of developing a pedagogy of teacher education.

Keywords: social and emotional learning; self-study; teacher education; higher education.

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Symposium 2: Embodiment in/and/for health, physical education and sport

Paper 1: Attending to the bodies between the theory, praxis, concept, and content of embodiment in physical education

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Introduction: Recent interest in topics to do with physical literacy (Young et al., 2019), meaningful physical education (Beni et al., 2017) and pleasure (Pringle, 2010) suggest that many PE practitioners are intrigued about the notion of embodiment, including what it is, why it's important and how it might be operationalised in everyday classroom practices. However, previous research suggests that embodiment in physical education (EPE) is conceptually complex and often poorly understood and enacted (Lambert et al., 2022).

Objective: To develop a more grounded pedagogical understanding of embodiment in physical education.

Methods: A narrative literature review methodology was used to identify sixty-six (66) articles from peer-reviewed literature between 2010 and 2021 that had some focus on embodiment. Twenty-three (23) articles were identified as theoretical and forty-three (43) as empirical. This paper reports upon convergences and divergences between the theoretical and empirical articles.

Results: Findings from this review provide advice for practitioners about the characteristics of embodiment that will better support them to both understand and operationalise the concept pedagogically in their classrooms. Specifically, it is noted that material bodies and their socio-cultural experiences, identities, nuances, and contexts imbue the theory, praxis, concept, and content of embodiment.

Conclusion: PE practitioners intrigued by embodiment must pay special attention to the discursive and material operations of power that privilege some bodies more than others.

Keywords: embodiment, narrative review, physical education, power, materiality, discourse.

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Paper 2: Embodiment in Meaningful Physical Education

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Introduction: In a review of embodiment research in physical education, Aartun et al. (2022) suggest that pedagogies of embodiment empower students by engaging in critical reflection which can create vibrant spaces for learning and meaningful experiences. To achieve this, student-centred and activist approaches have been recognized as supporting positive experiences in movement. The Meaningful Physical Education approach is a pedagogical innovation that prioritizes the quality of the student experience in physical education. Like pedagogies of embodiment, pedagogies that support the meaningfulness of students' experiences tend to be those that involve reflective and democratic principles (Fletcher & Ní Chróinín, 2022).

Objective: To review the literature and ask two reciprocal questions: How can pedagogies of embodiment inform and enhance pedagogies of Meaningful PE? How can pedagogies of Meaningful PE inform or enhance pedagogies of embodiment?

Methods: Peer-reviewed literature on Meaningful PE and embodiment in physical education will be analyzed from the years 2015–2023.

Results: Despite the clear overlap, we expect to show that embodiment is central to notions of meaningfulness in physical education, yet it has existed more or less under the surface of

conceptualizations and enactment of Meaningful PE. In a similar way, we anticipate finding that meaningfulness has remained an implicit dimension of embodiment in physical education.

Conclusion: The literature analysis will lead us to identify ways that: (a) embodiment might take on a more explicit and central role in conceptual and pedagogical descriptions of Meaningful PE, and (b) explicit consideration of the personal meaningfulness of physical education experiences might be more pronounced in future articulations of pedagogies of embodiment.

Keywords: meaning, meaningful PE, meaningfulness, literature review, physical education.

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Paper 3: Embodying learning and learning embodiment in HPETE: How might you, habitus, embodied subjectivity, Country and planetary wellbeing be useful?

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Introduction: We learn through, as, about and with bodies in Higher Education degrees such as Health and Physical Education (HPE) Teacher Education (HPETE), Sport and Leisure, Human Movement Studies, and Health Promotion to equip emerging teachers to educate young people as bodies. How we 'know' embodiment seems central to our work but some claim it is too difficult. Yet there seems to be great limitations in how we address bodily autonomy, diversity of ethic-onto-epistemologic praxis, bodily connectedness, conceptual understandings of embodiment, and perhaps therefore inclusion of different movement, body and health learning in HPE in schools. Why does our field struggle so much? At the same time, much debate continues about the necessary dispositions/embodiments and therefore coursework needed to enable HPE teachers and their roles in schooling with reference to these limitations.

Objective: This presentation explores several attempts to impact and connect emerging

teachers with 'understanding' bodies/embodiment. Through the use of movement examples, I explore some of the way of knowing/being/doing embodiment for clues into enhanced and equity driven teaching.

Methods: Using examples from some activities I have used with emerging teachers, some underutilized concepts (Bourdieu's field/habitus, Grosz's embodied subjectivity, Martin's Country, and Kortetmäki and colleagues' planetary wellbeing) and perhaps your own experiences, we can further explore praxis/practice central to HPETE and HPE to explore the importance/role/possibilities of 'embodiment'.

Results: Students and teacher educators reported both discomfort and new learning associated with embodied approaches indicating there is great scope for a more rigorous praxis associated with knowing/being/doing embodiment and pedagogy.

Conclusion: To engage with equity in education (HPE) and a more pluralistic 'PE' praxis/practice, teacher and teacher educator understandings of embodiment and its role in pedagogy needs to be explicit and intentional... but this requires a change to HPETE/HPE intentions to overcome dominant resistances.

Keywords: body image, visual impairment, body dissatisfaction.

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Paper 4: Using creative and embodied pedagogies to transform learning and PE

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Introduction: While global education systems have been overwhelmed with neoliberal practices of teacher accountability and high stakes testing, the academic underachievement and lack of wellbeing of students from disadvantaged backgrounds is scarcely considered. Where teacher agency continues to be compromised, teachers are still left with the overwhelming task of addressing structural inequity that is lived, embodied, and felt. This research draws on new theoretical movements in affect and embodiment to argue for an embodied, affective and creative pedagogy for young people who experience poverty and adversity. In looking beyond traditional forms of PE there is scope for understandings of embodiment that entail sense making ‘in’ and ‘through’ movement (Arnold, 1979, Lambert et al., 2022). In bringing this into dialogue with Arts-based, creative practices that utilise the body to feel, think, respond and imagine, new kinds of pedagogical movements can emerge that bring ‘affect’ seriously into play (Hickey-Moody, 2009).

Objective: This paper outlines empirical research that investigated how teachers utilised PE/ARTs strategies in a *Creative and Body-based Learning* (CBL) initiative to redesign curriculum for disadvantaged students.

Methods: In utilising the analysis of narrative portraits, I highlight examples of bodily affectivity as well as affective pedagogical practices that impacted on students’ capacity to learn and teachers’ capacity to teach.

Results: Analysis suggests that embodied and creative approaches enabled new forms of communication and learner identities through bodies, senses and imaginings. These approaches provided conditions that ‘hooked’ students in, encouraged dialogue and helped them to find joy in moving and learning.

Conclusion: Outcomes signal an epistemological and pedagogical shift toward understanding bodies and creativity as agents of learning that push the boundaries of traditional PE practices as well as classroom learning. They advance understandings of a learning, sensing body that has potential to foster more powerful engagement, hope and imagination.

Keywords: body image, visual impairment, body dissatisfaction.

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Paper 5: Theorising the sporting body in the context of trans-female athletes and sporting bans

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Introduction: Despite a paucity of quality scientific research, trans-female bodies have been banned from competing in a growing range of international and various school sporting competitions on the grounds of safety and fairness. Yet the issue that the ban can cause serious mental health problems for trans-females has been broadly neglected. The way the body is theorised determines how we understand the exclusion of trans-female athletes. I suggest, accordingly, that the biomedical approach, problematically focuses on the fallacy of fairness in sport and the apparent ‘need’ to classify sporting bodies as either male or female. In contrast, I promote Butler’s (2004) theorising on sex/gender as useful for understanding how to develop more inclusive sporting policies. I begin by drawing on evidence from cis-gendered female rugby players to highlight problems with World Rugby’s blanket ban of trans-female athletes.

Objective: To explore the experiences of trans-athletes with regards to sporting bans.

Methods: We conducted zoom interviews and focus groups with 32 cisgender female rugby players (n = 6 who self-identified as lesbian or bisexual) from amateur to elite levels (ages 17–48; n = 24 white; n = 8 Black, Chinese, or Pacifica).

Results: We found no support for the blanket ban of trans-players. The minority of players with safety concerns supported exclusion on a case-by-case basis. Importantly, the women and girls questioned why rugby’s leaders had chosen to focus their energy on ‘protecting’ them from trans athletes but had ignored serious problems which cause them direct harm.

Conclusion: Butler (1993, p.9) theorised that the sexed body is not a natural inert substance, but that it materializes over time through socio-cultural processes to produce “the effect of boundary, fixity and surface we call matter”. This theorising shifts the focus away from attempting to classify the ‘sex’ of a sporting body to a concern with the workings of discourse and power. We conclude that the banning of trans-athletes is a product of, and serves to reinforce, restrictive gender logics/norms.

Symposium 3

Reimagining Internationalisation of Research: Insights from a collaborative project rooted in solidarity education, schooling and AIESEP: a window to reconciliation or?

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Introduction: There is a body of research that highlights the importance of the internationalisation of research (Antelo, 2012; Woldegiyorgis et al., 2018). However, this body of research described that there are diverse economic and political challenges when working toward the internationalisation of research activities (e.g., Knight, 2012; Rumbley et al., 2012; Taylor, 2004). In the neoliberal context, the main drivers for internationalisation have been viewed as disruptive and insensitive to the less privileged contexts (e.g., Global South countries), and as a consequence seen to nurture inequities (MacPhail & Luguetti, 2021). We believe there is a need to critique this neoliberal view of internationalisation of research as marketdriven, profit maximisation and control (Khoo et al., 2019; Romani-Dias et al., 2019). We argue that internationalisation should be viewed as a ‘moral practice’ (MacPhail & Luguetti, 2021) where the notion of solidarity could be a way to cultivate communities of researchers, engaging together in struggles and opportunities (Fine, 1994; Freire, 1987; Zembylas, 2017). 14

Keywords: body image, visual impairment, body dissatisfaction.

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Objective: This interactive symposium aims to provoke the audience to reflect on the value of the internationalisation of research in the Physical Education (PE) field. For this purpose, we bring together experienced researchers from Global South and Global North to share experiences of co-designing a program of research published as a special issue in a Brazilian Journal. The symposium will start with an interactive discussion guided by provoking questions to the audience related to their intentions, tensions and experiences with the internationalisation of research. We will then share our experience through four paper presentations. The first paper is about the conceptualisation of the internationalisation of research. The second paper will describe how we codesign our Special Issue which we believe can be an inspiring template for colleagues who wish to work together across nationalities. Finally, the two final papers will emphasise some of the empirical data we collected and collectively analysed around the process (e.g., challenges and facilitators) and the outcomes (e.g., what academics learned). We will then conclude the session with an interactive discussion based on what emerged in our collaborative project. This symposium will contribute to the theme of Equity, Diversity and Inclusion at AIESEP by rethinking/reimagining how PE scholars understand research internationalisation.

Exploring solidarity in action: key methodology features for collaborative research

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Introduction: This paper explores the collaborative process of developing a special issue on collaborative practices in physical education (PE) adopting a dialogue-centered approach. Inspired by Freire's "circle of culture", the researchers acknowledged the presence of social inequalities and oppressive structures within academia and engaged in an innovative methodology to collaborate on a special issue.

Objective: This paper aims to explore how the principles of solidarity proposed by Freire (1987) can support the implementation of collaborative research methodologies in PE and sport pedagogy.

Methods: In this study, twenty-two researchers (nine Brazilians and thirteen international) worked in six small groups for two years to write about their experiences with collaborative practices in the field of physical education. Data were collected through joint meetings with all researchers, small group meetings, final focus group interviews with the researchers, meetings with a critical friend, emails, and presentations. Data were collaboratively analyzed by using constant comparative content analysis.

Results: Results were organized in three themes: (a) Levels of collaboration: formation of groups and their horizontal relations; (b) Modelling in a collaborative way: the effects of collaboratively analyzing and reviewing the works in groups; (c) Democratic facilitation: modelling the democratic facilitation and the importance of a critical friend.

Conclusion: In conclusion, the key features of collaborative research grounded in solidarity underlines the significance of collaboration, and shared experiences, serving as a valuable example for colleagues interested in qualitative research methods and in international collaborations centered in solidarity.

Keywords: collaboration, Paulo Freire, solidarity.

References

Aims of the papers: This symposium offers an innovative methodological approach to understanding the unique pedagogies of primary school physical education (PE) teachers. Specifically, the opening paper introduces the professional noticing theoretical framework that includes attention, reasoning, and action (Jacobs, et al., 2010), and a system-wide observation methodology developed to understand the nature of PE teachers' pedagogical repertoire in Singapore schools. The next two papers focus on the eye-tracking glasses technology to represent from the teachers' perspectives, information-visual processing, and knowledge-based reasoning experiences during teaching. The final paper describes what goes on in the PE primary classrooms, specific to general and PE-specific instructional domains related to teachers' effectiveness.

Contribution to the Field: Due to the lack of studies specific to PE teachers' use of wearable technology and systematic observation methodology in the Singapore context, the eye-tracking data offers insights into primary PE teachers' information processing, cognitive processes, and behavioral patterns that might or might not occur during teaching. The results could highlight how educational researchers use the eye-tracking technology to extend the knowledge that is responsive, relevant, and rigorous for policy, practitioners, teacher education, and other researchers.

Relevance to AIESEP 2023 theme: This symposium fits aptly the theme "Bridging the borders between PE research and practice" as the different papers focus on deepening our understanding of the logic of PE teaching and enhancing the vehicles for bridging the evidence-practice gap.

Keywords: professional noticing, knowledge-based reasoning, systematic observation.

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- Jacobs, V., Lamb, L., and Philipp, R (2010). Professional noticing of children's mathematical thinking. *Journal of Research in Mathematics Education*, 41(2), 169-202. <https://doi.org/10.5951/jresmetheduc.41.2.0169>.

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Investigating Physical Education Teachers' Pedagogies in Singapore's Primary Classrooms

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Introduction: Teachers' diagnostic ability, intellectual quality, and instructional logic are critical to their effective pedagogies in the classroom. It helps them to observe critical elements in the ongoing lesson, understand what is happening in-the-moment, and decide to act in the very instance of instruction. It is anticipated that such expertise creates a conducive environment to enhance student engagement and learning.

Aims of the papers: This symposium offers an innovative methodological approach to understanding the unique pedagogies of primary school physical education (PE) teachers. Specifically, the opening paper introduces the professional noticing theoretical framework that includes attention, reasoning, and action (Jacobs, et al., 2010), and a system-wide observation methodology developed to understand the nature of PE teachers' pedagogical repertoire in Singapore schools. The next two papers focus on the eye-tracking glasses technology to represent from the teachers' perspectives, information-visual processing, and knowledge-based reasoning experiences during teaching. The final paper describes what goes on in the PE primary

classrooms, specific to general and PE-specific instructional domains related to teachers' effectiveness.

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- Jacobs, V., Lamb, L., and Philipp, R (2010). Professional noticing of children's mathematical thinking. *Journal of Research in Mathematics Education*, 41(2), 169-202. <https://doi.org/10.5951/jresmetheduc.41.2.0169>.

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Symposium 4: Motor Competencies

MOBAK assessment in primary schools in Frankfurt, Germany: The program "Schoolkids in Motion"

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Within the program "Schoolkids in Motion", the city of Frankfurt am Main aims to further enhance cooperation between elementary schools and sports clubs in order to encourage children's lasting club sports activities. The program includes a sports and motor skills test for first graders using – amongst other items – the MOBAK (basic motor competencies) test battery (Herrmann, 2018). Since the program was launched in 2014, approximately 1,200 to 1,600

children from around 30 different elementary schools in Frankfurt have been tested each year. In the presentation, we will give an overview of the content, implementation, and evaluation of this test, as well as the challenges associated with its implementation. The MOBAK tests are conducted by students trained by university staff. All children get a certificate and the children's test results are then used as a door opener to make parents aware of the activities offered by local sports clubs. We will illustrate how the cooperation between the Sportkreis Frankfurt (the umbrella organisation of all sports clubs in Frankfurt), the Goethe University Frankfurt and the developers of the MOBAK test battery leads to synergistic effects for all partners. We will also show how such a regularly conducted test with large samples can form the basis for accompanying scientific research. For example, data from the "Schoolkids in motion"

project contributed to the generation of norm values for the MOBAK-1 and MOBAK-3 tests (Herrmann, 2018). Also, our data helped to confirm correlates of basic motor competencies found in previous studies (Herrmann et al., 2019), e.g. effects of sex and BMI. Another example is the association between actual and parent-assessed motor competencies (Ennigkeit et al., 2019). Correlations were low to moderate, indicating that parental report may be considered as a screening instrument, but cannot substitute objective assessment on an individual level.

Keywords: basic motor competencies, primary school children, movement promotion.

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Teachers make the difference? – Influence of the professional qualification and goal orientation of physical education teachers on the development of basic motor competencies of primary school pupils

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Introduction: The qualification of teachers, their beliefs and values and goals are aspects of professional competence. Their influence on the competence development of primary school pupils has already been studied in several school subjects. The results are inconsistent. So far, there are hardly any findings for physical education.

Objective: This study examines the extent to which the qualifications of teachers and their goal orientation influence the development of basic motor competencies in primary school pupils.

Methods: The basic motor competencies (object-movement, self-movement) and age, sex, body-mass-index of 398 pupils (51,8% male) were surveyed longitudinally and 24 physical education teachers (20,8% male) were questioned at the first measurement point regarding their qualification and goal orientation.

Results & Conclusion: Several models were calculated to explain the development of basic motor competencies. The teachers' goal orientation is decisive for the development of basic motor competencies, not the qualification.

Keywords: BMC, longitudinal, non-specialist, physical education, primary school.

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Self-perception of basic motor competencies in first and second grade children: The SEMOK-1-2 instrument

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Introduction: A positive-realistic self-perception is considered as an important prerequisite for learning. Moreover, the promotion of this is an educational goal of PE **(1)**. Basic motor competencies (BMC) are a prerequisite for participation in the culture of sport and movement and the acquisition of sport-specific skills **(2)**. Currently, correlations between the constructs are increasingly being investigated and discussed **(3)**.

Objective: Based on the MOBAK-instrument for 1st and 2nd grade **(4)** an illustrated instrument for the assessment of perceived BMC was validated.

Methods: As part of a validation study (N=409 children, M=7.8 years, SD=.78, 48% boys) the construct and criteria validity of the SEMOK instrument were evaluated. Using the eight SEMOK test items, a confirmatory factor analysis

(CFA) was calculated. Correlations with the covariates BMI, age and sex were investigated and level components between actual and perceived BMC were calculated.

Results: CFA confirmed a two-factor structure of the SEMOK test instrument with the factor self-perception object movement and self-perception self-movement, which is consistent with the structure of the MOBAK test instrument. The latent correlation of the SEMOK factors with the corresponding MOBAK factors was $r=.78$ for object movement and $r=.75$ for self-movement. Moreover, the level components were calculated. The children overestimated themselves in both object movement ($d=-.33$) and self-movement ($d=-.87$), whereas the boys overestimated themselves higher in object movement than girls.

Conclusion: The SEMOK-1-2 instrument can be used economically in class. The present study could show that the perceived BMC are cognitively represented in children in 1st and 2nd grade.

Keywords: self-perception, motor development, self concept, motor skills, childhood

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Development of basic motor competencies and connections with sports participation

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Introduction: During childhood, children develop their motor competencies. Basic motor competencies (BMC) are a central prerequisite for participation in sport activities **(1)** and form the basis for sport-specific skills **(2)**. In school, children have a choice of formal (e.g. sports club) and informal (free play) settings in which they can engage in sports activities **(3)** and increase their BMC **(4)**.

Objective: The purpose of this study was to investigate the relationship between BMC and sport participation.

Methods: As part of the longitudinal study "Development of basic motor competencies in childhood", funded by the Swiss National Science Foundation (SNSF), the BMC of N=659 preschool children (51% boys) and N=393 first and second grade children (49.4% boys) were assessed at two measurement points. Parent questionnaires were used to assess the children's sport participation. In initial analyses, the development of BMC was calculated using ANCOVA, with age as a covariate.

Results: Differences between girls and boys could be observed in preschool as well as in first and second grade. Boys showed better performance in "object-movement" whereas girls were better in "self-movement". From first to second grade, sports club participation increased ($F(1,467)=28.546$, $p<.001$, $\eta^2=.058$). First and second graders who were active in a sports club performed significantly better in both competence areas than children who were not.

Conclusion: Children who were active in club sports show a higher level of BMC, which seems to persist in the longitudinal section. This indicates an early selection effect and the importance of BMC for club sport.

Keywords: motor skills, development, physical activity, physical education

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Using Eye Tracking to Capturing Physical Education Teachers' Visual Perception during Teaching

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Introduction: The use of mobile eye-tracking has played an increasingly vital role in education, sports, and active living research as it provides useful information regarding the information-visual perception abilities of students, teachers, athletes, and adults (Jarodzka, et al., 2017). Yet, there is still a dearth of research on measuring PE teachers' visual perception directly with eye-tracking within PE classroom teaching. For PE teachers, it is essential for them to distill the relevant observable information in the complex classroom environment that is indispensable for successful student learning.

Objectives: The purpose of this paper is to present what teachers give importance to and capture visual perception in the classroom by analyzing gaze patterns during teaching.

Method: Thirty teachers wore eye-tracking glasses while teaching two, 30-minute lessons (n=60 lessons) to capture teachers' gaze patterns in the classroom. Areas of interest (AOIs) were created to reflect the complex interactions between the classroom environment and the teachers. By quantifying the fixation counts and durations, specific AOIs that were either caught or neglected by the teachers were analyzed.

Results: The analysis of teachers' gaze patterns during visual perception, using both spatial and temporal dimensions of the eye-tracking data, illustrates teachers' gaze behaviors during authentic teaching scenarios. Consistently, PE teachers tend to prioritize their gaze behaviors toward visual cues related to student learning, and to a lesser extent on equipment, and non-instructional classroom regions.

Conclusion: The results highlight the important usage of eye-tracking technology to help strengthen our perspectives and gain a deeper understanding of PE teachers' visual perception processing capability and educational practice in authentic lessons. The research thus helps to enrich the existing literature on how the role of visual perception plays in the very act of teaching for PE teachers in their classrooms.

Keywords: eye-tracking, gaze behaviors, visual cues.

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Understanding Physical Education Teachers' In-the-Moment Noticing and Knowledge-Based Reasoning

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Introduction: In the physical education context, teachers selectively attend to students' thinking processes through their behaviors and psychomotor performance during lessons. For such occurrences, teachers respond with in-the-moment pedagogical decisions based on what they notice and ascribe meaningful importance to them (Muhonen, et al., 2023; Reuker, 2017; Sherin, 2014).

Objectives: Therefore, this paper focuses on primary PE teachers' professional vision from the perspective where it explores what critical PE-specific incidents teachers attend to (i.e., meaningful features of pedagogical practices) and what reasons they give for the observations and actions.

Method: Teachers were asked to review several 2-minute segments of their own 30-minute lessons using the eye-tracking recording and to identify and reflect on critical incidents that occurred. The critical incidents were identified by teachers that function as stimuli to activate their selective attention and explain the rationale behind their noticing during the retrospective think-aloud (or stimulated recall) interview. The interviews were recorded, transcribed, and analyzed based on constant comparative method.

Results: The rationalization based on students' particular past experiences, lesson objectives, development and learning, and social emotions were explained by teachers as critical features to their in-the-moment noticing and knowledge-based reasoning. To a lesser extent were noticing events related to disruptive behaviors, equipment, environment, or other task-irrelevant situations.

Conclusion: The innovative contribution of this paper is the use of eye-tracking methodology and retrospective think-aloud (or stimulated recall) interviews to examine simultaneously the domains of teachers' knowledge-based reasoning that guided selective attention and interpretation of events.

Keywords: professional vision, knowledge-based reasoning, critical cues.

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Examining Physical Education Teachers' Pedagogical Repertoire through a Systematic Observation Lens

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Introduction: In earlier systematic studies across English, Mathematics, Science, Social Studies, and Mother Tongue classrooms, it was revealed that Singapore's teachers' pedagogical approaches tended primarily toward a more pragmatic mode focusing on the transmission of factual and procedural knowledge, with the acquisition of domain-specific skills and practices (Hogan, et al., 2013). More recently, the CORE 3 The Singapore Coding Scheme Manual for PE (SCSMPE) (Onishi, et al., 2020) was developed to gather baseline data on PE teachers' pedagogical indicators during classroom teaching. Therefore, it is useful to provide empirical answers to the persistent question 'Are Singapore's PE teachers effective in promoting student learning in primary schools?'

Symposium 5

Physical Literacy in Ibero-America: Towards a contextualized development

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Objectives: Specifically, the paper seeks to describe teachers' pedagogical repertoire reliably that is unbiased by observer interpretation using systematic observation.

Method: Using the SCSMPE (2020), a total of 60 lessons were coded in 15-second intervals ('episodes') for each lesson specific to PE-domain categories, e.g., student learning activity, classroom talk, feedback, and classroom management. A binary coding scheme to record whether or not an instructional event (based on Singapore Teaching Practice Processes) happened during episodes was used, with a Likert scale to capture more details about specific instructional events. All the data were analyzed according to frequencies using SPSS.

Results: Data were sufficient to develop distinct primary school PE teachers' pedagogical repertoire specific to the following domains: (a) teacher and student talk, (b) classroom management, (c) student practice, and (d) transitions. The Likert ratings were used to describe observed levels from absent/unsatisfactory (Level 0) to high quality (Level 3) for the following areas: (a) clear explanation and demonstration, (b) questioning, and (c) assessment and feedback.

Conclusion: The SCSMPE has been shown to provide evidence-informed pedagogical practice descriptors on the state of primary school physical education in Singapore schools.

Keywords: systematic observation, pedagogical repertoire, primary school PE teachers.

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Introduction: In recent years, the study of Physical Literacy (PL) has generated much interest, due to the holistic approach it promotes, being considered as a guide for public policies in education, sport and health. Despite its fast dissemination in different countries, it is not that known in Ibero-America, yet. In Spain and Portugal, it is just emerging as a topic of study, while in Latin America there is still no evidence of it as a subject of study in the field of Physical Education. In Chile, the work began with a

consensus process on PL, starting with the definition of this approach. In this context, the purpose of this symposium is to describe and update the knowledge about PL in Ibero-America, presenting both emerging experiences (Spain and Portugal) and exploratory studies (Chile); as well as to discuss whether it is possible to contextualize this approach within the Ibero-American reality.

Objective: This symposium seeks to share diverse and novel approaches of PL; it will consist of four papers that aim to present what PL means in Ibero-America.

Methods: 1) a systematic review of the literature and 2) the beliefs of physical education teachers. Furthermore, the speakers will present experiences of the development of PL in the

educational context, both 3) conceptually in Portugal and 4) empirically in Spain.

Conclusion: This symposium will provide an opportunity to discuss the study of PL in Ibero-America in a contextualized manner. We will invite the participants to reflect their own country and research perspective together with the international multidisciplinary panel, to identify opportunities for collaboration and to reflect on how this symposium can influence their own work.

Keywords: physical literacy, physical education, physical activity, Spanish, Portuguese, Iberoamerica.

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Symposium 6: Debating Olympic Education in Latin America

Olympic Education Internacional Review 2022

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Introduction: It was noticed an evolution of the discussion of “olympic education” values since the first writings of Coubertin, its different phases, the creation of the term by Norbert Muller, many discussions of different approaches by Roland Naul, and varied perceptions, contributions and criticisms, shaping the called “educational themes of Olympism” that Canadian researcher Deanna Binder had with her work in 2012, considered as a milestone of this conception.

Objective: We aimed to review the conceptions of olympic education as a pedagogical tool for social inclusion.

Methods: The review of international scientific references took place through the “Connected Papers” software, which presents works of “origin and derivation”, creation of bibliography for thesis and presents an overview of an academic field

Results: After studying the antecedent texts and those derived from the field of studies on Olympism's educational themes, it was able to highlight categories that would deserve greater emphasis. The first would be about Coubertin's considerations about a certain integral education, which would educate youth in a physical, mental and social way. The second would be about Olympic education as a pedagogical methodology: would it in fact be an ideological inscription with pseudo-religious characteristics with the objective of social neocolonization and

inclination to capitalist consumerism? Or would it be an opportunity to express critical pedagogies based on values that, before being Olympic, are human, and have in the Olympic history, an immense arsenal of facts and examples. Finally, the category of analysis of programs of Olympic education in practice. The production and dissemination of empirical studies on the results of these programs.

Conclusion: There is a need for new insights into the themes of “holistic education”; the pedagogical methodology hanging between the “capitalist ideological inscription” and the critical possibility based on examples of historical facts; and finally, on the empirical work produced in identifying changes in the “world of life” of participants in Olympic education programs.

Keywords: Olympic education, International Review, World of life.

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Olympic education at Rio 2016 Games: Between knowledge and life world

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Introduction: In 2016, for the first time, the Olympic and Paralympic Games took place in Latin America. One of the commitments of the host city is to offer an educational program in years prior the Games (Naul; Binder; Richtecky; Culpan, 2017). Transforma, the educational program of the Rio 2016 Organizing Committee for the Olympic and Paralympic Games, was developed from 2013 to 2016, reaching 16,000 schools in more than 3,000 municipalities throughout Brazil. However, there is lack of evaluations of this kind of program (Graver Et Al., 2010; Nikolaus, 2013) What Was Also Emphasized By Ioc Agenda 2020 (International Olympic Committee, 2014).

Objective: We aimed to measure the reach and impacts of Transforma, considering: official data, managers' reports and opinion of teachers.

Methods: This is an ex-post facto, pre-experimental research, who used questionnaire, interview, document analysis and geoprocessing as analytical tools.

Results: The quality of the educational material, the training programmes, the diversification of means and the ability to articulate with various public and private agencies stand out. The activities were oriented more towards 'knowledge' and 'experience' than towards 'competition' and the 'life world' Olympic education approaches (Naul, 2008). The main beneficiaries were students from schools with a high level of educational development, located in urban centers in the southeastern region of the country. The formal generality of its objectives (to get in touch with the Games, try new sports out and live the Olympic and Paralympic values) had impacted on the low level of knowledge acquired and actions of the teachers.

Conclusion: The Program had a significant national reach, however, its educational objectives, temporary nature and low level of articulation with educational authorities limited its effective educational impact.

Keywords: Olympic education, Olympic Games, Transforma programme.

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Philosophical perspectives of Olympism

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Introduction: The writings of Pierre de Coubertin on the Olympic philosophy, also known as Olympism, support in a plural and non-systematic way the ideals of human development that the creator of the modern Olympic Games conceived for the sport (McNamee; Parry, 2012). Scholars of the subject claim that Coubertin produced a work of eclectic characteristics, incorporating political, ethical, and philosophical perspectives as the foundation of Olympism (Durry, 2016).

Objective: The general objective of the research is to define a philosophical perspective of unity for Olympism based on three steps: (i) to identify the ethical proposal of the Olympic philosophy; (ii) to verify which philosophical theories support the goals and proposals of Olympism; (iii) to analyze which political theory is present in the conceptions of Olympism.

Methods: The methodology implemented is document analysis and hermeneutic analysis, both from the original writings of Pierre de Coubertin and of researchers on Olympism. The analyzed documents have their sources on the official websites of the International Pierre de Coubertin Committee, the National Pierre de Coubertin Committees and the Olympic World Library.

Results: As partial results, we have (I) identified the ethical proposal of Olympism according to "virtue ethics", above all, in Aristotle; (II) an analysis of Coubertin's Education for Peace is proposed in relation to the philosophies of education that aim at character education, especially with Seneca, as well as Stoic Cosmopolitanism; (III) as a political vision of peace and harmony, a comparative analysis is proposed between the writings of Coubertin and 'Perpetual Peace', by Immanuel Kant.

Conclusion: Despite the eclectic and non-systematic character of Olympism, it seems to be

possible to identify the intellectual foundations of Coubertin's work, broaden the understanding of the Olympic philosophy and to increase the understanding of its educational potential.

Keywords: Olympic philosophy, Pierre de Coubertin, Olympism.

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Defining the olympic education proposals, foundations and objectives

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Introduction: The existing definitions allow us to suppose that there are different meanings of the term Olympic Education, which make it polysemic (Culpan, 2001; Georgiadis, 2009). Values and education highlight the multifaceted aspects of this field.

Objective: Education in Olympism Values is identified, demonstrated, and structured. Therefore, there are reasons to develop Pedagogy, give them a purpose, an explanation and make them concrete.

Methods: Bibliographic search, speech analysis, conceptual interpretation of the empirical data found.

Oral Presentations

Theme 1: Physical Activity, Health Promotion, Policy & Education

A comprehensive evaluation to measure the impact of a legislated physical education pilot program

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Introduction: Colorado is one of only four U.S. states without physical education (PE) requirements at any level of schooling. This was the impetus for a coalition to pursue the development of legislation that established a pilot for the implementation of a 15-requirement

Results: Since Olympic Education is broad and is based on the values of Olympism, it is possible to assume this task from the specific point of view, to adjust it to the current normative hypotheses. The institutional dynamics of Education makes the common subject more feasible. The results could be improved by reinforcing the idea that Olympic Education is an Education in Values, and that it is necessary to give it a purpose, applicable to the structure of educational services, in the curricular and extracurricular spheres to define the path to follow.

Conclusion: The selection of professional roles for educational transformation through Olympic Education in Values is crucial. It is possible to add objectives and attitudinal contents in the training of trainers: Olympism. A set of strategies based on the management of Olympism should be developed to establish close contact with Institutes and Universities of Physical Education and an analysis should be carried out from the Local perspective, with the intention of establishing fields, studies and focus and transfer.

Keywords: Education, Olympic education, pedagogy.

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Model PE Policy by selected schools. The legislation mandated that an evaluation be undertaken to determine the impacts of the pilot.

Objective: The purpose of this paper is to overview the development of a multi-component evaluation being used to evaluate the implementation of the Model PE Policy.

Methods: The evaluation plan was developed in several stages; first, the research team conducted searches of literature to determine existing tools being used to assess each measure; next, each measure was listed in a spreadsheet which included details such as previous studies that had used the methodology; and finally, discussions within the team resulted in consensus of which tools to use based on research-team capacity and evidentiary rigor. The resulting data collection plan for the evaluation included 22 measures

within the categories of student demographics, school outcomes, PE outcomes, implementation, and participant perceptions.

Results: Developing a comprehensive evaluation based on legislation was not without its challenges. However, the research team was able to take advantage of the vagueness evident in the legislation to include additional measures of improvement in PE and to check for fidelity of implementation.

Conclusion: Others initiating PE policy initiatives can utilize similar strategies to collect high quality data on process and outcomes.

Keywords: poilycy, physical education, evaluation.

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The ripple effect of COVID-19 pandemic on young, preschool-aged children's physical and socio-emotional development

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Introduction: The COVID-19 pandemic had an immediate, negative impact on children's physical activity (PA). Nonetheless, the extended impact on young children's development associated with the pandemic should also be studied.

Objective: To examine how the pandemic might have affected young children's physical development and PA.

Methods: A mixed-method approach was employed for this study. Children (aged 3 to 6 years) and parents from 168 families took part in the study. Parents were asked to complete the Strength and Difficulties Questionnaire (SDQ) to assess their children's socio-emotional status. Physical activity was measured using ActiGraph accelerometers to determine whether children met physical activity guidelines set by the World Health Organization (i.e., 180 minutes of total physical activity and 60 minutes of moderate-to-vigorous physical activity [MVPA]). Qualitative data was also collected via interviews with parents from 16 families.

Results: Accelerometer data showed that 18.4% of children met PA guidelines, while their grade level was associated with their MVPA ($r=0.20$, $p=.012$) and SDQ scores ($r=-0.15$, $p=.030$). Through interviews, parents expressed that their children had not been able to go outdoors frequently due to pandemic-related restrictions. Limitations to PA, consequently, may have led to

more physical and emotional problems in children.

Conclusion: Kindergarten children have spent a large part of their school lives under pandemic-related restrictions, which negatively impacted their PA. Collateral effects were not limited to physical aspects, such as underdeveloped motor skills, but also children's socio-emotional developments. Special attention and intervention are imperative to lessen the long-term influence on children's growth and well-being.

Keywords: physical activity; parent; motor skills.

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Parent's physical literacy empowers intergenerational transmission of positive values towards physical activity in the family context

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Introduction: Physical literacy refers to the affective, physical, cognitive, and behavioural aspects of physical activity (PA). Previous studies supported its important role in fostering PA participation in the school setting¹, yet its potential effect in the family context remains unknown.

Objective: To examine whether parents' physical literacy empowers the intergenerational transmission of positive values towards PA and its potential mechanism.

Methods: 946 participating families (6-13y children and their parents) from 30 Hong Kong primary schools who participated in the Fun to Move@JC project completed an online survey from September 2020 to January 2021. Measures included parents' physical literacy and PA values, children's perceived autonomy support and PA values.

Results: Two significant mediation effects from parents' physical literacy to children's values towards PA were found: via parents' PA values ($\beta=0.13$, 95% CI [0.07, 0.19]), and via parents' PA values to children's perceived autonomy support ($\beta=0.05$, 95% CI [0.02, 0.08]). That is, parents' physical literacy predicted parents' positive values towards PA, which linked to more children's perceived parental autonomy support

for PA, and eventually fostered children's positive values towards PA.

Conclusion: Parent's physical literacy empowered the intergenerational transmission of positive PA values in the family context. Parental autonomy support serves as one possible mechanism of this link between parents and children. Practitioners may conduct interventions to elevate parents' physical literacy level, which would allow parents to create a supportive family environment for children. These measures could cultivate positive values towards PA among parents and children.

