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**Tese**

**Efeitos das múltiplas ameaças de estereótipo de gênero na aprendizagem motora em mulheres**

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Pelotas, 2025

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**Efeitos das múltiplas ameaças de estereótipo de gênero na  
aprendizagem motora em mulheres**

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*"Que nada nos defina. Que nada nos sujeite. Que a liberdade seja a nossa própria substância."*

Simone de Beauvoir

Dedico esta tese às 156 mulheres que participaram deste estudo e a todas que, todos os dias, rompem as amarras dos estereótipos de gênero. Cada passo dado por nós na ciência, na educação e na vida é uma movimentação de toda uma estrutura que, um dia, será realmente livre e igualitária.

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## Resumo

HEIDRICH, Caroline Valente. **Efeitos das múltiplas ameaças de estereótipo de gênero na aprendizagem motora de mulheres**. 2025. 159 f. Tese (Doutorado em Educação Física) – Programa de Pós-Graduação em Educação Física, Escola Superior de Educação Física e Fisioterapia, Universidade Federal de Pelotas, Pelotas, 2025.

A ameaça de estereótipo pode comprometer o desempenho e a aprendizagem motora de indivíduos pertencentes a grupos estigmatizados. Entretanto, indivíduos podem ser impactados por múltiplas ameaças de estereótipo, baseado em duas dimensões principais: o alvo (eu-como-alvo ou grupo-como-alvo) e a fonte da ameaça (eu-como-fonte, interno-como-fonte ou externo-como-fonte). Para investigar essas relações, foram realizados três estudos. O primeiro consistiu em mapear sistematicamente os efeitos da ameaça de estereótipo em desempenho e aprendizagem motora, identificando os tipos de estereótipos, formas de manipulação, características das populações, mecanismos envolvidos e principais achados. A maioria dos experimentos envolveram desempenho (n = 65) e a minoria de aprendizagem motora (n = 14). Os estereótipos de gênero foram os mais estudados, seguidos por idade, raça, peso, status esportivo, não praticantes de exercícios, deficiência, altura e status socioeconômico. Alguns estudos examinaram estereótipos combinados (por exemplo, gênero e raça). Os adultos foram a população mais estudada, seguidos por crianças, idosos e adolescentes. A manipulação explícita foi a mais utilizada. Poucos estudos avaliaram os mecanismos subjacentes, como competência percebida, autoeficácia e nervosismo. A maioria dos achados indicam que a ameaça do estereótipo afeta negativamente o desempenho e a aprendizagem motora. O segundo estudo investigou os efeitos de múltiplas ameaças de estereótipo de gênero em uma tarefa de drible no futebol, com 100 mulheres inexperientes e com baixa identificação esportiva. As participantes foram distribuídas em cinco grupos: quatro com diferentes combinações de alvo (self ou grupo) e fonte (ingroup ou outgroup), denominados ST/self-outgroup, ST/self-ingroup, ST/ group-outgroup, ST/self-ingroup e um grupo de estereótipo anulado (NST). Todas endossaram o estereótipo de inferioridade feminina no futebol. O grupo NST apresentou melhor desempenho nas fases de prática, retenção e transferência, além de maior autoeficácia. Os demais grupos não diferiram entre si. O terceiro estudo avaliou os efeitos de diferentes alvos de ameaça no desempenho e aprendizagem motora de jogadoras de futsal com alta identificação com o domínio. As participantes foram divididas em três grupos: ameaça com fonte externa e alvo grupo (STG), ameaça com fonte externa e alvo eu (STS) e grupo de ameaça anulada (NST). Na prática, o grupo STG teve o pior desempenho do que STS e NST, enquanto na retenção o grupo NST superou STG e STS, que não diferiram entre si. O grupo NST também apresentou maior autoeficácia, e todos os grupos não endossaram estereótipos. Além de escolherem um foco regulatório de promoção. Conclui-se que diferentes estereótipos e formas de manipulação impactam negativamente o desempenho e a aprendizagem motora em populações distintas, além de mecanismos explicarem o efeito. As múltiplas ameaças de estereótipo de gênero impactam a aprendizagem motora de mulheres inexperientes e com baixa identificação com o domínio e de jogadoras experientes e com alta identificação.

**Palavras-chave:** aprendizagem motora; ameaça de estereótipo; gênero; habilidade motora.

## Abstract

HEIDRICH, Caroline Valente. **Effects of multiple gender stereotype threats on women's motor learning**. 2025. 159 f. Thesis (Ph.D. in Physical Education) – Graduate Program in Physical Education and Physiotherapy, School of Physical Education, Federal University of Pelotas, Pelotas, 2025.

Stereotype threat can compromise motor performance and learning in individuals belonging to stigmatized groups. However, individuals may be affected by multiple stereotype threats, based on two main dimensions: the target of the threat (self-as-target or group-as-target) and the source of the threat (self-as-source, ingroup-as-source, or outgroup-as-source). To investigate these relationships, three studies were conducted. The first study systematically mapped the effects of stereotype threat on motor performance and learning by identifying the types of stereotypes, forms of manipulation, population characteristics, underlying mechanisms, and key findings. Most experiments focused on performance ( $n = 65$ ), with fewer addressing motor learning ( $n = 14$ ). Gender stereotypes were the most frequently studied, followed by age, race, weight, athletic status, physical inactivity, disability, height, and socioeconomic status. Some studies examined combined stereotypes (e.g., gender and race). Adults were the most commonly studied population, followed by children, older adults, and adolescents. Explicit manipulations were the most frequently used. Few studies assessed underlying mechanisms such as perceived competence, self-efficacy, and anxiety. Overall, the findings indicate that stereotype threat negatively affects motor performance and learning. The second study examined the effects of multiple gender-based stereotype threats on a soccer dribbling task among 100 inexperienced women with low domain identification. Participants were assigned to five groups: four combining different threat targets (self or group) and sources (ingroup or outgroup), labeled as ST/self-outgroup, ST/self-ingroup, ST/group-outgroup, ST/group-ingroup, and one group with stereotype threat nullified (NST). All participants endorsed the stereotype of female inferiority in soccer. The NST group showed superior performance during the practice, retention, and transfer phases, as well as higher self-efficacy. The other groups did not differ from each other. The third study evaluated the effects of different threat targets on the motor performance and learning of experienced futsal players with high domain identification. Participants were divided into three groups: stereotype threat with an external source and group-as-target (STG), external source and self-as-target (STS), and a no-threat group (NST). During practice, the STG group performed worse than STS and NST. In the retention phase, the NST group outperformed both STG and STS, which did not differ from each other. The NST group also demonstrated higher self-efficacy. All groups rejected the stereotype and adopted a promotion-focused regulatory orientation. In conclusion, different stereotypes and forms of manipulation negatively affect motor performance and learning across various populations, and certain psychological mechanisms may explain these effects. Multiple gender stereotype threats impact motor learning in both inexperienced women with low domain identification and experienced players with high domain identification.

**Keywords:** motor learning; stereotype threat; gender; motor skill.

## **Apresentação**

A presente tese de doutorado consta de um volume elaborado para cumprir exigências à obtenção do título de doutora em Educação Física, no Programa de Pós-graduação em *Stricto sensu*, da Escola Superior de Educação Física e Fisioterapia (ESEF) da Universidade Federal de Pelotas (UFPEL). O nível de descrição é no formato de artigos e os elementos textuais estão constituídos das seguintes seções:

- I. Introdução;
- II. Projeto de pesquisa ajustado de acordo com sugestões da banca;
- III. Relatório de atividades de campo;
- IV. Artigo científico 1, intitulado “Stereotype threat effects on motor performance and learning: a systematic review of 30 years”;
- V. Artigo científico 2, intitulado “Multiple Gender Stereotype Threats in Motor Performance and Learning”;
- VI. Artigo científico 3, intitulado “Effects of multiple gender stereotype threats on motor learning in female futsal players”;
- VII. Conclusão.

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## 1. Introdução

A aprendizagem motora, enquanto fenômeno, é compreendida como um conjunto de processos relacionados à prática ou à experiência, resultando em ganhos relativamente duradouros na capacidade de realizar performances qualificadas (Schmidt; Lee, 2016). Enquanto campo de investigação, a aprendizagem motora busca compreender os mecanismos e processos responsáveis pela aquisição de habilidades motoras, bem como os fatores que podem facilitar ou prejudicar esse processo (Tani, 2005).

Nas últimas duas décadas, estudos de aprendizagem motora tem buscado investigar a influência de fatores motivacionais no desempenho e na aprendizagem motora (Chiviacowsky, 2020; Wulf; Lewthwaite, 2016). Os fatores motivacionais são fundamentados na teoria da autodeterminação, em especial na microteoria das necessidades psicológicas básicas (Ryan; Deci, 2000) e na teoria *OPTIMAL* (Wulf; Lewthwaite, 2016). A primeira sugere que quando as necessidades fundamentais de autonomia, competência e relacionamento social são atendidas, há um aumento da motivação intrínseca. A segunda sugere que três pilares são determinantes para que a aprendizagem motora seja otimizada: a expectativa de desempenho aumentada, a autonomia e o foco externo de atenção. Por outro lado, fatores que frustram essas necessidades ou esses pilares podem prejudicar o desempenho e a aprendizagem motora, como é o caso da ameaça de estereótipo (Cardozo; Chiviacowsky, 2015; Heidrich; Chiviacowsky, 2015; Mousavi *et al.*, 2025).

A ameaça de estereótipo ocorre quando crenças negativas estereotipadas sobre determinado grupo, relevantes em determinado contexto, podem comprometer o desempenho de indivíduos que se identificam com esse grupo social (Steele; Aronson, 1995). Além disso, autores pioneiros sugerem que é a preocupação que alguém pode ter sobre como será visto e tratados por outros (Steele; Aronson, 1995; Steele, 1997). Tal fenômeno pode afetar três tipos de resultados de desempenho, sendo eles: ameaça cognitiva, social e sensório-motora (Schmader *et al.*, 2008).

Estudos que investigaram os efeitos da ameaça de estereótipo na aprendizagem motora têm crescido substancialmente nos últimos anos. Estereótipos de gênero prejudicaram a aprendizagem motora de mulheres (Cardozo *et al.*, 2021; Heidrich; Chiviacowsky, 2015; Nahid *et al.*, 2023), meninas (Mousavi *et al.*, 2021; 2023;

2025) e meninos (Bastos *et al.*, 2023). Entretanto, apesar de ter prejudicado o desempenho, parece não ter influenciado os resultados no teste de retenção em homens (Cardozo *et al.*, 2022). Efeitos prejudiciais foram observados em estudos de estereótipo de sobrepeso e obesidade em adultos (Cardozo; Chiviawsky, 2015) e crianças (Rabeinia *et al.*, 2023), em estudos sobre estereótipos de status socioeconômico (Lima *et al.*, 2024) e de idade em idosos (Chiviawsky *et al.*, 2018).

Além dos efeitos da ameaça de estereótipo observados no desempenho e na aprendizagem motora, diferentes mecanismos subjacentes foram investigados, sugerindo afetar a autoeficácia (Heidrich; Chiviawsky, 2015), a motivação intrínseca (Cardozo; Chiviawsky, 2015; Cardozo *et al.*, 2022), os níveis de afetos positivos (Cardozo *et al.*, 2021) e o foco regulatório (Mousavi *et al.*, 2023). Esses estudos estão de acordo com a literatura e sugerem que a influência da ameaça de estereótipo pode comprometer o desempenho e a aprendizagem motora dos indivíduos. No entanto, como as ameaças afetam, a quem elas afetam de maneira diferenciada, sob quais condições e moderadores elas surgem e de que forma são enfrentadas ou compensadas, ainda não foram bem esclarecidas (Shapiro; Neuberg, 2007).

Com base na *Multi-Threat Framework* (Shapiro; Neuberg, 2007) as autoras propõem que indivíduos estereotipados podem enfrentar até seis tipos distintos de ameaça, resultantes da combinação entre dois domínios: o alvo e a fonte da ameaça. O alvo trata-se de quem será julgado, ou seja, a reputação pessoal (eu-como-alvo) ou a reputação do grupo social ao qual a pessoa pertence (grupo-como-alvo). A fonte da ameaça refere-se a origem do julgamento, podendo advir da própria pessoa (eu-como-fonte), de pessoas pertencentes ao grupo externo (externo-como-fonte) ou pertencentes ao próprio grupo (interno-como-fonte).

Estudos pioneiros indicam que pessoas com alta identificação social com grupos estereotipados — como em contextos raciais, religiosos e étnicos (Laar *et al.*, 2008; Shapiro, 2011; Shapiro; Neuberg, 2007), ou mulheres fortemente identificadas com seu gênero (Wout *et al.*, 2007) — são mais suscetíveis às ameaças do tipo “grupo-como-alvo”. Por outro lado, indivíduos pertencentes a grupos estereotipados com baixa identificação social tendem a ser mais afetados por ameaças que atingem a reputação pessoal, do tipo “eu-como-alvo”, como aquelas associadas a doenças mentais, cegueira adquirida ou obesidade (Carels *et al.*, 2013; Shapiro, 2011). Outros efeitos foram observados em estudos de múltiplas ameaças de gênero: assinar o próprio nome em testes matemáticos afetou negativamente o desempenho de

mulheres, em comparação com as que atribuíram nomes fictícios (Zhang *et al.*, 2013), jogadoras de rúgbi avaliaram melhor o desempenho feminino quando a ameaça era individual (“eu-como-alvo”) e pior quando era direcionada às mulheres de modo geral (grupo-como-alvo). Em contrapartida, em jogos de videogame, a ameaça do estereótipo impactou igualmente o desempenho das mulheres, independentemente do alvo da ameaça (Pennington *et al.*, 2018).

No que diz respeito à fonte da ameaça, indivíduos com alta identificação social tendem a apresentar menor endosso aos estereótipos negativos, sendo, portanto, menos vulneráveis às ameaças do tipo “eu-como-fonte” e mais suscetíveis àquelas oriundas de fontes externas, como “grupo interno-como-fonte” ou “grupo externo-como-fonte” (Shapiro; Neuberg, 2007; Shapiro, 2011). Em contraste, indivíduos com baixa identificação social podem internalizar estereótipos negativos, tornando-se mais vulneráveis à ameaça “eu-como-fonte”. Contudo, estudos indicam que não há diferenças significativas no impacto das fontes externas de ameaça de gênero (“grupo interno-como-fonte” versus grupo externo-como-fonte”), tanto no desempenho de mulheres em videogames (Pennington *et al.*, 2018), quanto em estudantes de educação física imaginando-se jogando sob observação de homens ou mulheres (Laurin, 2019). Assim, a identificação social parece modular os efeitos da ameaça de estereótipo, embora os resultados sobre estereótipos de gênero em contextos de múltiplas ameaças ainda sejam inconclusivos.

Até onde sabemos, não há registros de estudos experimentais envolvendo desempenho ou aprendizagem motora com foco em múltiplas ameaças – ou seja, que realizem uma comparação direta entre diferentes combinações de alvos e fontes. Entretanto, ainda que de forma indireta, diferentes direções podem ser sugeridas em relação aos alvos e fontes utilizados. Por exemplo, afirmar que mulheres são inferiores aos homens no desempenho de determinadas tarefas esportivas (Cardozo *et al.*, 2021; Heidrich; Chiviawowsky, 2015; Mousavi *et al.*, 2021, 2023; Saemi *et al.*, 2023) ou que pessoas com sobrepeso e obesidade têm dificuldade em realizar tarefas motoras (Cardozo; Chiviawowsky, 2015; Rabeinia *et al.*, 2023) pode ser percebido como uma ameaça do tipo “grupo-como-alvo”. Por outro lado, informar que o desempenho pessoal de meninas (Soltanifar *et al.*, 2024), de idosas (Chiviawowsky *et al.*, 2018) ou indivíduos com baixo status socioeconômico (Lima *et al.*, 2024) seria investigado pode ser interpretado como uma ameaça do tipo “eu-como-alvo”. Já em relação à fonte da ameaça, manipulações sutis demonstram que mulheres realizando

tarefas de futebol (Cardozo *et al.*, 2021; Nahidi *et al.*, 2024) ou de arremessos (Soltanifar *et al.*, 2024) na presença de experimentadores homens podem caracterizar uma ameaça do tipo “grupo externo-como-fonte”, que parece ter prejudicado o desempenho.