Keywords: physical activity; parent; motor skills.

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A case study: Impact of assessment for learning on skill acquisition and engagement in a badminton unit in a secondary school in Singapore

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Introduction: Assessment for learning (AfL) provides feedback to learners, regarding the learners' progress towards the learning objectives, and allow students to take ownership of their own learning (Chng & Lund, 2018; Tannehill, Van der Mars, & MacPhail, 2013). Recent literature review on assessment in PE showed a shift from assessment of learning (AoL) to Assessment for Learning (AfL) (Moura, Graça, MacPhail & Batista (2021). However, there are still limited studies on the impact of assessment for learning on students' learning.

Objective: The purpose of this study is to examine the impact of using AfL tools on teaching and learning in physical education on students' skill acquisition and student engagement.

Methods: A quasi-experimental group design method was used and one class had AfL tools incorporated in the teaching and learning over 8 lessons, while the other class did not. The acquisitions of skills were measured by an analytical rubric by two independent raters, while the response rate was measured by the number of times the students contacted the shuttlecock (birdie) during gameplay.

Results: Results showed that the class with AfL tools incorporated into the lessons had a significantly higher response rate than the class

without. Both classes experienced almost similar improvement of skills even though the class with AfL tools incorporated had less game play time.

Conclusion: This study concluded that assessment for learning when incorporated into lessons can increase engagement and motivation, but with no significant conclusion on the impact on skill improvement and psychomotor learning.

Keywords: formative assessment, game play assessment, middle school physical education

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Promoción de hábitos saludables a través de la innovación pedagógica y uso de las TIC: Experiencia de la implementación de un curso virtual sobre alimentación saludable y actividad física en la Universidad de los Andes, Colombia.

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Introducción: Existe amplia evidencia científica sobre el impacto positivo a nivel social y económico de los países al hacer inversión en actividad física, sin embargo los altos niveles de inactividad física, el crecimiento de las enfermedades crónicas no transmisibles y las enfermedades que afectan la salud mental como la depresión y la ansiedad, especialmente después de la pandemia del COVID-19, son muestra que es necesario aumentar los esfuerzos e impulsar la creación de proyectos que promuevan hábitos de vida saludable como la práctica regular de actividad física y una alimentación saludable.

Objetivo: Relatar la experiencia de la Decanatura de Estudiantes de la Universidad de los Andes, en el diseño y ejecución de un curso virtual alineado con el proyecto educativo institucional y que tiene como objetivo, sensibilizar y promover hábitos de alimentación

saludable y actividad física además de generar una cultura de cuidado en la universidad.

Metodos: El curso inició en el año 2021, en modalidad virtual y de libre acceso para estudiantes de pregrado, posgrado, docentes y funcionarios de la universidad. Los temas se distribuyeron en 7 módulos, cada uno con actividades interactivas que motivaran a la persona a reflexionar no solamente de sus hábitos actuales en actividad física y alimentación, sino también de su disposición al cambio de comportamiento, esto último basado en el modelo transteórico. Además, de implementar un plan de cambio utilizando la herramienta WOOP.

Resultados: El curso ha contado con la inscripción de 1823 personas, siendo los estudiantes de pregrado y funcionarios los de mayor participación, sin embargo, el 12% de los inscritos han obtenido el certificado. Los comentarios finales de los participantes sobre la experiencia del curso, indican una contribución a la mejora de su calidad de vida.

Conclusion: El curso tiene un impacto inmediato sobre el estilo de vida de los participantes, pues se evidencia proceso de reflexión y cambio sobre los hábitos actuales de actividad física y alimentación. Sin embargo, la tasa de deserción es alta, además es necesario implementar un proceso de evaluación que permita identificar si el proceso de cambio que inicia el estudiante se mantiene a largo plazo.

Keywords: Actividad Física, Alimentación saludable, Educación Virtual, Estilo de Vida.

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Parental and family factors of physical activity participation in a national sample of 9-year-old Irish children

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Introduction: The family and parent setting provide contexts where socialisation of children's physical activity (PA) behaviour occur (Pate et al., 2019).

Objective: The purpose of the study was to identify family and parent factors associated with physical activity (PA) participation in Irish children (aged 9 years) using the Growing Up in Ireland (GUI) national longitudinal study.

Methods: Regression analysis was used to examine 36 family and parent variables for a potential relationship with children's self-reported PA behaviour.

Results: Significant associations were found for nineteen family and parent factors examined in the sample (n=4,894). Regression models explained between 14-18% of PA behaviour variance for boys and between 7-10% for girls. Family and parent factors that discriminated between physically active and physically inactive children were different to the factors that influenced duration of PA in active children.

Similarities and differences were found for associations related to boys and girls PA behaviour. Factors that were found to have significant associations ($p < 0.05$) with PA behaviour for both boys and girls were household income, alcohol consumption by mother and child-parent relationships. Unique factors associated with boys PA behaviour included: not getting on with siblings, having a dog, mother's health, mother's education, mother's BMI, mother's age, and mother's work-life balance. Unique factors associated with girls PA behaviour included: mother's opinion of child's body weight, mother's co-participation in PA with child, hours mother works each week, total people in the household, and mother's depression.

Conclusion: Study findings contribute to the literature on understanding factors that are associated with children's PA behaviour.

Keywords: children; physical activity; correlates; social ecological model; family, parent

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Understanding transitions into and out of orienteering coaching in the United Kingdom

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Introduction: The character, structure, and culture of orienteering encourages former elite athletes to maintain lifelong participation in the sport, however, little is known about why individuals transition into and out of coaching roles within orienteering. Research exploring coaching 'journeys' tends to focus on high-performance contexts within mainstream team sports, overlooking such transitions in adventure sports and within participation/development domains.

Objective: To understand orienteering coaches' perceptions and experiences of, and reasons for, transitioning into and out of coaching roles.

Methods: Eighty-four orienteering coaches from across the United Kingdom completed an online qualitative survey. Data were analysed via a *reflexive* thematic analysis process (Braun, Clarke & Weate, 2016), resulting in the development of four primary themes; two themes will be discussed.

Results: Individuals 'become' orienteering coaches for a variety of reasons. The athlete-to-coach transition was seen as a natural progression by many, while others described a desire to 'give back' to the sport, incidental events (i.e., 'right place, right time'), or passive entries into coaching (i.e., encouraged to coach), as a catalyst for their coaching careers. In contrast, time, family commitments, age, health, and internal club struggles were considered significant factors behind the need to transition out of coaching. Challenges associated with obtaining and maintaining coaching qualifications, a lack of paid coaching positions, and limited promotion of the sport were also reported as reasons to stop coaching.

Conclusion: The findings highlight the multifaceted, idiosyncratic, and complex nature of transitions in and out of orienteering coaching. Recommendations for orienteering governing bodies are provided.

Keywords: orienteering, transitions, coaching.

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Effects of mindfulness on psychological barriers to physical activity practice of teenage girls

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Introduction: 6% of Canadian girls meet the physical activity (PA) recommendations (Colley et al., 2017; Statistique Canada, 2015). It is crucial to design PA interventions targeting teenage girls carefully, mainly due to perceived barriers to PA (Rosselli et al., 2020; Harvey et al., 2018).

Objective: This study aimed to evaluate:

- a) The effects of mindfulness on PA practice.
- b) The effects of mindfulness on psychological variables related to PA.
- c) Participants' perceptions of their PA practice.

Methods: A quasi-experimental study with mixed-methods approach was used. 5 PA sessions were conducted with one group involving a mindfulness practice ($n=12$) and another including health vignettes ($n=5$). The participants could not be randomly assigned because the pandemic context. Accelerometers, standardized questionnaires, and logbooks were used for data collection.

Results: No significant differences were observed in PA practice and in variables targeted by the questionnaires. The mindfulness group perceived a change in self-judgment, self-efficacy, motivation, well-being, and a reinvestment in activities. The health vignettes group perceptions did not show any change, except for an improvement in their knowledge of healthy habits.

Conclusion: The results are consistent with literature (Schneider et al., 2019; Yang & Conroy, 2019). Two reviews explain this relationship by the effects of awareness to the present moment and mindful attitudes on psychological variables related to PA. Because psychological variables change with repeated exposure, these perceived changes are based on the beginnings of behavior change, rather than a paradigm shift. The direct effects of mindfulness on PA could benefit from further research.

Keywords: mindfulness, physical activity, psychological barriers.

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'Well, I can show you, here's the video' Playing football in primary school: synergies of TGfU and digitally enhanced learning processes

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Introduction: The use of digital technology in physical education (PE) is widely debated. PE is influenced by children's everyday lives and by changes in society, including the powerful presence of digital technology. In Germany, media education is not an independent school subject but a cross-curricular educational mandate that needs to be discussed within different subjects, including PE. However, there is little research on using digital technology in the context of invasion games in primary school PE (Jastrow et al., 2022). The possibility of combining video tagging and the didactic-methodical staging of PE to cover the content of football is investigated in the present study.

Objective: The objectives of the study were to (1) ascertain how students perceive the implementation of video tagging during student-led debates and (2) explore which action rules from these debates the students reconstruct during the interview. The study focused on the communication and interaction processes among the students, considering the aspects of movement education, general education, and media education.

Methods: In six Grade 4 classes in Germany, a football unit was taught over three lessons of 90 minutes each using the Teaching Games for Understanding method, preceded by one 90-minute media education lesson on various media pedagogical topics. In the lessons, the students were divided into teams of four and presented with football in the context of three-versus-three games. The fourth child on each team took on the camera-child role and tagged important game situations with an app on a tablet. The lessons were then evaluated based on the research approach of focusing on the students' perspectives. For this purpose, 104 guided interviews with students were conducted and analysed using grounded theory methodology (Corbin and Strauss, 2008).

Results: Based on the interview analysis, the phenomena that students experienced in video-supported debates were classified as: 1) the facilitation of student-led debates through

visualization (with the subcategories assessment and management of game performance and facilitating images for the discussion of (certain) game situations), and 2) action rules (with the subcategories of tactical considerations and technical elements). The results showed that physical activity was more important to students than using tablets.

Conclusion: The use of digital media offers a greater variety of methods and allows children new and expanded access to invasion games like football. In the process, (sports) pedagogical and didactic goals also change and are expanded to include media pedagogical aims. Social learning is also important in this context. In orchestrating digitally enhanced instruction, new opportunities open up in terms of learning and experiencing movement and learning about media and the media products created.

Keywords: videotagging, digital technology, primary school.

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Why some 10-18 year-old volleyball players did not renew their membership after 2019-2020 season?

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Introduction: Adolescents' dropout represents one serious concern for sport organizations as well as for public authorities. In their systematic review, Moulds et al. (2022) underlined the diversity of the factors that contribute to that phenomenon while Back et al. (2022)'s meta-analysis confirmed the central role of motivation.

Objective: The study is focused on (1) the reasons for dropout among young volleyball players and (2) the identification of potential player profiles affected by dropout.

Methods: In January 2021, with the support of the Wallonia-Brussels Volleyball Federation, 971 10-18-year-old players who did not renew their

membership between 2019-2020 and 2020-2021 seasons were invited to complete an online survey (Lickert scales).

Results: Descriptive statistics showed that only two factors were considered as important/very important by at least one half of the former 172 players who answered: (1) Relationships with teammates, (2) Lack of enjoyment. The profile of the factors corresponds largely to previous data from the literature. According to model-based clustering and Bayesian Information Criterion, subjects were divided into two clusters. Subjects of the second cluster (n=87) were significantly younger and had less experience playing volleyball. Furthermore, Rules, Autonomy, Teammates, Expenses, Health, Enjoyment, Skill-, Skill+, and Coach were significantly more important. However, Organization was significantly important for cluster 1 (n=81). It seems that when organizational aspects are not involved, the origin of the dropout stems from a combination of factors that coaches and clubs should take into consideration.

Conclusion: To fight against dropout, federation/clubs could focus on coaches' education to promote a positive motivational climate, mainly with beginners.

Keywords: dropout, youth, volleyball, Wallonia-Brussels federation, cluster analysis.

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Determining Best Practices for Hockey Teams Following Team Tragedy

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Introduction: The topic of athletes' mental health is one that has recently gained considerable attention. For a sport such as ice hockey, displays of emotional vulnerability have long been discouraged and the historically perpetuated ideals of hegemonic masculinity that glorify those able to push through pain remain intact (3, 6). But what happens when tragedy strikes? How can the well-being of athletes be

protected? Recently, there has been a greater call for accountability and progress towards more favourable player experiences in Canadian ice hockey (2, 5, 7).

Objective: This study's objective is to determine the best practices for athlete care following team tragedy and to assist organizations facilitate those outcomes.

Methods: Our methods utilize semi-structured interviews with appropriate stakeholders to collaboratively identify best practices and resources for teams in crisis, as well as identifying organizational capacity for support. This consultation process informed policy recommendations that can be implemented across multiple levels of sport and can help guide athletes through the recovery process (1, 4).

Results: Numerous participants mentioned an increased awareness in caring for athletes' mental health and preparing for tragic situations, although planning on this front was limited. In blueprinting a potential response, participants emphasized the need for mental health resources, though their capacities to acquire these resources varied considerably.

Conclusion: It can be concluded that most organizations are unprepared to handle the response to a team tragedy, while resources vary significantly from one organization to another. Due to this, it became evident that responses should be tailored to individual organizations and adjusted based on organizational capacity.

Keywords: mental health, policy, tragedy response, resources

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Changes in Motor Competence of 4-8-year-old children: a longitudinal study

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Introduction: The development of children's motor competence (MC) from early- to middle childhood can follow different patterns. Longitudinal study designs enhance our understanding of motor competence development of an individual child.

Objective: The purpose of this longitudinal study was to describe and quantify patterns of MC development from early childhood (2-5 years) to middle childhood (6-9 years).

Methods: Data were collected in three consecutive years, between February 2020 (T0) and May 2022 (T2). A total of 1131 typically developing Dutch children (50.2% male) between 4 and 6 years old at baseline (M = 5.35 ± 0.69 years) participated in this study. MC was measured with the Athletic Skills Track (AST) and converted into Motor Quotient (MQ) scores. To convert all individual MQ scores into patterns of MC development, changes in MQ subcategories were analyzed between T0 and T1 and between T1 and T2.

Results: A total of 11 different developmental patterns were found. When grouping the different patterns, 18.2% of the children showed an undesirable pattern of MC development between T0 and T2. These children showed a continuous low- or a decreasing course in MC over time. The patterns of motor development of the other children showed no worrying course.

Conclusion: There is a lot of variation in motor competence in early- and middle childhood. A substantial percentage of young children showed unhealthy MC developmental patterns emphasizing the need for early and targeted interventions.

Keywords: early childhood, middle childhood, motor competence development, longitudinal, undesirable patterns.

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A transdisciplinary approach to the Determinants of Physical Activities in Settings (DEPASS): A COST EU Action that bridges the knowledge - practice gap

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Introduction: Though regular physical activity (PA) is recognised as a means to increase and preserve the health of individuals and to reduce the risk of chronic diseases and mortality¹, European and global society is largely physically inactive².

Methods: A European Cooperation in Science and Technology (COST) Action called 'Determinants of Physical Activities in Settings' (DE-PASS; <https://depass.eu>) was set up in 2020 to examine and understand the associations between PA determinants.

Objective: Through collaboration amongst established researchers, policy makers, and early career investigators, the objective of the Action is to facilitate and guide the identification and greater understanding of determinants of life course physical activity behaviours (PABs) and translate this knowledge into outputs which will assist policy makers and practitioners to achieve more effective health promoting settings.

Results: Research capacity of DE-PASS has grown since its founding and includes 37 European countries, 8 international partners and 300+ participants. A network of multidisciplinary stakeholders collaborates in four work groups (1) overall management, capacity building, dissemination, and exploitation; (2) evidence translation; (3) PABs determinant profile measurement toolkit; and (4) European harmonisation of data collection, which have 19 deliverables due for completion at the end of 2024. Through a knowledge transfer platform (KTP), DE-PASS continues to achieve the completion of work group deliverables through its networking activities, e.g. Training Schools (3), Short-Term Scientific Missions (15), Virtual Mobility Activities (42) and numerous dissemination activities.

Conclusion: DE-PASS has made an excellent start in setting up a complex, multidisciplinary, cross-country, cross-sectoral organizational structure to collaborate in the field of determinants of behavioral PA research.

Keywords: Physical activity, settings, determinants, COST Action

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The Global Design Challenge for Sport and Physical Activity and its Impact: An evaluation

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Introduction: The university-led Global Design Challenge for Sport and Physical Activity (GDC), under UNESCO patronage, is an international, trisectoral, online innovation competition for diverse teams who use design thinking to crowdsource ideas that enable people of all ages and abilities to lead active healthy lives, as aligned with the Kazan Action Plan (2017). The GDC theoretical framework comprises: a human-centred approach to Innovation (Brown, 2008); the paradigm of design thinking (Laurson & Tollestrup, 2018); and the Social Innovation Ecosystem Model (Audretsch, Eichler & Schwarz 2022, p.234, adapted from Isenberg, 2011).

Objective: To evaluate the attainment of the GDC goals.

Methods: The GDC uses a mixed methodology framed by an indicator-based evaluation approach called the Theory of Change Logic Model (TOCLM) (Weiss, 1995) to ascertain attainment of the eight GDC goals.

Results: The findings show the attainment of all eight GDC goals, e.g.,

GDC Goal 4: *Establish a global competition and platform for new ideas in sport and physical activity to emerge.* Strong evidence of *Engagement and Attributions* and *Reach and Significance*:

- (i) GDC 2020 -187 participants from 40 countries; 38 projects from 25 countries.
- (ii) GDC 2021 - 256 participants from 53 countries; 58 team submissions from 16 countries.
- (iii) GDC 2022 -136 participants from countries; 36 team submissions from 14 countries.

GDC Goal 5 *Support the progression, piloting, and scaling of new ideas in sport and physical activity that can be tailored to local contexts.* Over 20 GDC team ideas have entered the incubator programme (five are being tested and scaled in a university incubator, one in an international accelerator, and two within our international partner organisations).

Conclusion: The GDC is a social innovation ecosystem promoting policy and praxis for inclusive sport and physical activity. It embraces diversity in team composition and mindset and through its trisectoral management team. It embodies the theme of AIESEP2023: Physical Activity, Health Promotion, Policy, & Education.

Keywords: design thinking, sustainable development goals

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Implementation of the CATCH P.E. program in Colombian schools

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Introduction: In 2021, CATCH Global Foundation adapted its evidence-based CATCH P.E. program for use in Colombian schools to increase the amount of physical activity students receive during the school day. Most schools in Colombia do not have a physical education teacher; classroom teachers are relied upon to engage students in physical activity during free play periods.

Objective: In alliance with the national Colombian Ministry of Education, as well as more than 15 Regional Secretariats of Education, CATCH Global Foundation has been providing training for classroom and P.E. teachers across the country on strategies related to increasing moderate-to-vigorous physical activity (MVPA) during the school day, as well as strengthening social and emotional competencies necessary to achieve academic goals, develop cognitive skills, and benefit mental health.

Methods: From 2021-2023, CATCH P.E. has been implemented in more than 300 Colombian schools. System for Observing Fitness Instruction Time (SOFIT) observations were conducted in a sample of 12 P.E. classes in 5 schools before CATCH P.E. implementation training and in 10 P.E. classes in the same 5 schools several months after training.

Results: The CATCH P.E. program and implementation training increased the portion of P.E. class time during which students engaged in MVPA from 37% to 48%.

Conclusion: This intervention demonstrates how schools in Colombia and across South America can utilize physical activity that involves play, fun, healthy competition, equity, inclusion, and reinforcement of social-emotional skills to improve student health and wellness and overall academic performance.

Keywords: physical education, physical activity, child health.

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Sand play for children's health and development: a systematic review

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Introduction: Sand play (SP) may be associated with children's health and development (Jarret 2010), but more evidence is needed.

Objective: This systematic review aimed to 1) aggregate studies examining 0–8-year-old children's SP, and 2) explore outcomes of child health and development associated with sand play.

Methods: The systematic review based on the protocol (Iivonen et al. 2021) was conducted according to the PRISMA (Page et al. 2021). Searches were conducted in eight databases. Inclusion criteria were: a) children's age 0–8 years, b) exposure to sand environments and/or materials, c) child-level outcomes related to health or development. Two reviewers independently screened full-texts and assessed study quality with tools (NHLBI 2022). The included studies were grouped by SP exposure context, outcomes were themed by child health or development domain, and effect direction was determined.

Results: Screening yielded 17 included studies (n = 684 children). Studies were at low (n = 2), moderate (n = 14) or high (n = 1) risk of bias. *Eight studies in education-context* included sandboxes and assessed physical activity and play (n = 12), cognitive (n = 7), and social-emotional (n = 4) outcomes and found non-significant negative or mixed associations between sandboxes and physical activity. *Two studies in leisure-context* included playground sand, assessed physical outcomes (n = 4) and

found negative associations between playgrounds containing substances and physical health. *Seven studies in rehabilitation-context* included sand play tables, assessed physical (n = 2), cognitive (n = 10), and social-emotional (n = 33) outcomes, and found significant positive associations between SP therapy and lower social-emotional behavioural problems among children with special needs.

Conclusion: Based on low-quality evidence, educational studies described the SP as not promoting children's physical activity, while rehabilitational SP positively impacted on children's social-emotional development. More high-quality studies are needed to understand the associations between SP and children's health and development.

Keywords: sand play, children, health, development, systematic review.

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EUMOVE project: Educative resources developed for a school-based promotion of healthy and active lifestyles

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Introduction: Most adolescents fail to meet the recommended 60 minutes of daily physical activity (PA) (Guthold et al., 2020). The school has been identified as a critical context to promote PA among all children and adolescents (WHO, 2018), with a multicomponent school PA program approach holding the potential to be more effective (Milton et al., 2021). The EUMOVE (<https://eumoveproject.eu/>) is a funded project by the Erasmus+ Sport (ref 622242-EPP-1-2020-1-ES-SPO-SCP) and its main goal is to design and implement a comprehensive set of strategies and resources to enable the school community to promote healthy lifestyles.

Objective: We aim to present the resources developed by the EUMOVE consortium to promote healthy lifestyles in and through schools.

Methods: The EUMOVE project is a 3-year project and involves academic and non-governmental institutions from Spain, Portugal, France, Italy, and the United Kingdom. During the initial 18 months, diverse strategies (e.g. literature review; problem-solving; software development and testing) were adopted to develop the resources.

Results: The following educative resources were developed in 5 different languages (Spanish, English, Portuguese, French, Italian): Physically Active Lessons Toolkit, Real-Time Active Breaks Platform, Active School Commuting Toolkit, Learning Units about healthy lifestyles promotion, School Leaders Toolkit, Parents Toolkit about promoting healthy lifestyles, and an APP to connect researchers, teachers, students, and their families. The resources are ready to be used by the school community to promote active lifestyles.

Conclusion: The EUMOVE project developed and offers evidence-based and innovative resources to be easily applied in a whole-of-school approach to promoting healthy lifestyles.

Keywords: physical activity, sedentary behaviour, sleep, dietary habits, physical education, school.

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Obstacle courses to improve motor competence and physical activity during PE: an intervention study in 2000 elementary school children

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Introduction: School physical education (PE) provides an optimal gateway for improving motor competence (MC), promoting physical activity (PA) and enhancing motivation. Current insights on motor learning should be given a central place within the PE curricula to increase MC, PA levels and intrinsic motivation.

Objective: The aim of this study was to investigate whether an obstacle course-based PE program consisting of 12 lessons, has a positive impact on the MC, PA and motivation of 2005 Flemish elementary school children.

Methods: 39 schools were randomly allocated to intervention (INT) or control (CON) groups. The KTK3+ was used to evaluate MC at the start (pre), after 12 lessons (post) and 5 months after the PE program (follow-up). To determine PA during PE lessons, Actigraph GT3x accelerometer data of 841 children were used and expressed as % time spent in sedentary behaviour (SED) and mild to vigorous PA (MVPA). To measure motivation, the Behavioural Regulation in Exercise Questionnaire was used.

Results: No Time x Group interaction was found for Overall MQ. Only for the subtest walking backwards a significant Time x Group interaction was found for all grades ($F=15.261$, $p<.001$, $\eta^2p=.022$). SED levels were lower in INT group (43.07%) compared with CON group (49.85%) ($p<.001$) whereas MVPA levels were higher in INT group (32.17%) compared with CON group (27.12%) ($p<.001$). Only for grade 5 an interaction effect for motivation toward PA was found ($F=3.850$, $p=.004$, $\eta^2p=.029$).

Conclusion: This study provides valuable information to optimize current elementary school PE programs in Flandres.

Keywords: physical education curriculum, primary school, physical activity, motor competence, obstacle course.

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Findings from the AIESEP Specialist Seminar on Motor Competence Assessment in Educational Settings, Brixen-Bressanone, September 2022

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Introduction and aim: The 2022 AIESEP Specialist Seminar “Motor competence assessment in educational settings” [1] was organized in Italy by the Universities of Bozen, Hamburg and Jyväskylä. The event was attended by 47 experts in the field from Australia, Belgium, Canada, Finland, Germany, Italy, Luxembourg, the Netherlands, the Republic of Ireland, Slovenia, Spain, Switzerland, the United Kingdom, and the United States; 23 posters were presented. The seminar represented a “space” for reflection and discussion on the specific topic, analysing the pros and cons of the diverse approaches to this very sensitive issue.

Four keynote speakers introduced the discussion held in four working groups, looking at diverse educational settings: early childhood education and care, primary school, secondary school, and grassroots youth sport. Inclusiveness was discussed as a transversal topic across all the four groups. In particular, the discussion focused on how to conduct, analyse, interpret, and use motor skills and physical fitness measures in diverse settings, and with diverse actors (i.e., students,

teachers, parents, young athletes, coaches, ...) while ensuring quality education and respectful approaches. In addition, the seminar provided the opportunity to present the situation of motor competence assessment in the participants’ countries, and to explore possibilities for joint collaborations and research agenda.

The aim of this symposium is to present the main results of the seminar, to introduce some key-open questions and to stimulate participants to critically discuss the topic. A second aim is using participants’ feedback to develop the new AIESEP position statement on best practice in youth motor competence assessment.

Keywords: early childhood education and care, ECEC, primary school, secondary school, grassroots youth sport, conference report.

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Qualitative analysis of children’s motor, social and nature-related behaviour during outdoor physical activities

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Introduction: The natural outdoor environment is recognised to be stimulating for children’s global development with critical impact on their physical health outcomes (1,2). Furthermore, outdoor educational activities have been associated with connectedness with nature which may play an important role in education for sustainable development and empathy towards nature.

Objective: The purpose of this study was to explore qualitatively children’s motor, social and nature-related behaviour during outdoor physical activities, with the aim to understand better why and how such context is very relevant for children education.

Methods: Children aged from 4 to 5 participated in an outdoor physical activity organised by a teacher specialised in motor education of preschool children. The activity was carried out in five different and complementary environments. Behavior of 12 children was recorded through a portable GoPro, a focal and a

group camera. An inductive qualitative approach was conducted in order to identify relevant physical, social, and nature-oriented behaviors. **Results:** The previous exploratory qualitative analysis enabled us to obtain an overview of children's motor, social and toward-nature behaviour during outdoor physical activities. Categories have been identified for type of behavior. The analysis also highlighted the importance of socio-motor, naturo-social and naturo-motor interactions. For each item, we selected relevant grids from the literature and compared them with our observations in order to highlight the main behaviours. **Conclusion:** Results of this qualitative analysis confirm the relevance of outdoor physical activities for children global development. Such qualitative approach seems complementary to quantitative researches (3) useful to understand why and how outdoor play is so relevant for children education.

Keywords: Children, outdoor play, physical behaviours, social behaviours, nature-related behaviours

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Pleasure and displeasure factors for physical activity in young inactive adolescents

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Introduction: Over the last few decades, numerous studies have demonstrated the

positive effects of physical activity on health (1). However, the onset of adolescence is marked by a decline in physical activity (2). For some students, physical activity is limited to physical education classes. Various factors influence this decline (3). These include the notion of pleasure (4). According to various authors, this notion is linked to the adoption of an active lifestyle (5).

Objective: The aim of this study is to highlight the factors of pleasure and displeasure for physical activity in young inactive adolescents in order to guide the practice of physical education teachers.

Methods: 52 inactive lower secondary school pupils were questioned via a semi-structured interview about their enjoyment of physical activity. A mixed method approach was used to analyze the data.

Results: This study shows that the enjoyment of intense physical activity is significantly lower than that of moderate physical activity. In terms of pleasure factors, more than half of those questioned stressed the importance of peers (30/52). Displeasure, on the other hand, is influenced by effort-related pain (20/52), morphology, physical capacity (16/52) and the gaze of others (14/52). The study also shows that the importance of these factors varies between boys and girls.

Conclusion: These results should serve as a basis for developing guidelines to help physical education teachers promote enjoyment in their classrooms. This will enable them to deal appropriately with inactive students who dislike physical activity.

Keywords: pleasure, displeasure, physical education, inactive students, adolescence

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What might be a salutogenic approach to physical education? A teacher-researcher reflection on developing a health-oriented learning unit at high school

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Introduction: Despite curricular nuances worldwide regarding the understandings of physical education (PE) and its role in health, it has been argued that there is a need for the development of health pedagogies to support students' learning¹. Salutogenesis theory² has been suggested as a potential framework for supporting a comprehensive view to health in PE^{3,4}. Yet, the enactment of a salutogenic approach to PE requires further investigation.

Objective: This study sought to investigate the development of a health-oriented learning unit at a high school framed by salutogenesis.

Methods: Action research framed the study. One PE teacher (who designed and led a health-oriented learning unit) and two critical friends participated in the study. The learning unit was developed over 18 weeks at a vocational public high school in Brazil. Data were generated through the teacher's reflexive journal and six critical friend meetings. Thematic analysis was adopted for data analysis.

Results: Three main reflections resulted from the analysis: (a) a need to deconstruct a biomedical comprehension of health that shapes students' discourses; (b) the context matters in the mobilisation of salutogenesis into practice; (c) opportunities for student voice as a health resource.

Conclusion: Rather than a single model to be implemented by teachers, the findings provided insights about possibilities in which salutogenesis might be enacted in practice including a focus on listening to students' voices, and questioning and extending their meanings of health.

Keywords: salutogenesis, health pedagogy, health education.

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An Investigation on Physical Activity Among Children and Adolescents in China

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Introduction: Sufficient physical activity (PA) can promote physical and mental health, cognitive ability, and academic performance in children and adolescents. However, there is a lack of large-scale investigation on the status of PA among children and adolescents in China. The purpose of this study was to assess levels of PA in Chinese children and adolescents and examine the differences in PA between boys and girls, as well as students in different grade levels.

Methods: Originally a sample of 180,276 Chinese students from grades 4 to 12 participated in the study. PA data were collected from 150,440 participants (49% are girls) from elementary school (58%), middle school (30%), and high school (12%) using the Physical Activity Questionnaire for Older Children (PAQ-C). PAQ-C is a self-administered, 7-day recall questionnaire and its possible scores range from 1 (low) to 5 (high). Mann-Whitney test and Kruskal-Wallis test were used to compare gender and grade level differences in PA.

Results: PAQ-C scores indicated the overall PA level in Chinese children and adolescents was relatively low (2.02 ± 0.72). The most active PA participation was reported in physical education classes (3.90 ± 0.98). And the frequency of daily participation in sports was low (1.33 ± 0.63). Boys had significantly higher PA compared to girls (2.11 ± 0.72 vs. 1.92 ± 0.70 , $P < 0.001$). There were also significant differences in PA among elementary (2.63 ± 0.64), middle (2.42 ± 0.64), and high school students (2.25 ± 0.65), with PA decreasing as the grade level increasing ($P < 0.001$).

Conclusion: PA level in Chinese children and adolescents was relatively low. Among them, girls and higher-grade students showed comparatively lower PA levels. Actions need to be taken to effectively improve PA in Chinese children and adolescents, with particular attention being paid to girls and higher-grade students.

Keywords: physical activity; children; adolescents; China

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Promoción de hábitos saludables a través de la innovación pedagógica y uso de las TIC: Experiencia de la implementación de un curso virtual sobre alimentación saludable y actividad física en la Universidad de los Andes, Colombia

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Introducción: Existe amplia evidencia científica sobre el impacto positivo a nivel social y económico de los países al hacer inversión en actividad física, sin embargo los altos niveles de inactividad física, el crecimiento de las enfermedades crónicas no transmisibles y las enfermedades que afectan la salud mental como la depresión y la ansiedad, especialmente después de la pandemia del COVID-19, son muestra que es necesario aumentar los esfuerzos e impulsar la creación de proyectos que promuevan hábitos de vida saludable como la práctica regular de actividad física y una alimentación saludable.

Objetivo: Relatar la experiencia de la Decanatura de Estudiantes de la Universidad de los Andes, en el diseño y ejecución de un curso virtual alineado con el proyecto educativo institucional y que tiene como objetivo, sensibilizar y promover hábitos de alimentación saludable y actividad física además de generar una cultura de cuidado en la universidad.

Metodos: El curso inició en el año 2021, en modalidad virtual y de libre acceso para estudiantes de pregrado, posgrado, docentes y funcionarios de la universidad. Los temas se distribuyeron en 7 módulos, cada uno con actividades interactivas que motivaran a la persona a reflexionar no solamente de sus hábitos actuales en actividad física y alimentación, sino también de su disposición al cambio de comportamiento, esto último basado en el modelo transteórico. Además, de implementar un plan de cambio utilizando la herramienta WOOP.

Resultados: El curso ha contado con la inscripción de 1823 personas, siendo los estudiantes de pregrado y funcionarios los de mayor participación, sin embargo, el 12% de los inscritos han obtenido el certificado. Los comentarios finales de los participantes sobre la experiencia del curso, indican una contribución a la mejora de su calidad de vida.

Conclusion: El curso tiene un impacto inmediato sobre el estilo de vida de los participantes, pues se evidencia proceso de reflexión y cambio sobre los hábitos actuales de actividad física y alimentación. Sin embargo, la tasa de deserción es alta, además es necesario implementar un proceso de evaluación que permita identificar si el proceso de cambio que inicia el estudiante se mantiene a largo plazo.

Keywords: Actividad Física, Alimentación saludable, Educación Virtual, Estilo de Vida.

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Policy process case learnings from physical education stakeholders: What we wished we had known...

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Introduction: Physical education [PE] professionals report desiring guidance to inform their policy work (e.g., advocating, designing, and/or enacting curriculum)¹. While some guidance for revising national PE policy exists², there remains a need for guidance on policy engagement at all levels³.

Objective: What practical lessons can be drawn through a process of collaboratively and reflexively interrogating our policy work experiences in relation to policy process theory(ies)?

Methods: Our international group of PE stakeholders (i.e., provincial/state-level curriculum leads [2], department head [1], and policy researcher [1]) engaged in a proposed method we are terming ‘policy process cases’. Over ~one year: the practitioners shared lived policy experiences; the researcher/critical friend identified relevant policy process theories as

lenses to consider those experiences/cases; all members interrogated the experiences/cases in written and online forums in relation to theory and ‘what we wished we had known’; and, finally, all members collaboratively analyzed the interrogations for potential lessons learned.

Results: All specific learnings relate to the overarching notion that we wished we had known more about the reality of policy processes as messy, unpredictable, and multidirectional (i.e., a ‘complex’ perspective), rather than idealized depictions of these processes as ordered, rational, and top-down (i.e., a ‘traditional’ perspective)⁴.

Conclusion: We suggest the policy process case method helps unpack policy experiences into practice-based insights, but moreover helps shift one’s policy perspective towards a greater appreciation of complexity, allowing for an expanded view of how all PE stakeholders engage in policy processes⁵.

Keywords: policy, participatory, policy process cases, policy perspective

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Deporte, actividad física, educación física y cambio climático. Estado de la cuestión, iniciativas y posibles soluciones

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Introducción y objetivos: Esta presentación se centrará en los vínculos de influencia bidireccional más recientes entre el deporte, la educación física (EF), la actividad física y el cambio climático (CC).

Método: La presentación constará de tres secciones complementarias basado en una revista systematica (PRISMA) de la temática.

Resultados: La primera sección ofrece una revisión exhaustiva de la bibliografía sobre las preocupaciones actuales en materia de conservación del medio ambiente y los vínculos conocidos entre el deporte, la actividad física y el cambio climático. La segunda sección presenta un retrato de varias iniciativas que utilizan el deporte, la actividad física o la educación física para lograr la educación medioambiental o la concienciación sobre el cambio climático. Por último, la tercera sección presenta un enfoque original de la utilización del aire libre en la educación física para la educación medioambiental sin perder una de las fuertes especificidades de la disciplina, a saber, el desarrollo de las capacidades motrices.

Conclusiones: Así, es a través del desarrollo de técnicas corporales específicas de las actividades al aire libre y, en particular, relativas a la dimensión sensible de la fisicalidad, como puede tener sentido una educación relacionada con la preservación del medio ambiente en la EF.

Palabras clave: Cambio climático, educación física, deporte, actividad física, aprendizaje al aire libre.

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Meaningful physical activity experiences in the home environment

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Introduction: The concept of meaningful PE is gaining ground within education, children and youth but the use of the concept among adults in health and physical activity (PA) contexts deserves exploring.

Objective: This paper explores the feasibility of the meaningful framework, through recreational PA and exercise experiences for adults, using an empirical study as an example.

Methods: We draw from a visual ethnography in the UK with eleven women regarding their PA at home when emerging from pandemic restrictions. They engaged in one-to-one video interviews and photo diaries during summer 2021–spring 2022. The six features of meaningful PE (fun, social interaction, competence, the right challenge, personal relevance, and joy, Beni et al., 2017; Kretchmar, 2006) were used as a theoretical lens to explore PA experiences.

Results: At home PA was convenient and personally relevant, and the ability to adapt exercises meant they maintained control over the right challenge for themselves. There was joy in finding purpose related to increased strength, functionality, and motor competence. Community and support from instructors and peers were valuable elements of social interaction. There was little mention of fun, but participants stressed the importance of access to nature and adventure for truly meaningful PA.

Conclusion: Meaningful PA is a valuable concept and relevant features are identifiable, in context (Wintle, 2022). Meaningful features may develop across the lifespan (O'Sullivan et al., 2020; Whitehead, 2010), which may urge future research to explore meaningful experiences according to age and other factors of functionality.

Keywords: meaningful physical education, personal relevance, exercise, recreational physical activity

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El estilo de vida de los estudiantes de Pedagogía en Educación Física de la Universidad Católica de la Santísima Concepción

The lifestyle of the students of Pedagogy in Physical Education of the Catholic University of the Santísima Concepción

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Introduction: Los estilos de los estudiantes universitarios en Chile suelen presentar características poco saludables, caracterizado por la inactividad física, consumo de comida chatarra, consumo de tabaco y alcohol. Por otro lado, las experiencias y el pensamiento docente tienen importancia en la formación inicial docente de los estudiantes de pedagogía en Educación Física.

Objective: Determinar el estilo de vida, las experiencias en las clases de Educación Física (EF) y los pensamientos que tienen acerca de su futura enseñanza.

Methods: Estudio de diseño transversal y alcance descriptivo, cuantitativo, por medio de cuestionario de autocompletación.

Results: un 89,8% declaró realizar actividad física 3 o más veces por semana, un 9,3% 1 o 2

veces por semana y un 0,9% casi nunca; respecto caminar 81,5% lo hace casi siempre, 17,6 a veces y 0,9% casi nunca; un 81,5% camina casi siempre, un 17,6% a veces y un 0,9% casi nunca. Respecto al consumo de alimentos saludables como frutas y verduras, un 11,1% declara consumir frutas y verduras todos los días, 69% casi siempre y un 19,4% casi nunca. Respecto a dormir bien, un 25% siempre, un 64,8% a veces y un 10,2% nunca.

Respecto a sus pensamientos docentes sobre la EF como formada de hábitos saludables, declararon que las actividades de enseñanza que utilizaría para promover estilos de vida saludable son, actividades deportivas con un 86,1%, juegos no deportivos 56,5%, expresión corporal y danza 46,7%, grupos de discusión 18,5% y proyectos de investigación 25,9%. Recursos para utilizar 80,6% implementos deportivos, 74,1% TIC, 46,3% posters y 18,5% cuadernos de bitácora. Aspectos considerados a la hora de evaluar la EF, 54,6% actitud positiva a la clase, 32,4% participación en clases, 9,3% habilidades motrices personales. Mecanismos para evaluar, pruebas físicas 37%, campeonatos 23,1%, exposición de trabajos 24,1.

Conclusion: Los estudiantes tienen un estilo de vida activo, consumen pocas frutas y verduras a diario, no fuman y duermen bien a veces. Como pensamiento docente se tiene que las clases de educación física tenían un enfoque "deportivizado", con poca formación en hábitos de vida saludable, y consideran muy importante la formación en salud.

Keywords: estilo de vida, estudiantes universitarios, pensamiento docente

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Gimnasia Aeróbica con metodología Aprendizaje Servicio: Pre, durante y post pandemia, una experiencia de impacto y aporte en los estudiantes

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Opportunities for student physical activity in elementary schools: effect of governmental measure 15023 « À l'école on bouge! ».

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Introduction: The benefits of regular physical activity (PA) are well known (World Health Organization [WHO], 2020; ParticipACTION, 2022) and studies show that school is an environment often favored to integrate opportunities for young people to be physically active (Government of Quebec, 2022; McMullen & al., 2015). The Government of Quebec has implemented measure 15023 « À l'école, on bouge! », which aims to support schools so that they can offer all elementary students a minimum of 60 minutes of opportunities to be physically active every day. To our knowledge, the literature is scarce regarding the minutes of PA opportunities offered during school hours and the PA intensities associated with it.

Objective: The objective of our study was to document the PA opportunities associated with measure 15023 and examine their relationship with the moderate to vigorous physical activity (MVPA) cumulated by students.

Methods: Overall, 255 students aged 6-12 years (126 girls and 129 boys) from five elementary schools participated. PA opportunities, such as recess, were documented for one week using time grids. PA intensities were measured using accelerometers (Actigraph, GT3X+).

Results: Results showed that schools offered 152 to 203 minutes of PA opportunities, and on average, students accumulated 35 minutes of

MPVA per day. The regression analysis showed that number of minutes of opportunities was positively associated with MPVA ($r = 0.21$). This relationship, however, also highlights that 79% of the MVPA is explained by other factors, such as PA nature or context.

Conclusion: Those findings lead us to question the characteristics of the PA opportunities offered, as well as the context in which they take place.

Keywords: physical activity, opportunities; intensities; governmental measure; elementary school.

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Theme 2: Teacher Preparation & Professional Development

Fostering students' professional vision of pedagogical quality in sports. Implementation and evaluation of an observer training for PE/sport and exercise science students

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Fostering a professional vision of pedagogical quality contributes to teachers' and coaches' pedagogical competence development (1). Focused attention and categorical understanding of quality features at the level of the deep structure of teaching-learning processes are central elements (2).

In this project, we evaluate a video-based observation training seminar for students to promote professional vision on aspects of pedagogical quality in sports. The training consists of 11 sessions on six dimensions of pedagogical quality and its corresponding theoretical concepts based on a sport-specific adaption of the Classroom Assessment Scoring System (3). Various materials have been developed: 1) A manual conveys core concepts, directs attention, and guides quality assessment. 2) Short video examples from everyday teaching-learning-practice situations in sports focusing on specific quality dimensions and indicators facilitate the first steps from knowing to observing. 3) Longer training videos require complex observational and assessment skills. Master codes with detailed justifications enable the comparison of one's own observation results with standard specifications. 4) Examination videos finally serve to test observer reliability.

Observation training was conducted in sports education seminars with 243 students from 2020-2023 at four different universities in Germany. In a quasi-experimental design, students from the intervention group and two control groups assessed video examples in terms of pedagogical quality in six dimensions at the beginning and the end of one semester (pre-post-test). To date, data collection from 170 students is complete. Further assessments will be completed by the end of February 2023.

Preliminary results of the intervention group show significant increases in observational agreement from before to after the seminar regarding the focus of attention and quality assessment (agreement-within-one 54% vs. 85%). Further results including statistical

comparisons with the control group will be presented.

Keywords: PE teacher training; video; university students; intervention

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QualiTePE – A cross cultural consensus study on quality in PE teaching in Europe

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Introduction: Teaching quality has a clear impact on student success. Accordingly, determining characteristics of good PE teaching and systematically analyzing their importance for successful learning has thus far-reaching significance for PE ¹. But up until now, there is no general consensus in Europe on what constitutes good PE teaching.

Objective: The purpose of the study in the context of the Erasmus+-funded QualiTePE project is to reach a common understanding of high-quality PE teaching and to develop the so-called QualiTePE framework concept. This framework can promote European standardization and enables evaluations of the quality and verifiable improvements.

Methods: A three-round Delphi study ^{2,3} involving a group of 324 European experts was carried out to articulate shared expert opinions on the main research question: what are the most effective characteristics of teaching quality in PE? In 3 rounds of data-gathering, participants with different levels of expertise on the quality of teaching in PE were asked to assess specific dimensions by rating and ranking 28 sub-dimensions via online questionnaires.

Results: High consensus with only slight differences (threshold of 90%) was reached on a

final ranked list of 20 sub-dimensions which in turn are assigned to 6 overarching dimensions. The highest levels of agreement were achieved in the sub-dimensions “Promotion of a Positive Learning Climate”, “Teacher’s Empathy”, as well as “Student-centered Teaching Climate” which all are subordinated to the main dimension “Social Emotional Support & Social Climate”. These being closely followed by “Clear Definition of Objectives” and “Clarity of Rules, Routines, and Expectations”. Of particular note is that one of the key sub-dimensions of PE “promotion of students’ motor activity” has just managed to cross the threshold at 90,4%.

Conclusion: Cautious of overly generalizing from the results, we suggest the findings offer empirically based and content related information for standardized evaluation of the quality in PE with relevance within Europe and beyond.

Keywords: quality in PE teaching, Delphi study, cross cultural consensus.

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Becoming a PE teacher - pre-service teachers’ understanding of their learning process in a subject didactics course and the practicum

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Introduction: Meaningful experiences for preservice teachers (PSTs) have been recognized as key for PETE to contribute to sustainable transformation (1). This study takes an inductive research approach, however guided by the ideas of John Dewey on meaning-making (2).

Objective: The aim was to explore how the PSTs make meaning of their participation in a subject didactics course and subsequent practicum. Following this aim, the endeavour has been to illustrate if, how, and why the PSTs’ learning processes take on different directions when moving between the university-based context and the school context.

Methods: Purposive sampling (3) resulted in three female students and four male students at one PETE institution in Sweden. The empirical material resulted in 28 individual interviews, and two group interviews. Lesson observations were done for contextualization. A reflexive thematic analysis was conducted (4, 5).

Results: The analysis shows four themes in the PSTs’ meaning-making processes: developing a PE teacher perspective through learning PE teaching as (a) practical knowledge, (b) advocacy for movement and health (c) didactical knowledge, and (d) embodied knowledge. While the first two themes almost exclusively appeared in the PSTs talk about learning in the subject didactics course, the two latter themes constituted a silver thread running through the learning process in both courses.

Conclusion: From a PST perspective, meaningful educational events in PETE involve emotional and direct experience. To support the PSTs’ learning processes, the organization of PETE needs to be cumulative. The importance of teacher educators and practicum supervisors as role models is highlighted.

Keywords: physical education teacher education, teacher learning, meaning-making, Dewey, experience, end-in-view

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Teaching physical education in the pandemic: Perspectives from Singapore pre-service teachers

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Introduction: Although Singapore schools did not experience the imposition of lockdown during the Covid pandemic, they have to deal with constantly evolving safety management measures (SMMs) imposed by the government. Given the physical and social constructs of physical education (PE), teachers had to adapt their pedagogical approaches, and at the same time deliver purposeful lessons for their students.

Objective: The present study aims to understand the challenges faced by a group of Singapore pre-service PE teachers during their school practicums and to propose relevant strategies to support future PE teachers in this important journey of their career.

Methods: The participants were pre-service teachers ($N = 12$, aged between 22 to 35 years old) enrolled in the National PE teacher education programme in Singapore. They have undertaken both their first (TP1) and second (TP2) teaching practicum, as part of the programme requirement. Data were obtained through individual online interviews comprising of 15 open-ended questions, relating to participants' teaching challenges, coping strategies and emotions experienced during their two practicums. These data were analysed using an inductive thematic analysis.

Results: Although similar themes like challenges in lesson planning were identified for both practicums, their responses were unique due to the evolving SMMs implemented during that specific period, for example there were stricter group sizes during TP1, while there were more students being excused from Covid vaccinations during TP2. In terms of emotional state, most participants ($n = 8$) felt less stressed in TP2 when group sizes were eased.

Conclusion: While participants in this study struggled to adapt to the new norm of teaching amidst the pandemic, it has provided them with opportunities to explore more effective teaching strategies. Recommendations include designing lesson plans for varying group sizes based on the same activity, as well as assigning roles for excused students to keep them involved.

Keywords: pandemic, physical education, teacher education, pre-service teachers, teaching practice

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Teaching invasion games for equity, diversity and inclusion: a study with pre-service teachers

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Introduction: The UNESCO (2015) Guidelines for Quality Physical Education highlights the inclusive potential of PE, focused on allowing access, participation, and achievement in the domains of physical literacy and civic engagement, academic achievement, social inclusion and gender equity, and health and well-being. But, despite the efforts of pedagogy and didactic courses to change PE towards meaningful participation and learning, student teachers remain unprepared to solve problems of marginalization, exclusion, and underachievement (Fisette, 2013; Graça, 2015; Kirk, 2020), namely in invasion games.

Objective: The purpose of this study is to examine student teachers' experiences and reflections about their teaching of invasion games, supported by a research project on inclusive PE.

Methods: The study took place in the context of school placement in four secondary schools and involved twelve pre-service PE teachers in a PETE programme of a University in northern Portugal, scaffolded by university PE teacher educators and school PE cooperating teachers. Each PST designs and teaches a unit on invasion team games informed by game-based and sport education models, with close assistance from TE specific didactics. Data collection includes PSTs' board diaries, teaching artefacts, such as unit and lesson plans and didactic tools, and focus groups during the process. Qualitative data analysis with an inductive lens was used to generate emergent themes related to inclusive PE practices in team games.

Results & Conclusion: Dealing with student diversity, answering their learning needs, participation and inclusion of students with different performance levels are major challenges for the PSTs. Lack of game and

pedagogical knowledge was perceived as limiting factors to adapt the game rules, action boundaries, and scoring goals to accommodate gender, physical and other characteristics that impact game play interaction.

Keywords: PE teaching, Handball, Soccer and Basketball.

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Formation of ethical values through sport

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The National Common Curricular Base (BNCC), the guiding document of Brazilian education, privileges the integral education of students. Assuming that the school is aware of its role in training and instruction, there is not the slightest possibility that it does not work with positive values. It is inherent to the school its responsibility to provide the best choices and opportunities so that they can interact in a reflective way and with the practice of values in which justice, integrality and citizenship are linked to this practice. Sport can emerge as an interdisciplinary pedagogical possibility, since it is a cultural and social practice in which different attitudes valued in society are manifested. The spirit of sport requires the practitioner to be an active subject in the construction of valuable attitudes. As an intervention, the class assembly was used, which is a pedagogical space organized so that students can reflect and seek solutions to the problems and conflicts that occur in the school routine. The intervention was carried out during the months of April and August 2022,

totaling 18 weekly sessions of 45 minutes each, divided alternately into: Week 1, classes on sports values; Week 2: the class assembly. During the sessions of the assemblies, the discussions dealt mainly with coexistence, respect for the rules and bullying, manifesting relationships with sport. The assembly influenced the way students relate to each other and resolve their conflicts and sport was a facilitator in processes involving respect, friendship and solidarity.

Keywords: ethical, sport, values, school.

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Bridging borders between physical and virtual movement? Conditions for the successful reflective integration of virtual reality in schools and physical education.

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Introduction: Students must learn to navigate increasingly prevalent immersive technologies, such as virtual reality (VR). Yet, VR's potential especially for process- and experience-oriented learning remains underexplored, mainly due to a lack of opportunities to test and reflect on its possible uses (Radianti et al. 2020). This lack of evidence and the resulting uncertainty extends to medical, pedagogical, and ethical implications (Zender et al. 2022; Southgate, 2018). PE-teachers and future teachers operate within this ambiguity alike. The competence-oriented teaching and learning concept of service-learning (Mason & Dunens, 2019) enable active cross-phase cooperation, via which those working in schools and the wider education system can address overarching challenges, such as this lacuna.

Objective: On that basis, this higher education project investigates conditions for successful incorporation of VR in schools and the potential

contribution of service-learning. Of particular interest are the didactic possibilities for the use of VR in physical education (PE). To this end, postgraduate students and teachers from partner schools jointly develop a needs-oriented educational approach using VR, implement it, and reflect on it in terms of service-learning.

Methods: Three rating conferences (Hascher et al. 2020), in which (PE) teachers and students discuss and determine grades for students, and ten guideline interviews with teachers were analysed via Qualitative Content Analysis (Kuckartz, 2018), using deductive and inductive category systems.

Results: The personal experience of VR is of central importance. PE teachers exhibit a fundamental willingness to include VR in schools but also profess residual uncertainty. And whereas service-learning is considered purposeful, actors nonetheless request VR experts to be involved alongside the general curriculum. Didactic application possibilities in PE lessons include the training of coordination, among others.

Conclusion: This presentation provides an evidence base for the design of digitisation-related PE teacher training and for pathways to further address remaining knowledge gaps.

Keywords: Teacher Preparation, Professional Development, Virtual Reality, Physical Education.

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Knowing better the students to improve the quality of PE teaching: A study with pre-service teachers

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Introduction: Dealing with students' diversity can be challenging for any teacher and even more for pre-service teachers (Kirk, 2020). Additionally, getting to know the students and understanding their background, interests, motivation and engagement in learning is crucial to teachers potentially provide students with a sense of belonging (Dyson, 2006).

Objective: The aim of this study was to gain insights about how knowing students' thoughts, feelings and experiences can help PE pre-service teachers (PST) to improve their teaching.

Methods: The study took place in the school placement of six pre-service PE teachers of master's degree in a PETE programme of a University in North Portugal. The PST teach six classes with approximately 28 students each one. The methodology of Fissette (2010) was adapted to know the students, specifically three strategies were used: personal profiles, picture-identification, and participation-identification. Personal profiles allow gathering general information (e.g., favorite hobbies and food, likes and dislikes, future goals) and PE and sporting specific information (e.g., level of competence in different sports; interactions with schoolmates; special needs; timeline of sports memories). Picture-identification activity allows exploring the body image and the concept of "What is to be Fit". Participation-identification activity allows exploring the engagement in team sports and the students' perception about skill level, level of involvement and social interactions. Class observation was also used. The artifacts produced by the students, PTS teaching artifacts, board diary, and class observation notes are analysed using an inductive thematic analysis.

Results: The first results showed that the PST progressively learn to use the knowledge of their students to design units and lessons better aligned with students' feelings, interests, and perceived competence. The class management and instructional strategies also were adapted according to students' performance, motivations, and social relationships.

Conclusion: Knowing better the students helped pre-service PE teachers to design more inclusive practices for all students.

Keywords: inclusive PE, students, teachers, students' diversity.

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Narrative inquiry as a mean to promote physical education preservice teachers' awareness about intergenerational learning and professional development

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Introduction: The potential of intergenerational learning among teachers is gaining ground in teachers' professional development. Teacher education researchers intend to address the question about what and how do teachers learn from older and younger colleagues (Geeraerts, Tynjala, & Heikkinen, 2018). Some researchers minded to extend the initial teacher education programs by including the dialogue of preservice teachers with retired teachers (Pardy & Reimer, 2018; Santoro, Pietsch, & Borg, 2012), or experienced in-service teachers (Kiviniemi et al., 2021). According to Kelchtermans (2014) narratives are powerful tools to engage preservice teachers in reflection further than the technical aspects of teaching,

bringing attention to emotional, moral, and political views.

Objective: The purpose of this study is to investigate the educational inspiration of intergenerational narratives constructed by physical education preservice teachers.

Methods: Within the course of Educational Research of the Master on Teaching Physical Education, twenty-four preservice teachers, divided per eight groups were assigned to develop a narrative based in interviews of teachers that began their teacher career in the decade of 1980s (more than 30 years of teaching experience). Each group invited one or two teachers to share the personal account of their professional history from their initial teacher education. They were also assisted in preparing and refining the interview script they intended to follow.

Results: The challenge of preservice narrative production was to recount in their own words and interpretation the main ideas they brought of the interviews. The narratives produced by the preservice teachers in a whole cover different aspects and perspectives related to the teacher profession, the school, the relation with the students, the subject matter.

Conclusion: In general, preservice teachers underscore the challenge and positive outcome of their narrative construction.

Keywords: Teacher Education; Intergenerational Dialogue; Learning; Narrative.

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Creating a culture of Meaningful Physical Education: A secondary school case study

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Introduction: An enduring goal of physical education (PE) is to impart a lifelong commitment to physical activity (Kilborn, et al., 2015) which has led to an increase in the need for educators to prioritize meaningfulness in PE (Fletcher, et al., 2021; Fletcher & Ní Chróinín, 2021; Harding-Kuriger, 2021).

Objective: The purpose of this research was to examine the experiences of secondary physical education teachers implementing a Meaningful PE (Fletcher, et al., 2021) approach in rural Alberta.

Methods: We used case study methodology within a community of practice (CoP) (Armour, et al., 2017) to enable PE teachers to explore the features of Meaningful PE (Beni, et al., 2017). Two PE teachers in a rural secondary school in Alberta were members of the CoP (Armour, et al., 2017) supported by the primary researcher and a graduate student. In line with key recommendations in professional development (PD) (Parker & Patton, 2017), we introduced the blueprint of the Meaningful PE (Fletcher, et al., 2021) approach and features (Beni et al., 2017) to the CoP using freely accessible online resources and a variety of communication methods. Both participants focused on Meaningful PE features (Beni et al., 2017) with several secondary classes in grades seven, eight, and nine. Multiple forms of qualitative data were gathered and analyzed to gain a deeper understanding of participants' experiences including journals, observations, and interviews.

Results: Data analysis produced a number of themes including the value of support (internal and external), the contextual adaptation of the features (Beni et al., 2017), and the importance of both reflective and reflexive practice.

Conclusion: The themes illustrated the value of the CoP (Armour, et al., 2017) for teachers implementing innovative pedagogical principles as well as the need for contextual flexibility. The results are impactful for professional

development and implementation of quality PE in secondary schools.

Keywords: body image, visual impairment, body dissatisfaction.

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“So do you always travel in packs?” The influence of a learning community on the experiences of five PhD candidates

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Introduction: While there is a range of research conducted on communities of practice and learning of teachers (Parker, Patton, & Tannehill, 2012) and teacher educators (MacPhail, Patton, Parker, & Tannehill, 2014), there seems to be little research published on PhD researchers' involvement in learning communities.

Objective: This paper seeks to challenge the research (Ali, Kohun & Levy, 2007; Janta, Lugosi

& Brown, 2014) and public discourse on the experiences of doing a PhD. Through qualitative measures, this paper presents the experiences of PhD researchers engaged in a learning community facilitated by their supervisors. Furthermore, this paper highlights the significant role supervisor(s) play in constructing, maintaining, and providing opportunities for the learning community that can assist (or not) on the PhD researchers' respective journeys.

Methods: This study employed qualitative research methods using a social constructivist framework that drew on data from focus groups with seven PhD candidates as members of a learning community. Data analysis was thematic, whereby focused coding was used to identify key categories.

Results: Findings present the positive and negative factors of being involved in such a learning community that include the impact on the professional development of each doctoral candidate across research and teaching, the insecurities and confidences that were enhanced and hindered, and the role of the supervisor in promoting key competences such as critical friendship and feedback.

Conclusion: Conclusions indicate the value of peer engagement in the learning community for enhancing overall researcher identity and in the reduction of isolation in the PhD journey.

Keywords: research; supervision; community.

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Pre-service teachers & primary school students first experience with Teaching Games for Understanding

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Introduction: Despite the growth in academic research, Teaching Games for Understanding (TGfU) still remain as an uncommon practice for most physical education (PE) teachers (Wang &

Ha, 2013) and limited research has been provided to investigate how pre-service teachers (PST) are being prepared to use TGfU.

Objective: Following a particularist case study methodology (Willis, 2007) the study analyze how PST and their students experienced the TGfU model for the first time in the northern of England.

Methods: The study included three PST and 90 students (three cohorts) from primary schools. Each PST taught one TGfU unit. The study included five methods of data collection: lesson plans, PST journal, fieldnote observations, post-intervention interviews with students and PST. A systematic process of inductive analysis and comparison (Denzin & Lincoln, 1994) was conducted to formulate common themes.

Results: Regarding the PST overall teaching experience: i) PST reported to enjoy this format of teaching, but found it challenging; ii) PST reported difficulty in engaging students in critical thinking discussions; iii) some PST reported difficulty in creating modified games; iv) Some PST found it challenging to promote inclusiveness. Regarding students' overall experience: i) students reported to have a higher engagement and motivation with TGfU lessons; ii) some students struggled to engage in the discussions that followed game-play.

Conclusion: Both PST and their students enjoyed their first TGfU experience and have expressed a desire to continue with this approach, however, both have acknowledged that it may require some adaptations that can be challenging at times.

Keywords: teacher preparation, teaching games for understanding

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Learning to integrate STEM into physical education through asynchronous professional development modules

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Introduction: A strong foundation in science, technology, engineering, and math (STEM) has become increasingly important as it continues to play an important role in education. Physical education (PE) provides a unique avenue for the integration of STEM that other disciplines cannot offer.

Method: Nine PE teachers participated in asynchronous professional development modules focused on the integration of STEM into PE. Data sources included semi-structured interviews, pre and post open ended questionnaires about the participants' perceptions of STEM and PE, and discussion board posts. Data were analyzed through a collaborative coding process (Richards & Hemphill 2018). Trustworthiness was increased by using a peer debriefer, multiple coders, negative case checks, and data triangulation.

Results: Four themes are used to describe the experiences of PE teachers learning to integrate STEM into PE: Theme 1: Teacher's knowledge about technology and STEM; Theme 2: Barriers of PE teachers in integrating STEM; Theme 3: "We're already integrating STEM"; and Theme 4: Issues in professional development.

Discussion: Most teachers were comfortable with technology but their content knowledge of science, engineering and math varied. Many believed that focusing on STEM would take away from PE content but the modules made them realize that a number of concepts were already embedded into what they were doing. Teachers indicated a willingness to modify their lessons to better integrate STEM concepts as long as it did not take away from what they wanted to accomplish in PE, and if they had the support of the classroom teacher, especially if they taught at the secondary level.

Conclusion: Integrating STEM and PE is possible if PE teachers are provided the time and opportunities to work with content experts to help them understand the concepts and have STEM be a by-product of the PE lesson rather than the sole focus of the lesson.

Keywords: integration, STEM, professional development, on-line education, cross-curricular

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Deportigualízate: exploring an intersectional critical feminist curriculum in a Spanish PESTE programme

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Introduction: Physical education has a historical role in reproducing inequities (e.g., Blackshear & Culp, 2022; Fitzgerald & Stride, 2012; Hokowhitu, 2008), especially in relation to gender (e.g., Dewar, 1986; Flintoff & Scraton, 2006; Kirk & Oliver, 2014). However, research exploring how to teach about equity as ways to address social issues in physical education teacher education is extensive and promising (e.g., Devís-Devís et al., 2018; Kirk, 2020; Oliver & Kirk, 2014; Philpot et al., 2020; Tinning, 2017). Within Spain, despite there being legislation that requires educators to teach about equity, topics around gender in Physical Education-Sport Tertiary Education (PESTE) programmes are marginalised (Serra Payeras et al., 2018).

Objective: The purpose of this study is to explore how students from a Spanish PESTE programme engaged with, and how they reported being affected by, *deportigualízate*, an intersectional critical feminist curriculum.

Methods: We present a single case study that is part of a larger participatory action research project exploring equity in physical education. We use qualitative data generation methods (interviews, evaluations, field notes, amongst others) as well as data analysis (narrative analysis, descriptive coding, and concept coding) to present the findings.

Findings: We explore two teaching moments from *deportigualízate* that resonated with students the most. In so doing, specific factors are examined as most affecting the way students think about equity in physical education. Students reported that *deportigualízate* can 'jar' preconceived ideas about femininities and masculinities in sport, having the opportunity to (re-)think knowledge. By being culturally relevant, students can raise their critical consciousness. Finally, students felt empowered, empowering others.

Conclusion: Our findings suggest that *deportigualízate* is an intersectional critical feminist approach to physical education that, by drawing on embodied pedagogies and emplaced criticality, can build empowering relationships. By doing so, it could potentially sow seeds of change amongst future physical education

professionals, through embedded transformative praxis.

Keywords: social justice, gender, physical education teacher education, curriculum

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Japanese elementary teachers’ learning experiences in online professional development for teaching physical education with Japanese language learners

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Introduction: In Japan, the discussion about education for Japanese language learners (JLL) children and its quality are ongoing (Ministry of Education, Culture, Sport, Science, and Technology (MEXT), 2022). As the children’s needs become diverse (e.g., linguistic support, religious and cultural understandings), teachers must take responsibility for securing children’s physical and emotional safety and well-being to achieve their academic performance in PE (ICCSPE, 2012; MEXT, 2018). In order to develop quality PE and provide a social environment that addresses diversity and social justice, Japanese teachers should improve their professional knowledge and ability for teaching inclusive PE with JLL children (Furuta et al., 2022).

Objective: The purpose of this study was to explore Japanese elementary school teachers’ learning experiences in the professional development (PD) program for teaching PE with JLL children in public elementary schools.

Methods: Framed in andragogy theory, which explains the learning experiences of teachers, the original PD program was developed through case studies and self-evaluation by authors (Knowles, 1988). Participants were eight public elementary school teachers who taught PE that includes JLL children. Data sources included a demographic questionnaire, online semi-structured individual interviews, and lesson plans. Constant comparative analysis was used for data analysis (Boeije, 2010).

Results: Three main themes were identified; a) prior experience to enrich their learning, b) preparedness for religious concerns in a PE setting, and c) benefits of online courses.

Conclusion: This online PD program showed that andragogy-based teacher education for

problem-solving is needed and accommodates teachers' individual optimized learning.

Keywords: professional development, second language learners, online course.

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Theme 3: Pedagogy, Curriculum & Assessment

A concept analysis of embodiment in physical education

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Introduction: Interest in and debates around meaningful movement and embodiment in physical education (EPE) have grown over the last ten years. These discussions centre on a degree of conceptual clarity for talking pedagogically about embodiment, and consideration of ways of applying it in practice in meaningful ways.

Objective: The aim of this study is to systematically analyse the theoretical concept of embodiment presented within physical education (PE) literature, in order to support a conceptual clarity upon which to build well-grounded pedagogical insights and practices for school-teachers and their students, as well as PE teacher educators.

Methods: A narrative literature review methodology was used to identify twenty-three (23) papers from peer-reviewed literature between 2010 and 2021 that had some focus on embodiment. These were analysed using Rodgers (2000) theoretical evolutionary concept analysis for surrogate terms, related concepts, attributes, antecedents, consequences, and references to the concept.

Results: Despite conceptual variances across the articles analysed, a set of common attributes that included intentionality, affect, meaning, sharing, and unity were identified.

Conclusion: The concept of embodiment as it pertains to its theoretical/ philosophical deployment in PE, is both complex and varied, limiting its potential to inform the pedagogical practices of teachers and therefore realise the consequences espoused. To temper this disconnect, the paper provides accessible, yet provisional guidance for teachers via clusters of familiar characteristics with accompanying descriptions of what the literature suggests as important for embodied approaches.

Keywords: embodiment, concept analysis, physical education.

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PE & Health: exploration of students' perceptions of a new curriculum in the French Community of Belgium

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Introduction: French Community of Belgium is currently reforming its curriculum, from physical education (PE) to PE and Health (PE&H). This is

expected to contribute more formally to the education of physically active citizens, able to transfer those learnings into their daily lives.

Objective: The aim of this study is (1) to explore the perceptions of secondary school students about this curriculum change, and (2) to explore the perceived transfer of competencies from PE to daily live in secondary school students and PE teachers.

Methods: This study was divided in two phases: (1) 107 students (mean age: 14,5 yrs) participated in a two-step presentation of the actual and the future curriculum of PE, each followed by a self-report questionnaire about their perceptions; (2) 477 students (mean age: 16,5 yrs) and 49 PE teachers provided by questionnaire their perceived experience about, respectively, learning and teaching competencies transfer from PE to daily live.

Results: Students in the first part of the study were more in favor of the PE&H curriculum ($4,01 \pm 0,92$ vs $3,55/5 \pm 1,1/5$). In the second part of the study, 331 experiences of transfer of competencies from PE to daily live were reported, with 291 considered as positive experiences. 47/49 teachers considered at least important to provide learning experiences of transfer to their students, but most of them didn't regularly verify (43/49) or made explicit (21/49) those notions.

Conclusion: The results of this study could guide the development of more evidenced-based pre- and in-service training for the PE&H curriculum.

Keywords: physical education, health, curriculum, transfer.

Assessment practices of Quebec physical education teachers: interpretation and grading

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Introduction: Among the set of tasks specific to the teaching profession in Physical Education and Health (PEH), quality assessment is considered essential to foster optimal student learning (Leirhaug & Annerstedt, 2016). Despite numerous definitions, findings shared by different authors and guidelines in official documents, assessment remains one of the main challenges faced by PEH teachers (López-Pastor et al., 2013). Teachers particularly struggle with justifying the grades given to students (Svennberg et al., 2014), particularly because of an assessment process they perceive to be highly subjective (Williams et al., 2020). To our knowledge, few studies have focused on the

process by which PEH teachers move from observations to a grade.

Objective: The purpose of this paper is to describe the assessment practices of PEH teachers with respect to the interpretation and grading steps.

Methods: An exploratory sequential mixed-method design was conducted (Creswell, 2014) with PEH teachers in Quebec (Canada) and the results presented come from interviews (n=16) and questionnaires (n=164).

Results: Our results show that participants use different strategies to interpret what they observe from students. When assigning a grade, the main strategy identified is to combine a mathematical approach with their professional judgment. They often take into consideration all the marks taken during an instructional sequence to assign a grade to students. The main finding of this study is consistent with the scientific literature: the interpretation and grading steps are highly subjective in PEH (Marmeleira et al., 2020; Williams et al., 2020).

Conclusion: Future research interested in assessment in PEH should go beyond describing current assessment practices and their challenges to develop strategies that truly address teachers' assessment needs.

Keywords: physical education and health, assessment, teachers practices, interpretation, grading.

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Relationships between student motivational/social beliefs, emotions, and fitness performances using Sport Education in Chinese college physical education

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Introduction: Teaching fitness and the use of fitness tests in physical education and how it influences student motivation to be physically active has received extensive scrutiny in the past decade. Findings from previous research has shown that pedagogical models such as Sport Education (SE) can elicit positive student emotions such as enjoyment (Wallhead et al., 2014).

Objective: Grounded in Control-Value Theory, the purpose of this study was to explore how student emotions, emotional antecedents (control-value beliefs), and achievement outcomes changed over one SE fitness season and how these changes influenced student fitness achievement.

Methods: Chinese college students (N=88; 100% male; Mage= 21.05) completed pre-post surveys (self-efficacy, value, personal/social skills, enjoyment, boredom, pride, and shame), cognitive exams, and fitness tests (flexibility, agility, shuttle run, reaction time, muscular strength, and endurance) during one semester of fitness taught using SE. Repeated measures multivariate analysis of covariance and regression was utilized to explore relationships.

Results: Significant increases were identified within students overtime for the motivational beliefs of self-efficacy and intrinsic value for content (Wilk's $\Lambda = .810$, $F(3, 78) = 6.081$, $p < .001$), emotions of enjoyment and pride (Wilk's $\Lambda = .826$, $F(4, 77) = 4.058$, $p = .005$) and personal/social skills (Wilk's $\Lambda = .750$, $F(2, 79) = 13.194$, $p < .001$). Fitness tests only revealed improvements in the shuttle run. Regressions did not reveal significant relationships between motivational beliefs, personal/social skills, and fitness performance.

Conclusion: SE facilitated improvements in motivation, emotion, and personal skills but

were disconnected from fitness test values. Students may have viewed the individual fitness tests as being disparate from goals of the team-based season.

Keywords: Sport education, College students, Fitness

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Gender differences in study satisfaction of physical education students – a mixed-methods-design

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Introduction: Study satisfaction represents an important construct in empirical higher education research. A high level of study satisfaction is predictive for academic achievement, career opportunities and students' physical and mental health and is therefore considered an indicator of successful higher education. At the same time, gender has an influence on study satisfaction, with males often having shown higher levels of study satisfaction (1). Especially coping with stress is associated with gender differences since women seem to perceive stress more strongly. In this regard, physical education students are exposed to additional subject-specific stresses such as physical demands or study delays due to injuries. Although appropriate instruments are available, study satisfaction is rarely analyzed in the context of physical education students.

Objective: The present study aims to investigate gender differences in study satisfaction in physical education students.

Methods: Based on the person-environment-fit-model (2) the study satisfaction – operationalized according to Westermann et al. (3) – of physical education students at a German university is investigated in a sequential, explanatory mixed-methods design from a gender perspective. For that purpose, the results of an online survey ($n = 553$) are integrated with the findings of episodic interviews ($n = 18$). The evaluation of the survey was performed by multivariate analyses of variance, while the interviews were analyzed via content analysis.

Results: Quantitative results show slight gender differences in one subdimension of general study satisfaction, coping with study stress, in favor of

male students. Consistently, in the qualitative phase of the study, female students report more stress caused by practical examinations, study organizational requirements and restrictions due to the pandemic.

Conclusion: The study reveals gender differences in study satisfaction of physical education teacher students thereby contributing to the understanding of influences on student satisfaction in higher education.

Keywords: study satisfaction, gender differences, teacher education, mixed methods.

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Understanding PE teachers' opinions about physical fitness assessment in children aged 10-11 years

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Introduction: Physical fitness assessments among Belgian children, aged 10-11 years were performed in the province of Luxembourg, in a campaign led by the sports service. Children went to sports centers with their teachers to achieve a battery of 8 tests, evaluating different parameters of their physical fitness. These tests measured the upper and lower limbs explosive power, the cardiorespiratory endurance, the speed, the flexibility, and the abdominal muscle endurance. Tests were assessed by external assessors, who received training before the campaign. Results were sent to the principals, PE teachers and relayed to the students. However, this campaign was restricted to the evaluation of physical fitness and was focused on performances. Moreover, PE teacher's involvement in this campaign seemed limited. From October 2023, the framework of the campaign will be modified following recommendations of the new curriculum for health and physical education. (1)

Objective: The aim of this study was to collect PE teachers' opinions about the objectives of the campaign, their role and how the campaign fitted into their PE lessons.