Embora o nível de identificação com o domínio não seja diretamente contemplado pelo Multi-Threat Framework, ele é apontado por Steele (1997) como um fator determinante para que a ameaça de estereótipo afete o comportamento dos indivíduos. Segundo o autor, quanto maior a importância atribuída ao bom desempenho em determinadas tarefas para a autoestima e a identidade pessoal, maiores são as chances de o indivíduo ser impactado por essa ameaça. No contexto do comportamento motor, a ameaça de estereótipos raciais comprometeu mais o desempenho de jogadores de golfe altamente identificados com o domínio do que o de jogadores com baixa identificação (Stone *et al.*, 1999; Stone, 2002). No entanto, no caso da ameaça de estereótipos de gênero, não foram observados efeitos no desempenho de mulheres, independentemente do nível de identificação (Deshayes *et al.*, 2025). Neste estudo, os autores sugerem que pesquisas sobre aprendizagem motora realizadas com pessoas inexperientes provavelmente envolvem indivíduos com baixa identificação com o domínio. Assim, destacam a importância de considerar o grau de identificação dos participantes para uma interpretação mais precisa dos achados.

Diante da sub-representação feminina em esportes coletivos e do impacto dos estereótipos negativos, que afastam meninas e mulheres das práticas motoras, bem como da ausência de estudos sobre desempenho e aprendizagem motora que investiguem os efeitos das múltiplas ameaças de estereótipo e seus impactos em pessoas com diferentes níveis de identificação com o domínio, a presente tese, estruturada em formato de artigo, tem como objetivos:

Artigo 1: Realizar uma revisão sistemática da literatura sobre os efeitos da ameaça de estereótipo no desempenho e na aprendizagem motora, investigando os diferentes tipos de estereótipos, as populações afetadas, os tipos de manipulação utilizados e os mecanismos subjacentes. Além disso, o artigo visa catalogar, analisar e discutir os principais achados dos estudos publicados nos últimos trinta anos.

Artigo 2: Investigar os efeitos das múltiplas ameaças de estereótipo de gênero, focando especificamente na combinação de diferentes alvos (eu ou grupo) e fontes (interna ou externa), no desempenho e na aprendizagem motora de uma tarefa de

futebol em mulheres inexperientes e com baixa identificação com o domínio. Além disso, examinar os mecanismos subjacentes, como o endosso do estereótipo e a autoeficácia.

Artigo 3: Analisar os efeitos das múltiplas ameaças de estereótipo de gênero, através da combinação de diferentes alvos (eu ou grupo) com fonte advinda de membros de grupo externo, no desempenho e na aprendizagem motora de uma tarefa de precisão de chutes em diferentes zonas-alvo em mulheres jogadoras de futsal com alta identificação com o domínio. Ainda, investigar os efeitos em mecanismos subjacentes como endosso do estereótipo, autoeficácia e foco regulatório.

***Projeto de pesquisa***  
***(Tese de Caroline Valente Heidrich)***

**UNIVERSIDADE FEDERAL DE PELOTAS**  
**Escola Superior de Educação Física Programa de Pós-Graduação em**  
**Educação Física**



Projeto de Tese

**Efeitos de diferentes ameaças de estereótipo de gênero na  
aprendizagem motora em mulheres**

**Caroline Valente Heidrich**

Pelotas, 2023

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Projeto de tese apresentado ao  
Programa de Pós-Graduação em  
Educação Física da Escola Superior  
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## Resumo

HEIDRICH, Caroline Valente. **Efeitos de diferentes ameaças de estereótipo de gênero na aprendizagem motora em mulheres**. 2023. 112f. Projeto de Tese (Doutorado) - Programa de Pós-Graduação em Educação Física, Curso de Doutorado em Educação Física, Universidade Federal de Pelotas, Pelotas/RS, 2023.

Estudos têm mostrado que pessoas expostas à ameaça de estereótipo são afetadas negativamente em desempenho cognitivo, motor e na aprendizagem motora. Na aprendizagem motora, poucos estudos até o momento investigaram os estereótipos de gênero, sobrepeso ou idade em adultos, idosos e crianças. Observa-se a necessidade de estudos em diferentes populações, tipos de estereótipo e a quem e de que forma essa ameaça pode influenciar. Por exemplo, estudos de desempenho motor afirmam que pessoas identificadas como domínio que tem sua autoestima ligadas à capacidade atlética são mais suscetíveis aos efeitos da ameaça. O objetivo do presente estudo é investigar os efeitos da ameaça de estereótipo de gênero na aprendizagem motora em indivíduos com alta e baixa identificação com o domínio, considerando o alvo a quem a informação estereotipada é direcionada (reputação envolvida: eu ou o grupo) e a fonte da ameaça (externa ou interna ao grupo estereotipado). Uma revisão sistemática sobre estudos de ameaça de estereótipo envolvendo desempenho e/ ou aprendizagem motora será apresentada e dois experimentos envolvendo tais variáveis serão conduzidos. Além disso, potenciais mecanismos subjacentes aos efeitos da ameaça de estereótipo no desempenho e na aprendizagem motora serão investigados, como motivação intrínseca, auto eficácia, endosso do estereótipo e self-handicapping.

**Palavras-chave:** aprendizagem motora; ameaça de estereótipo; aprendizagem; gênero.

## Abstract

HEIDRICH, Caroline Heidrich. **Effects of different gender stereotype threats on motor learning in Women**. 2023. 112f. Thesis Project (Doctorate degree) - Programa de Pós-Graduação em Educação Física, Curso de Doutorado em Educação Física, Universidade Federal de Pelotas, Pelotas/RS, 2023.

Studies have shown that people exposed to stereotype threat are negatively affected in several learning domains. In motor learning, only a few studies to date have investigated gender, overweight, or age stereotypes in adults or children. There is a need for studies on different populations, types of stereotypes, and how this threat can influence motor learning. For example, studies of motor performance state that people identified with the domain that has their self-esteem linked to athletic ability are more susceptible to the effects of threat. The aim of the present study is to investigate the effects of gender stereotype threat on motor learning in individuals with high and low identification with the domain, considering the target to whom the stereotypical information is directed (reputation involved: self or the group) and the source of threat (external or internal to the stereotyped group). A systematic review of stereotype threat studies involving performance and/or motor learning will be presented, and two experiments observing such variables will be conducted. Furthermore, potential mechanisms underlying the effects of stereotype threat on performance and motor learning will be investigated, such as intrinsic motivation, self-efficacy, stereotype endorsement, and self-handicapping.

Keywords: motor learning; stereotype threat; learning; gender

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## 1. Introdução

A capacidade do ser humano em desempenhar e aprender novas habilidades motoras é foco de estudiosos do movimento humano há décadas. Especificamente na área da aprendizagem motora, pesquisadores buscam verificar fatores ligados ao processamento de informações ligados à tarefa, observando que, de fato, alguns são facilitadores ou ao contrário, tem a capacidade de prejudicar a aprendizagem. São exemplo de fatores que afetam a aprendizagem motora a organização da prática (Lee; Magill, 1983) a frequência de feedback (Chiviacowsky; Campos; Domingues, 2010; Salmoni; Schmidt; Walter, 1984), a observação (Granados; Wulf, 2007; Shea, Wulf e Whitacre, 1999) e o foco de atenção (Mcnevin; Shea; Wulf, 2003; Chiviacowsky; Wulf; Wally, 2008).

Pesquisas mais recentes têm sugerido que fatores motivacionais podem também interferir sobre a forma como os aprendizes processam tais informações influenciando o desempenho e aprendizagem motora (para revisão, ver Wulf; Lewthwaite, 2016). O feedback de comparação social (Lewthwaite; Wulf, 2010b), o feedback de comparação temporal (Chiviacowsky; Drews, 2016), o feedback positivo (Chiviacowsky; Wulf, 2007), a autonomia dada ao aprendiz através da prática autocontrolada, (Chiviacowsky; Wulf, 2002; Kaefer *et al.*, 2014) e as concepções de capacidade (Drews; Chiviacowsky; Wulf, 2013; Wulf; Lewthwaite, 2009) são exemplos de variáveis com função motivacional que têm mostrado afetar o desempenho e a aprendizagem de habilidades motoras.

Entre as pesquisas com foco nas variáveis sócio-cognitivo-afetivo- motoras, estão os estudos sobre a ameaça de estereótipo, que teve origem na psicologia social na investigação sobre o desempenho cognitivo, através de estudos de Steele e Aronson (1995). Para os autores, a ameaça de estereótipo ocorre quando crenças negativas estereotipadas sobre determinado grupo, relevantes em determinado contexto, podem comprometer o desempenho de indivíduos que se identificam com esse grupo social. Além disso, sugerem que é a preocupação que alguém pode ter sobre como será visto e tratados por outros (Steele; Aronson, 1995; Steele, 1997). Tal fenômeno pode afetar três tipos de resultados de desempenho, sendo eles: ameaça cognitiva, social e sensório-motora. (Gentile; Boca; Giammusso, 2018).

No campo motor, a partir da pesquisa de Stone *et al.* (1999) que investigou os efeitos da ameaça de estereótipo de raça no desempenho motor através de uma tarefa de golfe, uma crescente linha de investigação tem verificado a influência da ameaça de estereótipo de gênero (Beilock *et al.*, 2006; Cardozo; Chalabaev; Chiviacowsky., 2022), raça (Grimm *et al.*, 2016; Stone, 2002), idade (Branaghan; Gray, 2010; Chiviacowsky; Cardozo; Chalabaev, 2018) e peso (Cardozo; Chiviacowsk, 2015; Rabeinia; Saemi; Abedanzadeh, 2021), entre outros.

No campo da aprendizagem motora, a ameaça de estereótipo começou a ser investigada a partir do estudo de Heidrich e Chiviacowsky (2015). Tal experimento verificou que mulheres que praticaram uma tarefa de drible de futebol sob condição de ameaça mostraram piores níveis de aprendizagem da tarefa do que mulheres que praticaram sem ameaça. A partir deste estudo, o estereótipo de gênero (Cardozo; Chalabaev; Chiviacowsky, 2022; Cardozo *et al.*, 2021; Mousavi *et al.*, 2021; Mousavi *et al.*, 2023), de peso (Cardozo; Chiviacowsky, 2015; Rabeinia; Saemi; Abedanzadeh, 2021) e de idade (Chiviacowsky; Cardozo; Chalabaev, 2018) foram conduzidos e confirmam a influência prejudicial do estereótipo negativo na aprendizagem motora.

Os efeitos do estereótipo de gênero têm sido ostensivamente investigados no campo motor (para revisão, ver Chalabaev *et al.*, 2013) e mostrado que, de fato, mulheres estereotipadas tem seu desempenho e aprendizagem prejudicados quando informadas de que as mulheres são inferiores aos homens em determinadas tarefas (Heidrich; Chiviacowsky, 2015; Laurin; Renard-Moulard; Comettl, 2020) ou mesmo pelo simples fato de que o investigador é do sexo masculino (Cardozo *et al.*, 2021). Tal efeito pode ser verificado em tarefas culturalmente estereotipadas como futebol (Chalabaev; Sarrazin; Fontayne, 2009; Heidrich; Chiviacowsky, 2015; Mousavi; Gray; Deshayes, 2021) e direção de automóveis (Moè; Cadinu; Maass, 2015), por exemplo. Porém, também é presente em tarefas neutras como lance livre de basquete (Howard; Borgella, 2018) ou de rebater ritmicamente uma bolinha de tênis (Huber *et al.*, 2015). Além disso, os experimentos verificam tais efeitos na aprendizagem motora tanto em pessoas inexperientes na tarefa (Heidrich; Chiviacowsky, 2015; Mousavi *et al.* 2023) como no desempenho motor de mulheres que são experts no esporte investigado, como jogadoras profissionais de futebol, por exemplo (Chalabaev *et al.*, 2013; Hermann; Vollmeyer, 2016).

Pode-se sugerir, portanto, que ameaça de estereótipo pode prejudicar as mulheres de formas distintas e, mesmo em mulheres que se identificam com o

domínio motor, como jogadoras experientes, os efeitos podem ser prejudiciais. De fato, estudos de desempenho motor (Stone *et al.*, 1999; Stone, 2002) sugerem que pessoas com alto grau de identificação com o domínio tendem a ser mais prejudicadas pela manifestação do estereótipo, enquanto este pode não ter relevância na motivação de outras (Shapiro, 2011). Para Shapiro e Neuberg (2007), múltiplas formas de ameaça de estereótipo podem ser ou não vivenciadas pelos sujeitos, dependendo do tipo de ameaça, da identificação pessoal do sujeito com o grupo social a qual pertencem e do nível de endosso de tal estereótipo, por exemplo. Assim, mulheres podem ser afetadas com maior ou menor grau quando são expostas à ameaça de gênero.

A partir do escasso número de estudos que investigaram os efeitos da ameaça de estereótipo na aprendizagem motora, especialmente no que tange estereótipo de gênero em mulheres com diferentes níveis de identificação com o domínio, são necessárias novas pesquisas que esclareçam se, assim como apresentado em estudos de desempenho motor, tal grau de identificação pode interferir na aprendizagem. Além disso, até o momento, parece que nenhum estudo verificou através de testes motores se as múltiplas formas de estereótipo proposto por Shapiro e Neuberg (2007) apresentam diferentes efeitos no desempenho ou aprendizagem motora.

Diante do exposto, o presente estudo tem como objetivo analisar os efeitos da ameaça de estereótipo de gênero em mulheres a partir de três investigações apresentados em dois capítulos: o primeiro capítulo consiste em apresentar através de uma revisão sistemática os efeitos da ameaça de estereótipo no desempenho e aprendizagem motora, identificando quantos experimentos investigaram desempenho e aprendizagem, o tipo de estereótipo, a população investigada, se a ameaça de estereótipo foi manipulada de forma explícita ou sutil e ainda quais estudos utilizaram e quais mecanismos subjacentes investigados. O segundo capítulo consiste na apresentação e proposta de dois experimentos, sendo o primeiro com mulheres inexperientes e com baixa identificação com o domínio e o segundo com jogadoras de futebol com alta identificação com o domínio. Em ambos estudos, o objetivo será verificar a influência da ameaça de estereótipo de gênero na aprendizagem motora de uma tarefa de futebol em mulheres em diferentes condições ligadas à fonte ou ao alvo da ameaça. Especificamente, irão verificar a AM de mulheres na condição de ameaça de estereótipo com “eu-como-alvo”, “grupo-como-

alvo”, “grupo externo-como-fonte” e “grupo interno-como-fonte”, além de grupo controle.

## 2. Apresentação dos experimentos

Ao longo de mais de duas décadas, desde a pesquisa seminal de Steele e Aronson (1995), a ameaça de estereótipo tem sido investigada em diversos campos de pesquisa, com centenas de estudos conduzidos envolvendo o desempenho cognitivo (para revisão ver Lamont; Swift; Abrams, 2015; Pennigton *et al.*, 2016; Spencer; Logel; Davies, 2016) e uma crescente investigação no campo do desempenho (Stone *et al.*, 1999) e aprendizagem motora (Heidrich; Chiviackowsky, 2015). Steele (1997) sugere que esse fenômeno é uma ameaça situacional, capaz de afetar membros de qualquer grupo sobre o qual exista um estereótipo negativo. Esse efeito geralmente consiste em desempenho inferior em tarefas relacionadas ao domínio ao qual o grupo ou pessoa é considerada como fraco.

Apesar desta crescente linha de investigação apresentar uma série de evidências sugerindo que pessoas negativamente estereotipadas tendem a ser prejudicadas em seu desempenho (para revisão, ver Spencer; Logel; Davies, 2016), ainda existem questões a serem compreendidas em relação a como e a quem este efeito apresenta prejuízos. Exemplo disso é o estudo de Shapiro e Neuberg (2007), que sugere, por exemplo, que nem mesmo o conceito do fenômeno ameaça de estereótipo apresentado pelos pesquisadores é categórico. Ou seja, pode-se dizer que a ameaça de estereótipo ocorre quando crenças negativas estereotipadas sobre determinado grupo, relevantes em determinado contexto, podem comprometer o desempenho de indivíduos que se identificam com esse grupo (Steele; Aronson, 1995) ou é a preocupação que alguém pode ter sobre como será visto e tratados por outros (Steele, 1997). Nestes dois exemplos de conceitos pode-se verificar a ameaça de estereótipo com foco na reputação de algum grupo social em que a pessoa faz parte ou na própria reputação, respectivamente. Ainda, existem definições que podem combinar estes dois pontos de vista, como “A ameaça de estereótipo foi caracterizada como uma situação psicológica na qual os indivíduos são inibidos de realizar o seu potencial pelo reconhecimento de que possível falha poderia confirmar um estereótipo negativo que se aplica ao seu grupo e, por extensão, a si mesmos” (Schmader, 2002).

Na tentativa de buscar mais explicações para os efeitos apresentados ao longo dos anos de pesquisas sobre a temática, Shapiro e Neuberg (2007) sugerem o termo *Multi-Threat Framework*, em que a ameaça de estereótipo compreende uma estrutura

com múltiplas e distintas formas de estereótipos. De modo geral, os autores descrevem seis ameaças de estereótipo distintas que emergem da combinação de duas dimensões: a primeira questiona quem é o alvo da ameaça de estereótipo, ou seja, em quem as ações e julgamentos de alguém irão atingir, sendo o “eu” ou o “grupo a qual pertença”. Por exemplo, a ameaça de “eu-como-alvo” emerge quando a pessoa acredita que sua reputação individual será julgada em resposta ao seu desempenho. Já a ameaça de “grupo-como-alvo”, é o receio de que, em virtude de seu mau desempenho, a pessoa exponha o seu grupo social ao mau julgamento, mostrando-se assim, ser um mau embaixador do seu grupo social.

A segunda dimensão é a fonte da ameaça de estereótipo, ou seja, quem pode julgar tais ações. Nessa dimensão, três possibilidades são sugeridas: o eu, o grupo a qual pertença ou o grupo externo. Por exemplo, a ameaça do “eu-como-fonte” é o medo de que, através de seu mau desempenho, a pessoa confirme pensamentos estereotipados em sua própria mente. A segunda forma de ameaça tem origem no “grupo externo como fonte”, que é o medo de que seu desempenho pode ser julgado pelos olhos de pessoas não pertencentes ao grupo ao qual pertence. Por fim, a ameaça de “grupo interno-como-fonte”, é o medo de seu desempenho ser julgado pelos olhos de outras pessoas, porém, pertencentes ao mesmo grupo social. A figura a seguir apresenta um esquema proposto por Shapiro e Neuberg (2007) que explica as múltiplas manifestações da ameaça.

Figura 1 – Informações referentes a Multi-Threat Framework

**Table 1.** The Stereotype Threats That Make Up the Multi-Threat Framework: Six Core Stereotype Threats That Emerge Out of the Intersection of Two Dimensions: the Source of the Stereotype Threat and the Target of the Stereotype Threat

|                                 |                       | Target of the stereotype threat  |                                    |
|---------------------------------|-----------------------|----------------------------------|------------------------------------|
|                                 |                       | Self                             | Group                              |
| Source of the stereotype threat | Self                  | Self-Concept Threat              | Group-Concept Threat               |
|                                 | Other—outgroup member | Own-Reputation Threat (Outgroup) | Group-Reputation Threat (Outgroup) |
|                                 | Other—ingroup member  | Own-Reputation Threat (Ingroup)  | Group-Reputation Threat (Ingroup)  |

Fonte: Shapiro e Neuberg, 2007.

Com base nas propostas sugeridas por Shapiro e Neuberg (2007), estudos investigaram os efeitos de diferentes fontes da ameaça de estereótipo em diferentes domínios. Um desses estudos (Shapiro, 2011) verificou que pessoas com alta

identificação com o grupo social a qual pertencem e será julgado, tendem a mostrar menor endosso do estereótipo e baixa probabilidade de sofrer com o “eu-como-fonte”, porém ser mais prejudicado quando a informação estereotipada é “grupo-como-alvo”. Isso aconteceu com pessoas que destacaram sofrer ameaças por conta de sua raça, etnia e religião, grupos apontados com forte identificação coletiva e baixo endosso de estereótipo. Por outro lado, quando se lida com estereótipos com baixo senso de coletividade e pertencimento, porém com maiores chances de endossar o estereótipo, como sobrepeso e doenças mentais, os efeitos aparecem mais robustos em informações ligadas à individualidade, ou seja, a sua própria reputação, através do “eu-como-alvo”, “eu-como-fonte” do que da “grupo-como-alvo” ou “grupo-como-fonte” (Shapiro, 2011)

Outro estudo verificou tais propostas, porém através de estratégias de redução das ameaças (Shapiro *et al.*, 2013). Através de quatro experimentos, os autores verificaram o papel de um modelo de sucesso e de estratégias de autoafirmação como ferramentas para reduzir a pressão da ameaça de estereótipo usando as ameaças de “grupo-como-alvo” e de “eu-como-alvo”. Por exemplo, no primeiro experimento, ao mostrar um artigo contendo um modelo de sucesso acadêmico com uma foto de um estudante negro, estudantes universitários negros que receberam informações de ameaça de “grupo-como-alvo” foram superiores no desempenho de um teste do que participantes negros que receberam informações de “eu-como-alvo”, confirmando a hipótese dos autores de que um modelo de sucesso pertencente ao próprio grupo social seria um fator de redução da ameaça de estereótipo quando as pessoas recebessem a mesma colocando em cheque a reputação do seu grupo social do que a reputação particular. Por outro lado, quando a estratégia de redução da ameaça de estereótipo utilizada foi de autoafirmação, ou seja, descrever em escalas valores atribuídos a si mesmo, mulheres avaliadas em desempenho matemático foram mais “protegidas” quando pertencentes aos grupos “eu-como-alvo” do que “grupo-como-alvo”.

As múltiplas ameaças também serviram de base teórica para outra investigação que procurou examinar mais a fundo as diferentes formas de ameaça estereotipada que se apresentam em indivíduos que apresentam sobrepeso e obesidade (Carels; Domoff; Burmeister, 2013). Os resultados mostram que pessoas com essas características tendem a ter baixos níveis de identificação com o grupo e altos níveis de endosso de estereótipo. Em acordo com as múltiplas ameaças e conforme previsto

pelos pesquisadores, indivíduos com sobrepeso e obesidade relataram maior ameaça de estereótipo de “eu-como-alvo” e “eu-como-fonte”. Os autores sugerem que, ao contrário de outros grupos estigmatizados, que são menos propensos a aceitar estereótipos dentro de seu grupo, pessoas com sobrepeso e obesidade frequentemente tem níveis mais altos de endosso do estereótipo do que de identificação com o grupo social, ou seja, pessoas com sobrepeso e obesas.

Outra investigação avaliou além da dimensão relacionada ao alvo, como nas pesquisas anteriormente citadas, a fonte da ameaça. Neste estudo, através de dois experimentos, Pennington *et al.* (2018) verificaram o desempenho de mulheres em jogos eletrônicos, sugerindo que este domínio é fortemente estereotipado como masculino. O primeiro experimento usou a ameaça de “eu-como-alvo” e “grupo-como-alvo” e, no segundo experimento, os grupos sofreram ameaças de “grupo externo-como-fonte”, onde acreditavam que homens iriam avaliar seu desempenho, ou “grupo interno-como-fonte”, onde acreditavam que outras mulheres iriam avaliar seu desempenho. Em ambos os experimentos, não houve diferença entre os grupos e o controle. Os autores sugerem que as mulheres do grupo controle podem ter sofrido ameaça sutil, enraizada culturalmente em seus pensamentos. Além disso, julgaram que a tarefa era muito fácil para evocar uma pressão situacional.

No domínio esportivo, um estudo proposto por Laurin, Renard-Moulard e Cometti. (2020), investigou as múltiplas ameaças em mulheres e homens em relação à esportes com estereótipo de gênero, como futebol para mulheres e ginástica artística para homens. Nele, o autor verificou o papel da identificação com o grupo, habilidade percebida e condições avaliativas, através das seis ameaças propostas por Shapiro e Neuberg (2007). O estudo investigou estudantes de educação física que deveriam se imaginar, por exemplo das participantes mulheres, em um teste de futebol, e dependendo do grupo, em situações distintas, como se a avaliação era pública ou privada, o tipo de ameaça (entre as seis propostas por Shapiro; Neuberg, 2007) e habilidades percebidas. Como resultado, a alta identificação com o domínio foi mediador de todas as ameaças propostas, assim como níveis de habilidades percebidas, porém, as condições avaliativas não mostraram efeitos distintos.

Apesar da linha de investigação de desempenho e aprendizagem motora apresentarem um crescente interesse em estudos sobre ameaça de estereótipo, não foi encontrado estudos com habilidades motoras que investiguem propriamente a influência das múltiplas ameaças, como as propostas por Shapiro e Neuberg (2007).

Na aprendizagem motora, a maioria dos experimentos utilizou, indiretamente, informações estereotipadas com foco no “grupo-como-alvo”. Por exemplo, *“Estamos interessados em examinar as diferenças na capacidade de equilíbrio entre homens e mulheres. Estudos anteriores mostraram que os homens têm problemas para manter o equilíbrio em comparação com as mulheres, e estamos tentando entender por que eles tinham essas dificuldades”* (Cardozo; Chiviawowsky; Chalabaev, 2022). Mas alguns estudos utilizaram o “eu-como-alvo”, como apresentado por Chiviawowsky, Cardozo e Chalabaev (2018), que informava: *“estamos interessados em examinar as diferenças na capacidade de equilíbrio entre diferentes faixas etárias e seu desempenho será comparado ao desempenho de adultos jovens”*.

Além disso, a ameaça de estereótipo através da fonte de quem irá julgar o desempenho e aprendizagem também foi investigada de modo indireto, quando, por exemplo, Cardozo *et al.* (2021) verificaram o papel da ameaça sutil na aprendizagem motora de mulheres. Através da presença de experimentadores homens ou mulheres, os pesquisadores observaram diferenças nos níveis de aprendizagem quando avaliadas por pessoas do grupo externo. Foi verificado que o “grupo externo-como-fonte” foi um fator prejudicial na aprendizagem motora. O quadro abaixo apresenta o tipo de ameaça apresentada em cada estudo de aprendizagem motora, com o olhar para as múltiplas possibilidades de ameaça.

Quadro 1 – Estudos de aprendizagem motora, população investigada e foco da ameaça de estereótipo

| <b>Autores</b>                           | <b>Estereótipo</b> | <b>População</b>                                | <b>Foco da ameaça de estereótipo</b>                                    |
|------------------------------------------|--------------------|-------------------------------------------------|-------------------------------------------------------------------------|
| Cardozo e Chiviawowsky (2015)            | Peso               | Mulheres com sobrepeso e percepção de sobrepeso | Eu e grupo- como-alvo                                                   |
| Cardozo, Chiviawowsky e Chalabaev (2022) | Gênero             | Homens                                          | Grupo-como-alvo                                                         |
| Cardozo <i>et al.</i> (2021)             | Gênero             | Mulheres                                        | Grupo-como-alvo<br>Grupo externo-como-fonte<br>Grupo interno-como-fonte |
| Chiviawowsky, Cardozo                    | Idade              | Idosos                                          | Eu-como-alvo                                                            |

|                                      |        |                                |                  |
|--------------------------------------|--------|--------------------------------|------------------|
| e Chalabaev (2018)                   |        |                                |                  |
| Heidrich e Chiviackowsky (2015)      | Gênero | Mulheres inexperientes         | Grupo-como-alvo  |
| Mousavi, Gray e Deschayes (2021)     | Gênero | Meninas com alta identificação | Grupo-como-alvo  |
| Mousavi <i>et al.</i> , ( 2023)      | Gênero | Meninas inexperientes          | Grupo-como-alvo  |
| Rabeinia, Saemi e Abedanzadeh (2021) | Peso   | Crianças com sobrepeso         | Grupo- como-alvo |

Fonte: Elaborado pela autora, 2023.

Um dos aspectos discutidos como eliciador das ameaças é o nível de identificação que a pessoa estigmatizada tem com o domínio e o grupo social a qual pertence. Laurin, Renard-Moulard e Cometti (2020), sugerem que o alto nível de identificação aumenta a ameaça em resposta ao estereótipo, assumindo que para pessoas com alta identificação, uma ameaça que visa o grupo pode ser sentida como uma ameaça pessoal. Pessoas com forte identificação com o domínio são mais influenciadas por informações estereotipadas do que pessoas que não se identificam com o mesmo, ou seja, a ameaça de estereótipo tem menos impacto no comportamento quando o desempenho em um determinado domínio é relativamente sem importância para o valor próprio de um alvo (Steele, 1997).

Do mesmo modo, Major *et al.* (1998) sugerem que a ameaça de estereótipo também deve se manifestar de modo diferente entre pessoas com baixa ou alta identificação e acreditam que tal identificação social está relacionada a um apego ou desapego à autoestima em relação à opinião externa ou resultados em um determinado domínio, de modo que os sentimentos de valor próprio dependam ou não de sucessos ou fracassos nessa tarefa. Além disso, o nível de identificação pode ser temporário e situacionalmente específico em resposta às ameaças, porém, a exposição crônica através de estereótipos culturais, por exemplo, pode levar à ausência de identificação crônica desse domínio, o que pode afastar as pessoas destes ambientes e, neste caso específico, de tarefas motoras ou certas práticas de atividades esportivas, por exemplo.

Originalmente voltadas ao domínio cognitivo, o grau de identificação virou objeto de estudo também de pesquisadores do comportamento motor. Stone *et al.* (1999) e Stone (2002) investigaram a influência da ameaça de estereótipo racial no desempenho de tarefas de golfe. Estes pesquisadores observaram que, além de grupos negativamente estereotipados apresentarem pior desempenho do que os grupos sem a ameaça de estereótipo, quando estes indivíduos eram categorizados com alta identificação atlética, foram ainda mais afetados pela ameaça do que os com baixa identificação. Os autores utilizaram questionários para medir a relação da importância do domínio com a autoestima dos participantes, através de perguntas como, “nenhum teste atlético define quem sou”, por exemplo. Tais resultados são justificados pelos autores pela necessidade das pessoas com alta identificação em refutar tais informações estereotipadas e, com isso, terem seus níveis de ansiedade aumentados, dando mais atenção a fatores que deveriam ser automatizados, prejudicando o desempenho (Stone, 2002).

A partir dessas evidências, outros experimentos de desempenho motor selecionaram sua amostra focando em pessoas experts na tarefa escolhida e com alto nível de identificação, como jogadores e jogadoras de times profissionais futebol (Chalabaev *et al.*, 2008; Grabow *et al.*, 2019; Martiny *et al.*, 2015; Rees; Salvatore, 2015). Esses jogadores foram prejudicados em seu desempenho quando expostos a informações estereotipadas, do mesmo modo que jogadores de golfe profissionais com alta identificação com a tarefa (Beilock *et al.*, 2006) e atletas de atletismo com alto nível de autoestima física (Laurin; Renard-Moulard; Cometti, 2020). Outros pesquisadores focaram em níveis de identificação, porém com pessoas inexperientes na tarefa, como Krendl, Gainsburg e Ambady (2012) que selecionaram sua amostra através de jogadores de basquete inexperientes, mas com altos níveis de auto estima física ligada à tarefa. Neste estudo, os participantes que foram alocados em grupos de ameaça de estereótipo foram piores em comparação aos grupos sem ameaça.

Na aprendizagem motora, um experimento considerou a identificação com o domínio como base para seleção de sua amostra (Mousavi; Gray; Deshayes, 2021). Estes pesquisadores investigaram os efeitos de estereótipo de gênero na aprendizagem de uma habilidade do futebol em adolescentes e para seleção destas meninas, elas deveriam apresentar alto nível de identificação com o domínio. Entretanto, este estudo não teve como objetivo avaliar a relação entre essa identificação com a ameaça de estereótipo especificamente, mas é o primeiro

experimento envolvendo aprendizagem motora que selecionou sua amostra com esta delimitação. Os achados mostraram que o estereótipo de gênero foi prejudicial para aprendizagem de uma tarefa de futebol em adolescentes no teste de retenção, porém não houve diferença em um segundo teste de retenção quatro dias depois.

Mecanismos subjacentes têm sido investigados buscando encontrar respostas para tais comportamentos associados à ameaça de estereótipo e apresentam-se de modo distintos, dependendo de uma série de fatores (para revisão ver Spencer, 2016). Tem sido sugerido que a ameaça de estereótipo pode prejudicar a autoestima das pessoas estigmatizadas (Chalabaev *et al.*, 2013), causar desengajamento com a tarefa (Stone *et al.* 2002) e estratégias de self-handicapping (Davies *et al.*, 2002; Steele e Aronson, 1995; Stone, 2002). Ainda não avaliado em estudos de AM, o *self-handicapping* foi investigado por Stone (2002), sugerindo que possíveis explicações para o decréscimo de desempenho podem ser associadas à tais estratégias, que é quando o sujeito, ainda que inconscientemente, pode gerar auto sabotagem e justificativas para possíveis fracassos. Pode-se dizer que ele é uma estratégia defensiva pela qual as pessoas tentam atribuir um responsável ao desempenho ruim, erguendo barreiras ao seu sucesso. Estudos mostraram que esse mecanismo é relevante para justificar os efeitos deletérios da ameaça de estereótipo no desempenho cognitivo (Steele; Aronson, 1995; Steele, 1997) e motor (Stone *et al.*, 1999; Stone, 2002). Outro mecanismo ainda não investigado na AM, porém indicado como um dos fatores que podem levar os participantes ao mau desempenho é o endosso do estereótipo, como sugerido por Shapiro (2013). Investigar o quanto as participantes concordam com os estereótipos atrelados ao seu grupo social, e, em consequência a si mesmas, pode explicar achados distintos entre os grupos.

Além disso, fatores como a relevância do domínio para sua autoestima (Shapiro *et al.*, 2013) e o nível de dificuldade da tarefa, que sugere que, em tarefas difíceis, a ameaça tende a ser maior, já em tarefas consideradas fáceis, os efeitos da ameaça de estereótipo podem não aparecer (Harkins, 2006; Hively; El-Alayli, 2014) ou até mesmo ser motivacionais (Deshayes; Clément; Zory, 2020) também são apontados como possíveis eliciadores da ameaça.