Methods: Interviews were conducted to meet PE teachers who were present during the campaign. Their participation was free. The aim of these interview was an open discussion about different thematic areas like the use of the physical fitness tests during PE lessons, PE teacher's implication regarding the campaign, advantages, limits, and evolution of this campaign. All interviews were recorded. Ideas discussed in each interview were transcribed. This procedure was used to create an online survey. The online questionnaire was sent to 54 PE teachers who did previously the interviews. This online survey was divided in 5 sections including PE teachers' profiles, the integration of the new health and physical education curriculum, knowledge about the campaign and the tests, the communication of results, evolutions for next campaigns.

Results: Forty-five PE teachers participated to the interviews, during 10 days of campaign. Thirty-seven PE teachers completed the online survey. Only very few PE teachers were involved in projects and interventions regarding the roles of PE teachers in the new curriculum. (From 19% to 30% according to the different areas).

For 57% of PE teachers, the aim of this campaign was to promote health, sport, and physical activity and to provide physical fitness assessment. Ninety-two percent of PE teachers prepared their students for the tests.

Ninety-two percent of PE teachers informed their students about their results and gave them a card with the results. There was no direct communication between PE teachers and parents about the results.

Three-quarters of PE teachers agreed with an evolution and wanted to further integrate the campaign.

Conclusion: This campaign did not benefit physical education teachers in terms of teaching. The collaboration between PE teachers, researchers and sports service of the Province should be improved. PE teachers would like to be more involved. The new campaign will extend to new areas such as motor and physical competencies assessment and health promotion. One perspective would be to create a physical literacy intervention focused on the campaign and on a teaching intervention.

Keywords: physical fitness, assessment, survey, PE teachers.

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Assessment of games from aligned and ecological perspectives in Physical Education

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Introduction: While teaching approaches within a tactical perspective (e.g., Teaching Games for Understanding) proliferate and their wide-ranging benefits are increasingly demonstrated, assessment within these approaches presents challenges, mainly relating to the assessment instruments (1, 2). Even though the available instruments represented an improvement in the collection of information, they face issues that make difficult an ecological and aligned assessment of games from a tactical perspective (3). For an aligned, ecological assessment, instruments should consider the teaching-learning elements that support learning outcomes, the concrete educational context, and the demands of learning (4, 5). As alignment and ecology are key criteria to enhance the teaching-learning-assessment process in games (6), the proper development of the teaching-learning process could be affected by inaccurate results reported (7).

Objective: In this context, our purpose was to develop a new instrument that allow an aligned, ecological assessment in football from a tactical perspective.

Methods: First, in the development stage, criteria were: (a) identified through a literature review; (b) delimited through an exploratory observation; (c) determined by consulting experts. Second, in the validation stage, we obtained: (a) content and comprehension validity by consulting experts and through a systematic game observation; (b) construct validity by comparing the tactical outcomes from two different groups; (c) criterion validity by comparing the tactical outcome using another instrument, and (d) reliability through inter-rater reliability.

Results: A new instrument has been developed with information from multiple entry points and pathways across the various elements in a

setting, what in games implies considering: (a) game phases, (b) learners' roles and (c) the interactions between the three tactical levels of play, nested in the unit of observation in real-game situations, attending to the institutional context and avoiding indexes.

Conclusion: A new 22 criteria instrument is provided that allows an aligned, ecological assessment in football from a tactical perspective.

Keywords: Assessment Instrument, Tactical outcomes, Tactical learning, teaching-learning process.

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Game-based approach for teaching martial arts: proposing the organization of contents

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Introduction: Martial Arts (MA) is a lifelong physical activity that has been growing in the

number of practitioners around the world. Practiced in a variety of settings, by people of all ages, characteristics, and engagement objectives, MA are being included in physical education curricula in many countries, representing the values of the bodily culture of movement.

Objective: We propose a contents organization for the combat actions typically present in different MA, by which teachers and coaches can develop pedagogical objectives to teach MA through combat games.

Methods: A review and critical analysis of the main pedagogical approaches to teaching MA from Portuguese and Spanish literature supported our proposal.

Results: We first provide an explanation of combat actions, the fundamental characteristics that classify combative activities, and the different approaches to teaching and organizing MA pedagogical contents. Our proposal starts with a general organization of possible combat actions in two main groups: (a) actions with weapons (one category: implement handling) and (b) actions without weapons (three categories: throws, groundwork, and striking). We then lay out a detailed description of the possible combat actions present in a variety of combat games organized into seven subcategories: (a) grapple/pull/push (overview of where a player can grapple or touch the opponent); (b) unbalance (possible directions to unbalance opponents); (c) body movement (possible body positions and movements performed in the different combat games); (d) falling techniques (impact absorption specific for throwing actions); (e) attack/counterattack (offensive possibilities in combat games); (f) defense (defensive possibilities in combat games); and (g) special movements (additional combat actions not organized in the previous categories).

Conclusion: This proposal aims to bring additional insights into the creation of safe and motivating environments for teaching MA to youth through a game-based approach and formally validating such activities in physical education curricula.

Keywords: sport pedagogy, physical education, combat sports.

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Structures and experiences of postdoctoral fellowships for fellows and supervisors in PE

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Introduction: While postdoctoral fellowships (PDFs) have long been commonplace in natural sciences, they are becoming increasingly prevalent in other areas, including social sciences disciplines, such as physical education (PE) (Jadavji et al., 2016). Despite this growth, understandings of PDFs remain nebulous to many (Woolston, 2020).

Objective: The purpose of this research is to examine the structures of PDFs in PE internationally and the experiences of fellows and supervisors.

Methods: Fourteen fellows and five supervisors participated in a one-on-one semi-structured interview. We conducted a thematic analysis of the data, conceptualized through Dewey's (1938) theory of experience.

Results: We found PDFs in PE to be extremely diverse in terms of structure, funding, supervision, length, composition and of fellows' and supervisors' perceptions of what fellowships are and what purposes they serve. Results point to a wide array of objective conditions (e.g., family/relationship status, location), rather than internal conditions (e.g., career aspirations), that influence fellows' decisions to engage in, and their experiences of, these positions, ranging from extremely positive to extremely negative. Lack of institutional support is a key condition influencing the quality of such experiences.

Conclusion: This research holds key implications for understanding and supporting postdoctoral roles in PE – both at the supervisory level and more broadly – as they become increasingly prevalent. There is a need for greater clarity in defining the role of PDFs and where/how they fit within institutional structures, along with stronger advocacy for access to supports and fair salaries.

Keywords: early career, research, supervision, academia

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Perceived water competence of 6-year-old children in Finland

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Introduction: Appropriate aquatic skills could protect young children from drowning. Children's perceived motor competence may have an important role in children's understanding of water safety issues and learning to swim.

Objective: The aim of this pilot study was to measure the level of 6-year-old children's perceived water competence in Finland.

Methods: Participants were 222 preschool children from different parts of Finland. Children answered with parents' help to the digital questionnaire modified from the Pictorial Scale of Perceived Water Competence (PSPWC) measure (Morgado et al. 2020). Ten tasks representing competence areas were included: (1) Lying down in a prone position, (2) standing in the water, (3) catching an object, (4) Back and (5) Front stars, (6) Water entry by slide, (7) Leg propulsion on the back and (8) front, (9) Jump into the water and (10) Longitudinal rotation). Descriptive statistics (%) were used to describe children's perceived competence.

Results: Preschoolers perceived their water competence mainly positively. Almost all (92%) children perceived themselves being able to lie down in shallow water. More than 70% of the children perceived that standing in submersion at the shoulder level and catching an object under water is easy. Approximately 40% of the children perceived themselves being able to do Back and Front star, 41% to enter water by sliding and 55% by jumping and 43% to turn from the front to the back.

Conclusion: The main results of the study showed that approximately 40% of children perceived their water competence to a level in which basic swimming skills could be easy to learn. On the other hand, 5% of the children perceived fear towards water entry in shallow water. Six years of age could be a good period to encourage children to play in the water, and little by little to start learning basic swimming skills.

Keywords: self-perception, water competence, children.

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Physical Education Teacher Education in Brazil: challenges in the transformation of the habitus of pre-service teachers according to teacher educators

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Introduction: Pierre Bourdieu's sociological approach, as well as his conceptual tools, has been used and recognized as potential analytical framework in Physical Education field (Lisahunter & Smith & Esmerald, 2015). In teacher education field, there are many problems and challenges that Bourdieu sociological approach can be helpful such as the reproduction of Doxa through practice (Hunter, 2004) or the comprehension of social fields and the habitus of the agents who participated in teacher education process, like teacher educators, pre-service teachers, and others (Hilgers & Mangez, 2015).

Objective: In this way, the aim of the study was to investigate the challenges in the transformation of pre-service teacher's habitus according to the considerations of six well experienced teacher educators and researchers of four well recognized Brazilian Universities at Sao Paulo State through semi-structured interviews.

Methods: We analyzed the results with content analysis (Bardin, 1991).

Results: The main results were divided in two categories: 1) Possible reasons for the inability of the university and professional education field in the process of transforming the habitus; and 2) the role of agents inserted in this process (teacher educators, pre-service teachers, etc.) so that the transformation of habitus can be possible. In general, the participants recognized that the current curricula in the field of Physical Education Teacher Education have not contributed to this transformation process, so that pre-service teachers often conclude graduation with strong remnants of the student habitus. On the other hand, in the professional field, the teachers' habitus (or professional habitus) is a fundamental condition for acting as a teacher in the perspective of professionalization.

Conclusion: In this sense, the study indicates that elements of curricular anachronism, structures that distance schools from universities

and an increasingly shorter and disciplinary education process are elements that need to be rethought in the field of Physical Education Teacher Education.

Keywords: Teacher education, Teacher preparation, Professional development, Curriculum, Pierre Bourdieu.

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The fitness barometer, a tool for physical education teachers

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Introduction: Belgium has been working on physical fitness assessment since a couple of years (1994, 2004, 2013) (1) (2) (3). In the Province of Luxembourg, a physical fitness campaign was organised every year for children in grades 5 and 6 (10-11 years). In October 2023 this campaign will be modified to provide motor and physical assessment, and health promotion. Several fitness tests will be removed.

Objective: The aim of this study was to provide a complete fitness barometer with the results of the campaign 2022.

Methods: In 2022, 4,344 children aged 10 and 11 years performed 8 fitness tests, assessing upper and lower limbs explosive power, cardio-respiratory endurance, speed, flexibility, and abdominal endurance. Tests were assessed by external assessors. Data were analysed by researchers. R software (Rcmdr) was used for statistical analysis. Four groups were categorized by gender and age. Descriptive statistical analysis of percentiles was conducted for each group.

Results: Percentiles divided statistical series into different categories that allowed each child to be placed in relation to usual values of children of his/her province, age, and gender. Results for each child highlight some qualities and weaknesses of his/her physical fitness, at the assessment time.

Conclusion: This barometer delivered to PE teachers an individualized profile for each

student. Collective results were provided for the PE teacher showing strengths and weaknesses of their class. Physical fitness is one domain of competencies that a person must develop to be physically active. Other domains of competencies should be added to this campaign.

Keywords: physical fitness, assessment, barometer, PE teachers.

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Facilitating innovative orientated physical education teachers: Using the subjective warrants' changes over time to overcome barriers to transforming physical education

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Introduction: Innovative pedagogies in physical education (PE) are often 'washed out'^{1,5} in favour of sport as technique, traditional games based curriculum^{3,4}; limiting innovative orientated pe teachers in disrupting the group habitus (shared dispositions) in the field and promoting much needed change² throughout their career cycle.

Objective: Identify how PE teachers' subjective warrant (thoughts, feelings and beliefs) change over time to reduce washout, disrupt the group habitus inherent within the field and promote pedagogies/ curriculum conducive to 21st Century learners.

Methods: Informed by interpretivist paradigm, semi-structured life story interviews were conducted with 29 PE teachers at different career stages. Complementing occupational Socialisation Theory (OST) framework,

Bourdieu's habitus, capital, field and practice were adopted as thinking tools to inform thematic analysis of personal, situational and societal factors influencing change to the subjective warrant over time.

Results: Four themes were identified: 1) Feelings of accountability, affirmation and acceptance within the profession changed over time. 2) Imbalance between pedagogical content knowledge (PCK) and taught during Physical education teacher Education (PETE) and Subject Content Knowledge (SCK) valued in schools leads to washout. 3) Increased pastoral responsibilities impact on teaching innovation. 4) Factors influencing innovative orientated teachers to pursue other roles in school.

Conclusion: Traditional curriculum SCK is exchanged as capital for acceptance and affirmation within the PE field. When traditional SCK and innovative PCK are equal, innovative orientated teachers are empowered to promote curriculum and pedagogical change, consequently disrupting the group habitus. The role and responsibility of teachers needs to be valued to ensure high quality, innovative teaching.

Keywords: Teacher socialisation, habitus, wash out, teacher beliefs, barriers to change

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Understanding PE teachers' opinions about physical fitness assessment in children aged 10-11 years

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Introduction: Physical fitness assessments for children, aged 10-11 years were performed in the province of Luxembourg. Children went to sports centres with their teachers to achieve a battery of 8 tests, evaluating different parameters of their physical fitness. However, this assessment campaign was restricted to the evaluation physical fitness and was focused on performances. Moreover, PE teacher's involvement in this campaign seemed limited. From October 2023, the framework of the campaign will be modified following recommendations of the new curriculum for health and physical education. (1)

Objective: The aim of this study was to collect PE teachers' opinions about the objectives of the campaign, their role and how the campaign fitted into their PE lessons.

Methods: Interviews were conducted to meet forty-five PE teachers involved in the 2022-campaign. Discussions were recorded. Ideas discussed in each interview were transcribed. This procedure was used to create an online survey.

Results: Thirty-seven PE teachers completed the online survey. Very few PE teachers were involved in projects regarding the new curriculum. Ninety-two percent of PE teachers prepared their students for the tests. Ninety-two percent of PE teachers informed their students about their results. Results were not discussed with parents. Three-quarters of PE teachers wanted to further integrate the campaign.

Conclusion: This survey analysed the impact of this campaign on teachers' interventions, as well as the barriers encountered. This study could allow a better collaboration between PE teachers, parents, researchers, and members of the sports service for the development of future campaigns.

Keywords: physical fitness, assessment, survey, PE teachers.

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Gender differences in study satisfaction of physical education students – a mixed-methods-design

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Introduction: Study satisfaction represents an important construct in empirical higher education research. A high level of study satisfaction is predictive for academic achievement, career opportunities and students' physical and mental health and is therefore considered an indicator of successful higher education. At the same time, gender has an influence on study satisfaction, with males often having shown higher levels of study satisfaction (1). Especially coping with stress is associated with gender differences since women seem to perceive stress more strongly. In this regard, physical education students are exposed to additional subject-specific stresses such as physical demands or study delays due to injuries. Although appropriate instruments are available, study satisfaction is rarely analyzed in the context of physical education students.

Objective: The present study aims to investigate gender differences in study satisfaction in physical education students.

Methods: Based on the person-environment-fit-model (2) the study satisfaction – operationalized according to Westermann et al. (3) – of physical education students at a German university is investigated in a sequential, explanatory mixed-methods design from a gender perspective. For that purpose, the results of an online survey ($n = 553$) are integrated with the findings of episodic interviews ($n = 18$). The evaluation of the survey was performed by multivariate analyses of variance, while the interviews were analyzed via content analysis.

Results: Quantitative results show slight gender differences in one subdimension of general study satisfaction, coping with study stress, in favor of male students. Consistently, in the qualitative phase of the study, female students report more stress caused by practical examinations, study organizational requirements and restrictions due to the pandemic.

Conclusion: The study reveals gender differences in study satisfaction of physical education teacher students thereby contributing to the understanding of influences on student satisfaction in higher education.

Keywords: study satisfaction, gender differences, teacher education, mixed methods.

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Transforming teaching and learning in physical education (PE) and physical education teacher education (PETE): A critical narrative review of remote teaching during COVID-19

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Introduction: The shift to remote learning as a result of the COVID-19 pandemic took physical education (PE) and PE teacher education (PETE) educators by surprise. An increasing amount of research has explored how teachers found/experienced the shift to remote learning.

Objective: This critical narrative review draws on bell hooks' engaged pedagogy to examine the pedagogies deployed by PE teachers and PETE educators in response to COVID-19.

Methods: In total, 86 articles were considered for full-text review, with 38 articles moving to data extraction after having met the study's inclusion criteria. We used inductive and deductive methods of data analysis.

Results: Findings are reported and discussed according to (a) the inductive identification of pedagogies deployed by PE teachers and PETE educators during COVID-19; and (b) the deductive analysis of the literature using bell hooks' engaged pedagogy as a theoretical lens. This review determined that whilst the COVID-19 pandemic may have signalled an opportunity to advance an engaged pedagogical approach in PE and PETE, there was scant evidence of teachers or researchers choosing this path. Instead, innovation, criticality, creativity, mutuality, engagement and meaningful learning was suspended in favour of day-to-day survival.

Conclusion: Most papers focused on remote learning enablers rather than engaged pedagogy.

We outline directions and critical challenges for PE teachers and PETE educators to develop equitable, inclusive, and empathetic classroom spaces which seek to create learning that is transformative, dynamic and holistic.

Keywords: COVID-19, remote teaching, physical education, PETE, hooks, critical review.

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Theme 4: Teacher Preparation & Professional Development

Tackling youth discomfort with sport and bodily practices: an Italian case study

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Introduction: The research concerns the relationship between sport and youth discomfort. Literature highlights two main tendencies: the first is giving for granted the beneficial effects of sport practices in vulnerable youth; the second presents a critical approach highlighting the lack of longitudinal studies.

During the pandemic, the research group monitored two projects carried out in Bergamo (Italy) by two sport organizations running educational services involving disadvantaged young people in sport-based projects. The aim of the projects was to empower them through and towards sport and physical activity.

Objective: The main research question has been to understand if sport can be considered an educational experience in social disadvantaged youth. The purpose has been to identify success criteria and limits of the interventions.

Methods: The research group have monitored and evaluated the progress and results of the two programs through field observations (n=35), meeting observation (n=23), interviews (n=3) and focus groups (n=6).

Results: The two projects led to different results. The more effective had been carried out by associations deeply rooted at community level. This allowed more flexibility during the pandemic and a more informal level of collaboration. The differentiation of the roles within the sport clubs, the customization of the actions, the joint training for educators and coaches were prodromal aspects for the success of the project.

Conclusion: The durability, the integration with the opportunities given by the welfare system, the sharing of competences between social and

sport educators are among the success criteria of a social intervention based on sport.

Keywords: youth discomfort, sport, body, shared continuous education

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Sports in prison: Inmates' perspectives on coaching effectiveness

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Introduction: Studies focusing on the providers of sport interventions in prisons are rare (Wicker et al., 2023). Given this research gap, the present study examines inmates' perceptions about effective coaches.

Objective: Which factors of coaching effectiveness do inmates perceive to be important for coaches working in prisons?

Methods: The theoretical framework is based on the definition of coaching effectiveness by

Côté and Gilbert (2009): Effective coaches need (1) professional, interpersonal, and intrapersonal knowledge, and should (2) help athletes to achieve outcomes. Furthermore, it is important to consider (3) the specific coaching context. As part of a larger research project with four sport programs in an open German prison, this study performed qualitative and semi-structured interviews with five inmates who participated in at least three programs. The interview guide protocol as well as the categories for the deductive content analysis are based on Côté and Gilbert's (2009) model.

Results: Inmates judge the professional knowledge especially on language of the coaches. Interpersonal knowledge is perceived as important in regard to the specific prison culture. Notwithstanding, coaches' intrapersonal knowledge seems to be less important to inmates. The development of sport-specific competences is perceived as a motivational factor to further participate in sports. To connect with others is not particularly important for the inmates, as prisons are not seen as places to make friends. In the inmates' opinion, the prison requires coaches to have sensitivity for the group and situations.

Conclusion: The results illustrate the importance of context-specific coaching skills in prisons.

Keywords: coaching expertise, instructor, knowledge, athletes' outcomes, content analysis.

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Scoring for the future? Social-educational outcomes of a soccer intervention in prison

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Introduction: Prisons can be characterized by an oppressive climate of social isolation (Müller & Mutz, 2019), social insecurity (Edgar et al., 2003), and individualism (Schliehe et al., 2022). Studies outside the prison indicate the potential of soccer to improve such aspects (Wikman et al.,

2017), which are, however, not documented in prison.

Objectives: This study investigated social-educational outcomes of a soccer intervention in prison.

Methods: Data were collected in an experimental field study with inmates ($n = 21$) of a German open prison. Inmates participated in a six-week soccer training including three sessions per week following the concept "Scoring for the Future" (Schlenker & Braun, 2020). Before and after the intervention, social integration (Fend et al., 1984) and social self-efficacy expectation (Jerusalem & Klein-Heßling, 2002) were assessed with a questionnaire in the intervention ($n = 11$) and control group ($n = 10$). Within the intervention group, group cohesion (Kleinknecht et al., 2014) was assessed after the first and the last session.

Results: The results of analyses of variances (ANOVA) reveal a significant positive interaction effect of time \times group for social integration, indicating an increase in the intervention group in the post-test. For group cohesion, the dimension of social group integration increased significantly from pre- to post-test.

Conclusion: The soccer intervention yielded positive outcomes concerning social integration and social group integration after only six weeks. They illustrate the importance of offering sports in prison to facilitate positive social processes, which help to better cope with the side effects of imprisonment.

Keywords: sports, education, social integration, social self-efficacy expectation, group cohesion

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Health, mountaineering, and the trans* experience: The case of Erin Parisi

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Introduction: Outdoor sports (e.g., mountaineering) are widely recognised as gendered; with recent increased interest on enhancing LGBTQ+ inclusion within such spaces. Research exploring LGBTQ+ experiences in ‘the outdoors’ has tended to conflate the experiences of trans* individuals with all LGBTQ+ ‘groups’ focusing on narrow aspects of health-related topics. Little, if any, research has focused solely on the broader health (i.e., physical, social, emotional, spiritual, and intellectual) of trans* individuals while they navigate these highly gendered outdoor spaces. This research focused on Erin Parisi, a trans* climber, as she attempts to become the first trans* person to ascend the Seven Summits. Erin commenced her physical and medical transition at 38 years and uses the pronouns she/her/hers.

Objective: To explore the multidimensional health experiences of Erin Parisi, as she attempts to become the first trans* person to summit the seven highest mountains on each continent.

Methods: Three in-depth semi-structured interviews were conducted with Erin to understand her experiences as a climber both before and after her transition, and in particular, her health during the Seven Summits expedition. To support the analytical process, Hjelm’s (2010) multidimensional model of health was adopted to understand Erin’s health experiences during this project.

Results: Data is currently being analysed and will report on the multidimensional health aspects of Erin’s experiences when navigating the gendered mountaineering space.

Conclusion: Erin’s story may act as a catalyst for change and be generalisable to other gendered contexts. More research is needed on

the health of trans* individuals in outdoor sports settings.

Keywords: trans*, transgender, LGBTQ+, Erin Parisi, health, multidimensional, outdoor sports, mountaineering.

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Tackling the COVID-19 pandemic social deprivation effects. Reconnecting youth through participation equality and positive interpersonal relationships in Physical Education

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Introduction: Physical education teacher education (PETE) programs that train Preservice Teachers (PSTs) to apply a Physical Education curriculum based on student-centred pedagogies can be a particularly well-tailored site of educational transformation by providing students with more equitable learning opportunities and enhancing the quality of their social skills and interactions.

Objective: To examine the effect of the implementation of a learner-oriented PETE program on PSTs’ ability to promote equitable and inclusive learning experiences and to assess students’ perceived accomplishment of Basic Pedagogical Needs (BPN) and Social Cohesion (SC).

Methods: Qualitative methods (e.g., participant observation) provided an in-depth exploration (thematic analysis) of the abilities of four PSTs to promote equitable and inclusive learning experiences and students’ social development. Questionnaires assessed students’ perceptions of BPN and SC. Gender and pre/post-test comparisons were performed using one-way and repeated measures ANOVAs.

Results: The PSTs struggled to design developmentally appropriate learning tasks and promote equitable participation of students in

learning tasks. An overall progress was noted in every student perception of fulfilment of BPN and SC, however, significant impact was found only in the BPN (competence and autonomy).

Conclusion: The PETE program mechanisms put in place to mediate and support the PSTs' ability to develop equity-based teaching showed to efficiently scaffold their professional development towards the enactment of more equitable practices that allow for positive outcomes in students social development. At odds with the main findings in prior research, effect sizes suggest a higher impact of the preservice teachers' pedagogical practices amongst boys.

Keywords: physical education teacher education, pedagogical equity, students' social development, preservice teachers.

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From ethnography to activist research: Ways of building a football learning environment for girls

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Introduction: In Brazil, there are still few spaces for girls play football. However, the visibility obtained in recent years has contributed to awaken their interest and participation (Martins & Silva, 2020), leading us to reflect on this phenomenon.

Objective: In light of this, we sought to explore the possibilities, discomforts, and learnings of an activist approach to girls' football practice.

Methods: Activist research focuses on responding to social problems, making it possible to involve participants in the co-creation of new practice spaces (Kirk & Oliver, 2014). The research was conducted in a football school in Vitória/ES, with girls from 6 to 10 years old. Data was produced from field diaries, conversations, interviews and meetings with the second author.

Results: For them, playing involved family relationships, friendship, and safe spaces, as well as enabling knowledge to be juxtaposed and produce new meanings. In the same way, the activist action faced challenges (Luguetti & Oliver, 2018). Among them: to stop being an observer and intervene as an activist researcher; the discomfort of acting, being a woman, in a space integrated only by men; the strangeness of the students, family members and managers with a new methodology.

Conclusion: This research allowed us to understand the meanings that circulated and that mobilized the girls to practice soccer, and to act

with them to produce new learning experiences. It is worth mentioning that this process caused discomfort for all of them, demonstrating that the activist approach demands patience, a support network, commitment, and time.

Keywords: Gender. Football. Girls.

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LGBT+ young people and school physical education

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Introduction: This work focuses on the issues of normalization of LGBTQIA+ bodies that cross the school environment and physical education (PE) classes. These classes are identified by these young people as spaces that are not receptive to their corporeality (Associação Brasileira de Lésbicas, Gays, Bissexuais, Travestis e Transexuais, 2016; Denison and Kitchen, 2020). In the wake of a sporting tradition, PE is influenced by discourses that naturalize bodies, classifying some as more "fit" to perform physical activities than others. Although overcoming this excluding normativity is imperative for inclusion, research with non-normative young people in school PE, especially regarding sexuality and gender boundaries, are recent and run into challenges of investigating this public (Landi et al., 2020).

Objective: Aiming to contribute to this scenario of scarce investigations, our objective was to

describe different experiences of LGBTQIA+ young people with PE.

Methods: Narrative interviews (Neto, 1999) were conducted with two young high school graduates – a trans boy and a gay boy.

Results: We narrate their perceptions about the barriers that possibly lead them to marginalization in the school environment, as well as their resistance strategies and negotiations. Both young boys narrate episodes of discrimination at school, mainly connected to actions of teachers and school counsellors. In addition, there is low institutional support. They describe their PE classes over the years as a standard model lacking elaboration. School sports tournaments also cause tension, by bringing to the forefront the exclusion linked to gender-norming views intertwined with ability and by highlighting gender as binary and excluding bodies that transgress boundaries.

Conclusion: Classes can be differentiated in order to include other contents, methods, objectives and sport must be recreated in classes and school competitions in order to become inclusive for all bodies types.

Keywords: Sexuality. School. School Physical Education..

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Exploratory study of homophobia in Wallonia-Brussels Federation male amateur football

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Introduction: Despite the implementation of some campaigns to fight against the phenomenon, in professional football stadiums, manifestations of homophobia are still regularly making headlines. Moreover, several French and Anglo-Saxon studies conducted within grassroots football report greater hostility towards homosexuality in this context than in other contexts of everyday life (Denison & Kitchen, 2016; Mette et al., 2012).

Objective: The aim of this study was to find out how homophobia expresses itself in WBF men's amateur football; to question different stakeholders in grassroots football about the role they might play regarding this problematic, and analyze the actions that are currently being taken to tackle it.

Methods: A total of 511 male amateur football stakeholders completed an online questionnaire. Based on their experiences or feelings, they answered questions regarding manhood, insults related to homosexuality, the role of each person in dealing with homophobia, and the positions taken by the football federation and the football clubs in relation to this issue. Afterwards, nine other people were interviewed in order to discuss the results of the questionnaire and to provide more details.

Results: Although acceptance of homosexuality is almost unanimous, the use of insults referring to homosexuality is common, and the belief that a homosexual person would not be masculine enough to play football is still widespread. The various stakeholders in grassroots football are poorly informed about the federation's anti-discrimination policy, while clubs rarely have a clear policy on discrimination.

Conclusion: At both federation and club levels, it is important to give more visibility to the efforts made in tackling homophobia and show acceptance of homosexuality.

Keywords: homophobia, amateur football, Wallonia-Brussels Federation.

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Habilidades motrices, creencias parentales, escolaridad materna y frecuencia de actividades en infantes

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Introduction: Las habilidades motrices son factores elementales que establecen la capacidad, efectividad y eficacia de ejecución del movimiento que va desarrollando cada individuo, sin tomar en cuenta la herencia genética que posee, sin embargo, los estudios sobre parentalidad han ido en aumento desde los años setenta hasta el día de hoy, a causa del gran impacto que tiene el contexto familiar y escolaridad de la madre sobre el aspecto personal y social, teniendo influencia en el desarrollo del infante. **Objetivo:** El objetivo de ésta investigación fue analizar la relación entre las habilidades motrices, creencias parentales, escolaridad materna y frecuencia de actividades en infantes de 3 a 5 años. **Metodología:** En el estudio participaron 158 sujetos (76 niñas y 82 niños), con un rango de edad de 35 a 71 meses, una media de 54.77 y una desviación estándar de 9.148 meses; se propuso un modelo el cual fue analizado mediante ecuaciones estructurales, donde previamente se comprobaron los supuestos subyacentes de esta técnica mediante el análisis de valores por asimetría, curtosis y los gráficos de dispersión matricial de las distintas variables contempladas en cada modelo. **Resultados:** Los resultados obtenidos fueron en relación a la habilidad motriz, específicamente la motricidad gruesa con la frecuencia de actividades, donde el mayor efecto es el que produce la importancia que dan los padres a la motricidad gruesa sobre la frecuencia de actividades de esta misma motricidad ($\beta = .63$, $p < .001$); también, se muestra que la escolaridad de la madre influye indirectamente de forma significativa en la frecuencia de actividades de motricidad gruesa. **Conclusión:** En conclusión, la escolaridad de la madre impacta tanto en creencias parentales como en frecuencia de actividades de motricidad fina y gruesa, además las creencias parentales sobre la importancia de las actividades motrices se relacionan

positivamente con la frecuencia de actividades motrices fina y gruesa.

Keywords: Habilidades Motrices, Infantes, Creencias parentales.

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Positive emotions of immigrant students in Physical Education in a Chilean school: a qualitative study

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Introduction: The present study will address the social phenomenon of immigration, which will be approached from the emotional perspective of the student body (1).

Objective: Its objective is to understand the positive emotions of migrant students in Physical Education and Health classes in a Chilean school.

Methods: The research responds to the qualitative methodological approach. In addition, it is a single case study of community type, since it investigates a school group that has as a common element the immigrant condition. The dimensions of the study are the following: a) positive emotions for the subjective well-being: joy, enthusiasm, security, fun and satisfaction; b) school immigration; and c) Physical Education. The student body participating in the study corresponds to ten in total, including six female and four male students, with a mean age of 13.5 years (SD= 0.6). Of the ten students, seven are from Venezuela, one from Ecuador, one from

Colombia and one from Peru. Data were collected using the semi-structured interview technique (2). These were subjected to a deductive-inductive content analysis in the ATLAS.ti 22 program.

Results: The results show ten categories where motor learning, confidence, motor success, didactic innovation, socio-motor play, patience, sports practice, responsibility, socialization and teamwork stand out. As a discussion, the presence of the ethical factor associated with teachers and peers stands out (3).

Conclusion: It is concluded that students recognize multiple meanings to their positive emotions by BS, highlighting a pedagogical environment where relevant ethical values are present.

Keywords: emotions, ethical education, physical education, immigrant students.

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Handball teaching: teamwork as key learning and inclusion strategy to address student diversity

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Introduction: Dealing with students' heterogeneity, different motor abilities and game skills, and learning needs is a major challenge in team sports teaching, especially for a PE student teacher.

Objective: The study intends to analyze the perception of students, identified with different game play skills, about the handball learning experience, when being clustered into homogenous or heterogeneous ability groups. Additionally, it is also aimed to capture students' opinions about the inclusion work done with a student with specific educational needs through cooperative learning. It should be noted that,

prior to the handball unit, this student was always working separately from her classmates.

Methods: A class of 24 students from the 10th grade was involved, with 9 females and 15 males ranging in age from 14 to 16 years, and a student teacher, who used an action research approach to improve her own practice. During the handball unit (Estriga, 2019), the students experienced the two types of grouping during the learning task and game play activities. Data collection was carried out after the pedagogical experience through group interviews with the involved students. The qualitative data were analyzed using the assumptions of thematic analysis, resulting in three categories defined a priori: experiences in classes, work by homogenous or heterogeneous groups, and inclusion.

Results & Conclusion: The results show that there were perceived advantages and disadvantages when comparing the two different grouping criteria (homogenous and heterogeneous game play ability). The strategies used to promote game play inclusion and active participation by all the student-players was highly valued by the participants.

Keywords: Equity, Game-Based Approach, Cooperative Learning.

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Socioeconomic Inequalities in Physical Activity among Chilean Women – A Mixed Method study

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Introduction: Socioeconomic inequalities in physical (in)activity contributes to a major burden for obesity and health inequalities(1). 39% of Chilean women lives with obesity, with a larger gap across socioeconomic position (SEP) groups(2). Previous studies have identified physical activity (PA) patterns across SEP(3,4), yet these do not include the Chilean population nor assess the social determinants(5) underpinning these inequalities.

Objective: To systematically review SEP inequalities in PA and describe the social

determinants contributing to the PA inequalities among Chilean women.

Methods: A systematic review (SR) comparing PA outcomes and SEP groups in Chile(6), and 30 qualitative interviews to Chilean women. Thematic analysis(7) was performed for exploring their perceptions and experiences around PA across SEP.

Results: Findings from 16 articles identified that women from the lower SEP groups engaged in less leisure-time PA and had higher physical inactivity. No significant differences across SEP were identified for total, work and-transport-related PA. Most participants from the qualitative study, regardless their SEP, faced time restrictions due to family and work demands. Higher SEP participants had economic and psychosocial resources for engaging regularly in leisure-time PA. On the contrary, lower SEP women engaged less in regular leisure-time PA but spent more time in work and-transport-related PA.

Conclusion: Lower SEP Chilean women face several barriers for engaging in leisure-time PA, contributing to the obesity gradient. Further policies should focus on improving the built and physical environments at underserved neighbourhoods. Further structural economic, labour and care policies should also include an equity and gender component to promote PA.

Keywords: equity, health inequalities, gender, physical activity, mixed methods

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Early Career Scholar Presentations

An international investigation on how teachers make sense of the Meaningful PE approach

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Introduction: While PE has arguably changed little since the 1960s (Kirk, 2009), the last several

decades have seen the development of numerous innovations in PE pedagogy. Researchers have sought to understand how/to what extent teachers implement innovations over time. The study of how teachers make sense of innovations in relation to an array of personal and situational factors can provide insights into the implementation process (Stollmen et al., 2022).

Objective: While much research to date on teachers' sensemaking has centred on innovations mandated through policy, in this research we take a different approach, beginning

with an international group of teachers who have voluntarily adopted the Meaningful PE innovation into their regular teaching practice and seeking to understand how they have made sense of the innovation in their local contexts.

Methods: Six teachers from five countries (Canada, USA, Cambodia, Vietnam, China) participated. Data collection included a) individual semi-structured teacher interviews, b) teacher-generated artifacts (e.g. blogs, social media posts), and c) analysis of teachers' local curriculum documents.

Results: Results illustrate how each teacher's sensemaking influenced their implementation of Meaningful PE, including making sense through: a) attributes of the innovation, b) personal characteristics, experiences and beliefs, and c) local curriculum. The impact of these sensemaking processes upon teachers' practice is explored.

Conclusion: Results provide insight into personal frames of reference and situational demands that influenced the implementation process as well as supports by which teachers resolved ambiguities and uncertainties (Allen & Penual, 2015), leading to sustained implementation of Meaningful PE across time.

Keywords:

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Antecedents of need-supportive and need-thwarting styles among Japanese secondary school physical education teachers: The influence of basic psychological need satisfaction and frustration at work

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Introduction: Existing literature emphasises the importance of need-supportive and need-thwarting teaching styles for legitimate learning outcomes, as outlined by self-determination theory (SDT: Ryan & Deci, 2017). However, there remains a knowledge gap regarding the motivational factors influencing the adoption of

these teaching styles, specifically within the context of physical education.

Objective: This study explored the influence of teachers' basic psychological need satisfaction and frustration (BPNSF) at work on their teaching styles, in line with SDT.