Através da revisão sistemática sobre a ameaça de estereótipo, pode-se observar uma série de caminhos e explicações para pessoas que são alvos de estereótipos terem o desempenho motor prejudicados, porém ainda existe diversas lacunas no que diz respeito à aprendizagem motora. Heidrich e Chiviacowsky (2015),

através de estudo pioneiro nesta linha de pesquisa, observaram que mulheres inexperientes expostas ao estereótipo de gênero foram prejudicadas quando comparadas com outras mulheres que tiveram ameaça anulada. Outros enfoques envolvendo gênero, mulheres e futebol foram investigados, como a influência de manipulação implícita e explícita (Cardozo *et al.*, 2021) e os efeitos em adolescentes com alta identificação com o domínio (Mousavi *et al.*, 2021). Para todos estes estudos, a ameaça de estereótipo de gênero foi prejudicial ao desempenho e aprendizagem motora de mulheres. Além disso, o estereótipo de gênero foi verificado também com participantes homens (Bastos *et al.*, 2013; Cardozo; Chalabaev; Chiviawsky, 2022). Os resultados destes estudos, respectivamente, demonstram que a ameaça de estereótipo de gênero afetou negativamente o desempenho e a aprendizagem motora de meninos, e o desempenho, mas não a aprendizagem, de homens adultos.

Outros tipos de estereótipos foram investigados na aprendizagem motora como estereótipo de idade em idosos (Chiviawsky; Cardozo; Chalabaev, 2018), de peso com mulheres adultas (Cardozo; Chiviawsky, 2015) e com crianças (Rabeinia; Saemi; Abedanzadeh, 2021) com sobrepeso e percepção de sobrepeso. Com esse compilado de estudos, pode-se observar evidências de que a ameaça de estereótipo influencia negativamente a aprendizagem de pessoas inexperientes em tarefas motoras e populações distintas. Porém, os efeitos da ameaça de estereótipo na aprendizagem motora de pessoas com expertise e/ou identificação com o domínio ainda é uma lacuna.

Outro questionamento é se pessoas responderão de forma distinta quando as informações estereotipadas em relação à tarefa e ao desempenho será atrelada ao conceito individual, ou seja, colocando em cheque a própria reputação do indivíduo ou se estas informações são atreladas ao conceito de grupo, ou seja, sugerindo que o seu desempenho naquela tarefa irá colocar em cheque a reputação do grupo social ao qual o indivíduo pertence. Além disso, verificar efeitos de diferentes fontes de ameaça foi verificado somente em Cardozo *et al.* (2021), porém, de forma sutil através do gênero dos experimentadores. Até o presente momento, estas perguntas não foram respondidas nos estudos de aprendizagem motora.

Na tentativa de esclarecer estes questionamentos, dois experimentos utilizando tarefas de futebol e explorando o estereótipo de gênero em relação a este domínio serão propostos a seguir. Os dois experimentos irão investigar a ameaça de

estereótipo de gênero em mulheres, sendo o primeiro com mulheres inexperientes e com baixa identificação com o domínio e o segundo com mulheres experientes no futebol e com alta identificação com domínio. Especificamente, irão verificar os efeitos das múltiplas ameaças, propostas por Shapiro e Neuberg (2007) no desempenho e aprendizagem motora, através de diferentes condições: “eu-como-alvo”, “grupo-como-alvo”, “grupo externo-como-fonte” e “grupo interno-como-fonte”. Para ajudar a compreender os possíveis achados, alguns mecanismos subjacentes serão investigados, como autoeficácia (Heidrich; Chiviawsky, 2015), níveis de afetos positivos e negativos (Cardozo *et al.*, 2020) e motivação intrínseca (Cardozo; Chiviawsky, 2015), que já mostraram efeitos em pessoas estereotipadas em estudos de aprendizagem motora e, ainda não investigados nessa linha investigativa, o endosso do estereótipo e *self-handcapping* (Stone *et al.*, 1999; Stone, 2002).

Deste modo, assim como sugerido pela “Multi-Threat Framework”, entender como a ameaça de estereótipo pode influenciar de modo distinto diferentes grupos e pessoas, tem importância pragmática e teórica. Teoricamente, o campo da aprendizagem motora poderá fornecer evidências de que os efeitos da ameaça de estereótipo podem ser diferentes mesmo quando investigado em uma mesma população, no caso, mulheres, contribuindo assim com a área de pesquisa e sugerindo novos caminhos para investigações futuras. Além disso, uma vez verificado que diferentes manifestações da ameaça de estereótipo podem atingir de forma distinta diferentes populações, as propostas de intervenções para reduzir estes efeitos deletérios ligados à ameaça de estereótipo não deverão se dar de forma universal e sim, com foco nas particularidades de cada grupo e fonte de ameaça.

## 2.1 Experimento 1

### 2.1.2 Objetivo geral

O objetivo do estudo é investigar os efeitos de diferentes focos e fontes de ameaça de estereótipo de gênero na aprendizagem motora de uma tarefa de futebol em mulheres com baixa identificação com o domínio, além de verificar potenciais mecanismos subjacentes como *self-handcapping*, endosso do estereótipo, motivação intrínseca, autoeficácia, afetos positivos e foco regulatório.

### 2.1.3 Hipóteses

Estudos na área cognitiva apontam que a ameaça de estereótipo pode se manifestar de forma diversa em diferentes pessoas, não sendo um fenômeno singular. Segundo os autores, a quem a informação estereotipada irá atingir (alvo) e de onde parte esta informação (fonte), podem ser ou não fatores eliciadores da ameaça (Shapiro; Neuberg, 2007). Além disso, o quanto a pessoa se identifica com o domínio em que está sendo avaliado também pode interferir no desempenho de uma pessoa sob ameaça de estereótipo (Shapiro, 2011; Stone *et al.*, 1999). Para os autores, pessoas com baixa identificação com o domínio podem não sofrer uma pressão da ameaça tão forte como seus pares com alta identificação, por não se influenciar tanto com a reputação do grupo no qual pertencem. Em relação à fonte da ameaça, estudos de AM que investigaram mulheres não identificadas com o futebol (no caso não praticantes da modalidade) que foram expostas à ameaça sutil através da presença de um experimentador homem (fonte externa ao grupo estereotipado), foram inferiores em seus resultados quando comparadas com mulheres que realizaram a tarefa sob olhar de uma experimentadora mulher (Cardozo *et al.*, 2021) (fonte interna ao grupo estereotipado).

Com base nisso e na literatura, acredita-se que:

1. Grupos praticando com ameaça do estereótipo apresentarão piores resultados em todas as medidas em relação ao grupo controle.
2. Por se tratar de mulheres com baixa identificação com o domínio, as que praticarem sob condição de ameaça de “eu-como-alvo”, ou seja, que terão sua auto reputação questionada, serão mais afetadas do que as que praticarem “grupo-como-alvo”, que acreditarão que o seu desempenho irá afetar a reputação das mulheres em geral.
3. Já em relação a fonte da ameaça, acredita-se que as mulheres que experimentarem a ameaça “grupo externo-como-fonte” serão mais prejudicadas do que as que experimentarem ameaça de “grupo interno- como- fonte”.
4. Para medidas de self-handcapping, o presente estudo considera que as participantes do grupo (AE/eu-alvo/externo-fonte) apresentarão maiores efeitos. Já para medidas de endosso de estereótipo, considera-se que as mulheres que praticarem em condição de ameaça de estereótipo apresentarão maiores níveis do que as do grupo controle.

#### 2.1.4 Participantes

Serão convidadas a participar do estudo 100 mulheres adultas inexperientes na tarefa e com baixa identificação com o domínio. Para seleção da amostra, essas mulheres serão recrutadas após preencherem, previamente ao dia do experimento, o questionário para medir a relevância do domínio nas suas percepções de autoestima, através de uma adaptação do questionário *Athletic Disengagement Scale (ADS)* proposto por Stone *et al.* (1999), e adaptado para a população deste experimento que contará as questões: *"Meu desempenho esportivo no campo de futebol é muito importante para mim"* *"O Futebol é importante para mim e parte importante de quem sou"* e *"O meu desempenho em testes de futebol é importante para minha autoestima atlética"* Cada pergunta deverá ser respondida usando um 1 (discordo totalmente) a 7 (concordo totalmente). Como em estudos anteriores (Stone *et al.*, 1999; Stone., 2002), as participantes serão classificadas baixa identificação com o domínio com base em uma divisão mediana e serão designadas aleatoriamente para as condições experimentais descritas abaixo. A participação será de forma voluntária e o consentimento será mediante assinatura do Termo de Consentimento Livre e Esclarecido (TCLE) (Anexo A). O projeto será encaminhado ao Comitê de Ética em Pesquisa da Universidade Federal de Pelotas.

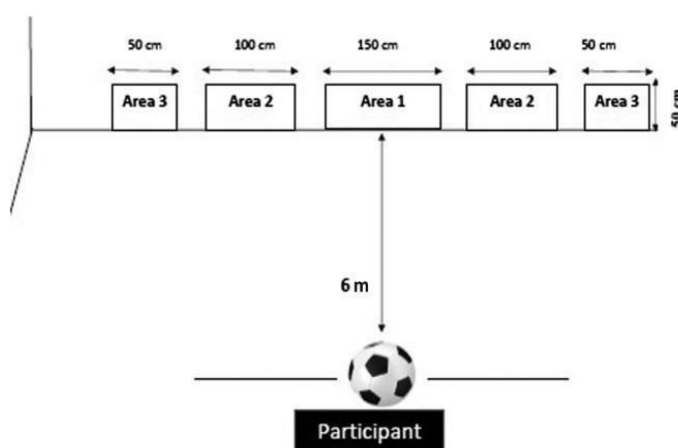
#### 2.1.5 Instrumentos e Tarefa

A tarefa, baseada em estudos prévios (Chiviakowsky; Drews, 2014; Mousavi *et al.*, 2021), consiste em os participantes executarem chutes com uma distância de 6 metros, em áreas-alvo presas a uma parede e tocando o solo (Figura) com o objetivo de atingir as áreas e marcar o máximo de pontos. As participantes serão informadas de que: "as dimensões das áreas um, dois e três são 50 × 150, 50 × 100, 50 × 50 cm, respectivamente. Se a bola atingir a área 3, você receberá três pontos. Se a bola atingir as áreas 1, 2 ou fora do alvo, serão atribuídas pontuações de 1, 2 e 0, respectivamente. Além disso, se a bola atingir qualquer ponto entre as duas áreas (por exemplo, se atingir um ponto entre as Áreas 1 e 2), você receberá zero pontos. Você pode escolher qual estratégia irá utilizar para atingir maior número de pontos ao final". Um notebook será posicionado de modo que os "avaliadores e avaliadoras" possam observar o teste através de uma avaliação remota.

Para mensurar a estratégia adotada pelas participantes, estas serão solicitadas a responder as seguintes perguntas: (a) "Durante a tarefa, eu estava correndo muitos riscos para marcar o maior número de pontos para cada chute (por exemplo, mirar

principalmente na área 3”, (b) “Durante a tarefa, eu estava correndo poucos riscos para garantir pontos para cada chute (por exemplo, mirar principalmente nas áreas 1 ou 2),” (c) “Durante a tarefa, meu objetivo era marcar o maior número de pontos para cada chute, mesmo que a probabilidade de errar os alvos fosse aumentada (por exemplo, apontar principalmente para a área 3)” e (d) “Durante a tarefa, meu objetivo era sempre acertar os alvos, mesmo que não permitisse marcar o maior número de pontos para cada chute (por exemplo, apontar principalmente para as áreas 1 ou 2).” Uma escala Likert de 7 pontos variando de 1 (discordo totalmente) a 7 (concordo totalmente) foi usada para responder a essas quatro perguntas. A primeira e a terceira questões referem-se à intenção de atribuir um foco de promoção, enquanto a segunda e a quarta perguntas, o foco de prevenção.

Figura 2 – Ilustração da tarefa com posicionamento da bola no local de chute e medidas dos alvos



Fonte: Mousavi *et al.*, 2021.

Para avaliação da autoeficácia, serão utilizados os questionários de autoeficácia (Bandura, 2006) (Anexo B), no qual as participantes serão convidadas a responder o quão confiantes estarão para executar a tarefa atingindo uma determinada pontuação, previamente estabelecida no estudo piloto, marcando uma escala de 0 (nada confiante) a 10 (extremamente confiante). Já para medidas de motivação intrínseca, será utilizado o questionário Intrinsic Motivation Inventory (IMI) (Mcauley; Duncan; Tammen, 1989) (Anexo C) que é composto pelas subescalas de interesse/divertimento, competência percebida, pressão/tensão, esforço/importância, relacionamento percebido, escolha percebida e valor/utilidade, cuja escala de

respostas variam de 1 (nada verdadeiro) a 7 (muito verdadeiro). Além disso, deverão marcar com um traço vertical em uma linha de 200 mm, o quão se sentiram felizes ao realizar a tarefa, variando de nada a extremamente feliz (Wewers; Lowe, 1990) (Anexo D), para mensuração dos afetos.

O *self-handcapping* será mensurado através de perguntas que envolverão quantas horas de sono tiveram na noite anterior; quão “mentalmente focadas”, “estressadas” elas se sentiram ultimamente e “Quão tendenciosas ou injustas são as situações de teste mais padronizadas?” Esses itens serão classificados a partir de uma escala de 1 (muito) a 7 (pouco) (Steele; Aronson, 1995) (Anexo E). Ainda, a medida de endosso do estereótipo será usada para avaliar se as participantes consideram o futebol uma atividade física masculina, feminina ou neutra, usando dois itens que abordarão o nível de desempenho de futebol que elas atribuem pessoalmente a mulheres (Bonnot; Croizet, 2007), contendo os seguintes itens: “Pessoalmente, acho que o desempenho das mulheres no futebol é” e “Pessoalmente, acho que o desempenho dos homens no futebol é”, em uma escala que varia de 1 (muito ruim) a 7 (muito bom) (Anexo F).

#### 2.1.6 Procedimentos

As participantes realizarão o estudo individualmente, somente na presença de uma experimentadora do sexo feminino. Ao chegar no local do estudo previamente preparado, todas as participantes receberão as seguintes instruções: *“você irá realizar alguns chutes mirando os alvos, com seu pé dominante, partindo da marcação inicial. Seu objetivo é realizar o máximo de pontos e a estratégia para isso é livre. Além disso, deverá responder alguns questionários breves”*. A manipulação experimental será apresentada através de leitura de texto pelas próprias participantes, além de que a experimentadora irá informar verbalmente antes da fase de aquisição e através de reforços entre os blocos da mesma fase. Todas as participantes dos grupos com ameaça de estereótipo farão a leitura do seguinte texto: *“O Futebol é conhecido como o esporte mais popular e praticado no Brasil, sendo conhecido como “paixão nacional”. Apesar disso, a participação feminina neste esporte é, ainda, muito menor do que a masculina”*.

A partir desse ponto, a manipulação se dará em diferentes condições: as participantes na condição “eu-como-alvo” receberão instruções estereotipadas que coloquem em questão a auto integridade, conforme proposto por Shapiro e Neuberg

(2007), através do seguinte texto: *“A tarefa que irás realizar é de chute ao alvo, que exige força e precisão, características físicas que os homens apresentam melhor desempenho do que mulheres. Neste estudo, nós queremos medir sua capacidade individual em realizar corretamente esse teste padronizado. Seu desempenho neste teste será usado para nos ajudar a estabelecer sua capacidade individual em realizar um bom chute”*. Para as participantes na condição de “grupo-como-alvo” as informações irão sugerir que o desempenho da participante irá influenciar na reputação do seu grupo social, no caso, mulheres. Isso se dará através do seguinte texto: *“A tarefa que irás realizar é de chute ao alvo, que exige força e precisão, características físicas melhor desenvolvidas por homens do que por mulheres. Neste estudo, nós queremos mensurar a capacidade das mulheres em realizar corretamente esse teste padronizado e entender porque as mulheres demonstram essa dificuldade”*.

A condição “grupo externo-como-fonte” informará às participantes que o teste será julgado por dois jogadores de futebol (homens). Precisamente, as participantes receberão a informação de que *“durante a realização do teste, dois jogadores de futebol estarão avaliando o desempenho através de transmissão online”*. Na mesma ficha, constará o nome dos jogadores com imagem dos mesmos. Já para as participantes em condição de “grupo interno-como-fonte”, a manipulação é a mesma da anterior, porém as informações serão atreladas à avaliação por jogadoras mulheres, além dos nomes e fotos serem femininas. Por fim, a condição controle, além das informações relacionadas a tarefa receberá a informação: *“A tarefa que irás realizar é de chute ao alvo, que exige precisão e coordenação, características físicas igualmente bem desenvolvidas por homens e por mulheres. Neste estudo, estão sendo avaliadas essas capacidades físicas em diferentes pessoas, para realizar corretamente esse teste padronizado. Além disso, as tentativas serão filmadas para avaliação dos resultados”*.

As informações de reforços fornecidas entre os blocos da fase de aquisição serão, para a condição “eu-como-alvo”: *“Lembre-se que esta tarefa exige força e precisão, características físicas melhor desenvolvidas por homens do que por mulheres e o resultado deste experimento servirá para verificar sua capacidade individual em realizar bons chutes”*. Para as participantes em condição “grupo-como-alvo” será dito: *“Lembre-se que esta tarefa exige força e precisão, características físicas melhor desenvolvidas por homens do que por mulheres e o resultado deste experimento servirá para verificar a capacidade das mulheres em realizar bons*

*chutes*”. Para reforço das informações sobre a fonte da ameaça, a condição “externo-como-fonte” receberão: *“Lembre-se que os jogadores (citar nomes masculinos) estão avaliando o teste”*. Já na condição “interno-como-fonte” serão informadas: *“lembre-se que as jogadoras (citar os nomes femininos) estão avaliando o teste”*.

Deste modo, cinco grupos distintos serão aleatoriamente formados: grupo ameaça de estereótipo/ grupo-como-alvo/externo-como-fonte (ST/grupo-alvo/externo-fonte), grupo ameaça de estereótipo/ eu-como-alvo/externo-como-fonte (ST/eu-alvo/externo-fonte), grupo ameaça de estereótipo/ grupo-como-alvo/ grupo interno-como-fonte (ST/grupo-alvo/ interno-fonte), grupo ameaça de estereótipo/ eu-como-alvo/ interno-como-fonte (ST/eu-alvo/interno-fonte) e controle.

Após as instruções gerais sobre a tarefa, todas as participantes realizarão um pré-teste, composto por 5 tentativas de chute aos alvos. Após a manipulação da ameaça de estereótipo iniciará a fase de prática que será composta por cinco blocos de dez tentativas. No dia seguinte, as participantes realizarão o teste de retenção e de transferência (distância do chute aumentada em um metro), consistindo em 10 tentativas em cada teste, sem indução da manipulação experimental.

Os questionários serão aplicados antes de iniciar a fase de prática, logo após o pré-teste, e ao final da fase de prática e no dia seguinte, antes do teste de retenção, exceto o endosso de estereótipo, que será medido ao final do teste de retenção, para que esse questionamento não atue como indução de estereótipos de gênero. No final do estudo, todas as informações de ameaça serão retiradas, revelando o objetivo do estudo e as condições manipuladas.

#### 2.1.7 Análise de dados

Para análise do desempenho e aprendizagem da tarefa, a variável dependente será o escore de precisão dos chutes. Na fase de prática, as médias dos escores de precisão serão analisados através da Análise de Variância (ANOVA) *two-way*, em 5 (grupos) x 5 (blocos de 10 tentativas), com medidas repetidas no último fator. ANOVAs *one-way* serão analisadas separadamente no pré-teste, retenção, transferência e questionários. Post-hoc de Bonferroni será utilizado para comparar eventuais diferenças entre os pares de observação. Todos os dados serão analisados no SPSS, versão 25.0 e adotado um nível alfa de significância de 5%.

## 2.2 Experimento 2

### **2.2.1 Objetivo geral**

O objetivo do estudo é investigar os efeitos de diferentes alvos e fontes de ameaça de estereótipo na aprendizagem motora em mulheres jogadoras de futebol e com alta identificação com o domínio, além de verificar os mecanismos subjacentes como self-handcapping, motivação intrínseca, autoeficácia, afetos positivos e o foco regulatório.

### **2.2.2. Participantes**

Serão convidadas a participar do estudo, 100 mulheres praticantes de futebol de times da cidade de Pelotas e com alto nível de identificação com o domínio. Para tal seleção, será utilizado o mesmo questionário do experimento 1 (Pelham e Swann, 1989; Stone, 2002). A participação voluntária ocorrerá mediante assinatura TCLE (Anexo A). O projeto será encaminhado ao Comitê de Ética em Pesquisa da Universidade Federal de Pelotas.

### **2.2.2 Hipóteses**

Estudos prévios de desempenho cognitivo e motor apontam que pessoas com alta identificação com o domínio tendem a ser mais prejudicadas quando expostas a situações estereotipadas do que pessoas com baixa identificação. (Stone *et al.*, 1999; Stone 2002). Além disso, pessoas com alta identificação com tal domínio podem apresentar mais efeitos quando acreditar que seu desempenho pode afetar a reputação do seu grupo social, como proposto por Shapiro (2011). Em relação à fonte da ameaça, parece não haver ainda estudos de AM que investigaram tal fator com mulheres identificadas com o futebol (no caso praticantes da modalidade). Para Shapiro e Neuberg (2007), a fonte da ameaça de estereótipo pode ser de membros do grupo externo, como verificado com mulheres não praticantes de futebol (Cardozo *et al.*, 2021) ou membros do grupo interno.

Com base nisso e na literatura, acredita-se que:

1. Grupos praticando com ameaça do estereótipo apresentarão piores resultados em todas as medidas em relação ao grupo controle.
2. Por se tratar de mulheres experientes e com alta identificação com o domínio, as que praticarem sob condição de “grupo-como-alvo”, ou seja, que terão a reputação do seu grupo social questionada, serão mais afetadas do que as que

praticarem “eu-como-alvo”, que acreditarão que o seu desempenho irá afetar sua própria reputação.

3. Já em relação a fonte da ameaça, acredita-se que por se tratar de mulheres experientes no futebol e com alta identificação com tal domínio, tanto as mulheres que praticarem na condição “grupo externo-como-fonte” e “grupo interno-como-fonte” serão prejudicadas, em relação ao controle, como sugere Shapiro (2013). Porém, com as participantes do “grupo externo-como-fonte” serão as mais afetadas.

4. Para medidas de *self-handcapping*, o presente estudo considera que as participantes do grupo (AE/grupo-alvo/externo-fonte) apresentarão maiores efeitos. Já para medidas de endosso de estereótipo, considera-se que não haverá diferença significativa entre os grupos, por se tratar de mulheres praticantes do esporte e identificadas com o domínio.

### **2.2.3 Instrumentos e tarefa**

A tarefa envolverá as participantes realizarem o chute de longa distância com objetivo de acertar o centro do alvo posicionado no centro do campo. A tarefa será realizada em campo de futebol, utilizando uma bola de futebol oficial e um alvo circular, contendo 5 círculos concêntricos aos quais serão atribuídos os escores de pontuações, sendo o círculo central com 5 pontos, os demais com diminuição de um ponto até a extremidade (4, 3, 2 e 1) e zero ponto será atribuído caso a bola não atinja o alvo. A pontuação será atribuída a partir do local em que a bola quicar a primeira vez no solo. Além disso, uma câmera de vídeo apoiada em um tripé focando apenas o alvo e localizada lateralmente ao mesmo, com uma distância de 5 metros será utilizada para registrar os escores de pontuação e ainda, como no experimento 1, um notebook será posicionado de modo que os avaliadores (jogadores ou jogadoras) possam observar o teste.

O número de tentativas, blocos e distância da tarefa será determinado através de estudo piloto que visará identificar a quantidade de tentativas necessárias para observação de mudanças de desempenho, bem como possível fadiga ao longo da prática. A mesma tarefa será realizada no pré-teste, fase de prática e retenção. O teste de transferência consistirá em as participantes chutarem a bola a partir de 2

metros atrás da distância definida da retenção. A variável dependente envolverá os escores de precisão dos chutes.

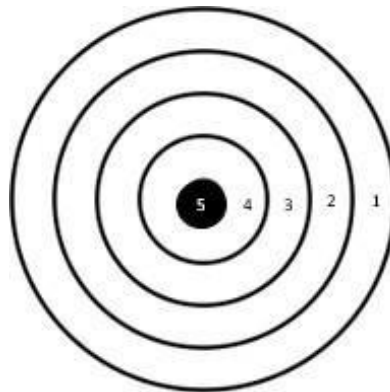
Para avaliação das medidas subjacentes das participantes na tarefa, serão utilizados os mesmos questionários propostos nos experimentos 1 e 2.

Figura 3 – Ilustração do arranjo da tarefa e posicionamento do alvo, da participante e da câmera (colocar medidas e distâncias).



Fonte: Elaborado pela autora, 2023.

Figura 4 – Ilustração do alvo do experimento 2



Fonte: Elaborado pela autora, 2023.

#### 2.2.4 Procedimentos

Ao chegar no local do teste, todas participantes receberão as seguintes instruções: *“O Futebol é conhecido como o esporte mais popular e praticado no Brasil. Esse sucesso pode ser observado através do crescente número de escolinhas/ clubes*

*para a prática do esporte, arrecadações de bilheterias e aumento dos quadros sociais, por exemplo. Hoje você deverá realizar um chute de longa distância, com seu pé dominante, partindo da marcação inicial. Seu objetivo é acertar o alvo e quanto mais ao centro, maior será a pontuação”.* A partir desse ponto, a manipulação da ameaça de estereótipo, divisão de grupos, fases do teste e questionários serão os mesmos do experimento 1, exceto pela instrução da tarefa, que é referente ao chute de longa distância. No final do estudo, todas as informações de ameaça serão retiradas.

#### **2.2.5. Análise de dados**

Para análise do desempenho e aprendizagem da tarefa, a variável dependente será o escore de precisão dos chutes. Na fase de prática, as médias dos escores de precisão serão analisados através da Análise de Variância (ANOVA) *two-way*, em 5 (grupos) x 5 (blocos de 10 tentativas), com medidas repetidas no último fator. ANOVAs *one-way* serão analisadas separadamente no pré-teste, retenção, transferência e questionários. Post-hoc de Bonferroni será utilizado para comparar eventuais diferenças entre os pares de observação. Todos os dados serão analisados no SPSS, versão 25.0 e adotado um nível alfa de significância de 5%

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## **Apêndices**

## APÊNDICE A- TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Pesquisadora responsável: Suzete Chiviakowsky Clark

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Concordo em participar do estudo “Efeitos da aprendizagem motora de uma tarefa de futebol”. Estou ciente de que estou sendo convidado a participar voluntariamente do mesmo.

**PROCEDIMENTOS:** Fui informado de que o objetivo geral será objetivo geral será “investigar a aprendizagem motora de uma tarefa de futebol”, cujos resultados serão mantidos em sigilo e somente serão usadas para fins de pesquisa. Estou ciente de que a minha participação envolverá "realizar chutes à alvos".

**RISCOS E POSSÍVEIS REAÇÕES:** "Fui informado que os riscos são mínimos, mas posso sentir leve desconforto muscular devido ao número de tentativas. Para isso, serei orientado a descansar entre cada bloco de tentativa. Além disso, em caso de desconforto psicológico durante o preenchimento do questionário, posso interrompê-lo a qualquer momento.

**BENEFÍCIOS:** O benefício de participar da pesquisa relaciona-se ao fato de que o participante aprenderá uma nova habilidade motora. Além disso, os resultados do estudo serão incorporados ao conhecimento científico e, posteriormente, em situações de ensino-aprendizagem.

**PARTICIPAÇÃO VOLUNTÁRIA:** Como já me foi dito, minha participação neste estudo será voluntária e poderei interrompê-la a qualquer momento.

**DESPESAS:** Eu não terei que pagar por nenhum dos procedimentos, nem receberei compensações financeiras.

**CONFIDENCIALIDADE:** Estou ciente que a minha identidade permanecerá confidencial durante todas as etapas do estudo.

**CONSENTIMENTO:** Recebi claras explicações sobre o estudo, todas registradas neste formulário de consentimento. Os investigadores do estudo responderam e responderão, em qualquer etapa do estudo, a todas as minhas perguntas, até a minha completa satisfação. Portanto, estou de acordo em participar do estudo. Este Formulário de Consentimento Pré-Informado será assinado por mim e arquivado na instituição responsável pela pesquisa.

Nome do participante/representante legal: \_\_\_\_\_

Identidade: \_\_\_\_\_

ASSINATURA: \_\_\_\_\_ DATA: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

**DECLARAÇÃO DE RESPONSABILIDADE DO INVESTIGADOR:** Expliquei a natureza, objetivos, riscos e benefícios deste estudo. Coloquei-me à disposição para perguntas e as respondi em sua totalidade. O participante compreendeu minha explicação e aceitou, sem imposições, assinar este consentimento. Tenho como compromisso utilizar os dados e o material coletado para a publicação de relatórios e artigos científicos referentes a essa pesquisa. Se o participante tiver alguma dúvida ou preocupação sobre o estudo pode entrar em contato através do meu endereço acima. Para outras considerações ou dúvidas sobre a ética da pesquisa, entrar em contato com o Comitê de Pesquisa da ESEF/UFPEL – Rua Luís de Camões, 625 – CEP: 96055-630 - Pelotas/RS; Tele (53)3273-2752.

ASSINATURA DO PESQUISADOR RESPONSÁVEL: \_\_\_\_\_

## **Anexos**

**Anexo A – Questionário de autoeficácia**

**Responda, por favor, às seguintes questões:**

Você está confiante de que ao final da prática conseguirá realizar X pontos?

Nada confiante

Extremamente confiante

0      1      2      3      4      5      6      7      8      9      10

Você está confiante de que amanhã, ao final da prática conseguirá realizar X pontos?

Nada confiante

Extremamente confiante

0      1      2      3      4      5      6      7      8      9      10

Você está confiante de que ao final da prática conseguirá realizar X pontos?

Nada confiante

Extremamente confiante

0      1      2      3      4      5      6      7      8      9      10

### Anexo B – Questionário de motivação intrínseca

As perguntas seguintes se referem à sua experiência em relação à tarefa. Por favor responda todos os itens indicando quão verdadeiras são as colocações para você, usando a seguinte escala como guia:

| 1                  | 2 | 3 | 4                      | 5 | 6 | 7                                                                                  |
|--------------------|---|---|------------------------|---|---|------------------------------------------------------------------------------------|
| Nada<br>verdadeiro |   |   | Um pouco<br>verdadeiro |   |   | Muito<br>verdadeiro                                                                |
| _____              |   |   |                        |   |   | Eu gostei muito de fazer esta atividade                                            |
| _____              |   |   |                        |   |   | Eu acho que eu sou muito boa nesta atividade                                       |
| _____              |   |   |                        |   |   | Eu me esforcei bastante pra fazer bem esta tarefa                                  |
| _____              |   |   |                        |   |   | Eu não me senti nem um pouco nervoso fazendo esta atividade                        |
| _____              |   |   |                        |   |   | Eu me senti bem “distante” da pessoa responsável pela tarefa                       |
| _____              |   |   |                        |   |   | Eu acredito que eu tive alguma escolha sobre fazer esta atividade                  |
| _____              |   |   |                        |   |   | Eu acredito que esta atividade pode ter algum valor pra mim                        |
| _____              |   |   |                        |   |   | Foi divertido fazer esta atividade                                                 |
| _____              |   |   |                        |   |   | Depois que eu realizei esta atividade, eu me senti muito competente                |
| _____              |   |   |                        |   |   | Eu tentei muito fazer bem esta atividade                                           |
| _____              |   |   |                        |   |   | Eu me senti muito tenso enquanto fazia esta atividade                              |
| _____              |   |   |                        |   |   | Eu duvido que eu e a pessoa responsável pela tarefa seríamos amigos algum dia      |
| _____              |   |   |                        |   |   | Eu me senti um pouco obrigada a fazer esta atividade                               |
| _____              |   |   |                        |   |   | Eu faria esta atividade novamente porque ela tem algum valor para mim              |
| _____              |   |   |                        |   |   | Eu descreveria esta atividade como muito interessante                              |
| _____              |   |   |                        |   |   | Eu estou satisfeita com a qualidade do meu desempenho nesta atividade              |
| _____              |   |   |                        |   |   | Foi importante pra mim, fazer bem esta tarefa                                      |
| _____              |   |   |                        |   |   | Eu me senti ansiosa enquanto fazia esta atividade                                  |
| _____              |   |   |                        |   |   | Eu me senti como se pudesse realmente confiar na pessoa responsável pela tarefa    |
| _____              |   |   |                        |   |   | Eu fiz esta atividade porque eu não tive escolha                                   |
| _____              |   |   |                        |   |   | Eu acredito que fazer essa atividade pode ser benéfico para mim                    |
| _____              |   |   |                        |   |   | Eu achei esta atividade muito divertida                                            |
| _____              |   |   |                        |   |   | Eu fui muito habilidosa nesta atividade                                            |
| _____              |   |   |                        |   |   | Eu não me importei muito em fazer bem esta tarefa                                  |
| _____              |   |   |                        |   |   | Eu me senti pressionado enquanto participava disto                                 |
| _____              |   |   |                        |   |   | Eu queria poder interagir com mais frequência com a pessoa responsável pela tarefa |
| _____              |   |   |                        |   |   | Eu fiz essa atividade porque eu queria fazer                                       |
| _____              |   |   |                        |   |   | Eu acho que esta é uma atividade importante                                        |