Methods: Employing a pragmatic mixed methods approach, the quantitative phase involved a web-based questionnaire that utilised the Japanese versions of the Situations-in-School-PE and BPNSF Scales. Valid responses were obtained from 302 teachers (231 men and 71 women). Furthermore, qualitative interview data were collected from six teachers (four men and two women) selected from the quantitative survey. The interview data were deductively coded to generate themes related to BPNSF.

Results: Regression analysis demonstrated that relatedness satisfaction and autonomy frustration predicted need-supportive styles, and there was a statistically significant and positive correlation between need-thwarting styles and relatedness frustration. The results also indicated that the quality of interpersonal relationships with colleagues significantly affected teaching styles. Moreover, we found that need-supportive teachers often experienced frustration with their autonomy at work, potentially due to prevalent hierarchical structures in the Japanese work environment.

Conclusion: The findings affirm that the sufficient fulfilment and hindrance of basic psychological needs in the workplace are essential factors that drive appropriate teaching styles in physical education.

Keywords: self-determination theory, mixed-method, pedagogy.

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Toward a "coaching as a joint endeavour": an analysis of a Gymnastics training centre

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Introduction: The Gymnastics' environment has been criticised for normalizing and reproducing non-accidental types of violence. Thus, understand the effects of power within gymnastics coaching reality is essential to

purpose policy and pedagogical implications in attempt to ensure the health and well-being for young gymnasts.

Objective: Therefore, drawing on a Foucauldian theoretical framework, the aim of this study was to analyze how power affects the micro-coaching reality of a Gymnastics training centre in Brazil, and the pedagogical policy implication.

Methods: This study was designed as a case study and 4 coaches, 15 gymnasts and 12 parents participated in the research. Data were produced from participant observation and semi-structured interviews. To analyze the data, we used the Reflexive Thematic Analysis Method.

Results: From the analysis we found four themes: (1) “The reproduction of coaching practices in the socialization of coaches”, in which we explored how discourse, power relations and coaching practices that take place in the context of Gymnastics in Brazil emerges and are reproduced in the socialization of the coaches; (2) “How disciplinary power operates within the gym”, in which we explored the coach-gymnast power relationship, from both gymnasts’ and coaches’ perspectives; (3) “How power operates around the gym: the perspective and the role of parents”, in which we analyze the interconnections of the socialization between “gymnastics parents”, the coach- parent power relationship and the parent-gymnast power

relationship; (4) “Towards more effective and less coercive coaching practices”, in which we explored the active role of coaches in problematizing the dominant discourses and practices that circulate within and around Gymnastics coaching environment.

Conclusion: In so doing, we consider that the challenges to ensure the balance between performance, health and well-being of the gymnasts depend of a joint endeavour, a co-responsibility and a co-surveillance of the main agents, which circulate in Gymnastics coaching reality.

Keywords: Women’s Artistic Gymnastics, Foucault, sports coaching, youth sport.

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Poster Presentations

Motor competence pre and post lockdown due to COVID-19 in Chilean schoolchildren

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Introduction: As a result of the Covid-19 pandemic, many countries opted for total lockdown of their populations. This restriction has produced several negative effects and limited the factors that promote a positive health development, such as motor competence. A decrease in motor competence has been evidenced^{1,2}. Pre-lockdown values in Chilean schoolchildren showed low levels of motor competence³⁻⁵.

Objective: The aim of this work is to compare the level of motor competence values of Chilean schoolchildren, based on data from the pre-lockdown cohort (2018-2019) and the post-lockdown cohort (2022).

Methods: A total of 1,179 children (46.8% girls; age $M=11.1$ $SD=0.6$) from La Araucanía, Chile, participated.

Cohort A (pre-lockdown 2018-2019): 588 children (52.2% girls; age $M=11.1$ $SD=0.6$), Cohort B (post-lockdown 2022): 591 children (47.8% girls, age $M=11.1$ $SD=0.7$). MOBAK Test was used for the assessment of AMC^{6,7}.

Results: Cohort A presented a motor competence in object control of $M=2.96$ ($SD=1.98$), a value that decreases in cohort B to $M=2.57$ ($SD=1.98$), with significant differences ($p=0.001$; $d=0.19$). Regarding the motor competence in self-movement, cohort A presented a value of $M=2.49$ ($SD=1.99$), while cohort B $M=1.96$ ($SD=1.86$), with both groups differing significantly ($p<0.001$; $d=0.27$).

Conclusion: The analysis revealed that the level of motor competence has a negative trend regarding the post-lockdown cohort. The decrease in motor performance in schoolchildren coincides with both follow-up studies¹ and cohort studies². Considering that before the outbreak of the pandemic Chilean schoolchildren had a poor motor performance, these results affirm the urgent need to take measures to counteract this problem exacerbated by the Covid-19 pandemic.

Keywords: motor development, motor competence, physical education, physical activity, physical literacy.

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Coach Education Program for life skills teaching through sport: focus on coach behaviours

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Introduction: Coaches are more likely to adopt behaviors favorable to the teaching of Life Skills (LS) when involved in a Coach Education Program (CEP) developed specifically for this purpose (MacDonald et al., 2020). The Behavior Change Wheel (BCW) is a model capable of guiding the evaluation of the effectiveness of the CEP (Allan et al., 2018). The model evaluates how the intervention provides Capacity, Opportunity and Motivation to assume a target behavior (Michie et al., 2011).

Objective: This research aimed to evaluate the impact of a CEP for LS teaching on the behavior of coaches of a Brazilian multi-sport club.

Methods: The program lasted four years and included different intervention strategies. 23 coaches involved in the program participated in the research. Coaches provided their conception about the program through interviews and their behaviors were analyzed through the PQAYS systematic observation instrument (Bean et al., 2018). BCW guided the analysis of qualitative data.

Results: In the coaches' conception, workshops and support meetings provided specific knowledge that gave them the Capacity to teach LS. A pilot phase of implementation allowed the application of the acquired knowledge and perception about the performance, representing to the coaches the Opportunity to teach LS. Involving them in program decisions awakened a sense of belonging and engagement with the club's proposal, providing the Motivation to teach LS. The observation of the coaches' practice showed a higher frequency of behaviors favorable to teaching LS during the program ($\Delta = 2.72$).

Conclusion: A CEP established over a long term and supported by a set of intervention strategies provided capacity, opportunity and motivation for coaches to teach LS.

Keywords: coach learning, coaching behaviour, impact evaluation.

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Actual and perceived motor competence according to sex and extracurricular sports participation

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Introduction: It has been conceptualised that the interaction between AMC and PA is mediated by factors such as perceived motor competence (PMC)¹. Factors such as sex and participation in extracurricular sports are determinants in the development of AMC and PA. While physical education can promote AMC², out-of-school physical activity (e.g. extracurricular sports) is another relevant factor that is positively associated with AMC³.

Objective: The purpose of this study is to determine if there are differences in actual and perceived motor competence in Chilean schoolchildren, according to sex and participation in extracurricular sports; and if there is a relationship between AMC, PMC, participation in extracurricular sports activities and the type of sports.

Methods: A total of 120 primary school students (60.0% girls, age $M=11.05$ $SD=1.05$ years) from La Araucanía, Chile, participated. MOBAC Test was used for the assessment of AMC. SEMOK Questionnaire for the assessment of PMC^{4,5}.

Results: Boys performed better than girls in the object control of AMC, while no significant differences were found in PMC according to sex. Students who participate in extracurricular sports show higher values in AMC and PMC compared to those who do not participate in any extracurricular sports activity. Significant relationships were found between AMC, PMC and participation in sports. The type of extracurricular sports was only associated with AMC, where group sports were related to the object control and individual sports to the self-movement.

Conclusion: The results show the need to provide equal sporting opportunities for both boys and girls. Furthermore, the importance of extracurricular sports activities for the development of AMC and PMC is highlighted and should be promoted in schools.

Keywords: motor development, motor competence, physical education, physical activity, physical literacy.

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Active methodologies in initial training in physical education: a pilot study

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Introduction: The aim of this pilot study was to carry out an analysis exercise on the perceptions of a physical education student about his experience while taking a course on team sports, which adopted active learning methodologies as a pedagogical resource.

Objective: Identify a student's perception of the method used during the course.

Methods: Anchored in a qualitative research approach, the project proposed conducting interviews, which were recorded and transcribed and later analyzed according to Yin's (2016).

Results: The data analyzed here refer to the interview of a physical education student, aged 24 at the time. Two broad categories emerge from this initial analysis: (1) approaches developed during the course and (2) being part of the learning process. In the first category, the interview reveals that two approaches seem to have marked the student's experience more forcefully, citing several challenges, difficulties and discoveries in dealing with TGfU and Sport Education. In the second category, the student reveals the intensity of the learning process by being part of the gear of the methodology adopted during the course, which demanded constant active involvement, whether in planning, intervention, analysis or reflection activities. Despite pointing out that at times the process is a little tiring due to the demand, the student seems to understand that such

immersion was important for their training and understanding of the content studied. Another highlight was the relevance of the practical activities and experimentation opportunities offered during the course.

Conclusion: This preliminary analysis in this specific context indicates that active methodologies for teaching collective modalities seem to promote meaningful experiences for students.

Keywords: sport, team sports, qualitative research.

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Adventure Education as a vehicle to promote social emotional learning outcomes of K-12 students

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Introduction: Physical education (PE) curriculums should include all three learning domains, but it's acknowledged that it can be difficult for educators to assess within all domains, specifically in the affective domain. Scholars have identified Social and Emotional Learning (SEL) in PE to help facilitate personal and social learning in the affective domain. The Adventure Education (AE) curriculum model has long been acknowledged as helping students grow in personal and social development, making it a seamless way to embed SEL components in teaching practices and student learning outcomes.

Objective: This study aimed to analyze AE and its use as a vehicle for promoting SEL outcomes of K-12 students within PE.

Methods: Purposive sampling was employed to recruit the 150 12-13 year old students in a 7th grade PE class located in a Midwest state in the United States of America. Data collection was executed in a five-day AE unit through four formative, one summative assessment, informal observation and questioning. Data were analyzed through thematic analysis utilizing deductive and inductive methodology.

Results: Three main themes (and six sub-themes) were found regarding student outcomes in three specific SEL competencies and the associated taxonomies: a) development of social awareness, b) development of self-management, and c) development of relationship skills.

Conclusion: This study demonstrates the ability of the AE model to serve as a vehicle to help students reach targeted SEL outcomes. Students in this study were able to understand, apply and analyze SEL skills to both their experience in and out of PE.

Keywords: assessment, physical education curriculum, affective domain

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Complementarity of video recording methods to analyze children's behaviour during outdoor play

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Introduction: When we want to study children's behavior in educational situations, the most appropriate recording method should be chosen according to the context and research objectives. Currently, there are several tools for observing the children preschool behaviors in outdoor settings. Among these, a group camera, a focal camera and a wearable camera seem to be relevant (1, 2, 3). **Objective:** The objective of this study was to analyze, on the basis of those tools, the advantages and disadvantages of each and establishing the most effective one for analyzing children's behavior in an outdoor

environment.

Methods: Children aged from 4 to 5 participated in an outdoor physical activity organised by a teacher specialised in motor education of preschool children. The activity was carried out in five different environments 12 children were filmed throughout the session with 3 different video recording methods: an wearable camera, a focal camera and a group camera.

Results: Our results highlighted the relevance of the wearable camera for assessing social and nature-related behaviors. However, this tool was not adapted to the analyse of motor behavior, whereas it was the case for the focal camera. This recording method can also be very useful for the social component provided that the practitioner is close enough to the child. The group camera gives us information on the dynamics group and on interactions with nature, that were obtain less well with the two previous ones.

Conclusion: Our results confirm the complementary of video recording methods to analyse children's behavior during outdoor play. Coupling these three tools seems particularly interesting to analyze in depth the behaviors of preschool children during outdoor play.

Keywords: children, outdoor play, onboard camera, focal camera, group camera

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Conceptualization of assessment during PETE methods courses

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Introduction: Despite international advances in assessment literacy (Moura et al., 2023), preservice teachers (PTs) in the United States (US) continue to struggle when implementing assessment (Goc Karp & Woods, 2008; Killian & Mays Woods, 2021; Lund & Veal, 2008). The appropriate use of assessment has been

characterized as “the missing ingredient” due to the need for deeper pedagogic action in many physical education teacher education programs (PETE; Dinan-Thompson, 2013). Coupled with PTs own K-12 socialization where assessment often isn't prioritized, PETE programs are tasked with developing PTs assessment literacy to navigate technical and sociopolitical issues (Starck et al., 2018).

Objective: Using occupational socialization theory (Richards et al., 2014), the purpose of this study was to explore PTs perceptions and implementation of assessment during a methods course. Specifically, the research question was: How do PT's initial beliefs regarding assessment impact their perceptions and use of assessment during a methods course.

Methods: 21 PTs at a Midwest university in the US participated in this study while enrolled in a methods course. Data collection included: formal and informal interviews, focus groups, and teaching reflections. Data analysis was grounded in inductive and deductive analysis using a collaborative process open, axial, and final coding (Richards et al., 2022). Trustworthiness was enhanced through triangulation, member checking, and a search for negative and discrepant cases.

Results: Themes included: (1) Effective management afforded a focus on student learning, (2) Cooperating teacher modeling and support promoted assessment use, and (3) PETE programming increased assessment literacy, however more accountability was needed.

Conclusion: Preparing PTs with proactive management tools before entering field afforded them to focus more on student learning as opposed to a focus on self. In this study, the PTs practiced and explored with effective instructional and management strategies. This allowed them to navigate technical concerns with while providing feedback informally and utilizing formal assessment (Hay and Penney, 2013; Starck, O'Neil, & Richards, in press). In addition, the PTs feelings of support and modeling from cooperating teachers helped them buy into assessment value. Although formal CT modeling promoted more buy in (Macken et al, 2020), with feelings of supports, PTs seemed to buy in to perceptions of assessment value learned in PETE. Although the PTs assessment literacy increased during PETE, more accountability is needed from faculty given the limitations to the field design. PETE faculty may consider designing field where students are able to gather assessments, analyze data, and implement changes into a continuous teaching-learning to promote more use and buy in (Starck, Richards, O'Neil, 2018).

Keywords: occupational socialization, teaching-learning, preservice teachers.

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Exercise professionals' responses to a weight stigma intervention: A pilot study

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Introduction: To address widespread weight stigma across the physical activity landscape, scholars have emphasized the need for educational interventions targeting exercise professionals. This is important as weight stigma is associated with negative health consequences and lower physical activity participation and enjoyment (Souza & Ebbeck, 2018; Rote et al., 2018).

Objective: The purpose of this pilot study, which was part of a larger research project, was to examine exercise professionals' responses to a new weight stigma intervention.

Methods: The weight stigma intervention was a two-hour, self-paced, interactive online course titled Weight Inclusive Thinking for Fitness Spaces (WIT FITS). The course was designed upon the Health at Every Size® (HAES®; Association for Size Diversity and Health, n.d.) paradigm, attribution theory, and research-based strategies for creating weight-inclusive climates within fitness settings. Participants were 36 employees at recreation centers from three public universities in the United States. Data were collected post-intervention using the Recommended Training Effectiveness Questions for Postcourse Evaluations (Centers for Disease Control and Prevention [CDC], 2019)

Results: Findings showed participants' perceived ability to create a more weight-inclusive climate in their fitness spaces increased. Participants admitted to having limited knowledge about weight inclusivity before completing the course but reported that their knowledge increased after the intervention. Most exercise professionals (72%) also indicated that they understood the importance of weight-inclusive training for professionals working in fitness spaces. Through their open-ended responses, participants reported that the relevant content, as well as the instructional design, were the most valuable components of the course.

Conclusion: Findings from this pilot study suggest that the WIT FITS course offers a possible practical, low-cost, and scalable way to introduce an essential yet debated subject matter (Rich & Mansfield, 2019) to a population previously known to be particularly biased toward larger-bodied people (Carmona-Márquez et al., 2021).

Future studies should continue to make their interventions evidence-based, interactive, and practical.

Keywords: weight stigma, body size diversity, weight inclusivity

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Feasibility and efficacy of a pre-surgery physical exercise program on upper limb function and adverse effects in women newly diagnosed with breast cancer

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Introduction: Breast cancer (BC) is commonly treated with surgery, which can lead to decreased

upper limb (UL) function and adverse effects. Previous reports have suggested that pre-surgery education and exercise can help to mitigate the loss of UL function. However, implementing pre-surgery exercise programs in BC patients can be challenging due to adherence and waiting times between diagnosis and surgery.

Objective: we aimed to assess the feasibility of a pre-surgery exercise program for BC compared to usual care. Additionally, we assessed UL function, adverse effects, and quality of life.

Methods: it was a quasi-experimental pre-post pilot study. Eighteen patients were recruited and assigned to an intervention group receiving a multimodal pre-surgery exercise program three times per week or a control group receiving usual care without exercise. The feasibility was assessed through retention, adherence, and safety. The instruments assessments were UL by questionnaire, manual grip by a hydraulic hand dynamometer, pain perception with numeric rating scale of pain intensity, axillary web syndrome by clinical assessment after surgery, and quality of life by a questionnaire. The outcomes were assessed before the exercise program (baseline) and four weeks after surgery.

Results: the results showed there was a median of 23 days between surgical indication and date of operation. The exercise program was found to be feasible in terms of recruitment (70%), adherence, and retention (100%). Furthermore, no adverse effects were reported.

Conclusion: the study concluded that a pre-surgery exercise program for patients with BC is feasible and future research in this area is warranted.

Keywords: breast neoplasia, physical activity, prehabilitation, adverse effects.

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Interpretations of fair play across education and sports settings

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Introduction: Fair play is an essential part of successful participation and development of sport and life. Fair play in sport can give hope, identity, and a chance to unite nationalities, politics, religions, and cultures (Ellis, 2012). Fair play in physical education (PE) is associated with desirable behaviors such as cooperation, respect, responsibility, and effort that should be taught and reinforced in schools and sports settings (Vidoni, 2020).

Objective: The purpose of this presentation is to analyze interpretations of fair play in PE and sport through immersive learning initiatives of college students.

Methods: Three different immersive learning experiences with college students in PE and SPAD have been analyzed. Data were collected through: (a) field notes, (b) interview with students, (c) observation logs, and (d) students' presentations. Students completed observations in PE and youth sports' settings. From these observations, they reported their perceptions through individual and group work. Data were analyzed through a systematic process of inductive analysis (Lincoln and Guba, 1985). Accumulated data confirmed similar findings, and themes were generated.

Results: Three themes emerged from data analysis: (a) pragmatism and idealism, (b) promise and reality of fair play, and (c) rules and consequences. The results showed that some students believe that opportunities to teach and motivate fair play behaviors are imperative throughout practices, while others reported that the pace of games or activities is so important that it should not be interrupted unless misbehaviors occur. It was found that the positive effects of fair play are easier said than done.

Conclusion: Data from three different projects show that fair play is still a valued concept among college students. However, fair play has different interpretations in schools, youth sports, and professional sports. In conclusion, the results of these projects generated more enquiries about the role of fair play in education and sports settings.

Keywords: Fair Play, physical education, sport administration, youth sport, character development.

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Value, Content, and Implementation Strategies of Health Education in Chinese Physical Education and Health Curriculum

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Introduction: In the Physical Education (PE) and Health Curriculum Standards for Compulsory Education (2022 Edition), health education (HE) was included in the curriculum content of the PE and health curriculum for the first time.

Objective: The purpose of this study was to analyze the important value and the content of health education in the curriculum standards, and then to propose specific strategies for implementing health education.

Methods: The literature was collected on CNKI through the documentation method. The text analysis method was used to interpret the content of HE in the curriculum standards.

Results: It is important to improve the public health system; a key grasp to cultivate students' health literacy; a fundamental guarantee to carry out the overall education of PE. In the curriculum standards, (1) The curriculum objectives of HE is oriented to the core literacy of PE and health. (2) Based on a public health perspective, the curriculum covers five areas: healthy behavior and lifestyle, growth and development and adolescent health, mental health, prevention of infectious diseases and public health emergencies, and responding to safety emergencies and risk avoidance. (3) In terms of learning assessment, academic quality was mapped to portray students' academic achievement.

Conclusion: (1) Focus on cultivating students' health literacy; (2) Achieve a high degree of integration of "PE and health > PE + health"; (3) Implement core literacy in the whole process of teaching implementation; (4) develop a comprehensive evaluation model of HE based on performance; (5) improving PE teachers' teaching skills and ability of HE in PETE.

Keywords: health education, health literacy, physical education and health curriculum.

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Why is varied practice strategy important for teaching in physical education?

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Introduction: It is well established that variability in motor skill practice facilitates learning. Findings from previous studies have converged on superior retention- and/or transfer-test performance after varied practice but not fixed practice. Few studies have investigated the neural underpinnings of the behavioural observation.

Objective: In this study, we used functional near-infrared spectroscopy to measure brain activity during an overarm bean bag throwing task.

Methods: 18 participants took part in the study. A pre-test measurement was recorded for throws to a 4m target. The participants were then randomly assigned to 2 groups: FT - fixed target at 4m; VT - varied targets at 3m, 4m, and 5m. Each participant performed 120 trials over 2 practice sessions separated 24 hours apart. Immediately after the second session, post-test scores were recorded for targets at 4m. After a 48-hour interval, the same procedure was repeated to obtain the retention-test scores. Shortly after, the transfer-test scores were recorded by constraining the participants' throw to a novel 3.5m target.

Results: Although the results showed no significant group differences in the post-test ($p = 0.60$) and retention-test ($p = 0.82$) scores, there was a trend towards significance in the transfer-test ($p = 0.07$). Differences in brain activity during FT and VT practice marginally missed significance ($p = 0.06$).

Conclusion: Future studies should increase the sample size to attain statistical power. The current findings suggest that VT practice enhances, to a greater extent, the transference of motor skill. The underlying mechanisms may be

related to additional neural resources dedicated to solving the movement problems in the VT context. This study has important implications for the inclusion of varied practice strategies in Physical Education.

Keywords: varied practice, fixed practice, motor learning, functional near-infrared spectroscopy, brain activity.

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Analysis of Hispanic student-athlete participation at Hispanic serving institutions in NCAA Division I athletic programs

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Introduction: Athletics are an important part of the university experience for many students. Hispanic Serving Institutions (HSIs) support accessibility for undergraduate Hispanic students and must have a minimum 25% full-time undergraduate Hispanic enrollment to qualify for an HSI status. There are currently 539 HSI universities in the United States. These institutions educate two-thirds of undergraduate Hispanic students. Nineteen of the top 25 institutions awarding bachelor's degrees to Hispanic students were HSIs. Hispanic participation in NCAA athletics is rising, but still accounts for only 5% of the 200,000 NCAA

athletes in the US. Hispanics are 19% of the US population and accounted for over half of the US population growth in 2020. Hispanic Serving Institutions (HSIs) support greater university accessibility for Hispanic students. HSI universities must maintain the 25% full-time undergraduate Hispanic enrollment.

Objective: This pilot study wanted to determine if there were significantly higher levels of participation of Hispanic student-athletes at an HSI NCAA Division I athletic program?

Methods: Data were collected from 872 student-athletes (542 Hispanic/ 330 non-Hispanic) in 2015, and 727 respondents (443 Hispanic/ 284 non-Hispanic) in 2018. The dependent variable was participation in intercollegiate sports and the independent variable was student-athletes that identified as Hispanic. A Chi-Square analysis was used to determine significant differences and level of significance with $p < .05$.

Results: Overall Hispanic participation in NCAA Division I sports were significantly lower than with non-Hispanic student-athletes ($\chi^2 = 17.902$, $df = 1$, $p < .001$).

Conclusion: The NCAA reported approximately 5% Hispanic student-athlete participation in Division I programs from 2015- 2018. Hispanic student-athlete participation in NCAA athletics at the HSI was approximately 10% in 2015 and 12% in 2018. This finding suggested HSIs had significantly higher rates of Hispanic participation in NCAA Division I programs. Researchers found growing rates of Hispanic student-athlete representation and rates of participation 2.5 times higher at the HSI than at NCAA Division I universities on average. However, the number of Hispanic student-athletes at the university was significantly lower than the 51% Hispanic student enrollment. Researchers concluded that Hispanic athletes were underrepresented nationally and within Hispanic Serving Institutions.

Keywords: hispanic athlete, student-athlete, athletic participation, sports, equity

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Collaborative coach development initiative in a multisport club: The sports leaders' perceptions

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Introduction: In an increasingly complex and globalized society, the development of new skills and knowledge is a constant need in the routine of 21st-century professionals (Kegan & Lahey, 2016). Coach Education is viewed as an essential route for coaches' development, however, the impact of formal education is still limited.

Objective: The aim of this study was to explore multiple perspectives from sports leaders concerning the implementation of a professional development initiative for coaches in a multisport club – "The Learning in Action".

Methods: Three Sports managers and eight head coaches participated in this qualitative study. Semi-structured interviews were divided into three phases with each participant at the beginning, during and at the end of the development initiative. The data was interpreted through thematic analysis(Braun & Clark, 2016).

Results: Findings reported the importance of collaboration between professionals and researchers, developing the program's content contextualized to the club's reality. The multiple learning strategies were positively perceived, encouraging lifelong learning and being useful to sports leaders in the club's routine.

Conclusion: Bringing together different actors from different sports and experiences provided important exchanges among coaches and with researchers who can be more assertive and effective in developing learning strategies through shared goals, language and vision. This planning process was not simple, it took a long time for different coaches and sports leaders to understand and gain enough confidence to take an active role in their own development. Despite the inherent learning challenges, when coaches and sports leaders demonstrated a sense of belonging, engaged in the initiative and assumed a shared role, the accumulated experience of the participants nurtured, contributing to the practices of their peers.

Keywords: Head coaches; sports managers; coach development; coach learning; sports.

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Global Experiential Learning in Kinesiology Programs

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Introduction: International partnerships are critical to the success of international programs. This type of cooperative relationship can support faculty and students to mutually meet their own goals through support of common activities with shared outcomes (Parkes, et al., 2021). An international partnership between two universities illustrate opportunities for students, through high impact educational practices, for developing global awareness, citizenship (Sherman, et al., 2020; Mandigo, et al., 2021), and intercultural competence.

Objective: Two experiences are highlighted here: faculty-led, study abroad programs over several summers and a virtual course experience during the pandemic.

Methods: A mixed-method, descriptive study of two international experiences was conducted. Data were collected from administration of the Cross Cultural Adaptability Inventory (Kelley & Meyers, 1995) for the study abroad experiences and student written reflections and focus group interviews following both experiences.

Results: Data on the study abroad and virtual international course project showed a high degree of positivity among all participants. Students showed a readiness for study abroad through CCAI scores. Additionally, learning about education, culture, and physical activity were themes that emerged from focus group interviews, written reflections and debriefings. Learning about the technical and logistical difficulties of conducting a virtual international course project was an important lesson for faculty. However, students on both sides of the partnership illustrated the willingness to problem-solve and use different technology to communicate with their peers. Further, a student perspective emerged that was centered around learning through intercultural and comparative exchange and interaction with students abroad and was an important feature for the German students. Students were favorable to this virtual teaching and learning collaboration.

Conclusion: The activities of a strong partnership can help to universities meet their strategic goals in inclusive excellence (Russell, 2019), which align with the development of global awareness, citizenship (Sherman, et al., 2020; Mandigo, et al., 2021), and intercultural competence.

Keywords: high impact practices, study abroad, pandemic, intercultural competence, inclusive excellence

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Meaningful learning from sports: the representation of knowledge of future physical education teacher

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Introduction: In recent years, new teaching trends have pointed to the need to train creative and intelligent players, capable of solving problems quickly. In this sense, the cognitive domain is emphasized, and tactical understanding becomes the focus in sports learning¹. To achieve this objective, the teacher must carry out a pedagogical intervention that prioritizes the assimilation of tactical concepts or principles, promoted by meaningful learning². Despite the large number of evidence that point to the need to structure the teaching and learning process centered on the game or on the apprentices, it is still possible to observe the predominance of the reproduction of pedagogical behaviors based on the coaches' previous experiences with the sport³.

Objective: to represent the organization of knowledge of future Physical Education teachers regarding the meaningful learning of sports through conceptual maps.

Methods: The qualitative, descriptive and interpretative approach is part of the constructivist research paradigm⁴. The selection of participants was intentional and not probabilistic. Three future Physical Education teachers participated in the study. The representation of the organization of knowledge was carried out through retrospective conceptual mapping⁵, consisting of the steps: interview, transcription, codification and construction of the map.

Results: The investigated undergraduates have concepts about meaningful learning acquired before graduation. However, the conceptual maps demonstrate that the cognitive structure of the undergraduates is partially consistent with a scientifically accepted conceptual proposal.

Conclusion: Future physical education teachers build knowledge to promote meaningful learning from significant experiences prior to the undergraduate course.

Keywords: Meaningful learning; sports pedagogy, knowledge

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Promoting significant experiences through swimming: a self-study

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Introduction: Providing meaningful experiences is recognized as a fundamental objective that physical education teachers must achieve¹. Especially in teaching sports to children

and young people, the practice of activities that have a personal meaning for the practitioner increases motivation, commitment, pleasure and adherence to the practice². In recent years, although there has been an increase in the number of studies on the pedagogical practice of teachers aimed at promoting meaningful experiences in Physical Education, there seems to be no studies on swimming teaching.

Objective: Explore the experiences of a future Physical Education teacher using the "Meaningful Physical Education" approach.

Methods: A self-study^{3,4} was carried out by a future academic teacher of Physical Education. A master teacher with extensive experience in teaching swimming participated as a critical friend. Multiple sources were used for data collection: reflective diary, WhatsApp messages, emails, planning documents and informal conversations. Data analysis was performed using the content analysis technique, with categories determined a posteriori.

Results: The future teacher's experiences were categorized into three categories: comparison between the traditional approach and the promotion of meaningful experience approach, intervention experiences in classes and final reflections. It should be noted that the main challenge was the inclusion of social aspects in swimming lessons.

Conclusion: future teacher did not resist the change in her professional practice and that self-study proved to be an excellent research technique and professional training tool.

Keywords: Swimming, Meaningful experiences, self-study

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Socially just?! Exploring PE teaching practices across PE teachers and their students

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Introduction: Diversity and the accompanying demand for more social justice have become an integral part of modern societies (1). Meeting students' diversity and promoting social justice are both requirements and challenges for physical education (PE) (2, 3). Social justice pedagogies address these two requirements and serve as a theoretical framework for the research project (4, 5). In contrast to the vision of social justice itself, concrete teaching practices concerning social justice are still rarely covered within scientific literature. Little is known about what PE teachers actually do to address their students' diversity and foster social justice (6, 7).

Objective: The aim of this study is to identify the actual teaching practices PE teachers conduct to meet the above-mentioned requirements.

Methods: Therefore, an exploratory qualitative interview study is realized (8). Using semi-structured, narrative-generating interview guidelines, PE teachers and students are interviewed concerning two main aspects: (a) What do PE teachers do to meet their students' diversity and teach for social justice? and (b) To what extent does PE already meet students' diversity and contribute to social justice? By combining the two perspectives (PE teachers and their students), the study allows an evaluation of the teaching practices. This is important when thinking about possible suggestions for the future development of teaching practices in PE (2).

Results: First results will be presented at the conference.

Conclusion: The results of the study contribute to the state of research on teaching practices in PE concerning meeting students' diversity and social justice. In addition, the results are relevant for the further development and improvement of PE.

Keywords: social justice pedagogies, diversity, physical education, teachers' and students' perspectives.

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Pre-competitive functional physical assessment in field hockey players

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Introduction: It has been seen that some alterations may represent a risk factor for sport-specific injuries (1–3).

Objective: characterize the physical condition of Chilean field hockey players in order to determine risk factors for the sport.

Methods: all field hockey players from Club Deportivo Universidad Católica of Chile of the 2022 season were invited to participate in the study. The evaluations carried out were; hip rotation ROMs, Thomas, Ely's, AKE and Ober tests, lunge test, Y Balance test (4), Biering-Sorensen (5), Hop test battery (6) sport specific endurance plank test (7) and SLBT (8). Statistical analyses were performed with STATA 15.0

Results: 121 participants were included (age 17.76 ± 5.27 years), where 109 were female. Decreased hip rotation ROM was observed (right hip: IR $35.6^\circ \pm 8.1^\circ$ and ER $27.8^\circ \pm 7.4^\circ$; left hip IR $34.6^\circ \pm 7.8^\circ$ and ER $26.8^\circ \pm 6.2^\circ$). 36%, 30.6%, 61.2% and 47.1 % showed a decreased hip flexors', TFL, knee extensors and flexors' flexibility respectively in their right leg, along

with 29.7%, 33.9%, 68.6% and 46.3% decreased flexibility on their left leg, respectively. A lack of endurance of the CORE musculature was observed in the sports specific plank test and in the Biering-Sorensen test, with an average of 92 ± 35.4 and 118.3 ± 47.5 seconds respectively. 50.4% and 49.6% showed a poor performance in SLBT test (<20 rep) on their right and left leg, respectively.

Conclusion: participants have low flexibility and ROM, along with poor CORE and hamstrings endurance.

Keywords: risk factors, sports, field hockey

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What elementary students acquire in peer support netball skill learning?: An analysis of children's drawings

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Introduction: The constructivist perspective has pointed out that, during learning experiences, students construct their own new conceptualization based on prior knowledge and principles. The skill approach is the basis of sports education, and it was said through cognitive awareness, human reconstruct better movement forms.

Objective: This study aims to investigate elementary school students' conceptualization in net ball skill learning through their cognition of the movement experience.

Methods: There were 31 participants in the 3rd grade conducted seven times 45-minutes lessons (for 4 weeks) in netball skill learning units. 225 drawings and explanator writings were gathered, and semi-constructed interviews were conducted without and with drawings. A coding system was developed to analyze the drawings and dissect their components. Interview data were coded thematically, and member check and date triangulations were performed to ensure trustworthiness.

Results: The themes were divided into seven categories: affection, success, failure, tips of moving, others, effort, trial and error, and problem solving. In particular, drawings and interruptions in the theme "tips of moving" movement notice points were a lot, and it could be confirmed that by students discovered their original tips in this skill learning. The "others" theme category showed that other learner's cooperation and advice helped psychologically, cognitively.

Conclusion: The findings revealed that students' conceptualization were tips of moving variation, peer support importance, and success and failure were important for improving problem-solving skills. The analysis of drawings and interviews shows that students' real learning conceptualization may positively contribute to better teaching.

Keywords: drawing analysis, interview, constructivist, students' conceptualization and cognition

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Research on teacher education: A call to strengthen academic language

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Introduction: In a recent call for new research agendas in physical education (PE), Rovegno (2008) asserted that research on teacher education (RTE) examine undergraduates' coursework and their learning that transfers into professional practice and impacts K-12 students' learning. Similarly, Bernstein's framework showed that undergraduate students must reconceptualize academic terms and concepts within coursework to impact K-12 learning (Kirk & Macdonald, 2001). However, PE continues to lack sufficient research into the pedagogical complexities of academic language in undergraduate PETE programs of study. (80)

Objective: The purpose of this study was to examine current pedagogical literature on academic language in PE in order to cultivate a research agenda in this area. (26/106)

Methods: Researchers conducted a literature search for manuscripts that addressed academic language in PE. Searches of online databases and print indexes supplied more than 50 manuscripts meeting this criterion. Texts were selected and qualitatively analyzed for emergent themes based on relevance to PE pedagogical practices and application into PETE programs. (49/157)

Results: Results showed a large proportion of current research focused on applying current English Language Learners (ELL) tools into the PE gymnasium to help with edTPA, align with core curriculum standards or increase student ELL skills. Only Chandler-Olcott (2017) presented a data driven study investigating authentic academic language in PE – a multimodal teaching of basketball plays. No other studies successfully addressed pedagogical

methods for the challenges of academic language in PE. (66/223)

Conclusion: Future research must investigate the multimodal nature of academic language in PE and create pedagogical methods unique to this field of study. (22/245)

Keywords: PETE, academic language, pedagogy, multimodal instruction.

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Factors that favor adherence to extracurricular physical exercise during the school years and the transition to college

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Abstract: In Chile, research on physical activity and sports has identified a large proportion of the population as physically inactive, with activity levels decreasing as age increases (1,2). One possible explanation for this decrease would be the activities during free time or involvement in extracurricular activities (3).

A qualitative study was designed to distinguish the factors favoring and hindering adherence to extracurricular physical exercise in elementary, middle, and university education, from the perspective of college students of the Pontificia Universidad Católica de Chile. The sample was selected using a two-stage design: general information was collected from 88 college students; then, 8 participants were selected and interviewed in depth based on physical activity background. Analyses followed Grounded Theory procedures.

Based on the interviews, 6 central categories were identified: (a) contextual aspects, (b) personal aspects, (c) perceived value of the activity, (d) interpersonal relationships, (e) characteristics of the activity, and (f) reasons for remaining in the activity. Additionally, 3 key axes were identified to visualize the articulation of the categories over time: (a) value attributed to the

activity, (b) sense of belonging and, (c) prioritization of the sports context.

Results show that educational institutions and mentors are key in diverse sports options and experiences, favoring the possibility of exploration and the construction of a sense of belonging. In addition, pleasure and enjoyment would be one of the main reasons for permanence over time. Moreover, permanence would imply the interaction of a variety of factor, not just the will or motivation of the participants.

Keywords: physical exercise, extracurricular activities, sports, trajectories of involvement, motivational beliefs.

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Exercise professionals' responses to a weight stigma intervention: A pilot study

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Introduction: To address widespread weight stigma across the physical activity landscape, scholars have emphasized the need for educational interventions targeting exercise professionals. This is important as weight stigma is associated with negative health consequences and lower physical activity participation and enjoyment (Souza & Ebbeck, 2018; Rote et al., 2018).

Objective: The purpose of this pilot study, which was part of a larger research project, was to examine exercise professionals' responses to a new weight stigma intervention.

Methods: The weight stigma intervention was a two-hour, self-paced, interactive online course titled Weight Inclusive Thinking for Fitness Spaces (WIT FITS). The course was designed upon the Health at Every Size® (HAES®;

Association for Size Diversity and Health, n.d.) paradigm, attribution theory, and research-based strategies for creating weight-inclusive climates within fitness settings. Participants were 36 employees at recreation centers from three public universities in the United States. Data were collected post-intervention using the Recommended Training Effectiveness Questions for Postcourse Evaluations (Centers for Disease Control and Prevention [CDC], 2019)

Results: Findings showed participants' perceived ability to create a more weight-inclusive climate in their fitness spaces increased. Participants admitted to having limited knowledge about weight inclusivity before completing the course but reported that their knowledge increased after the intervention. Most exercise professionals (72%) also indicated that they understood the importance of weight-inclusive training for professionals working in fitness spaces. Through their open-ended responses, participants reported that the relevant content, as well as the instructional design, were the most valuable components of the course.

Conclusion: Findings from this pilot study suggest that the WIT FITS course offers a possible practical, low-cost, and scalable way to introduce an essential yet debated subject matter (Rich & Mansfield, 2019) to a population previously known to be particularly biased toward larger-bodied people (Carmona-Márquez et al., 2021). Future studies should continue to make their interventions evidence-based, interactive, and practical.

Keywords: weight stigma, body size diversity, weight inclusivity

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Pre Recorded Oral & Poster Presentations

Actions of Physical Activity and Sports Promotion Schools: differences according to their characteristics

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Introduction: The Physical Activity and Sport Promotion Schools (CEPAFE in Spanish) in the Comunidad Valenciana (Valencia, Spain) receive an annual grant to implement projects addressed to promoting healthy physical activities and sports actions. The characteristics of these schools are determinant for what type of actions they can develop (Mittelmark et al., 2008).

Objective: This study compares some actions implemented by the CEPAFEs according to the following characteristics: sociodemographic environment (rural/urban), type of school (state/private) and education stage (primary/secondary).

Methods: 189 CEPAFE's coordinators (66.6% of the total in the region) completed an anonymized, ad-hoc questionnaire with 43 questions regarding the school and the actions (2018-19 academic year). Data were analysed using descriptive analysis and Chi-square test of independence with SPSS 27.0 software.

Results: Among 22 actions, the results showed significant differences for nine of them. Primary education schools promoted more actions related to sports practice (e.g., 'Esport a l'escola' program; $\chi(2)2=4.91$; $p=.027$) and interventions for the promotion of physical activity and sports

in PE ($\chi(2)2=8.313$; $p=.004$) than Secondary Education schools. State schools employed more active recess ($\chi(2)2=9.17$; $p=.002$) and managed spaces and materials to promote cooperation and coeducation better than private schools ($\chi(2)2=5.83$; $p=.016$). The schools in rural environments, compared to their urban counterparts, seemed more conducive to the use of active recesses/classes ($\chi(2)2=8.19$; $p=.004$).

Conclusion: There are actions that are more likely to be implemented by some CEPAFEs than by others depending on their characteristics. These results should be interpreted cautiously since significant differences were only observed in some of the actions analysed. Future studies should adopt a qualitative methodology to further evaluate the reasons behind the present findings.

Keywords: health promotion, educational center, school setting.

Funding: AICO/2021/342 Project; Generalitat Valenciana. First author: Contrato Margarita Salas [MS2021]; Universidad de Castilla-La Mancha.

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Actuaciones de los Centros Promotores de Actividad físico-deportiva: diferencias según sus características

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Introducción: Los Centros Educativos Promotores de Actividad Física y Deporte (CEPAFE) de la Comunidad Valenciana reciben una subvención anual para desarrollar proyectos de promoción de actividades físico-deportivas saludables. Las características de estos centros pueden determinar las diversas acciones que se desarrollen (Mittelmark et al., 2008).

Objetivo: Comparar el tipo de actuaciones realizadas en los CEPAFE en función de las siguientes características: entorno sociodemográfico (rural/urbano), titularidad (privado/público) y etapa escolar (primaria/secundaria).

Método: 189 personas coordinadoras de CEPAFE (66.6% del total en la región) cumplimentaron un cuestionario ad-hoc anonimizado con 43 preguntas referentes al centro y actuaciones realizadas (curso 2018-19). Los datos se analizaron mediante análisis descriptivos y la prueba Chi cuadrado de independencia con el software SPSS 27.0.

Results: De un total de 22 acciones, se encontraron diferencias significativas para nueve de ellas. Los centros de Educación Primaria promovieron más actuaciones relacionadas con la práctica deportiva (p.ej., "Esport a l'escola"; $\chi(2)^2=4.91$; $p=.027$) e intervenciones para la promoción de actividad-físico deportiva en EF ($\chi(2)^2=8.313$; $p=.004$) que los centros de Educación Secundaria. Los CEPAFE de titularidad pública emplearon más recreos activos ($\chi(2)^2=9.17$; $p=.002$) y gestionaron mejor los espacios/materiales para promover la cooperación y coeducación que los privados ($\chi(2)^2=5.83$; $p=.016$). El entorno rural parece más propicio que el urbano para la utilización de descansos/clases activas ($\chi(2)^2=8.19$; $p=.004$).

Conclusion: Hay actuaciones que pueden estar más desarrolladas por unos CEPAFE que por otros en función de sus características. Estos resultados deben ser interpretados con cautela puesto que solo se observaron diferencias significativas en algunas de las actuaciones analizadas. Futuros estudios deberían adoptar una metodología cualitativa para conocer las principales razones de dichos resultados.

Keywords: promoción de la salud, centro educativo, caracterización del centro.

Funding: AICO/2021/342 Project; Generalitat Valenciana. First author: Contrato Margarita Salas [MS2021]; Universidad de Castilla-La Mancha.

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The Corporal Adventure Practices and their application on Physical Education classes in Birigui/SP, Brazil

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Introduction: Adventure Physical Practices (PCAs), also known as Adventure Sports, have gained prominence in contemporary societies (INÁCIO, BAENA-EXTREMEIRA, 2017; PORTELA, 2020). Currently, this content is present in Physical Education in Brazilian schools at the national level and replicated in their respective levels of education.

Objective: Investigate the possibilities of implementing such adventure proposals in schools in the state of São Paulo, from the teachers' perspective, considering the adaptation and contextualization of the schools.

Methods: A pilot study was conducted, using interviews with six Physical Education teachers in Birigui, São Paulo, Brazil, with content analysis by Bardin (2015).

Results: The absence of the: open space in schools, materials, school management, training in PCAs and professional development. The curriculum was found to have difficulty addressing this topic symbolically without providing efficient methods to implement adventure physical practices, and there was a lack of encouragement and awareness of the topic among many students.

Conclusion: The problems are linked to professional training, as professionals are reluctant to step out of their comfort zone, and there is a lack of materials and school infrastructure. Ultimately, many students are unaware of adventure activities

Keywords: adventure, Brazillian curriculum proposal, interview.

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Social and affective domain within a hybrid Sport Educacion – Teaching Games for Understanding season: practical tips

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Introduction: On many occasions, sports education focuses almost exclusively on the physical and cognitive domains, through the development of tactical-technical aspects. However, sport is much more than techniques and tactics. Through sport it is possible to develop aspects related to the social and affective domains. In this sense, two models that have gained special relevance are the Sports Education model (Siedentop, 1994; Siedentop et al., 2020) and Teaching Games for Understanding (Bunker and Thorpe, 1982). Through these models it is intended to incorporate some strategies for the development of social and affective domains.

Objective: To provide examples of strategies of how to develop social and affective domain within a hybrid Teaching Games for Understanding – Sport Education season.

Methods: This proposal provides strategies for the development of social domain through the proposed pedagogical models, creating a classroom climate where a healthy competition and respect among peers is generated (e.g., peer referee, discussion or ethical contracts). Regarding the affective domain, strategies are proposed so that each student gives the best of him/herself, showing autonomy and personal effort (e.g., use of roles, adaptation and modification of games, or record keeping).

Conclusion: it is expected that the use of specific strategies in a hybrid season between Sport Education and Teaching Games for Understanding will allow the development of the affective and social domains in primary school students.

Keywords: physical education, pedagogical models, life skills.

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Preservice teachers' adaptations to lesson plans in a methods class: a case study

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Introduction: Adaptive competence is the ability of teachers to adapt their teaching to individual students' learning. It is an essential outcome for preservice teachers (PSTs) in practice-based teacher education (PBTE)¹. Adaptive competence can be developed by deliberate practice and reflecting on core teaching practices following teaching².

Objective: The purpose of this study was to examine PSTs' adaptations to lesson plans as a function of three feedback conditions during teaching rehearsals in a methods class.

Methods: 21 PSTs from one PETE program in Flanders (Belgium) participated in a 6-week secondary methods class volleyball and badminton. Adaptive competence was analyzed through adaptations to core practices in lesson plans. Adaptations were coded as refining/modifying and appropriate/inappropriate. Following each class, all PSTs made adaptations based on their role as student (PST-S) or student-teacher (PST-T) with or without a feedback meeting (FM) with experts. All PSTs took on each role at least once throughout all classes. Data were analyzed using One-Way ANOVA.

Results: A total of 601 adaptations were coded. PSTs made a mean 6.7 and 6.8 adaptations per lesson plan for volleyball and badminton respectively. In both domains, PST-T with FM made significantly more adaptations to management and task presentations compared to PST-S ($p < .05$). Also, significantly more modifications, refinements, and appropriate adaptations were made by PST-T with FM compared to PST-S.

Conclusion: PSTs' adaptations to lesson plans were enhanced through a feedback meeting with experts. PSTs gained less from merely participating. Individual, specific feedback

following teaching is crucial to develop adaptive competence.

Keywords: Physical Education, Teacher Education, Core Practices, Reflection-On-Action.

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Using didactic variable (DV) in badminton : differences between an expert PE teacher and a novice PE teacher

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Introduction: Teachers are confronted to an ever-growing heterogeneity between each student. Experts and novices have different ways of teaching and adapting to students. Adaptability in teaching is expressed through the use of didactic variables (DV). DV are a task parameters that can be changed in a situation in order to learn, like the time needed to do a drill. By changing DV, teachers can focus on different knowledge to adapt to students.

Objective: Our purpose is to analyse the differences between expert and novice PE teachers using DV in badminton.

Methods: We have selected a teaching expert and a novice. We filmed them during their lessons. We ran 20 minutes interviews before and after each of the 3 consecutive lessons (Amade-Escot, 2014) with their classes of 14 years old students. We asked about their use of DV during "auto-confrontation" (Brière et Musard, 2012) interviews to understand how they use DV so that that students learn. We registered each DV by *nature*: with *general DV* existing in every teaching situation like space or the use of pedagogic tools or with *specific to badminton DV like technics and strategies*. Then we compared both of them.

Results: The expert uses 70% less DV than the novice, he tries to be more accurate with what he already uses to be adequate with the student

learning stage. The expert aims at badminton specific knowledges whereas the novice teacher bases his intervention on general DV. For example, the expert will regulate on the shuttle trajectory when the novice changes space, time or the adversity level. When these teachers feel that they failed in their choice of DV, it motivates them to chose a better DV to help each student to learn.

Conclusion: These teachers use different kind of DV. The expert uses more specific to badminton knowledges based DV dealing with technics and strategies. The novice uses more *general DV* showing that he uses different DV than the expert. For both of them, DV is a key factor of choice in the making of their lesson to help each student to succeed. To learn to adapt is a modern goal for teachers and a real competence to build (Xie et al. 2021)

Keywords: didactic, pedagogy, variable

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Changing Organisational Structures in Skateboarding – Ethnography of a Subcultures' Learning Environment

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Introduction: In its genuine informal organizational structure Skateboarding stands as a breeding ground for competences concerning movement, spatial appropriation and style (Borden). However, its recent "sportification" (Kilberth and Schwier) contributes to an ongoing differ-entiation of the contexts of learning, e. g. as an olympic sport or as a subject in physical education. Of particular pedagogical interest are those settings that originate from the subculture itself, when experienced scene members pass on selected cultural content to beginners (Atencio et al.).

Objective: In the course of an "organizational ethnography" (Ybema et al.) a total of 45 field visits were carried out in such a learning

environment in order to investigate its internal structures, rules and processes.

Methods: A participant observation initially consisted of skateboarding with the group as well as the gradual immersion in its organizational and social forms. As familiarity increased, in-depth field interviews were conducted with participants as well as coaches. The data set of 250 pp. observation protocols and 150 pp. interview transcripts was evaluated by means of a “Grounded Theory” (Corbin and Strauss) and was increasingly put into a praxeological perspective.

Results: The open codings of ritualization, rule-making and sanctioning are illustrated by means of essayistically elaborated data-anchors. On the level of an axial category, the field-specific organizational structure is discussed with regard to its origin in skateboarding subculture as well as referential institutions of sports.

Keywords: skateboarding, subculture, ethnography, learning environment, practices of organisation.

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We are the best! Getting to know athletes with intellectual disabilities: An intervention to develop positive attitudes towards disability in Physical Education

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Introduction: Disability awareness programs have used strategies such as information and direct contact for the development of positive attitudes, being widely used in physical education due to the potential of sport activities as a driver of change (1). However, the design of many awareness-raising experiences has not contemplated their participation in the programs design and implementation.

Objective: Following the principles of social justice, this work shows an experience of sensitization towards intellectual disability through physical education.

Methods: 30 students (10 pre-school, 20 elementary school) from a school participated. The intervention was structured in two stages: firstly, a theoretical presentation of Paralympic sport, which ended with the participation of two athletes with intellectual disabilities who narrated their sporting experience as a brief life story, focusing their speech on their capabilities. The second stage consisted of practicing the sport activities identified in the life stories (athletics and futsal), which were directed by the protagonists. The experience was evaluated through a motivated drawing by the students and a field diary filled out by one of the authors.

Results: The results show that the day was perceived as very positive by the students, without making any reference to the disability of the athletes who took part in the activity. Both the drawings and the diary entries show references to their sporting achievements and not to their limitations.

Conclusion: It is concluded that the modification of the status of athletes, and the idea of focusing on their abilities, have achieved the success of the day.

Keywords: inclusive sport, direct contact, motivated drawing.

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Application of machine learning and clustering techniques in Sports talent selection

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Introduction: Talent selection decisions are currently based on youth performance to predict prosperity in adulthood, implicit coach preferences, and subjective criteria. Athletes in different sports have different anthropometry features, body composition, and body types. Also, there is a similar body size and body type pattern at high skill levels. Today, Artificial intelligence (AI) has entered sports science and created new opportunities for multivariate data analysis in

this field. Machine learning (ML) techniques, as part of AI, now allow us to classify athletes. Clustering provides a new perspective on sports specialization, and K-means clustering is a powerful tool.

Objective: The purpose of the study was application of machine learning and clustering techniques in Sports talent selection

Methods: One hundred and fifty (N=150) male cyclists were selected. The anthropometric measurements (ISAK protocol) were taken. The Heath-Carter model is employed to estimate Somatotypes. k-means++ algorithm and the Principal Component Analysis (PCA) were applied.

Results: novel machine learning technique provides attitudes on anthropometry-dependent sports specialization, for example, High mesomorph and low ectomorph assigned MTB, Track, and Road, respectively. There were significant differences between MTB and Road in three body types; endomorph: ($p = .000$), mesomorph: ($p = .025$) and ectomorph: ($p = .003$), and between MTB and Track ($p = .000$) in endomorph. The MTBs had mostly distinct anthropometric features. However, Track and Road cyclists were intertwined, and splitting them into two groups was difficult.

Conclusion: This study implies that competition within a sports environment relates to different anthropometric features. Clustering and ML may help discover how athletes match their sports discipline with individual anthropometry.

Keywords: Machine Learning, Cycling disciplines, Anthropometry, Clustering

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Trends in Physical Activity and Sedentary Behavior among Chinese Children and Adolescents (2017-2022)

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Introduction: This study aimed to analyze the status and trends of Physical Activity (PA) and Sedentary Time (ST) among Chinese children and adolescents from 2017 to 2022.

Methods: A total of 180,276 children and adolescent students from grades 4-12 in mainland China participated in this study. The Chinese version of the PA Questionnaire for Older Children and Adolescent Sedentary Activity Questionnaire was used to survey participants' PA (0-5 score) and ST (minutes/week) from September to November of each year. A total of 136,358 participants were included in the final analysis after excluding incomplete data. Of these, 49% were female, 58% were elementary school students, 30% were middle school students, and 12% were high school students. Independent samples t-test and ANOVA was used to examine the current status and trends of PA and ST.

Results: Males have significantly higher PA and less ST than females. Elementary school students had higher PA and lower ST compared to middle school students, and middle school students had higher PA and lower ST compared to high school students. PA among children and adolescents showed a significant downward trend from 2017 to 2020, a significant upward trend from 2020 to 2021, and a significant downward trend from 2021 to 2022, with the trend of ST changing in the opposite direction of PA.

Conclusion: There were significant differences in PA and ST among children and adolescents by gender and grade, showing a preference for males over females and lower grades over higher grades. Trends in PA and ST changes among children and adolescents show dramatic fluctuations. It is possible that this dramatic fluctuating trend is due to the pandemic.

Keywords: physical activity, sedentary behavior, trends, children and adolescents, Chinese.

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Teacher immersion programs as a catalyst for cultural competency development in HPE pre-service teachers

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Introduction: In countries such as Australia, there has been an increased focus on graduate teachers to have the knowledge and be able to demonstrate their understanding of the impact of culture and cultural identity on the educational outcomes of their students (AITSL, 2012). As such, cultural competence has become an integral component of exit requirements for all Preservice teachers (PSTs). While there is no one agreed way to integrate this into the training curriculum of preservice Health and Physical Education (HPE) teachers, immersion programs have been identified as one possible way. This presentation will demonstrate how an international cultural immersion program is effective in helping to develop cultural competency within preservice HPE teachers. It will also explore the need for authentic partnerships to be established to support the development of cultural competency of Australian HPE students participating in the program and provide benefits for schools and academic staff in the host country.

Methods: Participants consisted of 18 HPE pre-service teachers and their supervising teachers from two Fijian Primary schools. The students spent three weeks immersed in a primary school setting, undertaking their first teaching practicum. The primary data source was semi-structured interviews.

Results: Initial results showed a significant increase in the preservice teachers' understanding and demonstration of cultural competency. Both schools and Fijian supervising teachers also expressed interest in creating ongoing, authentic partnerships to foster cultural competency.

Conclusion: The findings help to reinforce the concept of immersion programs as an effective method to develop cultural competency in preservice teachers while also providing benefits to both schools and supervising teachers, including (increased cultural

awareness, understanding of the importance of regular physical education lessons, awareness of various pedagogical approaches for teaching physical education).

Keywords: cultural competency, teacher education, pre-service HPE teachers, cultural immersion

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Physical fitness level and intelligence of early childhood education students

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Introduction: The benefits derived from improved physical fitness, specifically in relation to cognition (Donnelly et al., 2016), are increasingly well known, although more evidence linked to intelligence (Quan et al., 2018) is needed, especially at younger ages.

Objective: Thus, the aim of this research was to test the possible relationship between different components of health-oriented fitness (HRF) (body composition, musculoskeletal capacity, motor capacity and cardiorespiratory capacity) and intelligence. The sample consisted of 25 participants (13 boys and 12 girls) aged between 5 and 6 years, in the third year of Infant Education.

Methods: Two assessment instruments were used; the PREFIT battery to measure the different components of the HRF and the Goodenough test to measure intelligence in terms of intelligence quotient (IQ). Bivariate correlations and Kruskal-Wallis test (CFS and intelligence variables) and paired comparison analysis (scores of one group relative to the other) were developed.

Results: The results showed a significant correlation between intelligence and cardiorespiratory fitness, as well as musculoskeletal fitness (long jump with feet together) and their respective percentiles. In addition, participants in the high intelligence

group showed better results in all components of the CFS than the rest.

Conclusion: Coinciding with some previous studies, higher levels of HRF are positively and significantly associated with intelligence in pre-school children (Mezcua-Hidalgo et al, 2020). Therefore, the relevance of promoting the practice of physical activity aimed at the development of HRF from a very early age, especially in the context of school Physical Education, is highlighted.

Keywords: physical fitness, intelligence, childhood education.

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Self-responsibly fit during the covid pandemic. How students are positioned in remote teaching of physical education

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Introduction: The coronavirus pandemic forced physical education (PE) in schools into remote forms of teaching that relied on digital resources and online spaces. There is a need to investigate these digital resources and online spaces as media and sites relevant for the social construction of PE (1, 2). In a larger project (3), we identified webpages created by PE teachers on the site Padlet.com as an important hub for German-speaking remote PE.

Objective: Following a poststructuralist perspective, the purpose of our study (4) is to investigate how students are positioned as subjects of remote PE through the discursive practices articulated on these webpages.

Methods: We conducted a discursive analysis (5) of a sample of 14 German-speaking Padlet webpages with a combined number of 755 posts.

Results: Our analysis revealed one largely uncontested discursive construction that positions students as (i) doing something during lockdown, (ii) using suggestions individually and self-responsibly, (iii) exercising, performing, fit, and (iv) predominantly able bodied, sporty, stereotypically gendered, and white.

Conclusion: We critically discuss the narrow possibilities of becoming intelligible as an appropriate subject of remote PE in the context of foregoing scholarship. We argue that exploring how PE is socially constructed, how students are positioned, and which forms of subjectivity are privileged/marginalized in emerging PE-related online cultures is a crucial task for sport pedagogical research and practice.

Keywords: physical education, corona pandemic, remote teaching, subject positioning, discourse analysis.

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A familial investigation of motor behaviors in children with autism spectrum disorder with a neurotypical sibling at home

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Introduction: Children with Autism Spectrum Disorder (ASD) can experience issues in motor skills and fall short of physical activity (PA) recommendations. Siblings may play important roles in influencing children's motor skills and PA, especially during the COVID-19 pandemic during which most children with ASD were staying at home with their neurotypical (NT) siblings.

Objective: This study aimed to investigate and document motor behaviors in children with ASD.

Methods: This cross-sectional study recruited 18 families (18 ASD-NT-Parent triads; 54 participants). Motor behaviors, including levels of PA, parental perceived motor competence, and family dynamics (i.e., parent-child interactions, NT-ASD interactions, parents' and NT siblings' self-efficacy in supporting PA) that could potentially affect motor behaviors in children with ASD were investigated and analyzed using descriptive statistics.

Results: Results indicated children with ASD spent a greater amount of time in sedentary activities (2379.06±1480.10 minutes) than leisure time (316.88± 301.48 minutes) and sports activities (183.00±153.94 minutes) during a week. They also participated in sedentary activities more frequently and in more types. Parents generally perceived their child with ASD as having low levels of motor competence. Additionally, from the PA-related family dynamic surveys, parents reported themselves as having good levels of self-efficacy in supporting PA in children with ASD, while NT siblings perceived relatively lower levels. In terms of interactions with children with ASD, parents reported higher than NT siblings in almost all the aspects/statements in the survey.

Conclusion: The findings of this study during the unique circumstances brought on by the pandemic indicated that motor behaviors were not adequately addressed at home, and NT siblings need support in using play at home to increase these behaviors in children with ASD. This study also informed future directions to influence motor behavior in children with ASD at the family level.

Keywords: ASD, family, sibling, physical activity, COVID-19, motor skills

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Zeichner's Paradigms of Teacher Education and its Relevance to Modern PETE

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Introduction: All teaching and teacher education is a form of ideology. Indeed, there is no such thing as a value-free education. According to Zeichner (1983), to which this presentation is based, a paradigm to teacher education can be thought of as a matrix of beliefs and assumptions about the nature and purposes of schooling, teaching, teachers, and their education that gives shape to specific forms of practice in teacher education. For Physical Education Teacher Education (PETE) faculty in the modern day, this ideology or "paradigm" appears to be centered around cultivating teachers' ability to prepare children for lifelong physical literacy (McEvoy et al., 2017). Despite this fact, it would appear that the field of physical education and sport pedagogy has yet to establish a situationally sensitive, profession-wide technical culture associated with how this ideology can be best enacted through formal PETE. The purpose of this presentation, therefore, is to discuss Zeichner's (1983) paradigms of teacher education and its relevance to the current ideology of PETE. To achieve this goal, this presentation will begin with an in-depth description of Zeichner's (1983) behavioristic, traditional/craft, personalistic and critical-inquiry orientations to teacher education. Subsequently, we will then provide down-to-earth examples of these paradigms by drawing from the literature in the past decade before addressing their potential implications for PETE and its current ideology. This presentation hopes to strengthen teachers' and teacher educators' ability to (re)construct programs that are aligned

with their disciplinary and programmatic paradigms. In addition, we hope to illuminate a potential paradigmatic language that could be used to help teachers and faculty members of all kinds to develop local, national and international technical cultures.

Keywords: Physical education, sport pedagogy, teaching, curriculum, assessment

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Impact of Secondary Organizational Socialization on Early Career Faculty Members' Delivery of PETE

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Background/Objectives: In the last decade, a group of sport pedagogy scholars have begun to investigate how sport pedagogy faculty members' (FMs) beliefs and actions regarding physical education teacher education (PETE) are influenced by secondary organizational socialization (i.e., the impact of the university conditions and culture). This study's purpose, therefore, was to add to this small body of work by describing the impact of secondary organizational socialization on early career FMs' delivery of PETE. The specific research questions we attempted to answer were: (a) How did FMs deliver PETE? and (b) What factors undermined and supported FMs as they delivered PETE?

Methods: Participants were five early career sport pedagogy FMs who had worked in universities in North America. They were purposefully selected because the universities at which they worked varied in terms of location, focus, and size. The FMs completed formal semistructured interviews, supplied documents that illustrated the type of PETE they implemented, completed critical incident reports, and provided film of themselves engaging in PETE. Data were analyzed using thematic analysis.

Findings/Conclusions: This study revealed that the FMs delivered PETE based on the behavioristic, traditional/craft, and critical-inquiry orientations to teacher education. The key cultural components that shaped the FMs' delivery of PETE were sport pedagogy colleagues, preservice teachers, administrators, and the focus of the university. The main conditions that supported or undermined the FMs' implementation of PETE were the quality of mentor teachers and practicums, resources, and the influence of national and state standards for teacher education. Most of the FMs experienced a

form of institutional pull (as opposed to the institutional press), although they were required to employ coping strategies when faced with negative and unfavorable cultures and conditions. The study has practical implications for those training sport pedagogy doctoral students, the doctoral students themselves, senior sport pedagogy FMs, and administrators.

Keywords: Sport pedagogy, teacher education, higher education, teaching profession, academics

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"It's about bringing people together": One Middle School Physical Education Teacher's Attempt at Deploying Character Education

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Background/Objectives: In response to rising levels of youth precarity several sport pedagogy scholars have begun to examine the role and purpose of school-based physical education in the modern age. While several critiques are available, this study sought to respond to the field's lack of understanding about what affective learning is and does, and how to teach it. In response to this issue, scholars have urged pedagogues to revisit the affective domain and where appropriate, experiment with pedagogies of affect as a means to foster a shared, but situationally flexible, profession-wide technical culture. The purpose of this study, therefore, was to describe how one teacher deployed character education in the context of physical education.

Method: Joseph, a 41-year-old teacher working at Flourishville Middle School in the United States was purposefully invited to participate because of his passion for teaching character through physical activity. At the time, Joseph identified as a white, able-bodied male and was in his first year of instruction. Subsequently, Joseph dedicated 99 lessons to the teaching of character education to three classes. To understand Joseph's pedagogies of affect, data were collected with eight qualitative techniques (formal/informal interviews, documents/artifacts, observations, teaching film, field notes, and critical incident reports) and analyzed using thematic analysis.

Findings/Conclusions: In summary, Joseph deployed a "thematic approach" to teaching character education. Through this method, Joseph taught his students about 32 virtues through the content of human flourishing, handball, ultimate frisbee and practical wisdom that were framed around seven, Aristotelian

inspired affective themes. Complementing Joseph's pedagogies of affect were the school cultures, the content of physical education, the universality of affective pedagogy and teacher autonomy. Inhibiting Joseph's efforts were factors that were outside of his control. The study has practical implications for those interested in researching and teaching the affective domain, and to those preparing future educators.

Keywords: Applied ethics, sport pedagogy, moral education, teaching, curriculum

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Flourishing Through the Spectrum: Toward an Affective-Oriented Composite Pedagogical Model?

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Abstract: If we have learnt anything from over 40-years of research, it is that there is no single best way to teach physical education. Based on this fact, there remains a need to explore how pedagogies of affect or otherwise might be anchored in ways that insist of the possibility of a good life and in the sense that all might flourish. Indeed, there remains a need to create new pedagogical models meant to serve youth in ever-growing pluralist societies. The purpose of this study, therefore, was to conceptualize a new, affective-oriented composite pedagogical model comprised of the Spectrum Theory (ST) and Aristotelian virtue ethics (VE). In joining two theories that are distinctively pedagogical (i.e., ST) and moral (i.e., VE), I will articulate and propose: The Spectrum Model. To outline this model, I will begin by attending to the need to study ST and the concept of models-based practice more closely. I will then synthesize ST and VE before discussing the notion of models-based practice. Afterwards, I will describe a Spectrum Model that is driven by two broad main ideas, three critical elements, six intended learning aspirations, and a series of suggested pedagogies. Specifically, its main ideas include "human flourishing" and "practical wisdom." Its critical elements include "virtue & character," "flourishing friendships," and "decision-making is shared between teachers and pupils across the landmark styles." Its intended learning aspirations are grounded in ST and VE. Finally, its pedagogies of affect favor a range of teaching styles and value orientations, are progressive and transformative in nature, and act to compliment individual and societal flourishing. The proposed model has implications for teachers and teacher educators and contributes to the ongoing debate surrounding ST and models-based practice. This

research also contributes to the field's discussion regarding how pedagogies of affect might be best employed.

Keywords: sport pedagogy, models-based practice, moral education, teaching styles, applied ethics

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Towards policy literacy in physical education

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Introduction: Physical education (PE) policies and related public policies influence the status of school programs worldwide¹. These context-specific policy clusters are social determinants of children's experiences, teachers' working conditions, school program resources, and teacher education programs². Absent policy-related expertise, all PE professionals will inherit sub-optimal working conditions, including those that constrain the achievement of desirable student outcomes³. A dual strategy is needed: (1) Recognize the causes, correlates, and outcomes associated with policy neglect⁴; and (2) Develop policy expertise. We refer to this agenda as "the development of policy literacy".

Objective: To set out a working vision of what the policy literacy might, and might not, entail and how it might be developed.

Results: We suggest policy literacy starts with an awareness of the importance of policy and knowledge of key policy concepts/processes. Such literacy is furthered centered on know-how for engagement in interdependent policy development, advocacy, enactment, and/or analysis efforts. Furthermore, policy literacy depends upon motivation and confidence to implement policy know-how within one's sphere of influence. Ultimately, being policy literate reflects a readiness to engage strategically with big and little 'p' policy appropriate to one's contexts and needs.

Conclusion: We claim policy literacy is not a high-altitude attribute restricted to experts, but rather a core competency and priority for the entire PE workforce. Policy literacy lays the foundation for collective action locally, regionally, nationally, and internationally. Our presentation provides salient details, including considerations for the development of policy literacy within pre-service education, graduate education, and continuing professional development.

Keywords: policy, policy literacy, physical education.

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“Writing Is Not Like Doing”: Girls’ Views and Perceptions of Physical Education Provision in Saudi Arabia

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Introduction: In 2020, the Saudi Arabia (SA) government re-established Physical Education (PE) as a curriculum subject for girls (Alahmadi, 2021). In 2021-2022, girls in SA participated in face-to-face PE for the first time in their lives.

Objective: The aim of this study was to examine female students' experiences and perceptions of PE in this unique historical context, drawing upon the "didactical tringle" (Mong and Standal, 2019) as the theoretical framework.

Methods: Three secondary, single-sex case study schools were recruited. A total of 30 girls (aged 12-15) across the three schools volunteered to participate in focus group interviews, each consisting of 4-5 girls and lasting 30-45 minutes. To facilitate interactive discussions, participatory research activities, such as drawing and ranking were utilised (Hooper, 2018). Grounded theory and Nvivo 12 were utilised to analyse the data.

Results: Preliminary analysis suggests that most of these girls expressed positive views about the importance of PE as a vehicle for health promotion (to “prevent diseases”) and for achieving an ideal body weight. Not all girls however found meaning and relevance in the way PE was offered in their schools. With most lessons taking place in the classroom (mainly through video analysis of skills or teacher explanations), the lack of practical PE was a significant limitation and one that appeared to contribute to a widespread concern of physical incompetency that prevented ‘achievement’ in PE.

Conclusion: These findings shed light on some important dimensions about the prevailing

discourses in the newly established PE curriculum in SA and underline the importance of critical engagement with student voice and theoretical advancements to inform curriculum development and implementation.

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Task analysis skills as part of the professional competence of physical education teachers

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Introduction: Teachers should adapt the tasks in physical education (PE) to the prerequisites of the students in the sense of individual support. Therefore, they need to be able to assess the demands of each task (Rieu et al., 2020). The ability to choose tasks according to the individual needs of the students is an important aspect of PE-teachers' professional competence but has rarely been investigated. This study aims to answer the questions if teachers can assess motor and cognitive task demands in PE and what factors may influence the quality of their assessments.

Methods: Teachers should adapt the tasks in physical education (PE) to the prerequisites of the students in the sense of individual support. Therefore, they need to be able to assess the demands of each task (Rieu et al., 2020). The ability to choose tasks according to the individual needs of the students is an important aspect of PE-teachers' professional competence but has rarely been investigated. This study aims to answer the questions if teachers can assess motor and cognitive task demands in PE and what factors may influence the quality of their assessments.

Results: The results show that PE-teachers are better at assessing cognitive (76,6% correct assessments) than motor demands (67,6% correct assessments). Furthermore, there is no correlation between the ability to assess cognitive and motor demands. These findings may indicate that the assessment is based on different abilities. The study also demonstrates

that work experience has no influence on the quality of the assessments. The results and potential implications for teacher education will be discussed in consideration of the professional competence of PE-teachers.

Keywords: professional competence; task analysis skills

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A National Audit into the Different Levels of Typical School Provision of Physical Education, Physical Activity and Sports in the Republic of Ireland.

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International guidelines recommend sixty-minutes of moderate-to-vigorous-intensity physical activity (PA) daily for adolescents (WHO, 2020). Prevalence of physical inactivity is high and is regarded as a leading risk factor for death worldwide, contributing to the onset of non-communicable diseases with just 20% of adolescents meeting the recommended PA guidelines (Guthold et al., 2020). Physical inactivity cost \$67.5 billion worldwide in 2013 and is estimated to reach over €110 billion in 2030 (WHO, 2022). Despite the worldwide adoption of school PE, PA and sport policies to promote PA and health, paralleled with significant investment, a gap in the literature exists that audits the different levels of typical school provision of PE, PA and sports.

Participating schools (n=112) completed the validated PE, PA and sports provision evaluation index. A One-way ANOVA with Tukey Kramer's Post-Hoc test was performed to examine variation in the demographic profile relative to the indicators of provision. A proposed grade for each indicator of provision was established using a standardized, international grading system.

Half of schools had no outdoor all-weather surface (54.5%). Two thirds had no facilities to accommodate active transport (66.1%). One in five felt the percentage of the budget given towards PE, PA and sports was inadequate (19.6%). Regarding indicators of provision, physical activity received the lowest grade (D+) while physical education received the highest

grade (B-). Provision scores for personnel were significantly higher for mixed schools (girls/boys) in comparison to girls schools. Provision scores for budget and partnerships were significantly higher for larger schools (>800) than small schools (<300).

The evidence suggests that while there has been a significant shift in focus both in policy development and the availability of financial resources to enhance typical school provision of PE, PA and sports for adolescent health, considerable modification of existing provision is required to potentiate positive impact.

Keywords: physical Education; Physical Activity; Sports; Adolescence; Youth; School.

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The importance of satisfying children's basic psychological needs in primary school physical education for pe-motivation, and its relations with fundamental motor and PE-related skills

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Introduction: Children's motivation for physical education (PE) is vital for developing physical skills¹. Following Self-Determination Theory, satisfaction of the basic psychological needs autonomy, relatedness, and competence is necessary for reaching high levels of autonomous and low levels of controlled motivation².

Objective: This study tested the 'motivational sequence'³: whether psychological need satisfaction predicts children's motor skills

(fundamental motor skills, FMS, and PE-related skills), both directly, and indirectly via motivation. As PE-related skills more accurately reflect skills being practiced during PE, we expected the strongest relations for these skills.

Methods: 2224 primary school children (mean age = 11.8 years, 51.6% boys) of 89 schools filled out questionnaires on psychological need satisfaction and motivation during PE. FMS were assessed via the BOT-II⁴ upper-limb subtest and three KTK⁵ subtests. A set of PE-related skills was examined with validated tests. Data was analyzed via multilevel structural equation models in Mplus.

Results: The needs for competence, peer-relatedness, and teacher-relatedness predicted autonomous motivation, whereas only peer-relatedness predicted controlled motivation. Relations of psychological needs and motivation differed for FMS and PE-related skills, with PE-related skills being predicted by autonomous and controlled motivation, whereas FMS were only predicted by controlled motivation, via direct and indirect paths. Additionally, competence was directly linked to FMS and PE-related skills; and peer-relatedness and teacher-relatedness with FMS specifically.