**Anexo C – Níveis de afetos positivos e negativos**

Por favor, marque um traço na linha abaixo mostrando o quanto você se sentiu feliz enquanto realizava essa atividade:

---

Nada feliz

Muito feliz

### **Anexo D – Questionário de *Self-handcapping***

As perguntas seguintes se referem à sua experiência em relação à tarefa. Por favor responda todos os itens indicando quão verdadeiras são as colocações para você, usando a seguinte escala como guia:

|              |          |          |          |          |          |              |
|--------------|----------|----------|----------|----------|----------|--------------|
| <b>1</b>     | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b>     |
| <b>Pouco</b> |          |          |          |          |          | <b>Muito</b> |

Quanto mentalmente focada e motivada estás para realizar a tarefa? \_\_\_\_\_

Quanto estás estressada ou cansada para realizar a tarefa? \_\_\_\_\_

Quantas horas de sono tu dormistes na noite passada? \_\_\_\_\_

Quanto tu consideras tendenciosa a tarefa que realizaste? \_\_\_\_\_

**Anexo E – Medidas de endosso de estereótipo**

Por gentileza, responda às seguintes questões, utilizando uma escala de 1 (muito ruim) a 7 (muito bom)

“Pessoalmente, de modo geral, acho que o desempenho das mulheres no futebol é”

|            |   |   |   |   |   |           |
|------------|---|---|---|---|---|-----------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7         |
| Muito ruim |   |   |   |   |   | Muito bom |

“Pessoalmente, de modo geral, acho que o desempenho dos homens no futebol é”

|            |   |   |   |   |   |           |
|------------|---|---|---|---|---|-----------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7         |
| Muito ruim |   |   |   |   |   | Muito bom |

**3. *RELATÓRIO DO TRABALHO DE CAMPO***  
**(Tese de Caroline Valente Heidrich)**

### 3. Relatório do trabalho de campo

O presente relatório do trabalho de campo foi realizado como parte da Tese de Doutorado na linha de pesquisa de Movimento Humano, Educação e Sociedade do Programa de Pós-Graduação em EF – Universidade Federal de Pelotas, o qual abordará as etapas realizadas para a elaboração e coleta de dados do estudo sobre as Múltiplas ameaças de estereótipo na aprendizagem motora bem como mudanças que aconteceram entre o projeto e o produto da tese.

A qualificação do projeto foi realizada em 31 de outubro de 2023, sendo aprovada pela banca examinadora composta pelo Dr. Ricardo Drews e pela Dra. Andrea Michele Freudenhem. Após a qualificação, as cartas de anuência foram entregues à direção da ESEF-UFPEL, e o projeto foi aprovado pelo Comitê de Ética da ESEF-UFPEL (CAAE 76027123.6.0000.5313).

A revisão sistemática da literatura foi iniciada em 2022, com sua primeira versão apresentada na qualificação como parte da revisão teórica. O objetivo foi mapear estudos sobre os efeitos da ameaça de estereótipo no desempenho e na aprendizagem motora, considerando desde a pesquisa seminal de Steele e Aronson (1995) até 2022. Devido à extensão do processo de revisão e submissão, novas buscas foram realizadas em 2025 para atualização da literatura. Assim, a revisão incluiu artigos publicados entre 1999 – ano do primeiro estudo sobre ameaça de estereótipo e desempenho motor (Stone et al., 1999) – e março de 2025. Após ajustes conforme as sugestões da banca examinadora, o manuscrito foi submetido à revista *Learning and Motivation* com o título *Stereotype threat effects on motor performance and learning: a systematic review of 30 years*, na data 11 de fevereiro de 2025 e publicado na data 12 de junho de 2025, seguindo suas normas e apresentado na tese como "Artigo 1". Como foi publicado como um artigo resultante da tese, a revisão sistemática foi retirada do projeto de qualificação para evitar duplicação no documento final.

Paralelamente a isso, em maio de 2024, demos início ao recrutamento das participantes do Experimento 1, composto por cem mulheres adultas inexperientes e com baixa identificação com o futebol. A coleta de dados foi realizada nos meses de maio e junho de 2024, na sala de dança da Faculdade Anhanguera de Pelotas. Foi necessária uma adaptação na tarefa originalmente proposta no projeto, devido às limitações do espaço disponível para a coleta de dados e aos impactos da crise

climática que atingiu o Rio Grande do Sul em 2024, resultando no cancelamento de aulas e na alteração da rotina da cidade de Pelotas. Dessa forma, optou-se pela tarefa de dribles no futebol, viável para realização na sala de dança. Após a conclusão da coleta de dados, foram realizadas as análises estatísticas e a redação do artigo, submetido para publicação na *revista Research Quarterly for Exercise and Sport* no dia 17 de fevereiro de 2025 e aceito para publicação dia 7 de abril de 2025, intitulado *Multiple Gender Stereotype Threats in Motor Performance and Learning*, e apresentado como artigo 2.

No segundo experimento (artigo 3), algumas adaptações foram necessárias em relação à proposta original do projeto. A coleta de dados ocorreu em janeiro de 2025 e, diferentemente do planejamento inicial, optou-se por substituir jogadoras de futebol por jogadoras de futsal, devido à maior participação feminina na modalidade e à disponibilidade de times na cidade de Pelotas, facilitando o recrutamento de participantes. Além disso, a coleta em quadra fechada mostrou-se mais viável. O número de grupos experimentais também foi reduzido. Inicialmente, seriam formados cinco grupos, como no Experimento 1. No entanto, devido ao prazo reduzido de um mês e à necessidade de utilizar o ginásio da ESEF-UFPEL sem interferências externas, a coleta foi realizada no período de férias, quando muitos times universitários estavam inativos. Assim, recrutaram-se jogadoras de atléticas universitárias por meio de convites online enviados a jogadoras e treinadores. Como resultado, três grupos experimentais foram formados, totalizando 48 participantes. A tarefa experimental foi adaptada com base nas sugestões da banca examinadora e nos resultados do estudo piloto. Buscando uma atividade inovadora, capaz de mensurar a aprendizagem e alinhada ao futsal, optou-se por chutes ao gol com diferentes alvos (ver figura). A coleta de dados ocorreu ao longo de três semanas em janeiro, com a participação de duas experimentadoras. Após a coleta, iniciaram-se as análises de dados e a redação do terceiro artigo, entre fevereiro e maio de 2025, para posterior submissão à revista, apresentado como “artigo 3”, e intitulado “*Effects of multiple gender stereotype threats on motor learning in female futsal players*”. Paralelamente, deu-se início à elaboração da tese, no modelo de artigos: deste modo, serão apresentados o produto da tese, através de três artigos, em inglês e em conformidade com as normas de submissão das respectivas revista.

#### **4. ARTIGO 1**

### ***Stereotype Threat Effects on Motor Performance and Learning: A Systematic Review of 30 Years***



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# Stereotype threat effects on motor performance and learning: A systematic review of 30 years

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## ABSTRACT

Stereotype threat can impair performance in individuals who fear confirming a negative stereotype about their group. This study systematically analyzed its effects on motor performance and learning observed in the last 30 years. Searches in Web of Science, PubMed, Scopus, and PsycInfo, conducted in March 2025, identified 808 studies published between 1995 and March 2025, of which 65 met the inclusion criteria, covering 79 experiments and 5734 participants. Most experiments focused on motor performance ( $n = 65$ ) rather than learning ( $n = 14$ ). Gender stereotypes were the most studied ( $n = 45$ ), followed by age ( $n = 13$ ), race ( $n = 7$ ), weight ( $n = 3$ ), sports status ( $n = 2$ ), nonexerciser ( $n = 2$ ), disability ( $n = 1$ ), height ( $n = 1$ ), and socioeconomic status ( $n = 1$ ). Some studies examined combined stereotypes (e.g., gender and race,  $n = 2$ ). Adults were the most studied population, followed by children, elderly individuals, and adolescents. Explicit manipulation was the most used, followed by combined explicit-implicit and solely implicit approaches. Few studies assessed underlying mechanisms, as perceived competence, self-efficacy, and nervousness. Most findings indicate that stereotype threat negatively affects motor performance and learning across different populations and manipulation types. The limited research on motor learning, different stereotype types, and diverse populations highlights the need for further studies to clarify the mechanisms of stereotype threat and its effects on motor skill acquisition. Finally, we recommend research focused on developing strategies to mitigate the detrimental impact of stereotype threat on motor performance and learning.

## 1. Introduction

Stereotype threat is a situational phenomenon that can affect individuals from any stereotyped group regarding their ability to perform a certain task (Steele, 1997). This phenomenon suggests that stigmas can shape individuals' behavior, impairing their performance, and further reinforcing detrimental behavior. This detrimental behavior can occur due to the fear of confirming a negative stereotype of a group as a personal characteristic (Steele & Aronson, 1995). Steele and Aronson (1995) demonstrated, in four experiments, that Black participants exhibited poorer performance in the face of both explicit (test measuring intellectual ability) and implicit (questionnaire indicating race) stereotype threat. Additionally, they showed greater concern about their abilities, a tendency to make preventive excuses, and reluctance to associate their racial identity with performance, unlike White participants and Black participants who were not exposed to stereotype threat.

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Based on this seminal study, several studies have investigated the effects of stereotypes in various categories, such as age, gender, body image, race, and socioeconomic status, over nearly three decades. For example, negative racial stereotypes have been shown to impair academic (Alter et al., 2010; Steele & Aronson, 1995) and neuropsychological performance (Thames et al., 2013), as well as impact healthcare among African Americans (Abdou & Fingerhut, 2014). Other groups, such as Hispanics and Asians, have also been affected, experiencing academic performance deficits and pressures related to cognitive stereotypes (Bratter et al., 2016; McGee, 2018). Negative stereotypes related to aging affect task performance in older adults, particularly in areas such as memory and functional dependency (Armstrong et al., 2017; Barber & Lui, 2020). Gender stereotypes have primarily impacted women's performance, especially in areas such as science, mathematics, and engineering (Beasley & Fischer, 2012), in addition to influencing their performance in mathematics tests, leadership, and public speaking (Spencer et al., 1999; Von Hippel et al., 2011). Overweight and obese individuals face weight-related stigmas, which can affect healthy lifestyle choices (Major et al., 2014) and academic performance (Guardabassi & Tomasetto, 2020). Negative stereotypes also influence leadership, entrepreneurship, and competitiveness (Casad & Bryant, 2016). Other groups targeted by stereotypes include individuals with physical disabilities (Silverman & Cohen, 2014), learning difficulties (Zhao et al., 2019), and drug users (Von Hippel et al., 2017).

The effects of stereotype threat can occur in explicit situations (e.g., women informed that a soccer task required physical abilities where men were superior to them (Chalabaev et al., 2008)), but can also be evoked by any situational aspect that increases the salience of the group stereotype (Inzlicht & Ben-Zeev, 2000), namely, in subtle or implicit situations such as indicating race on a questionnaire (Steele & Aronson, 1995, Study 4), the presence of an experimenter of the opposite sex (Stone & McWhinnie, 2008), a numerical superiority of the opposite sex during an evaluation (Inzlicht & Ben-Zeev, 2000; Sekaquaptewa & Thompson, 2003), use of images (Jansen et al., 2015), or even toys (Knight et al., 2004).

Several mechanisms have been investigated to understand how stereotype threat impacts performance (for a review, see Pennington et al., 2016). This threat has been shown to influence individuals' motivation to refute or avoid confirming negative stereotypes related to their social identity, resulting in improved performance on simple tasks but impaired performance on complex ones (Spencer et al., 2016). The explicit monitoring hypothesis proposes that the pressure generated by stereotype threat leads individuals to excessively monitor their own task performance. This overcontrol increases anxiety and cognitive load, ultimately impairing performance—especially among experienced individuals who would otherwise perform the task automatically (Schmader et al., 2008). Furthermore, anxiety itself constitutes a key mechanism associated with stereotype threat. It arises from the fear of confirming negative stereotypes about one's social group, particularly in evaluative contexts. This intense emotional state can deplete attentional and cognitive resources, hindering task focus and efficient task execution (Steele & Aronson, 1995). Additionally, this threat can elevate blood pressure during the execution of complex tasks (Blascovich et al., 2001). Other responses to stereotype threat have also been identified in the literature, such as self-handicapping, understood as a defensive strategy used to protect one's self-image. It involves the creation of obstacles to performance—often unconsciously—as a way to justify potential failure (Stone, 2002). In addition, reduced self-efficacy is commonly observed in individuals exposed to stereotyped contexts. Self-efficacy refers to the belief in one's ability to successfully perform a task (Bandura, 1982), and when weakened, it can lead to lower engagement, decreased persistence in the face of difficulties, and, consequently, poorer motor performance and learning (Heidrich & Chiviawowsky, 2015). These effects may also be associated with reduced engagement or investment in the task (Steele, 1997). On the other hand, the mere effort hypothesis suggests that when a task is simple and the correct response is more obvious, stereotype threat may increase motivation, which in turn can enhance performance. However, this effect tends to reverse in more complex tasks, where the additional effort may instead hinder performance (Harkins, 2006).

The effects of stereotypes observed in the cognitive domain have also been confirmed in motor behavior (e.g., Beilock & McConnell, 2004; Cardozo & Chiviawowsky, 2015; Chalabaev et al., 2013; Heidrich & Chiviawowsky, 2015; Stone et al., 1999). Pioneering studies demonstrated that negative racial stereotypes can impair motor performance in both Black and White individuals in a golf task (Stone et al., 1999) and that gender stereotype threat reduces self-efficacy and motor learning in women, as observed in soccer tasks (Heidrich & Chiviawowsky, 2015). Participation in physical and sporting activities have historically been unequal, with Black athletes predominating in basketball teams and women being perceived as less capable than men in athletic performance (Chalabaev et al., 2013; Gentile et al., 2018). Furthermore, older adults tend to perceive limitations in physical skills, such as balance, due to age stereotypes (Chiviawowsky et al., 2018). Indeed, there is a growing body of research investigating the effects of stereotype threat in motor performance and learning. In most cases, individuals exposed to stereotyped situations tend to perform worse and have learning impaired in motor tasks compared to their peers in contexts where the threat is minimized or absent, as observed in studies involving gender (Cardozo et al., 2021; Heidrich & Chiviawowsky, 2015; Mousavi et al., 2023), age (Chiviawowsky et al., 2018) and weight (Cardozo & Chiviawowsky, 2015; Rabeinia et al., 2021) stereotypes, for example. However, it seems that these stereotypes do not affect men's performance (Huber et al., 2015) nor women's performance in non-technical simple tasks (Deshayes et al., 2019) in the same way. Surprisingly, some research suggests that, under certain conditions, stereotype threat can, in fact, improve women's performance (Deshayes et al., 2020; 2023). More recently, research has also focused on investigating other strategies to nullify or reduce the harmful effects (Mousavi et al., 2025; Saemi et al., 2024).

Stereotype threat has been widely studied in the cognitive domain, as demonstrated in reviews (Pennington et al., 2016) and meta-analyses (Appel et al., 2015). However, in the motor domain, although some authors have conducted reviews on the motor performance topic, particularly regarding gender stereotypes (Chalabaev et al., 2013; Gentile et al., 2018), there is still a lack of comprehensive, systematized, and updated reviews that encompass all the different influences of stereotype threat on motor performance and learning. This gap may hinder the identification of consistent patterns of this phenomenon. Moreover, stereotype threat can lead to disidentification with sports, reducing interest and participation in physical activities, which can negatively impact health (Stone et al., 2012). Therefore, understanding the impacts of stereotypes on motor behavior is essential not only to assess their

consequences in sports, rehabilitation, skill acquisition, physical activity, and education across different populations but also to develop effective strategies to minimize or eliminate these harmful effects.

The present review therefore seeks to map the stereotype phenomenon in motor performance and learning. More specifically, it aims to identify studies that have evaluated stereotype effects on motor performance and learning, identify types of stereotypes and target populations, investigate manipulations that have been used to induce the stereotypes, observe the underlying mechanisms of the main effects, not only synthesizing the findings but also identifying methodological strengths and weaknesses in motor performance and learning studies, aiming to identify consistencies, gaps and potential future developments of this variable in the motor domain, considering the period from 1995 to 2025.