Conclusions: Psychological need satisfaction seems vital for children's motivation and skill development in PE. The motivational sequence was more applicable for PE-related skills than FMS, underlining the importance of choosing adequate outcome measures in examining PE-motivation.

Keywords: motivation, physical education, primary school, physical skills, physical development

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Physical activity, satisfaction of basic psychological needs and motivation towards physical activity in primary education: a proposal for an interdisciplinary intervention under the Project-Based Learning model.

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Introduction: Currently, due to the importance of physical activity in society because of the many physical and psychological benefits it brings, it is essential to work in schools, in an interdisciplinary way, to motivate students towards physical-sports practice (1).

Objective: The main objective was to find out the levels of physical activity, satisfaction of basic psychological needs (BPN) and motivation of 6th year Primary School pupils in physical education in order to create an interdisciplinary educational proposal under the methodology "project-based learning (PBL)" and thus promote these variables. The sample consisted of 58 students in 6th grade of primary school (6th A, 6th B and 6th C).

Methods: The sample consisted of 58 students in 6th grade of primary school (6th A, 6th B, and 6th C). The Assessment of Physical Activity Levels Questionnaire (APALQ) (2-4) was used to determine physical activity levels; the Motivation in Physical Education Questionnaire (CMEF) (5) was used to determine motivation. Finally, the Vlachopoulos and Michailidou (6) questionnaire adapted by Moreno et al. (7) was used to determine the NPB.

Results: Once the mean physical activity levels of the three groups (6^oA=9.94; 6^oB=9.39 and 6^oC=11), autonomy (6^oA=3.76; 6^oB=4.31 and 6^oC=4.24), competence (6^oA=4.08; 6^oB=4.29 and 6^oC=4.34), social relations (6^oA=4.43; 6^oB=4.61 and 6^oC=4.70) and intrinsic motivation (6^oA=4.64; 6^oB=4.51 and 6^oC=4.73), it was found that they could be improved, so an interdisciplinary educational project (music, plastic arts and physical education) was created under the PBL model to encourage pupils' motivation for physical activity.

Conclusion: It is considered essential to create programmes along these lines because, if pupils' basic psychological needs are met and they are motivated from an early age towards physical activity, high levels of sedentary lifestyles and associated illnesses can be avoided.

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intervención interdisciplinaria bajo el modelo ABP para fomentar la satisfacción de las necesidades psicológicas básicas y la motivación hacia la actividad física en educación primaria” carried out by the main author of this work Marina González, at the University of Seville.

Keywords: motivación, necesidades psicológicas básicas, ABP, actividad física, educación primaria.

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Physical Literacy and Bildung: A comparative study

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Introduction: The concept of physical literacy (PL) is increasingly finding its way into educational policies and curricula for physical education (PE) in many countries (1). Nevertheless, attempts to operationalize PL have fostered the neglect of certain aspects that Whitehead (2) originally used to develop the concept, such as embodiment and experience.

This development as well as the philosophical foundations of the concept (e.g., phenomenology) seem to show parallels with the discussion about the concept of Bildung in the context of PE in Germany (3).

Objective: The study aims to identify similarities and differences between these two concepts and their discourses to examine whether they are compatible with each other, and whether constructive connections are possible.

Methods: Using a discourse-analytical approach (4), the discourses on the concepts was traced based on scientific publications that contribute to the academic discussions about PL and Bildung in the context of PE. Similarities and differences were identified and categorized to enable a systematic comparison of the concepts.

Results: The results show commonalities, particularly in the philosophical foundation of the concepts (e.g., conception of human nature, corporeality), which have led to difficulties in operationalizing the concepts. However, the discussion about Bildung in Germany seems to be a bit more advanced regarding the practical implementation of the concept in PE, whereas, at the moment, more attempts are made to operationalize PL.

Conclusion: The study confirms initial assumptions about the relation between the two concepts (5). It provides constructive impulses for both discourses regarding issues of operationalization and practical implementation. Thus, the results open up opportunity for international connectivity of the German discourse on Bildung in PE.

Keywords: physical literacy, bildung, physical education, embodiment.

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Development of digital teaching competencies in PE teacher educators

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Introduction: One consequence of the COVID-19 pandemic has been a rapid increase in networked digital technologies in many areas of daily living. Yet, it cannot be assumed that young people have a responsible handling and profound understanding of digital media. The concept of digital literacy thus highlights the need for teachers to have appropriate teaching skills. This underpins the necessity to adequately prepare future teachers and to modernize teacher education programs (1). Besides curricula considering digital competencies, one should also pay attention to teacher educators' abilities to enhance digital teaching skills.

Objective: Therefore, the status of the promotion of digital competencies in one of Germany's largest P.E. teacher training programs at GSU Cologne was analyzed to identify strengths and weaknesses among P.E. teacher educators.

Methods: Based on the framework "Teachers in a Digitalized World" (3) and select scientific models (2, 4) a seven-dimensional structure of digital competencies in teacher education was derived. To identify developmental needs among teacher educators, each dimension was standardized by three to six items. Prior to the survey, the questionnaire was subject to communicative validation based on expert advice. Eventually, a full survey was conducted among teacher training staff at GSU Cologne in 2022 (n= 106).

Results: With respect to a return ratio of 41.3 % (n=45), several strengths and weaknesses in teacher educators' competencies could be identified. In all seven dimensions a substantial part (30-50%) of the teaching staff feels uncomfortable teaching digital skills. The general discomfort is also reflected in university courses, in which digital competencies are taken up only to a small extent.

Conclusion: Regarding comprehensive digital transformation in school and beyond, the results show the need for professional development among teacher educators at university level as a prerequisite to put curricular learning objectives into practice.

Keywords: PE teacher education, digitalization, digital literacy, professional development

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Application of the flipped classroom for the improvement of motivation in learning and towards physical education and the improvement of basic psychological needs. Proposal of an intervention program

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Introduction: The flipped classroom makes students take a more active role in the learning process (1). In this way, the teacher provides content with which students work outside school hours to take advantage of the classes to resolve doubts and carry out practical exercises (2). Previous studies (3) show that the application of the Flipped Classroom makes students acquire new skills and knowledge, thus being in a continuous learning process.

Objective: The aim of the research was to know the levels of motivation towards physical education (PE) and learning and basic psychological needs (BPN) in order to make a proposal for an intervention program through the Flipped Classroom for the improvement of these variables in primary school education.

Methods: the study sample consisted of 45 children from C.E.I.P Marismas del Odiel, divided into group A (23 students) and group B (22 students). The study variables were motivation for the learning process, motivation for learning and basic psychological needs. The research instruments were the "questionnaire of motivational evaluation of the learning process" (4), to measure motivation towards learning; questionnaire "motivation in Physical Education in primary education" (5), to measure motivation towards PE and "scale of psychological needs based on physical education" (6) to measure the BPN.

Results: The results showed, in relation to learning motivation, that group A obtained a higher mean in intrinsic motivation (3.66), with extrinsic motivation (3.44) being the highest in group B. In terms of motivation towards PE, both groups had a higher value for intrinsic motivation (4.15 and 4.14, respectively). Finally, in relation to NPB, social relations was the factor that obtained a higher value in both groups (3.49 and 4.17, respectively).

Conclusion: After obtaining the results, an intervention programme was created for the improvement/maintenance of the studied variables.

Acknowledgements: This study is part of the TFG: "Propuesta de un programa de intervención a través del flipped classroom en educación primaria", carried out by Mr. Francisco José Sánchez Díaz, at the University of Huelva.

Keywords: primary education, flipped classroom, motivation, basic psychological needs

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Caracterización de las intervenciones escolares para la promoción de actividad física en España

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Introduction: Los centros escolares son considerados como los lugares más adecuados para implementar programas para la promoción de la salud (Fernández y Hoyos, 2015). Los motivos, según Harris y Cale (2019), son su influencia en el comportamiento diario de la mayoría de los infantes, su oferta de programas y servicios a cargo de profesionales y su incidencia en las familias.

Objective: Ante la falta de un modelo de promoción de salud consolidado en el que sustentar las propuestas de promoción de salud en España, se ha realizado un análisis bibliográfico de las intervenciones y programas centrados en la actividad física (AF) llevados a cabo en centros educativos del contexto español.

Methods: Se realizó una búsqueda bibliográfica en cuatro bases de datos: SCOPUS, Dialnet, WOS y SportDiscus, en inglés y castellano, y siguiendo la metodología PRISMA. Un total de 22 artículos fueron seleccionados, sobre los que se realizó un análisis de contenido.

Results: Existen intervenciones escolares para promocionar la AF en Educación Primaria y Secundaria, pero apenas se han realizado en Educación Infantil (de 0 a 6 años). Cabe resaltar que solo algunas intervenciones incluyen participación comunitaria. Por otro lado, se distinguen intervenciones que incorporan actividades como transporte activo, patios activos, descansos activos o actividades extraescolares.

Conclusion: Una visión global de todas las intervenciones analizadas muestra efectos positivos de todas ellas en cuanto al incremento de la AF del alumnado, aunque resulta difícil su transferencia a otros contextos por la disparidad de instrumentos y valores de medición. En este sentido, sería interesante llevar a cabo estudios cualitativos, con el fin de conocer con más detalle el significado de las experiencias. Asimismo, desde una perspectiva holística de promoción de la salud, destacamos la conveniencia de incorporar intervenciones multicomponente que atiendan a diferentes niveles educativos.

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Keywords: revisión sistemática, salud, edades tempranas.

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Characterization of school interventions for the promotion of physical activities in Spain

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Introduction: Schools are considered as the most suitable places to carry out health promotion programs (Fernández & Hoyos, 2015). According to Harris & Cale (2019), their influence on children's daily behavior, their offer of programs and services given by professionals, and their incidence on families emerge as the main reasons for being a crucial scenario for fostering healthy lifestyles.

Objective: A lack of a consolidated health promotion model on which to underpin the present health promoting proposals in Spain urged us to carry out a literature review to analyze Spanish school interventions and programs focused on physical activity (PA).

Methods: A systematic review of four databases: SCOPUS, Dialnet, WOS and SportDiscus was conducted, both in English and Spanish, following the PRISMA methodology. A total of 22 documents were selected for their content analysis.

Results: Interventions to promote PA were mainly carried out in Primary and Secondary Education, but very few in Preschool and Early-years Education (0 to 6 years). It should be noted that only a few interventions comprised community participation. On the other hand, it has been identified interventions including activities such as active transport, active playgrounds, active breaks, or extracurricular activities.

Conclusion: An overall view shows positive health effects of each of the intervention examined regarding the students' increase of PA,

but this cannot be transferred to other application contexts due to the disparity of measure instruments and values used. In this regard, it would be interesting to qualitatively evaluate this type of interventions by exploring the meaning students give to their experiences. Also, from a holistic perspective of health promotion, the incorporation of multi-component interventions at the different educational levels are of great importance.

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Keywords: systematic review, health early years.

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Graduate studies as transformative growth: Experiences from the HPE MEd cohort

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Introduction: Horn & Jang (2017) note that there has long been encouragement for teachers to pursue a graduate degree. Rationale for graduate education comes from a variety of levels and includes such diversity as: a desire for a higher salary; seeking to raise the status of the profession; meeting state level requirements for teacher licensure and; improvement of teacher effectiveness (professional development). We know much less about how graduate programs affect teachers themselves (status, professionalism, retention, etc.) and the impact on their learning on students and schools. While there is a well-established body of literature on professional development (PD) for teachers (e.g., Darling-Hammond & McLaughlin, 1995; Garet, et al., 2001), it is surprising that despite the proliferation of graduate programs directed towards in-service teachers, we still know very little about the impact of these programs on teachers, their contexts (schools) and their students. In the area of health and physical education (HPE), in the midst of an abundance and richness of research on PD (e.g., Armour, et

al., 2017; Parker, Patton & Tannehill, 2012) we have yet to find a single study focused on the impact of a health and physical education graduate program.

Objective: To understand how the HPE MEd program impacts health and physical educators professionally and contextually.

Methods: This qualitative study, the first in a series, explores the experiences of students in our inaugural HPE MEd Cohort. Using Dewey's theory of experience (1938) as the theoretical framework and interpretive inquiry as the methodology (Ellis, 1998), we interviewed students after the first year and on the completion of the program.

Results: Interviews were transcribed and analyzed thematically with resulting themes including: (a) theory to practice and back again; (b) multiple perspectives; (c) becoming a community, and; (d) transforming purpose.

Conclusion: The results of this study will inform new cohorts and guide future work on a Deweyan framework for graduate studies as transformative PD.

Keywords: body image, visual impairment, body dissatisfaction.

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A gender comparative study on off-task behavior: sedentary lessons versus physically active lessons

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Introduction: Students spend more than 65% in sedentary time in school (1). As result, Physically Active Learning is positioned as one of the most appropriate methodological resources to decrease sedentary time in this context. Among the strategies that are identified and included in the concept Physically Active Learning we find physically active lessons. Physically active lessons include physical activity in lessons while students continue to work on academic aims.

Objective: The main aim of this study was to evaluate and compare off-task behavior based on gender in two different methodologies: sedentary and physically active classes.

Methods: Twenty-two primary school students (12 girls and 10 boys) from a state school in central Spain participated in the study. A program that integrated two methodologies was applied: sedentary classes (lessons 1-3) and physically active classes (lessons 4-6) in Spanish Language and Literature courses. Task behavior was assessed by observation, recording off-task behavior in an ad hoc list.

Results: Results showed that boys had significantly higher mean off-task behaviors than girls in both methodologies. When both methodologies were compared by gender, both boys and girls showed fewer off-task behaviors during physically active lessons, with these differences being significant only in boys.

Conclusion: In conclusion, physically active lessons seem to have a positive effect on task behavior compared to sedentary classes, particularly in boys.

Keywords: task behavior; physically active learning; physically active lessons

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Value, Content, and Implementation Strategies of Health Education in Chinese Physical Education and Health Curriculum

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Introduction: In the Physical Education (PE) and Health Curriculum Standards for Compulsory Education (2022 Edition), health education (HE) was included in the curriculum content of the PE and health curriculum for the first time.

Objective: The purpose of this study was to analyze the important value and the content of health education in the curriculum standards, and then to propose specific strategies for implementing health education.

Methods: The literature was collected on CNKI through the documentation method. The text analysis method was used to interpret the content of HE in the curriculum standards.

Results: It is important to improve the public health system; a key grasp to cultivate students' health literacy; a fundamental guarantee to carry out the overall education of PE. In the curriculum standards, (1) The curriculum objectives of HE is oriented to the core literacy of PE and health. (2) Based on a public health perspective, the curriculum covers five areas: healthy behavior and lifestyle, growth and development and adolescent health, mental health, prevention of infectious diseases and public health emergencies, and responding to safety emergencies and risk avoidance. (3) In terms of learning assessment, academic quality was mapped to portray students' academic achievement.

Conclusion: (1) Focus on cultivating students' health literacy; (2) Achieve a high degree of integration of "PE and health > PE + health"; (3) Implement core literacy in the whole process of teaching implementation; (4) develop a comprehensive evaluation model of HE based on performance; (5) improving PE teachers' teaching skills and ability of HE in PETE.

Keywords: health education, health literacy, physical education and health curriculum.

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The Impact of Typical School Provision of Physical Education, Physical Activity and Sports on adolescent physical activity behaviours. A systematic literature review.

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Regular engagement in physical activity is cited as a powerful predictor of future health among adolescents (Piercy & Trioiano, 2018). International guidelines recommend sixty-minutes of moderate-to-vigorous-intensity PA daily for adolescents (World Health Organization, 2022). Physical Education is recognized as playing an integral role in the promotion of PA and health (Alijuhani & Sandercock, 2019). Despite the worldwide adoption of school physical education, physical activity and sports policies to promote physical activity and health, paralleled with significant investment, a gap in the literature exists that synthesizes the impact of school physical education, physical activity and sports on adolescent physical activity behaviours (Hardman et al., 2014).

Web of Science, SPORTDiscus, PsychINFO, ERIC and MEDLINE were searched for articles that examined the impact of regular school PE, PA and sport provision on adolescent aged 12-18 years, published between 2000-2020.

The relationship between typical school provision of physical education, physical activity and sports was found to be multifaceted. The provision of regular physical education class, extension of minutes dedicated to physical education (>90 min), maximizing opportunities for moderate to vigorous physical activity and minimizing opportunities for sedentary behaviour should be considered when strategizing to impact adolescent physical

activity behaviour. In addition, for school physical activity and sports, active transport to school, extension of recess time (>60 min) and provision of a wide variety of sports was also deemed to be impactful. Overall, provision had the greatest impact on meeting physical activity guidelines with 62.5% significantly positive effects.

Future research should consider examining the additive impact of typical school provision of physical education, physical activity and sports as the included studies examined individual components of provision only.

Keywords: Physical Education; Physical Activity; Sports; Adolescence; Youth; School.

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“It doesn’t fit in here!” – Pre-service PE student teachers’ perspectives on inquiry learning in school placement

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Introduction: Inquiry learning (IL) in school placement is mandatory for pre-service student teachers in most states in Germany. The purpose is to develop inquiry stance and ensure professional development. In PETE, IL challenges relating theory and practice variously. However, research into understandings, views and relevance of IL is scarce.

Objective: Based upon relational Bildung theory (Benner, 2015), this study explores a) understandings of IL in school placement, b) views on IL in school placement and c) the

relevance of IL for professional development among pre-service PE student teachers.

Methods: In an explorative, longitudinal mixed methods study a questionnaire was administered to pre-service student teachers (N = 221) before and after school placement. Qualitative data were gained from semi-structured interviews conducted 6-12 weeks (N = 15) and 1 ½ years (N = 12) after school placement. Qualitative content analysis was used to identify deductive and inductive categories.

Results: Open-ended answers show that understandings of IL remain incomplete before and after school placement. Referring to views on IL and its relevance for professional development, there are significant pre-post-changes, both becoming more critical (d = .49; d = .54). Preliminary results from the interviews exemplify understandings of IL as narrow (i.e. research-oriented). Considering views, circumstances of IL in school placement are criticized in terms of lack of time, autonomy and appreciation. The relevance of IL for professional development seems ambivalent (i.e. relating theory and practice). Interviewees suggest a long-term implementation of IL into PETE and tailored guidance.

Conclusion: The study illustrates challenging circumstances of IL in school placement particularly in view of Bildung-theoretical goals and the need to introduce IL to pre-service student teachers in PETE in the long term and more deeply.

Keywords: inquiry learning, school placement, PE teacher education, Bildung theory.

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Investigation on the current situation of PE teachers' Content Knowledge of Badminton Subject

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Introduction: Since Shulman put forward "missing paradigm", researchers have begun to study teachers' pedagogical content knowledge (PCK) However, some studies have shown that improving teachers' content knowledge (CK) can contribute to their PCK, thus affecting teachers' teaching effectiveness .CK mainly includes CCK and SCK, CCK refers to teacher knowledge of rules, technique and tactics of sports (Ward, 2009). This study adopts the developed "Common Content Knowledge (CCK) Test of Badminton for PE Teachers" to investigate the CCK of pre-service PE teachers.

Objective: This paper studies the development status of PE teachers' badminton subject content knowledge, so as to further strengthen the improvement of PE teachers' badminton subject content knowledge.

Methods: 87 PE teachers (64 males and 23 females) were tested on badminton CCK , including three dimensions of badminton rules, technical and tactical knowledge. In order analyze whether the educational background, gender, professional title and systematic study of badminton and different badminton years have any influence on the CCK. SPSS 26.0 was used to conduct descriptive statistics, independent sample T test and one-way ANOVA.

Results: Independent sample T-test found that the PE teachers' gender ($P=0.166>0.05, T= 0.734$) and whether they had systematically learned badminton ($P=0.864>0.05, T=-1.684$) had no significant influence on PE teachers' CCK. One-Way ANOVA showed that different badminton years had a significant difference on CCK, while education ($P=0.254>0.05$) and professional title ($P=0.164>0.05$) had no significant effect on CCK.

Conclusion: The overall level of PE teachers' CCK is good, especially in rules and techniques, while tactical knowledge is weak. So it needs to be paid attention to and strengthen the training of PE teachers in the study of badminton tactics.

Keywords: PE teacher, badminton, content knowledge.

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Motor test assessment instruments in children under 6 years of age validated in the Spanish population: a review

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Introduction: the condition characterized by a significant delay in the acquisition of gross and fine motor skills and impairment in the execution of coordinated motor skills that interferes in an individual's daily living activities is known as a developmental motor coordination disorder. This health condition has an estimated prevalence ranging from 2 to 20% in children, most of whom do not outgrow their problems when they reach adolescence and adulthood. It is more prevalent in boys than in girls.

Objective: to locate the instruments that exist to assess motor competence and to extract those that have been validated in the Spanish context in their whole or reduced version.

Methods: a review of articles on validated instruments for assessing motor competence in the Spanish population.

Results: there are around 20 different tools to assess motor competence in childhood, of which only half can be used in children under six. Three tools have been previously validated in the Spanish population: the Movement Assessment Battery for Children second edition (MABC-2), the Test of Gross Motor Development third edition (TGMD-3), and the basic motor competencies in kindergarten (MOBAK-KG), in 2012, 2018 and 2020, respectively.

Conclusion: further validation is needed in order to be able to apply different instruments, depending on the context and needs. In addition, none of the instruments validated for the Spanish population had a short version. Using tests to assess motor competence could improve the early diagnosis and treatment of children with motor development problems.

Keywords: motor competence, motor skills, motor skills disorders, children.

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The Application Strategy of Sport Education into PE Interdisciplinary Teaching

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Background: Since “Physical Education (PE) and Health Curriculum (2022 version) for Compulsory Education” first included interdisciplinary teaching into the curriculum content in China, many PE teachers have tried to carry out interdisciplinary teaching in various teaching forms, but there are still many problems in practice. As a mature mode, sport education has some commonalities with PE interdisciplinary teaching. This paper aims to use sport education to carry out PE interdisciplinary teaching to solve the problem that interdisciplinary teaching is difficult to practice.

Methods: Using CNKI, Web of Science, Scopus and other databases, a total of 20 articles were selected with "sport education", "interdisciplinary teaching of physical education" and "interdisciplinary teaching" as keywords, and the similarities between sports education model and PE interdisciplinary teaching were analyzed in depth.

Results: Common characteristics: (1) The sport education has the characteristics of situation and interest, and the interdisciplinary teaching also requires the setting of situations close to real life. (2) The sport education is to achieve common goals through teamwork, and interdisciplinary

teaching emphasizes and encourages students to solve problems cooperatively. (3) The feature of sport education is that the unit is the season, while the interdisciplinary teaching is the subject. Strategies: (1) Arrange interesting situations from easy to complex to stimulate student's motivation for cooperative explore. (2) Divide the class into different teams to emphasize a learning atmosphere of division of labor and cooperation within the team and active competition among the teams. (3) Determine the theme according to the specific sports events as the season, and the divided subthemes can be used as mini-seasons.

Conclusion: PE teachers should pay attention to the deep integration of PE and other disciplines, improve students' ability to solve problems cooperatively, improve the evaluation system of interdisciplinary teaching, so as to cultivate interdisciplinary talents.

Keywords: Application Strategy, Sport Education, Interdisciplinary Teaching.

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Effects of Sport Education Model on Student Physical Fitness: A Meta-Analysis

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Introduction: The Sport Education Model (SEM) is one of the most widely studied instructional models in PE. Nevertheless, it started relatively late in China since it was introduced in 2003. After 20 years of development, the research on SEM in China has been deepening in both theoretical and empirical dimensions. At present, the majority of studies on SEM focus on sports competence and psychological outcomes, few studies discuss the influence on students' physical fitness. Consequently, the purpose of this study was to specifically synthesize the evidence for SEM for Chinese students' physical fitness.

Methods: An extensive internet search using the keywords 'Sport Education Model' 'Application effect' and 'Experimental study' was performed resulting in over 200 published studies within the past 20 years. The database used to search for relevant studies were CNKI, CQVIP, and WanFang database. Effect sizes were calculated with 95% confidence intervals in the Review Manager 5.4 software, the heterogeneity among effect sizes was assessed with I^2 statistics.

Results: A total of 255 studies and articles were considered for inclusion and 23 studies qualified for this review, 18 studies used 50-meter running

to test the speed quality of students, had an effect size of -0.15 , 95%CI $[-0.22,-0.08]$, $Z=4.08$ ($p < 0.00001$); 12 studies used sit and reach to test the flexibility quality of students, had an effect size of 0.30 , 95%CI $[-0.51,1.11]$, $Z=0.72$ ($p=0.47$); 18 studies used stand long jump to test the strength quality of students, had an effect size of 2.1 , 95%CI $[0.51,3.69]$, $Z=2.59$ ($p=0.01$); 11 studies tested the student's endurance quality with 1000-meter running for male students and 800-meter running for female students, had an effect of -0.6 , 95%CI $[-2.98,1.77]$, $Z=0.15$ ($p=0.62$).

Conclusion: This meta-analysis shows that the application of SEM had a significant effect on speed and strength of Chinese students, but the effects on flexibility and endurance is not significant.

Keywords: meta-analysis, sport education model, physical education.

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The associations among children's physical activity, sleep, digital media behavior and hyperactivity risk

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Introduction: Recently, the detection rate of children with ADHD has been on the rise and has drawn increasing attention and children's daily behaviors are potentially associated with ADHD.

Objective: The aim of this study was to explore the relationship between children's 24-hour behaviors and the hyperactivity index, and to provide better behavioral optimization recommendations.

Methods: 11190 parents completed an online survey. children's behaviors were surveyed by the Parent-surveillance of digital media in childhood Questionnaire, while the child hyperactivity risk was measured use hyperactivity index by the Brief Symptom Questionnaire from the Conners Parent Symptom Questionnaire. Linear regression models and isotemporal substitution models were

constructed by applying compositional analysis, which were conducted using the R language and adjusted for gender, age, and geography.

Results: The results of the linear regression model showed that children's physical activity, sleep, and digital media behavior were significantly associated with the hyperactivity index ($R^2=0.07, p<0.001$). Both physical activity and sleep were significantly and negatively associated with the hyperactivity index ($\beta_{lr-PA} = -0.03, P<0.001$; $\beta_{lr-SL} = -0.03, P<0.001$), while digital media behavior was significantly and positively associated with the hyperactivity index ($\beta_{lr-DM}=0.01, P<0.001$). When 15, 30, 45, and 60 minutes of digital media behavior were replaced with physical activity and sleep at a base point of 15 minutes, children's hyperactivity index decreased significantly by 0.004 versus 0.006, 0.013 versus 0.01, 0.022 versus 0.018 and 0.037 versus 0.032, respectively.

Conclusion: Children's physical activity, sleep, and digital media behavior were significantly associated with the hyperactivity risk. Parents should prevent and reduce the risk of hyperactivity in children by increasing physical activity and sleep time and reducing digital media behavior.

Keywords: physical activity, sleep, digital media behavior, hyperactivity risk.

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Preservice classroom teachers' noticing skills and content development in physical education

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Introduction: Teachers should develop various effective skills in enhancing student learning. Among these are teacher noticing¹ and content-development skills². Teacher noticing skills include teachers' attending to teaching aspects, interpreting, and deciding accordingly. Content development refers to the skills needed for selecting and sequencing the content of the lesson. While research has advanced in investigating PE teachers' content development, little attention has been paid to preservice classroom teachers' noticing and content-development skills.

Objective: The purpose of this study was to describe preservice classroom teachers' noticing skills about PE content development during their student teaching experience.

Methods: Three preservice teachers voluntarily participated in this study. Data collection included semi-structured interviews, scenario interviews, and document analysis. Data were analyzed using the principles of individual-case and cross-case analysis. Particularly, a coding scheme was developed including (a) the participants' ability to identify task types (b) their interpretation of each task type, and (c) their decision-making about each task type.

Results: Results suggested that the participants were able, at least to some extent, to attend to four types of tasks (i.e., informing, refining, extending, and applying). The participants were also able to interpret and decide how to respond to all four types of instructional tasks.

Conclusion: Findings suggest that children were the main focus of the participants' interpretation and decisions. Above all, the participants provided their decisions on how to respond to instructional tasks based on pedagogical issues such as children's needs. Findings provide insights that describe the teachers' noticing skills regarding content development in PE.

Keywords: content development, pre-service classroom teachers, teacher noticing

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Students' Emotional Experiences of Mastering Jumping Tasks in Physical Education

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Introduction and Objective: Emotions are interrelated to motivation and of particular importance for sports participation (1), especially considering associated (implicit) affects. Emotional experiences in Physical Education (PE) are shaped by situational contexts and PE contents. However, there is limited empirical evidence on experiential dimensions and a lack of related content- and task-specific research in PE (2). We ask, how students experience jumping emotionally in open, autonomy-oriented tasks in PE?

Methods: We taught a didactic lesson at a sixth grade in an Austrian high school that focused on offering different tasks of jumping off and over obstacles. Subsequently, 12 (6m/6f) episodic narrative interviews (3) were conducted. For analysis, the documentary interpretation (4) was used to reconstruct orientation frames of students, describing their emotional experience.

Results: Analysis show that social relationships are central orientation frames in jumping situations, being individually interpreted: Manuel experiences the social setting and his peer as a

pleasant, meaningful togetherness, in which his achievement (mastering) represents a potential source of ascendance in the social ranking (emotion: surprise). Sara in turn experiences the social setting as pressureful, in which the visibility of (non-)achievement emerges as a potential source of being evaluated by others (emotions: shame, worry).

Conclusion: Students engage with open tasks in order to experience typical feelings of movement and they use their classmates as a reference norm. PE Teachers can consider the importance of movement tasks, that allow students certain emotional movement experiences. However, these are always balanced with expectations that are interpreted into the classmates.

Keywords: emotional experience, jumping, documentary method, orientation frame.

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Examining graduate student's models-based teaching: Sport Education

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Introduction: Many graduate physical education teacher education programs in the United States include learning about models-based approach such as Sport Education (Hastie et al., 2021). While the understanding of Sport Education among physical educators varies (Sinelnikov & Hastie, 2016), research on the perspectives of graduate students as they learn the model is limited.

Objective: This study examines the perspectives and practices of a graduate student

as they implement Sport Education in their collegiate teaching.

Methods: A 25-year-old male graduate student with limited college teaching experience was selected. The participant taught a 32-lesson basketball Sport Education season to 30 university students, meeting twice weekly for 50-minute classes. Formal interviews, reflection journals, critical incident reports, and document analysis informed the study. Analysis was performed using a constant comparison and analytic induction approach (Goetz & LeCompte, 1984).

Results: The participant's use of the Sport Education reflected three key themes: alignment with own educational philosophy, a comprehensive approach to Sport Education, and challenges in delivery. The participant implemented the model to foster physical, mental, social, and emotional growth for all students through affiliation and competition, which promotes positive relationships and teamwork. However, the biggest challenge was managing disputes related to officiating during formal competition.

Conclusion: The participant's use of Sport Education was guided by his educational philosophy with a focus on affiliation and competition. Despite high referee engagement and accuracy in collegiate Sport Education seasons (Wahl et al., 2019), conflict resolution seemed to be a challenge for someone who is learning to implement SE.

Keywords: sport education, models-based approach, graduate student.

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Exploring teachers' perception of risks and benefits of competition in primary physical education: Development and validation of a new questionnaire

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Introduction: International guidelines suggest competitive activities to be part of physical education (PE) programmes, as they can promote fair play, courage, commitment, teamwork, respect, and enjoyment among pupils [1,2]. Despite these recommendations, primary school teachers are often reluctant to propose competitive activities in PE, and this is often due to their beliefs [3].

Objective: The paper presents the development and validation of an instrument to assess teachers' beliefs about competition in PE.

Methods: A systematic literature review allowed identifying 13 papers exploring competition in PE settings. A pool of 37 items was extracted and organised in two emerging themes: perceived benefits and perceived risks. This initial questionnaire was completed by 433 participants (9.9% men), consisting of in-service primary school teachers (76.0%; *M age* = 45.6; *SD* = 10.9) and Education Science students (24.0%; *M age* = 23.5; *SD* = 3.52). Participants were also asked about their experiences in competitive sports and in teaching PE.

Results: Confirmatory Factor Analysis (CFA) allowed for item reduction and testing of a two-dimensional model. The model showed excellent fit [$\chi^2(df) = 276.04(126)$, $\chi^2/df = 2.191$; CFI = .96; IFI = .96; RMSEA = .053 (CI: .044-.061)] with eight items accounting for each dimension. The two dimensions demonstrated good reliability (benefits, $\alpha = .86$; risks, $\alpha = .88$).

Conclusion: The Benefits and Risks of Competition in Physical Education (BRC-PE) 16-item questionnaire demonstrated validity and reliability for use among Italian speaking teachers. Further studies should extend the validity of the BRC-PE to other languages and contexts.

Keywords: physical activity, teaching, school, confirmatory factor analysis, scale validation.

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Repetition and differences: Exploring the practical logic and experiences of repetitive practices in elite sports

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Introduction: Repetitive practice is essential for skill/sense acquisition in high-performance sports. Extant literature focused on verifying the effectiveness of repetition training in controlled settings based on the assumption that repetition enables players to reach the level of unconsciousness so they can perform certain movements without paying special attention. However, little exploration has been conducted on how such repetitive practice proceeds in the messy reality of sport coaching.

Aim: The purpose of this study was to comprehend repetitive practice in actual coaching milieus. Drawing on Deleuze's *difference and repetition*, two research questions were addressed: (a) What are individuals' practical logics underlying their repetitive practice; and (b) Which experiences do individuals encounter in each logic?

Methodology: Empirical data were collected from observations with body-mounted-camcorders and stimulated-recall-interviews conducted on eight coaches and eight athletes in four elite sports. The data were analysed through Pink's sensory ethnography.

Results and discussion: First, our participant engaged in repetitive practices under two logics; one was 'pursuing sameness', and the other was 'finding difference'. While the former logic seeks to copy the normative body schema that is defined by coaches, the latter aims to optimise players' own movement by focusing on a difference itself. Second, the logic of pursuing sameness induced athletes to experience the agony of tediousness, which often led them to conduct purposeless practices. In contrast, the logic of finding differences was closely related to purposeful practices in flow. However, most of our participants engaged in repetitive practices for copying purposes.

Conclusion: Our findings imply the lack of players' agency in repetitive practices. Therefore, coaches need to adopt the logic of finding differences together to facilitate athletes' active participation and meaningful experiences in repetitive practices.

Keywords: Repetitive practice; practical logic; sport coaching; sameness; differences

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Analysis of motor competence in non competitive sports practice versus federated practice

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Introduction: Physical activity and sport are a very positive alternative for the younger population to have a physical, mental and social development both in their childhood and in the future for their adult life (Back et al., 2022; Holt et al., 2016; Kirk, 2006).

Objective: The purpose of this research is to compare a model of non-competitive after-school sport practice with a model of competitive sport practice in the development of an adequate perception of motor competence

Methods: To this end, an evaluation of programmes with a model of educational and non-competitive sport practice and a model of federated sport practice was carried out. A questionnaire was administered to a sample of 203 after-school sport students, federated sport students and after-school sport families.

Results: The results indicate that there are no differences in the development of motor competence. In both sporting contexts are found to be able to generate a positive perception of motor competence.

Conclusion: It is concluded that the educational after-school program is not able to make a difference in the development of a positive perception of motor competence is developed in the schoolchildren.

Keywords: after-school sport, federated sport, motor competence

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Physical Education on Pandemic Times: PE Teachers Experiences During and After the Lockdown

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Introduction: On March 11, 2020 education worldwide switch to the distance learning mode to prevent the spread of SARS-CoV-2 virus (Covid-19). Among all the academic disciplines, Physical Education (PE) faced a drastic change in the teaching and learning process from face to face to distance learning. The particular PE features of teaching content, developing competencies and achieving objectives through movement, was uncertain and as a result placed on hold. The new educational scenario raised unknown issues regarding the quality and contribution of PE as an academic discipline (Cuenca et al, 2021; Varea & Gonzalez-Calvo, 2021). The importance of identify barriers, effective educational strategies and usable contents are essential to the adaptation or transition of the PE discipline to the distance modality in the future.

Objective: The aim of this study was to explore the experiences of physical education teachers in Puerto Rico during and after the lockdown period as a result of the pandemic.

Methods: A total of seven PE teachers (4 males and 3 females) participated in this qualitative study. The data collection methods used were semi-structured interviews, a focus group and drawings of participants experiences. The interviews and focus group were transcribed and cross-referenced by the participants.

Results: A total of five emerging themes were identified using the Nvivo program and thematic analysis: the lack of technological pedagogical knowledge, inclusive teaching strategies, the need for self-made materials, emocional fatigue, and the loss of identity of PE as an academic discipline.

Conclusion: PE teachers continues facing great challenges with distance teaching, synchronously and asynchronously as required. In actuality, there is no curriculum that attends to the needs of students after an major event as the pandemic.

Keywords: Physical Education, distance learning, pandemic.

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The assessment of Common Content Knowledge of Basketball: an application of Rasch analysis

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Introduction: Common content knowledge (CCK) includes knowledge of rules, technique and tactics (Ward,et al, 2018). Such knowledge has been valued by nearly all physical education professions.

Objective: Developing valid and reliable CCK tests is an important step in assessing the depth of CCK possessed by PE teachers. The purpose of this study was to develop a test of basketball CCK (TBCK) using Rasch model.