## 2. Methods

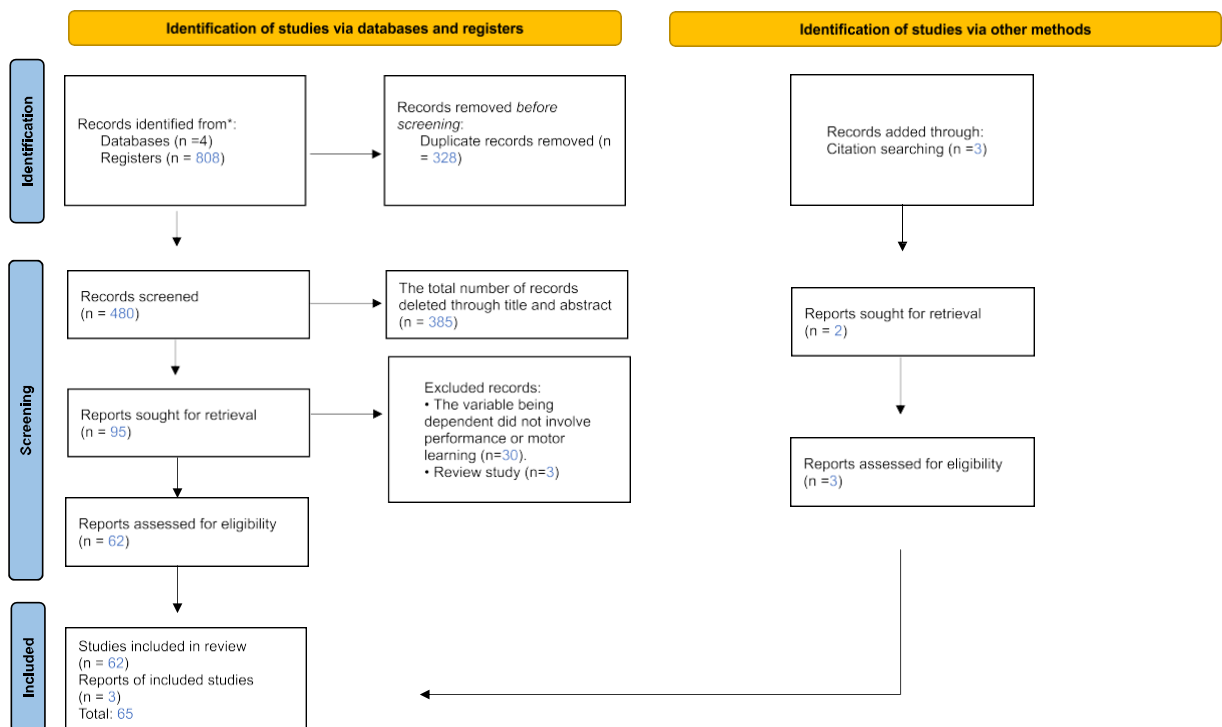
### 2.1. Eligibility criteria and information sources

This systematic review was registered with PROSPERO (CRD42022377216) and conducted in accordance with the Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines (Page et al., 2021). Searches were conducted from December 2023 to March 2025. The searches were conducted in the databases Web of Science, PubMed, Scopus, and PsycInfo. These databases were selected for their reputation, comprehensiveness, and focus on areas relevant to our study, ensuring that our systematic review is as complete and representative as possible. Search terms included the combination of Stereotype OR Stereotype threat OR Stereotypes AND motor performance OR motor learning OR motor skill OR motor task OR physical performance. These terms were defined based on those used in previous studies (Cardozo et al., 2021; Chalabaev et al., 2008). Additionally, a search of the reference lists of selected articles was conducted to ensure that all relevant research was included.

#### Inclusion criteria

- Original articles published from 1995 onwards (the year of the first study on the topic, Steele & Aronson, 1995) until March 2025;
- In English and Portuguese languages;
- With experimental designs aiming to assess the effects of stereotype on motor behavior, with dependent variables involving motor performance and/or learning (i.e., studies using retention and/or transfer tests with at least a 24-hour interval).

#### Exclusion criteria



**Fig. 1.** PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources, *from*: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al# the PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Bmj* 2021;372: n71. doi: 10.1136/bmj.n71. For more information, visit: <http://www.prisma-statement.org/>.

- Non-original articles, reviews, opinion articles, studies published in conference proceedings, meta-analyses, theses, and dissertations.
- In languages other than Portuguese or English.
- Non-experimental studies that did not aim to investigate the effects of stereotype threat on motor performance.

## 2.2. Study search and selection process

The entire search process in the databases was conducted by two researchers independently, whose detailed information can be observed in the PRISMA flowchart, as shown in [Fig. 1](#). After entering the search terms into the databases, the studies were selected by examining the title and abstract according to the eligibility criteria. A total of 808 articles were found in the following databases: Web of Science (n = 396), PubMed (n = 42), Scopus (n = 162), and PsycInfo (n = 208). After removing duplicates (n = 328), 480 studies were evaluated based on titles and abstracts, and in case of eligibility doubts, a third researcher was consulted. Consequently, 95 studies were selected for full-text reading. Among these, 62 articles were selected for analysis based on inclusion criteria. A second review was conducted through relevant studies, adding 3 research papers not found in the aforementioned databases. Thus, this review comprises 65 articles and a total of 79 experiments. In addition, a total of 5734 participants were investigated in this review. We chose not to apply a formal risk of bias assessment tool because the aim of the review was to include all available findings in the literature on the topic, regardless of the risk of bias in individual studies, allowing for a broader perspective on the field without excluding potentially relevant contributions. The results are detailed in [Table 1](#).

## 3. Results

### 3.1. Number of motor performance and learning studies

Of a total of 65 articles, the majority investigated the effects of stereotype threat on motor performance only (n = 51). Studies involving the practice or acquisition phase, and retention and/or transfer tests, with a minimum interval of 24 h after practice, characteristic of motor learning experiments, were a minority (n = 14). As some investigations included more than one experiment, absolute values were calculated considering the number of experiments. Thus, there were those that exclusively measured motor performance (n = 65) and those that involved both motor performance and some type of motor learning test (n = 14).

### 3.2. Population

In relation to age group, the most investigated population was adults (n = 50), followed by elderly (n = 13), children (n = 12) and, in smaller numbers, adolescents (n = 4).

### 3.3. Type of stereotype

The most common stereotype found among the 79 experiments was gender stereotype (n = 45), followed by age stereotype (n = 13), race stereotype (n = 7), weight stereotype (n = 3), nonexerciser stereotype (n = 2), low performance in penalties by English players stereotype (n = 2), disability stereotype (n = 1), height stereotype (n = 1) and socioeconomic status (n = 1). Other experiments compared two types of stereotypes, such as gender and race (n = 2) and age and disability (n = 2), while another used gender for women and status in the English cricket league for men (n = 1).

#### 3.3.1. Gender stereotype

The gender stereotype was exclusively investigated in most studies (n = 45), but it was also compared with other types of stereotypes, namely race stereotype (n = 2) and low status of the country's players in the sports league (n = 1). Regarding the gender of participants, most experiments were conducted exclusively with women (n = 25) and by both men and women (n = 18), and only men (n = 4). The effects of gender stereotype on men and women were distinct and used different designs.

Regarding gender stereotype in women, several studies (n = 43) have investigated the effects of stereotype threat (ST) on the performance and motor learning of women, particularly in culturally stereotyped tasks. Most of these studies compared women under threat with control groups, positive stereotypes, threat reduction, or a "lift" condition. Gender stereotype threat in women impaired performance in tasks such as soccer dribbling ([Chalabaev et al., 2008](#)), kicking ([Grabow & Khl, 2019](#)), and dribbling followed by kicking ([Hermann & Vollmeyer, 2016](#)). Motor learning studies in soccer also showed inferior performance under ST, such as in target kicking and dribbling tasks with male presence and stereotypical information ([Cardozo et al., 2021](#); [Nahidi et al., 2023](#)). Stereotypes associated with attributes such as strength and speed, considered masculine, hindered women's performance compared to those who were informed that the task required agility and coordination ([Heidrich & Chiviawowsky, 2015](#); [Mousavi et al., 2021; 2023; 2025](#); [Saemi et al., 2024](#)). Detrimental effects were also observed in contexts such as driving, where women informed they would be compared to men in a driving simulation performed worse ([Mo`e et al., 2015](#)), and in the manipulation of "masculine" toys ([Knight et al., 2004](#)). Another study investigated whether manipulating negative gender stereotype threat related to soccer would affect performance on the task itself and whether this effect would extend to a non-stereotyped task, such as tennis ball throwing ([Mousavi & Soltanifar, 2025](#)). The results showed that the girls performed worse in soccer but not in the throwing task. Furthermore, gender ST affected gender-neutral tasks such as balance ([Chalabaev et al., 2008](#)), basketball shooting ([Laurin, 2013](#)), throwing a small ball

**Table 1**

Studies investigated in the systematic review, stereotypes, populations, tasks, groups, threat manipulations, and results.

| Authors                                  | Stereotype | Population characteristic             | Task and measures                                                                  | Groups or conditions                       | Manipulation                                                                                                                                                                                                                                               | Other measures        | Motor Behavior           | Results                                                                                                                                                                                                                                                |
|------------------------------------------|------------|---------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Allen et al. (2023)                   | Gender     | Young adult (n = 392)<br>Women<br>Men | Running task:<br>Anteroposterior, mediolateral and vertical<br>bodily acceleration | ST<br>Lift<br>Control<br>Sex: female /male | Between-subjects<br>Explicit: visual textual messages<br>Implicit: visual image<br>ST: Ingroup inferiority information<br>Lift: Outgroup inferiority information<br>Control: Observed abstract painting                                                    | Anxiety<br>Motivation | Performance              | Anteroposterior<br>Men: ST = C, Lift > C<br>Women: ST = C, Lift = C<br>Mediolateral<br>Men: ST = C, Lift = C<br>Women: ST < C, Lift = C<br>Vertical<br>Men: ST = Lift = C<br>Women: ST = Lift = C                                                      |
| 2. Barber et al. (2020)                  | Age        | Elderly (n = 163)                     | Gait speed, Gait speed variability, Number of step errors                          | ST<br>RST<br>Difficult<br>Easy             | Between-subjects<br>Explicit: text and verbal<br>ST: Older adults have difficulty with the task and would be compared with younger adults<br>RST: Healthy older adults do not have difficulty with the task and would not be compared with younger adults. | Resource evaluations  | Performance              | Speed/error<br>Difficult:<br>ST = worsened performance<br>RST = not difference<br>Easy: not difference<br>Variability<br>Difficult:<br>ST = worsened performance<br>RST = not difference<br>Easy: Improved performance.<br>ST < Lift and C<br>Lift = C |
| 3. Bastos et al. (2023)                  | Gender     | Children (n = 42)<br>Boys             | Ballet pirouette:<br>Punctuation scores                                            | ST<br>Lift<br>Control                      | Between-subjects<br>Explicit: verbal<br>Implicit: video<br>ST: Outgroup superiority information<br>Lift: Outgroup inferiority information<br>Control: Not receive instructions related to stereotypes                                                      | No                    | Performance/<br>Learning | ST < Lift and C<br>Lift = C                                                                                                                                                                                                                            |
| 4. Beilock et al. (2006)<br>Experiment 1 | Gender     | Young adult (n = 40)<br>Men           | Golf putting: Precision                                                            | ST<br>Control                              | Between-subjects<br>Explicit: text<br>ST: Outgroup superiority information<br>Control: Individual differences would be observed (without mentioning gender)                                                                                                | No                    | Performance              | ST < C                                                                                                                                                                                                                                                 |
| 5. Beilock et al. (2006)<br>Experimento2 | Gender     | Young adult (n = 23)<br>Men           | Golf putting: Precision                                                            | Simple task<br>Dual task                   | Within-subjects<br>Explicit: text<br>Outgroup superiority information<br>Implicit: questions that reaffirmed the negative gender stereotype                                                                                                                | No                    | Performance              | Dual > Simple                                                                                                                                                                                                                                          |

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Table 1 (continued)

| Authors                                  | Stereotype | Population characteristic                                        | Task and measures                                                                                          | Groups or conditions                  | Manipulation                                                                                                                                                                                                                                                            | Other measures                                              | Motor Behavior           | Results                                                                                                           |
|------------------------------------------|------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------|
| 6. Beilock et al. (2006)<br>Experiment 3 | Racial     | Young adult<br>(n = 17)<br>White men                             | Golf putting:<br>Precision                                                                                 | Simple task<br>Dual task              | Within-subjects<br>Explicit: text<br>Outgroup superiority<br>information                                                                                                                                                                                                | No                                                          | Performance              | Dual > Simple                                                                                                     |
| 7. Borel et al. (2024)                   | Age        | Elderly adults<br>(n = 22)                                       | Dynamic balance (eyes<br>open and closed; with and<br>without foam)<br>walking speed task and up<br>and go | ST<br>RT                              | Between-subjects<br>Explicit:<br>ST: informed that young<br>and older adults would<br>be evaluated<br>RT: The performance on<br>the task does not differ<br>between young and<br>older adults                                                                           | No                                                          | Performance              | Dynamic balance<br>ST < RT<br>(whit close eyes or whit<br>foam)<br>Walking speed or up and<br>go<br>No difference |
| 8. Branaghan &<br>Gray (2010)            | Age        | Young adult<br>(n = 11)                                          | Driving Simulator:<br>Time and velocity                                                                    | Elderly stereotype<br>Control         | Between-subjects<br>Implicit: arrange words:<br>Elderly ST:<br>Stereotypical age-<br>related information<br>Control: Use of non-<br>stereotypical words                                                                                                                 | No                                                          | Performance              | ES < C                                                                                                            |
| 9. Cardozo &<br>Chiviawowsky<br>(2015)   | Weight     | Young adult<br>(n = 23)<br>Women with<br>perceived<br>overweight | Balance on the<br>stabilometer: Time in<br>balance                                                         | ST<br>RST                             | Between-subjects<br>Explicit: text and Verbal<br>ST: Information that the<br>task was influenced by<br>individual<br>characteristics such as<br>weight<br>RST: Information that<br>the task is not<br>influenced by<br>individual<br>characteristics, such as<br>weight | Intrinsic Motivation<br>(Enjoyment)<br>Competence<br>Effort | Performance/<br>Learning | ST < RST                                                                                                          |
| 10. Cardozo et al. (2022)                | Gender     | Young adult<br>(n = 48)<br>Men                                   | Balance on the<br>stabilometer: Time in<br>balance                                                         | ST<br>Lift<br>Control                 | Between-subjects<br>Explicit: verbal<br>ST: Outgroup<br>superiority information<br>SL: Outgroup inferiority<br>information<br>Control: not receive<br>stereotype<br>related instructions                                                                                | Intrinsic Motivation<br>(Enjoyment)<br>Nervousness          | Performance/<br>Learning | Performance<br>SL > ST e C<br>ST = C<br>Learning<br>No difference                                                 |
| 11. Cardozo et al. (2021)                | Gender     | Young adult<br>(n = 60)<br>Women                                 | Dribbling and soccer<br>kicking:<br>number of touches to the<br>ball and shot accuracy on<br>target        | ST ex<br>ST im<br>ST ex/im<br>Control | Between-subjects<br>Explicit: verbal<br>ST: Outgroup<br>superiority information<br>Implicit: gender<br>experimenter<br>Control: practiced                                                                                                                               | Positive affects                                            | Performance/<br>Learning | ST ex/ST im < ST im<br>< ST ex < C                                                                                |

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Table 1 (continued)

| Authors                     | Stereotype | Population characteristic             | Task and measures                                                                                    | Groups or conditions                                 | Manipulation                                                                                                                                                                                                               | Other measures                                     | Motor Behavior | Results                                                                                                                                                                                                                                                                |
|-----------------------------|------------|---------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12. Chalabaev et al. (2020) | Age        | Elderly (n = 27)                      | Self-paced walking: Speed, cadence and spatial parameter                                             | ST<br>Control                                        | without stereotype activations<br>Within-subjects<br>Explicit: verbal<br>Implicit: questionnaire<br>ST: Information that they would be compared with younger people<br>Control: Compared with older adults of the same age | Cognition test                                     | Performance    | ST = C                                                                                                                                                                                                                                                                 |
| 13. Chalabaev et al. (2013) | Gender     | Young adult (n = 40)<br>Men and Women | Isometric knee extension contraction:<br>Maximal voluntary contraction and rate of force development | Stereotype<br>Nullified<br>Sex: female/male          | Between-subjects<br>Explicit: verbal<br>S: Information that women are inferior to men in the task<br>N: Information that there is no difference between genders on the task                                                | Physical self-worth                                | Performance    | Women<br>Rate of force development<br>S < N<br>Maximal voluntary contraction<br>S = N<br>Men<br>Rate of force development<br>S = N<br>Maximal voluntary contraction<br>S > N<br>Relationship between endorsing the stereotype, perceived ability and worse performance |
| 14. Chalabaev et al. (2009) | Gender     | Children (n = 102)<br>Girls           | Soccer:<br>Technical and tactical skills                                                             | There was no separation of groups                    | Within-subjects<br>Implicit: questionnaire<br>Questions about stereotype endorsement and perceived abilities                                                                                                               | Perceived ability<br>Endorsement of the stereotype | Performance    | C > ST athletic,<br>C = ST technical                                                                                                                                                                                                                                   |
| 15. Chalabaev et al. (2008) | Gender     | Young adult (n = 51)<br>Women players | Soccer dribbling:<br>Time to complete the task                                                       | ST athletic skills<br>ST technical skills<br>Control | Between-subjects<br>Explicit: verbal<br>Implicit: questionnaire indicate gender<br>ST: Information about task characteristics (athletic or technical)<br>Control: the task measured psychological factors                  | Achievement goals                                  | Performance    |                                                                                                                                                                                                                                                                        |
| 16. Chalabaev et al. (2008) | Gender     | Young adult (n = 63)<br>Men and women | Balance on the stabilometer:<br>Time in balance                                                      | ST Women<br>ST Men<br>Control                        | Between-subjects<br>Explicit: verbal<br>ST: Information that men/women are inferior to women/men in the task<br>Control: the task measured psychological                                                                   | Anxiety<br>Self-confidence<br>Heart rate           | Performance    | Men<br>ST women > C<br>ST men = C<br>Women<br>ST men > C<br>ST women = C                                                                                                                                                                                               |