Methods: Content development of the test began in collecting 268 multiple choice questions for TBCK from 8 basketball experts . 15 experts teachers who knew middle and high school PE teaching and Curriculum Standards very well ranked the importance of the test and 32 questions were left, refer to rules, etiquette, techniques and tactics. The test was then given to 98 PETE students (67% males and 33% females) from five provinces.

Results: 53(54%) of students indicated that they had half year of basketball training, and 35 (36%) had a special training one or two years in college. Twenty-nine out of 32 questions demonstrated good item-model fit (Infit/Outfit 0.5 and 1.5 logits). Item difficulty ranged from -1.93 to 1 logits. The Wright map showed large gaps between person ability estimates and item difficulty levels at the higher ends of the map. It reveals there is a lack of difficult questions to test students' basketball knowledge.

Conclusion: The TBCK is the first tool to measure CCK of basketball in physical education in China. The Rasch analysis provided evidence

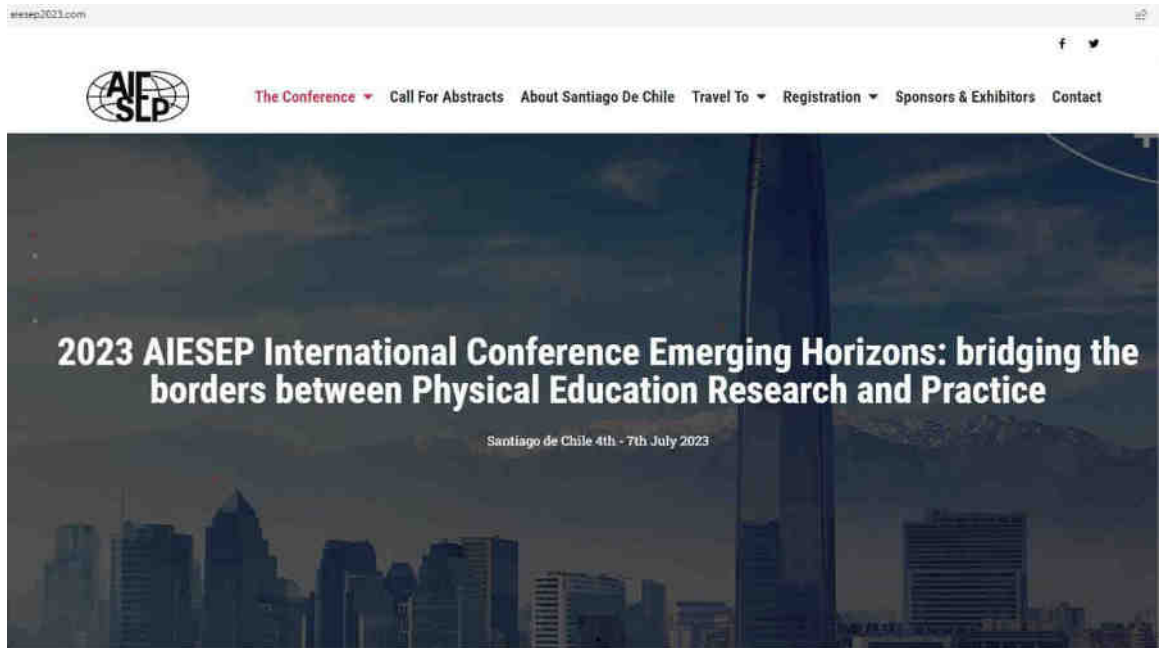
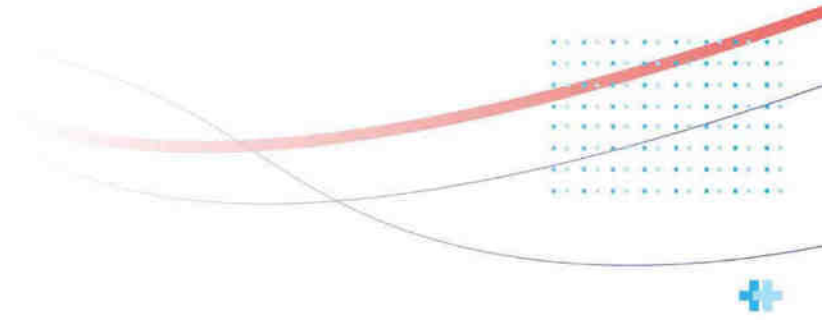
for valid and reliable of TBCK, further item refinement is needed.

Keywords: common content knowledge, rasch model, validation

References:

1. Ward P, He Y, Wang X, et al. Chinese secondary physical education teachers' depth of specialized content knowledge in soccer[J]. Journal of teaching in physical education, 2018, 37(1): 101-112.
2. He Y, Ward P, Wang X. Validation of a common content knowledge test for soccer[J]. Journal of Teaching in Physical Education, 2018, 37(4): 407-412.

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Normas para Publicação

A *Revista de Educação Física / Journal of Physical Education* utiliza o portal de submissão em Sistema Eletrônico de Editoração de Revistas (SEER) para submissão e avaliação por pares dos artigos científicos. Por favor, leia cuidadosamente todas as *Instruções aos Autores* antes de apresentar seu artigo. Estas instruções também estão disponíveis online em: <https://www.revistadeeducacaofisica.com/instru-aut>

Instruções gerais

Os estudos publicados pela *Revista de Educação Física / Journal of Physical Education* são artigos originais, de revisão, estudos de caso, breves relatos e comentários, este último a convite. Os estudos de interesse são aqueles que enfoquem a atividade física e sua relação com a saúde e aspectos metodológicos relacionados ao treinamento físico de alta intensidade, bem como estudos epidemiológicos que procurem identificar associações com a ocorrência de lesões e doenças no esporte e os que apliquem neurociência ao treinamento físico. Confira o Escopo.

Depois de ler cuidadosamente as Instruções aos Autores, insira seu manuscrito no respectivo Modelo/*Template*, bem como as informações sobre os autores, e demais informações obrigatórias, na Página Título e, então, submeta seu artigo acessando o sistema eletrônico.

A *Revista de Educação Física / Journal of Physical Education* considera todos os manuscritos para avaliação desde que a condição originalidade de publicação seja atendida; isto é, que não se trate de duplicação de nenhum outro trabalho publicado anteriormente, ainda que do próprio autor.

Ao submeter o manuscrito para a *Revista de Educação Física / Journal of Physical Education* o autor infere declaração tácita de que o trabalho não está sob consideração ou avaliação de pares, nem se encontra aceito para publicação ou no prelo e nem foi publicado em outro lugar.

O manuscrito a ser submetido não pode conter nada que seja abusivo, difamatório, obsceno, fraudulento ou ilegal.

Por favor, observe que a *Revista de Educação Física / Journal of Physical Education* utiliza a plataforma verificadora de plágio <http://plagiarisma.net/> para avaliar o conteúdo dos manuscritos quanto à

originalidade do material escrito. Ao enviar o seu manuscrito para a *Revista de Educação Física / Journal of Physical Education*, você concorda que essa avaliação pode vir a ser aplicada em seu trabalho em qualquer momento do processo de revisão por pares e de produção.

Qualquer autor que não respeite as condições acima será responsabilizado pelos custos que forem impostos à *Revista de Educação Física / Journal of Physical Education* por seu manuscrito, o qual será rejeitado ou retirado dos registros. É fundamental conferir a seção [Ética e Boas Práticas em Pesquisa](#).

Preparação do Manuscrito

Os manuscritos são aceitos em português e, também, em inglês. No caso de submissão em língua inglesa, caso a língua materna do autor não seja o inglês, durante os procedimentos de submissão eletrônica, será necessário anexar, em documentos suplementares, o comprovante da revisão do trabalho quanto ao idioma, por um revisor nativo inglês. Este padrão de exigência, está em consonância à *praxis* realizada por periódicos de alta qualidade e visa assegurar a correção idiomática, para que os trabalhos publicados pela *Revista de Educação Física / Journal of Physical Education* sejam amplamente reconhecidos no meio científico internacional.

Um artigo original típico não poderá exceder 4.000 palavras não incluindo referências, tabelas, figuras e legendas. Trabalhos que excederem esta quantidade de palavras deverão, antes da submissão, ser revisados criticamente em relação ao comprimento. A contagem de palavras do artigo deverá constar na Página Título. Artigos que excederem em muito a esta quantidade de palavras deverão ser acompanhados de carta-justificativa ao editor a fim de solicitar excepcionalidade para a publicação. Para citações literais curtas, utilize aspas, citações

literais longas (mais de duas linhas) estas devem ser em parágrafo destacado e recuado. Notas de rodapé não devem ser usadas.

Por favor, considere que a inclusão de um autor se justifica quando este contribuiu sob o ponto de vista intelectual para sua realização. Assim, um autor deverá ter participado da concepção e planejamento do trabalho, bem como da interpretação das evidências e/ou da redação e/ou revisão das versões preliminares. Todos os autores deverão ter aprovado a versão final. Por conseguinte, participar de procedimentos de coleta e catalogação de dados não constituem critérios para autoria. Para estas e outras pessoas que tenham contribuído para a realização do trabalho, poderá ser feita menção especial na seção Agradecimentos (Ver e baixar o Modelo/Template).

Considera-se a quantidade de 6 (seis) um número aceitável de autores. No caso de um número maior de autores, deverá ser enviada uma carta explicativa ao Editor descrevendo a participação de cada um no trabalho.

Nota importante: *É imprescindível que TODOS OS COAUTORES sejam incluídos no sistema por ocasião da Submissão*, o que não é possível a posteriori. Confira atentamente sua submissão antes de concluí-la.

Para todos os manuscritos linguagem não discriminatória, é obrigatória.

Tabelas, equações ou arquivos de imagem deverão ser incorporados ao texto, no local apropriado.

Durante o processo de submissão, o autor correspondente deverá declarar que o manuscrito em tela não foi previamente publicado (excetuando-se o formato Resumo/Abstract), e que o mesmo não se encontra sob apreciação de outro periódico, nem será submetido a outro jornal até que a decisão editorial final seja proferida.

Os manuscritos devem ser compilados na seguinte ordem:

1. Página Título (inserida em documentos suplementares)
2. Resumo
3. Palavras-chave
4. Corpo do texto
5. Agradecimentos
6. Declaração de conflito de interesses

7. Declaração de financiamento
8. Referências
9. Apêndices (conforme o caso)

Estatísticas

As análises estatísticas devem estar contidas na seção Métodos e devem explicar os métodos utilizados no estudo.

Diretrizes para relato de pesquisa científica

Os autores são incentivados a utilizar as diretrizes para relatórios de pesquisa relevantes para o tipo de estudo fornecidas pela Rede EQUATOR (mais detalhes abaixo). Isso garante que o autor fornecerá informações suficientes para que editores, revisores e leitores possam compreender como foi realizada a pesquisa; e para julgar se os resultados são susceptíveis de confiabilidade.

As principais listas de checagem a serem seguidas, correspondentes aos tipos de estudo, são as seguintes:

- Ensaio clínico randomizado controlado (ECR): *Consolidated Standards of Reporting Trials* (CONSORT). Tais estudos deverão ter sido registrados em base de dados conforme as recomendações SCIELO e LILACS confira:

<http://espacio.bvsalud.org/boletim.php?articulo=05100440200730> . O número de registro deverá constar ao final do Resumo / Abstract.

- Revisões sistemáticas e meta-análises: diretrizes e orientações: PRISMA.

- Estudos observacionais em epidemiologia: *Strengthening the Reporting of Observational Studies in Epidemiology* (STROBE).

- Qualidade de pesquisas via Web: *Improving the Quality of Web Surveys: The Checklist for Reporting Results of Internet E-Surveys* (CHERRIES).

Ilustração de capa

Solicita-se aos autores que enviem uma ilustração de capa (colorida) que reflita a pesquisa científica em tela para compor a versão eletrônica do artigo e possivelmente a capa do volume em que for publicado. Não é item obrigatório e é sem custo adicional, assim, os autores são encorajados enviar esta imagem representativa de seu trabalho. Esta imagem deverá ter uma resolução de 1200 dpi.

Modelos

Recomenda-se fortemente a utilização do Modelo (*template*) formatado. Formate seu artigo inserindo-o no respectivo documento modelo de seu tipo de estudo.

Lista de checagem pré-submissão

A fim de reduzir a possibilidade de o seu manuscrito vir a ser devolvido, confira:

Informações sobre o(s) autor(es):

- Você forneceu detalhes de todos os seus coautores?
- As informações inseridas no Sistema Eletrônico de Editoração de Revistas (SEER) são as mesmas constantes na Página título manuscrito?

Manuscrito comprimento e formatação:

- Você verificou se o seu manuscrito não excede as quantidades limite para a contagem de palavras, número de tabelas e / ou figuras, e número de referências?
- Conferiu se o seu resumo está no formato correto?
 - Todas as seções estão em espaço duplo?
 - Você inseriu os números de linha contínuos na margem esquerda?
 - Você inseriu números de página no rodapé à direita?
- A página título foi devidamente elaborada e anexada separadamente em Documentos Suplementares?

Tabelas:

- Você já incorporou todas as tabelas no texto principal?
- Todas as tabelas foram citadas no texto?
- Você forneceu títulos e legendas adequados?
- Tabelas longas foram enviadas como apêndices?

Figuras:

- As figuras foram preparadas (preferencialmente em cores) e com a resolução apropriada?
 - Foram fornecidas em formato aceitável e são de qualidade suficiente?
- Você inseriu todas as figuras no texto (em locais apropriados)?
 - Todas as figuras foram citadas no texto?
 - Você forneceu legendas apropriadas para as figuras?

Referências:

- Todas as referências foram citadas no texto?

- Citações e referências foram inseridas de seguindo o estilo *Vancouver of Imperial College of London*?

Documentos Suplementares e apêndices:

- Os documentos suplementares foram fornecidos em formato aceitável?
- Foram citados no texto principal?

Declarações:

- Você incluiu as declarações necessárias em matéria de contribuição, interesses, compartilhamento de dados e aprovação ética?

Listas de checagem para a descrição de pesquisa científica:

- Você seguiu as diretrizes apropriadas para o relato de seu tipo de estudo?
- Você forneceu os três Pontos-Chave em destaque de seu trabalho (na Página Título)?

Permissões:

- Você já obteve do detentor dos direitos de voltar a usar qualquer material publicado anteriormente?
- A fonte foi devidamente citada?

Revisores:

- Você forneceu os nomes dos colaboradores preferenciais e não preferenciais?

Manuscritos revisados:

- Você já forneceu tanto uma cópia marcada quanto uma cópia limpa do seu manuscrito?
- Você forneceu uma carta ao Editor respondendo ponto por ponto as questões e comentários do revisor e do editor? (Baixe no site o *Formulário de Avaliação* utilizado pelos revisores).

Itens obrigatórios na submissão:

1. Página de título

Deverá conter:

- Título completo com, no máximo, 150 caracteres com espaços
- Título resumido com, no máximo, 75 caracteres com espaços
- Contagem de palavras do Resumo
- Contagem de palavras do Corpo do texto
- Citar 3 (três) pontos de destaque referentes aos resultados do estudo em contribuição ao conhecimento
 - Nomes completos, titulação, e-mails dos autores e afiliações dos autores
 - Palavras-chave (até cinco) para fins de indexação
 - Indicação do autor correspondente

- Contatos: endereço postal, números de telefone do autor correspondente
- Financiamento e instituições patrocinadoras (se for o caso)
- Declaração de Conflito de Interesses

Por favor, note que o endereço de e-mail do autor correspondente será normalmente exibido no artigo impresso (PDF) e no artigo online. Baixe o Modelo (*template*) da *Página Título*.

Para preservar o anonimato durante o processo de revisão por pares, a *Página Título* deverá ser submetida em Documentos Suplementares.

A importância do título do trabalho

O título e resumo que você fornece são muito importantes para os mecanismos de busca na internet; diversos dos quais indexam apenas estas duas partes do seu artigo. Seu título do artigo deve ser conciso, preciso e informativo. Leia mais em *Otimizando a visibilidade do seu artigo na internet*.

2. Resumo

Para todos os tipos de artigo, o resumo não deve exceder 250 palavras e deve sintetizar o trabalho, dando uma clara indicação das conclusões nele contidas. Deve ser estruturado, com as seções: Introdução, Métodos, Resultados e Conclusão. Artigos de Revisão apresentarão as seções: Introdução, Discussão e Conclusão. Os Modelos devem ser utilizados.

Artigos em língua portuguesa obrigatoriamente deverão apresentar o Resumo em ambas as línguas: português (Resumo) e inglês (Abstract). Em nenhum caso ultrapassando a contagem de palavras limite.

3. Palavras-chave

O manuscrito deve ter de 3 a 5 palavras-chave. É de fundamental importância que os autores, revisores e editores empreguem todos os esforços para garantir que os artigos sejam encontrados online, com rapidez e precisão e, de preferência, dentro das três principais palavras-chave indicadas. Nesse contexto, a utilização adequada das palavras-chave é de fundamental importância. Por favor, para escolha suas palavras-chave consultando os Descritores em Ciências da Saúde da Biblioteca Virtual de Saúde (BVS) e/ou o *Mesh Terms*. Deve-se ter todo o cuidado para escolher as palavras-chave porque o uso de palavras-chave adequadas ajuda a

umentar as possibilidades do artigo vir a ser localizado e, por conseguinte, citado; há forte correlação entre resultados exibidos online e subseqüente citações em artigos de periódicos (leia mais sobre isso em *Otimizando a visibilidade do seu artigo na internet*). Os mecanismos de busca na Internet são os principais pontos de partida. Os alunos estão cada vez mais propensos a iniciar sua pesquisa usando Google Acadêmico™, em vez começar por pontos de partida tradicionais como bibliotecas físicas e/ou periódicos impressos. Os termos das palavras-chave podem ser diferentes do texto real usado no título e no resumo, mas devem refletir com precisão do que se trata o artigo.

4. Corpo do texto

Os textos deverão ser produzidos em formato Word 2003 ou mais recente, utilizando fonte tipo Times New Roman, tamanho 12 pontos, com margem de 3 cm do lado esquerdo, em espaço duplo. O texto poderá conter títulos e subtítulos, margeados à esquerda. Os títulos deverão ser em negrito e apenas com a primeira letra maiúscula. Subtítulos deverão ser destacados apenas em itálico. Se necessário, o segundo nível de subtítulo, deverá ser apenas sublinhado. Devem ser evitados níveis excedentes a estes. Por favor, baixe o Modelo (*template*) referente ao seu tipo de artigo, e insira seu trabalho no formato específico.

As seções que estruturam obrigatoriamente os diferentes tipos de artigos devem ser consultadas na seção Tipos de Artigos.

Todos os demais detalhes devem ser consultados na seção Estilo e formatação.

5. Agradecimentos

Agradecimentos especiais. Os homenageados devem consentir em ser mencionados.

6. Declaração de conflito de interesses

Seção obrigatória no artigo. Declarar se existe algum tipo de conflito de interesses entre autores e/ou instituições quanto à publicação do artigo. Seção obrigatória a figurar após o corpo do texto (utilize os Modelos).

7. Declaração de financiamentos

Seção obrigatória do artigo. Declarar a instituição patrocinadora do estudo. Seção obrigatória a figurar antes das referências (utilize os Modelos).

8. Referências

Mantenha suas referências atualizadas verificando estudos mais recentes no tema e, também, faça uma busca em nossos arquivos, se faça a citação. Os autores são responsáveis pela exatidão das referências citadas e devem ser conferidas antes de se submeter o manuscrito. O número máximo de citações é de 40 referências; excetuando-se artigos de revisão. Os autores deverão respeitar este limite. A *Revista de Educação Física / Journal of Physical Education* utiliza o estilo de referências bibliográficas *Vancouver - Imperial College London* (veja os exemplos abaixo). O estilo está disponível no gerenciador de referências gratuito *Zotero*, que funciona diretamente no Mozilla Firefox. Primeiro deve-se instalar o aplicativo, instalar o plugin para seu editor de texto e depois baixar o respectivo estilo. Note que os títulos dos periódicos e livros são apresentados em itálico e o DOI (veja abaixo), se disponível, deve ser incluído.

Citações no texto

Ao fazer uma citação no texto, caso haja mais de um autor, use a expressão "et al." após o nome do primeiro autor. As referências devem ser numeradas sequencialmente conforme forem surgindo ao longo do texto. As referências citadas em figuras ou tabelas (ou em suas legendas e suas notas de rodapé) devem ser numeradas entre parênteses, de acordo com o local no texto onde essa tabela ou figura, na primeira vez em que for citada. Os números de referência no texto devem ser inseridos imediatamente após a palavra (sem espaçamento entre as palavras) antes da pontuação, por exemplo: "(...) outro(6)", e não "(...) outro (6)". Onde houver mais de uma citação, estas devem ser separadas por vírgula, por exemplo: (1,4,39). Para as sequências de números consecutivos, dar o primeiro e o último número da sequência separadas por um hífen, por exemplo, (22-25). Caso se trate de um livro, as páginas deverão ser referidas.

A lista de referências

As referências devem ser numeradas consecutivamente na ordem em que são mencionadas no texto. Somente os trabalhos publicados ou no prelo devem ser incluídos na lista de referências. Comunicações pessoais ou dados não publicados devem ser citados entre parênteses no texto com o nome(s) da(s) fonte(s) e o ano.

Na lista de referências, caso uma citação refira-se a mais de 3 autores, listar os 6 primeiros e adicionar "et al.". Utilize um espaço apenas entre palavras até ao ano e, em seguida, sem espaços. O título da revista deve estar em itálico e abreviado de acordo com o estilo do Medline. Se o jornal não está listado no Medline, então ele deve ser escrito por extenso.

Por favor, note que, se as referências não estiverem de acordo com as normas, o manuscrito pode ser devolvido para as devidas correções, antes de ser remetido ao editor para entrar no processo de revisão.

Exemplos de citação na lista:

Artigos de periódicos

1. Dunn M. Understanding athlete wellbeing: The views of national sporting and player associations. *Journal of Science and Medicine in Sport*. [Online] 2014;18: e132–e133. Available from: doi:10.1016/j.jsams.2014.11.118

2. Bize R, Johnson JA, Plotnikoff RC. Physical activity level and health-related quality of life in the general adult population: a systematic review. *Preventive Medicine*. [Online] 2007;45(6): 401–415. Available from: doi:10.1016/j.ypmed.2007.07.017.

Livros

1. Åstrand P-O. *Textbook of work physiology*. 4th ed. Champaign, IL: Human Kinetics; 2003.

2. Kenney WL, Wilmore J, Costill D. *Physiology of Sport and Exercise*. 5th ed. Champaign, IL - USA: Human Kinetics; 2012. 642 p.

Citações eletrônicas

Websites são referenciados por URL e data de acesso. Esta última, muito importante, pois os sites podem ser atualizados e as URLs podem mudar. A data de "acessado em" pode ser posterior à data de aceitação do artigo.

Artigos de periódicos eletrônicos

1. Bentley DJ, Cox GR, Green D, Laursen PB. Maximising performance in triathlon: applied physiological and nutritional aspects of elite and non-elite competitions. *Journal of Science and Medicine in Sport / Sports Medicine Australia*. [Online] 2008;11(4): 407–416. Available from: doi:10.1016/j.jsams.2007.07.010

Digital Object Identifier (DOI)

A DOI é uma rede que foi criada para identificar uma propriedade intelectual em

ambiente on-line. É particularmente útil para os artigos que são publicados on-line antes de aparecer na mídia impressa e que, portanto, ainda não tenham recebido os números tradicionais volume, número e páginas referências. Assim, o DOI é um identificador permanente de todas as versões de um manuscrito, seja ela crua ou prova editada, on-line ou na impressão. É requerida a inclusão do DOI na lista de referências sempre que houver.

9. Apêndices

Tabela muito extensas, figuras e outros arquivos podem ser anexados ao artigo como apêndices, em arquivos separados, conforme o caso.

Estilo e formatação

1. Estilo de redação

O texto deve ser elaborado em estilo científico, sucinto e de fácil leitura (leia mais em *Estilo científico de redação*). São desejáveis: um título informativo, um resumo conciso e uma introdução bem escrita. Os autores devem evitar o uso excessivo da voz passiva e empregar desnecessariamente abreviaturas produzidas dentro do próprio texto. Tal será aceito no caso de abreviatura que se refere à(s) variável (eis) objeto de estudo. As considerações quanto aos aspectos éticos da pesquisa envolvendo seres humanos devem constar ao final da seção Métodos (use os modelos/*templates*). As figuras e tabelas devem ser utilizadas para aumentar a clareza do artigo. Por favor, considere, em todos os momentos, que seus leitores não serão todos especialistas em sua disciplina.

2. Idioma

O manuscrito deve ser em português do Brasil ou em inglês. Este último pode ser britânico ou americano, todavia, o texto deverá ser padronizado não se admitindo mistura de idiomas. Todos os artigos deverão apresentar o Resumo em português e o Abstract em inglês.

Autores cuja língua nativa não seja o inglês deverão submeter seu trabalho à revisão/tradução prévia de um revisor nativo e enviar em documentos suplementares o certificado da respectiva tradução, assegurando a correção textual e a qualidade da produção, a fim de garantir credibilidade internacional aos conteúdos apresentados.

Alguns exemplos de sites que oferecem esse tipo de serviço são *Elsevier Language Services* e *Edanz Editing*. Existem, ainda,

diversos outros sites que oferecem esses serviços; nenhum dos quais de responsabilidade desta revista, sendo que a responsabilidade de revisão textual idiomática é encargo dos respectivos autores. Recomenda-se aos autores que revisem seus trabalhos após a tradução/revisão idiomática, pois, muitas vezes, podem ocorrer erros contextuais referentes às especificidades de cada área.

Destaca-se que artigos em língua inglesa ganham maior visibilidade no meio acadêmico científico internacional, portanto, a produção científica neste formato é fortemente encorajada.

3. Formatação textual

O texto deve ser processado no formato Word, com fonte do tipo Times New Roman, 12 pontos, em espaço duplo, com margem de três centímetros (3 cm) no lado esquerdo, com cabeçalhos e rodapés seguindo o formato contido nos modelos (*templates*). Note, por exemplo, que o único elemento no rodapé é o número de página que deve ser localizado ao final da página, à direita. Os números das linhas deverão ser inseridos no documento principal (configura-se no Word, no menu <Layout da Página>). Não utilize notas de rodapé, a menos que sejam absolutamente necessárias. O manuscrito deverá ter a seguinte estrutura: Introdução, Métodos, Resultados, Discussão e Conclusões, sendo aceitos subtítulos. Para elaboração de artigos consulte a seção Tipos de artigo e para formatar seu artigo de acordo com o respectivo modelo, baixe-o (download) em Modelos (*templates*).

Os autores devem fazer todos os esforços para assegurar que os manuscritos sejam apresentados da forma mais concisa possível. Idealmente, o corpo principal do texto não deve exceder 4.000 palavras, excluindo-se as referências. Manuscritos mais longos podem ser aceitos a critério do respectivo Editor de Seção, a quem os autores deverão enviar em Documentos Suplementares carta-justificativa que deverá acompanhar textos com volume excedente de palavras. Consulte no item Tipos de artigos a quantidade de palavras para cada tipo.

O estilo da redação científica caracteriza-se fundamentalmente por clareza, simplicidade e correção gramatical. A clareza na redação é obtida quando as ideias são

apresentadas sem ambiguidade, o que garante a univocidade (característica do que só pode ser interpretado de uma única forma); a clareza está relacionada com o domínio de conhecimento que se tem de determinado assunto. Para mais detalhes sobre o Estilo científico de redação (clique aqui).

Tipos de artigos

Leia as instruções que se seguem e, em seguida, baixe o respectivo Modelo (*template*) para seu trabalho. A contagem de palavras não inclui o Abstract, nem Tabelas e Referências.

- Artigos Originais

Os artigos originais conterão no máximo 4.000 palavras, e terão a seguinte estrutura: Introdução, Métodos, Resultados, Discussão e Conclusão.

- Artigos de Revisão

Os artigos de revisão poderão ser do tipo revisão sistemática com metanálise, revisão sistemática sem metanálise ou revisão integrativa e revisão narrativa. Conterão no máximo 6.000 palavras e, conforme o caso, terão a seguinte estrutura: Introdução, Métodos, Resultados e Discussão, e Conclusão. A seção Resultados e Discussão compõe-se de uma integração dos resultados com a discussão dos achados. Consulte o artigo Revisão sistemática x revisão narrativa (1) para maior compreensão.

1. Rother ET. Systematic literature review X narrative review. Acta Paulista de Enfermagem. [Online] 2007;20(2): v – vi. Available from: doi:10.1590/S0103-21002007000200001 [Accessed: 31st March 2015]

- Estudo de Caso e Breve Relato

Os estudos de caso e breves relatos conterão no máximo 2.500 palavras, e terão a seguinte estrutura: Introdução, Métodos, Resultados, Discussão e Conclusão.

- Comentários

Comentários são publicados a convite do editor-chefe da **Revista de Educação Física / Journal of Physical Education**. Este tipo de artigo apresenta a análise de cientistas e outros especialistas sobre temas pertinentes ao escopo revista. Devem conter no máximo 1.200 palavras e o resumo. Comentários poderão ser submetidos à revisão por pares, a critério do Editor.

Outros tipos de artigos em Gestão Desportiva

- Notas de Pesquisa

Notas de pesquisa artigos relatam teste de desenvolvimento de projeto e análise de dados, não contêm mais que 4.000 palavras, e têm a seguinte estrutura: Introdução, Métodos, Resultados e Discussão, e Conclusão.

- Resenha de Livro

Revisões de livros referem-se àqueles fora de edição (Fora da Imprensa), contêm não mais que 6.000 palavras, e têm a seguinte estrutura: Introdução, Desenvolvimento e Conclusão.

Em Aspectos Históricos da Educação Física

- Historiografia, Pesquisa Histórica e Memória

Historiografia, pesquisa histórica e memória são tipos de artigos que não contêm mais de 6.000 palavras, e têm a seguinte estrutura: Introdução, Métodos, Resultados e Discussão.

Modelos (templates)

Junto às seções principais componentes do manuscrito, devem figurar as seções Pontos Fortes e Limitações do Estudo, Declaração de Conflito de Interesse e Declaração de Financiamento, sendo seções obrigatórias.

IMPORTANTE: Artigos fora da formatação, estipulada nestas instruções, poderão ser imediatamente excluídos da consideração para publicação.

Tabelas e figuras

As tabelas e as figuras (preferencialmente coloridas) devem ser incluídas no texto do manuscrito e numeradas com algarismos arábicos em ordem sequencial (ex.: Tabela 1, Tabela 2, e assim por diante). Os títulos das tabelas devem precedê-las, enquanto que as legendas das figuras devem ser inseridas abaixo delas. Os detalhes das especificações para as figuras estão explicadas em detalhes a seguir.

Tabelas

As tabelas devem ser autoexplicativas, com título informativo posicionado acima da tabela, claro e conciso. Maiores detalhes podem ser colocados em legendas. As unidades de linha e coluna devem ser sem linhas verticais ou horizontais, à exceção da linha com cabeçalhos dos dados (títulos de colunas), do corpo principal da tabela, e ao final do corpo da tabela. Confira os Modelos.

Figuras

Cada figura deverá ser enviada em duas versões. A versão colorida deverá ser inserida normalmente no texto com as respectivas legendas das figuras (abaixo da figura). Adicionalmente, em Documentos Suplementares, deverá ser enviada a versão em preto e branco, cujo arquivo deverá ser nomeado com a sigla "pb" ao final (Exemplo: "Fig1 pb.jpg"), ambas versões (no texto - colorida e em documentos suplementares - em preto e branco) deverão ter resolução mínima de 300 dpi. Fotografias, desenhos e mais de um gráfico, em uma mesma figura, devem ser referidos como Figura 1, Figura 2 e assim por diante. Devem ser numerados na ordem em que aparecerem no texto. Diagramas e desenhos devem ter formato digital (.jpg ou .jpeg).

Para a versão impressa da revista, o padrão das figuras é preto e branco. Portanto, por favor, produza suas figuras e imagens em preto e branco da melhor forma possível (confira a resolução e o formato de seus arquivos) para que ilustre e informe adequadamente ao leitor do que se trata.

Por favor, assegure-se que a resolução de cada arquivo está dentro do estabelecido. O total de Figuras e/ou Tabelas de um manuscrito não excederá a quantidade de 4 (quatro). Para artigos estudo de caso, breve relato e comentário esta quantidade é de no máximo 2 (duas).

Adicionalmente, encorajamos os autores a enviarem imagens (fotografias) ilustrativas do trabalho de pesquisa a que se refere o artigo. Veja o item Ilustração da Capa.

Considerações sobre ética em pesquisa envolvendo seres humanos

A *Revista de Educação Física / Journal of Physical Education* aceita apenas trabalhos que tenham sido conduzidos em conformidade com os mais altos padrões de ética e de proteção dos participantes. Os princípios norteadores constam da Resolução nº 466 do Conselho Nacional de Saúde do Ministério da Saúde, publicada em 12 de dezembro de 2012, a qual abrange princípios mundiais sobre o tema incluindo a Declaração de Helsinque, os quais oferecem maior proteção tanto aos voluntários quanto aos pesquisadores na condução de pesquisas científicas envolvendo seres humanos ou informações sobre estes. Todo o trabalho experimental envolvendo

seres humanos deverá estar em conformidade com os requisitos estipulados e, conforme o caso, com as leis do país em que o trabalho foi realizado. O manuscrito deve conter uma declaração de que o estudo foi aprovado por um comitê de ética reconhecido ou por um conselho de revisão. Ainda que o objeto de estudo seja informações de domínio público, como em dados estatísticos populacionais ou outra, a aprovação ética formal deverá ser obtida para confirmar que houve a devida consideração das questões relacionadas à ética. Da mesma forma, no caso de análises de dados retrospectivas, tais como aqueles produzidos por meio de dados de monitoramento de longo prazo de atletas ou de outras categorias profissionais em que sejam realizados testes de aptidão física, a aprovação quanto à ética envolvendo seres humanos deverá ser obtida.

A declaração sobre a aprovação ética deve ser feita ao final da seção Métodos e o número de registro da aprovação obtida, caso haja um, deverá ser incluído.

Avaliação por pares (duplo cego)

O processo de análise e apreciação dos artigos é realizado por especialistas (mestres e doutores) das diversas áreas do conhecimento integrantes do escopo da revista, com o anonimato dos autores e dos pareceristas ("avaliação duplo cega"). Assim, o manuscrito não deve incluir nenhuma informação que identifique claramente os autores ou suas afiliações, as quais constarão somente na página título que é enviada separadamente ao artigo. Por favor, certifique-se de remover das propriedades do seu documento Word itens que identifiquem os autores.

As informações sobre os autores e autor correspondente deverão ser enviadas em arquivo à parte intitulado Página Título. Consulte o Modelo (*Template*) disponível.

Termos e nomenclaturas

Termos e nomenclaturas devem respeitar o Sistema Internacional para símbolos, unidades e abreviaturas.

Os cientistas têm buscado aumentar a comparabilidade dos estudos e, também, a confiabilidade. Nesse contexto, os termos e constructos a serem utilizados pelos autores devem preferencialmente valer-se daqueles já existentes e bem estabelecidos na literatura. Os autores devem considerar os termos

constantes no **Guia para Atividades Físicas do Centro de Controle de Doenças dos Estados Unidos** (1), no qual os cientistas buscaram padronizar conceitos e terminologias. Alguns exemplos de conceitos e definições constantes no Guia mencionado são:

- Atividade física:
- Atividade física regular
- Exercício
- Esporte
- Exercício aeróbico

Além disso, para mensurar o nível de atividade física, a literatura sugere que sejam utilizados instrumentos já existentes, que utilizam com padronização do gasto calórico em METs (equivalente metabólico) pelo Compendio de Atividades Físicas de Ainsworth et al. (2). Os mais utilizados são o Questionário de Baecke (3) e o International Physical Activity Questionnaire – IPAQ (4).

Referências:

1. Department of Health and Human Services D. Physical activity guidelines for Americans. *Okla Nurse*. 2009;53(4): 25.

2. Ainsworth BE, Haskell WL, Whitt MC, Irwin ML, Swartz AM, Strath SJ, et al. Compendium of physical activities: an update of activity codes and MET intensities. *Medicine and Science in Sports and Exercise*. 2000;32(9 Suppl): S498–S504.

3. Baecke JA, Burema J, Frijters JE. A short questionnaire for the measurement of habitual physical activity in epidemiological studies. *American Journal of Clinical Nutrition*. 1982;36: 936–942.

4. Craig CL, Marshall AL, Sjöström M, Bauman AE, Booth ML, Ainsworth BE, et al. International physical activity questionnaire: 12-country reliability and validity. *Medicine and science in sports and exercise*. [Online] 2003;35(8): 1381–1395. Available from: doi:10.1249/01.MSS.0000078924.61453.FB [Accessed: 5th July 2012]

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Aceito: Esta decisão implica que o artigo poderá ainda passar por ajustes textuais, com a colaboração do Corpo Editorial, a fim de que o relato científico apresente-se da melhor qualidade.

Revisões requeridas: Esta definição implica que pequenos ajustes ainda são necessários para que o artigo avance até o aceite.

Submeter a nova rodada: Esta definição implica que o artigo necessita ser amplamente editado a fim de que uma avaliação mais aprofundada seja realizada por parte dos revisores. Comumente esta decisão é tomada em casos nos quais o artigo possui mérito devido ao desenho experimental mas precisa avançar bastante na redação a fim de efetivamente transmitir com qualidade os achados do estudo.

Rejeitar: Esta decisão é adotada para os estudos os quais os revisores não verificam inovações suficientes no desenho

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