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Table 1 (continued)

| Authors                        | Stereotype | Population characteristic             | Task and measures                                                                                                                                               | Groups or conditions                                  | Manipulation                                                                                                                                                                                                                                                            | Other measures                          | Motor Behavior           | Results                                                                                                                                                                                                                                                                                          |
|--------------------------------|------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17. Chiviawowsky et al. (2018) | Age        | Older adults (n = 39)                 | Balance on the stabilometer:<br>Time in balance                                                                                                                 | Negative Stereotype<br>Positive Stereotype<br>Control | factors<br>Implicit: video man or woman performing the task.<br>Between-subjects<br>Explicit: Verbal<br>NS: Information comparing performance with younger adults.<br>PS: Performance compared with adults 20 years older<br>Control: Performance not influenced by age | No                                      | Performance/<br>Learning | Performance<br>No difference<br>Learning<br>NS < C and PS                                                                                                                                                                                                                                        |
| 18. Dehkordi et al. (2024)     | Gender     | Girls (n = 120)                       | Standing long jump<br>Distance                                                                                                                                  | ST<br>Questioning<br>control                          | Between-subjects/<br>Within-subjects<br>Implicit: gender experimenter<br>ST: Questioning: received stereotype challenging messages from the male examiner<br>Control: Participants received no specific instructions/ female examiner                                   | No                                      | Performance              | Between-subjects<br>ST < question and control<br>Question = control<br>Within-subjects<br>ST post-test worse<br>Question post-test better<br>Control =                                                                                                                                           |
| 19. Deshayes et al. (2019)     | Gender     | Young adult (n = 34)<br>Men and women | Self-paced cycling exercise: Power and Fatigue                                                                                                                  | Negative Stereotype women<br>Nullified                | Within-subjects<br>Explicit: verbal<br>Negative: Information that women are inferior to men in the task<br>Nullified: there is no difference between genders                                                                                                            | Self-efficacy<br>Challenge (heart rate) | Performance              | Men/Women<br>Power<br>Negative women > Nullified<br>Fatigue<br>Negative women = Nullified                                                                                                                                                                                                        |
| 20. Deshayes et al. (2020)     | Gender     | Young adult (n = 40)<br>Men and women | knee extension contraction:<br>Peripheral fatigue of the quadriceps,<br>Mean power frequency,<br>Rate of strength decrease<br>Central fatigue of the quadriceps | Negative Stereotype women<br>Nullified                | Within-subjects<br>Explicit: verbal<br>Negative: Information that women are inferior to men in the task<br>Nullified: there is no difference between genders and we will measure cognitive and psychological settings                                                   | Rate of perceived exertion              | Performance              | Men/women<br>Time 1: There was a gender-related difference in the Mean power frequency measure. No differences were found in the other measures<br>Time 2:<br>Mean power frequency:<br>Negative women > Nullified<br>No differences were found in the other measures<br>(continued on next page) |

Table 1 (continued)

| Authors                    | Stereotype | Population characteristic             | Task and measures                                                                              | Groups or conditions                                  | Manipulation                                                                                                                                                                                                                                                         | Other measures | Motor Behavior | Results                                                                                                                                                                                                   |
|----------------------------|------------|---------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21. Deshayes et al. (2020) | Age        | Elderly (n = 34)                      | knee extension contraction:<br>Time to exhaustion<br>Fatigue                                   | Negative stereotype<br>Nullified                      | Between-subjects<br>Explicit: verbal<br>Negative: older adults have been shown to underperform on this task as compared to younger adults<br>Nullified: older and younger adults have been shown to perform the same on this task                                    | Subjective age | Performance    | Time to exhaustion<br>Negative = Nullified<br>Fatigue<br>Negative = Nullified                                                                                                                             |
| 22. Deshayes et al. (2020) | Gender     | Young adult (n = 77)<br>Men and women | Isometric contraction on manual dynamometer: exhaustion time, fatigue and perception of effort | ST women<br>Nullified ST<br>Control                   | Between-subjects<br>Explicit: verbal<br>ST women: Information that women are inferior to men in the task<br>Nullified ST: there is no difference between genders<br>Control: not receive stereotype related instructions                                             | No             | Performance    | Men/ Women<br>Exhaustion time<br>Nullified ST worse Time 2 to than Time 1<br>Control worse Time 2 to than Time 1<br>ST women no difference<br>Fatigue and perception of effort<br>No effect for condition |
| 23. Deshayes et al. (2022) | Age        | Elderly (n = 50)                      | Isometric contraction on manual dynamometer at different levels of effort: Kg                  | Negative Stereotype<br>Positive Stereotype<br>Control | Within-subjects<br>Explicit: verbal<br>Negative: information that older adults are inferior to younger adults in this task<br>Positive: information that older adults are superior than younger adults in this task<br>Control: nothing was told to the participants | No             | Performance    | Easy/hard levels<br>Increase strength from time 1 to time 2 in the negative stereotype and positive stereotype groups, but no control group<br>Moderate/Very hard<br>No difference                        |
| 24. Deshayes et al. (2022) | Age        | Elderly (n = 20)                      | Physical activity<br>Inactivity time<br>Subjective Physical activity                           | Negative Stereotype<br>Neutral<br>Control             | Within-subjects<br>Explicit: verbal<br>NS: Compare performance between younger and older adults<br>Neutral: Compare performance in individuals aged 65 and older<br>Control: nothing was told to the participants                                                    | No             | Performance    | Physical activity<br>No difference<br>Subjective Physical and Inactivity time<br>C worse neutral = NS                                                                                                     |

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Table 1 (continued)

| Authors                                    | Stereotype     | Population characteristic                           | Task and measures                                                                                                                               | Groups or conditions                                        | Manipulation                                                                                                                                                                                                                      | Other measures                                        | Motor Behavior | Results                                                                                                                                                                |
|--------------------------------------------|----------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 25. Deshayes et al. (2023)                 | Gender         | Young adult (n = 34)<br>Men and Women               | Self-paced intermittent isometric elbow contractions: Kg and Fatigue                                                                            | Negative Stereotype women<br>Nullified<br>Sex: female/ male | Within-subjects<br>Explicit: verbal<br>Negative S: Information that women are inferior to men in the task<br>Nullified S: there is no difference between genders                                                                  | Electroencephalographic activity<br>Achievement goals | Performance    | Men/Women<br>NS woman > Nullified<br>Fatigue<br>NS woman = Nullified                                                                                                   |
| 26. Deshayes et al. (2024)                 | Gender         | Yong adults (n = 54)<br>Women                       | Soccer-dribbling task<br>Time<br>Error                                                                                                          | Negative stereotype<br>Nullified stereotype                 | Within/ Between-subjects<br>Explicit: verbal<br>Negative: Information that women are inferior to men in the task<br>Nullified: there is no difference between genders                                                             | Domain identification                                 | Performance    | No differences were observed                                                                                                                                           |
| 27. Dupraz et al. (2023)                   | Weight         | Young adult (n = 35)<br>healthy weight participants | Virtual reality on locomotor imagery task: slope and distance                                                                                   | Healthy-weight self-avatar<br>Overweight self-avatar        | Within-subjects<br>Implicit: use overweight or healthy weight avatar                                                                                                                                                              | No                                                    | Performance    | Slope and distance<br>Healthy-weight self-avatar > overweight self-avatar                                                                                              |
| 28. Emile et al. (2017)                    | Age            | Elderly (n = 82)                                    | Handgrip strength: Peak maximal voluntary contraction (MVC), average MVC, peak rate of force development, rate of force development 50 (RFD 50) | Entity<br>Incremental<br>Control                            | Between-subjects.<br>Explicit: text<br>Implicit: task type<br>Incremental: Information about which force is malleable.<br>Entity: Information about which force is not malleable<br>Control: nothing was told to the participants | No                                                    | Performance    | Peak MVC/ Average MVC<br>Incremental increased, Entity no interaction, Control decreased<br>Peak RFD/ RFD 50<br>Incremental increased Entity or Control no interaction |
| 29. Ginsberg et al. (2012)<br>Experiment 1 | Disability     | Young adult (n = 61)<br>Person without disability   | Manipulative dexterity: Speed and manual dexterity                                                                                              | ST disability<br>Control                                    | Between-subjects<br>Implicit: organizing words<br>ST: Organize disability-themed words<br>Control: Organize neutral words                                                                                                         | No                                                    | Performance    | Speed<br>ST disability < C<br>Manual dexterity<br>ST disability < C                                                                                                    |
| 30. Ginsberg et al. (2012)<br>Experiment 2 | Age Disability | Young adult (n = 38)<br>Person without disability   | Manipulative dexterity: Speed and manual dexterity                                                                                              | ST disability<br>ST age<br>Control                          | Between-subjects<br>Implicit: organizing words<br>ST: Organize words with a stereotypical theme of disability or old age                                                                                                          | No                                                    | Performance    | Speed<br>ST age and ST disability < C<br>Manual dexterity<br>ST disability < C<br>ST age = ST disability and C<br>(continued on next page)                             |

Table 1 (continued)

| Authors                                                    | Stereotype     | Population characteristic                                  | Task and measures                                                                                | Groups or conditions                                                                              | Manipulation                                                                                                                                                                                                                                                            | Other measures                                                                                                           | Motor Behavior | Results                                                                                                                                |
|------------------------------------------------------------|----------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 31. <a href="#">Ginsberg et al. (2012)</a><br>Experiment 3 | Age Disability | Young adult (n = 91)<br>Person without disability          | Manipulative dexterity: fine motor coordination                                                  | ST disability<br>ST age<br>Control                                                                | Control: Organize neutral words<br>Between-subjects<br>Implicit: organizing words<br>ST: Organize words with a stereotypical theme of disability or old age<br>Control: Organize neutral words                                                                          | No                                                                                                                       | Performance    | ST disability < C<br>ST disability < ST age<br>ST age = C                                                                              |
| 32. <a href="#">Grabow &amp; Kühl (2019)</a>               | Gender         | Young adult (n = 83)<br>Women players                      | Shot on goal: Accuracy and mistake                                                               | ST<br>No-threat                                                                                   | Between-subjects.<br>Explicit: text<br>ST Outgroup superiority information<br>No-threat: Informed that there were no studies on individual differences in precision tasks.                                                                                              | Self-efficacy<br>Importance<br>Collective identification with women and female football players<br>Subjective difficulty | Performance    | Accuracy<br>ST < No-threat<br>Mistakes<br>ST = No-threat                                                                               |
| 33. <a href="#">Gray et al. (2022)</a>                     | Nonexerciser   | Middle-aged adults (n = 18)<br>Person with HIV             | Handgrip strength: force-time integral and average force over a 500-ms MVC                       | Control<br>ST<br>low self-efficacy<br>high self-efficacy                                          | Within-subjects<br>Explicit: verbal<br>ST: Information about less active people are more fatigued and have lower performance<br>Control: nothing was told to the participants                                                                                           | No                                                                                                                       | Performance    | Force-time integral/<br>Average force over a 500-ms MVC<br>ST < C<br>High self-efficacy > ST<br>Low self-efficacy = ST                 |
| 34. <a href="#">Gray et al. (2022)</a>                     | Nonexerciser   | Yong adult (n = 26)<br>Men<br>nonexercisers and exercisers | Isometric contraction on dynamometric chair: global fatigue, central fatigue, peripheral fatigue | ST<br>Nullified                                                                                   | Within-subjects<br>Explicit: verbal<br>Information about inactive individuals are less healthy and weaker performance in this task<br>Nullified: informed that they would measure mental parameters, and that there is no difference between active and inactive people | Self-efficacy                                                                                                            | Performance    | Global fatigue/<br>exercisers and non-exercisers/CVM<br>Nullified < ST<br>Central fatigue/<br>Peripheral Fatigue<br>No effect observed |
| 35. <a href="#">Grimm et al. (2016)</a>                    | Racial         | Young adult (n = 70)<br>Whites and Asians                  | Golf putt:<br>Shot accuracy and speed                                                            | ST (athletic ability)<br>intelligence (cognitive skills)<br>Gains/losses<br>Single-task/Dual-task | Between-subjects.<br>Explicit: text<br>Information about the characteristics of the task (athletic or intelligence)<br>Information about                                                                                                                                | Working memory                                                                                                           | Performance    | Single-task/Dual-task<br>No found difference<br>Athletic ability:<br>Gains = Losses<br>intelligence ability<br>Losses < Gains          |

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Table 1 (continued)

| Authors                                 | Stereotype        | Population characteristic                                     | Task and measures                                                   | Groups or conditions                        | Manipulation                                                                                                                                                                                            | Other measures                | Motor Behavior       | Results                                                                                                                                     |
|-----------------------------------------|-------------------|---------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 36. Hausdorff et al. (1999)             | Age               | Elderly (n = 47)                                              | 45 m march:<br>Walk time<br>Gait speed and<br>Swing time            | Negative<br>Positive                        | measures of gains or losses<br>Implicit: race indicator<br>Between-subjects<br>Implicit: organizing words<br>Negative: Organize negative words about age<br>Positive: Organize positive words about age | No                            | Performance          | Walk time<br>Positive decreased the time<br>Negative no difference<br>Gait speed/Swing time<br>Positive increased<br>Negative no difference |
| 37. Heidrich & Chiviawsky (2015)        | Gender            | Young adult (n = 24)<br>Women                                 | Soccer dribbling: movement time                                     | ST<br>NST                                   | Between-subjects<br>Explicit: text<br>ST: Information about outgroup superiority on assessed physical capabilities<br>NST: there is no difference between genders                                       | Self-efficacy                 | Performance/learning | Performance/learning<br>ST < NST                                                                                                            |
| 38. Hermann & Vollmeyer (2016)          | Gender            | Young adult (n = 36)<br>Women players                         | Soccer dribbling and goal kicking: time                             | ST<br>Control                               | Between-subjects<br>Explicit: text<br>ST: Information about women's inferiority in the task<br>Control: Information about the growing popularity of football                                            | Flow concern                  | Performance          | ST < C                                                                                                                                      |
| 39. Hively & El-Alayli (2014)           | Gender            | Young adult (n = 61)<br>Men and women                         | Basketball and tennis (speed and concentration): number of hits     | ST<br>No-threat                             | Between-subjects<br>Explicit: text<br>ST: Information about differences about natural athletic between men and women<br>No-threat: there is no difference between genders                               | Endorsement of the stereotype | Performance          | ST<br>Women < Men - Task 1<br>No-threat<br>There was no effect<br>ST e No-threat – Task 2<br>There was no effect                            |
| 40. Howard & Borgella (2018)            | Racial and Gender | Young adult (n = 91)<br>Experienced Black Women in Basketball | Basketball free throw: number of hits                               | Race prime<br>Gender prime<br>Control (age) | Between-subjects<br>Implicit: questionnaire about gender, race or age identity                                                                                                                          | No                            | Performance          | Race > Gender and C<br>Gender < C                                                                                                           |
| 41. Huber et al. (2015)<br>Experiment 1 | Gender            | Young adult (n = 72)<br>Men and Women                         | Hit virtual tennis ball: median error absolute, racket acceleration | ST<br>NST                                   | Between-subjects<br>Explicit: verbal<br>ST: Information that the task presents differences between genders in this task                                                                                 | Endorsement of stereotypes    | Performance          | Median Error Absolute/<br>Racket acceleration<br>ST = NST                                                                                   |

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Table 1 (continued)

| Authors                                                 | Stereotype | Population characteristic                | Task and measures                                                                                | Groups or conditions                                   | Manipulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Other measures             | Motor Behavior | Results                                                                                             |
|---------------------------------------------------------|------------|------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------|-----------------------------------------------------------------------------------------------------|
| 42. <a href="#">Huber et al. (2015)</a><br>Experiment 2 | Gender     | Young adult<br>(n = 69)<br>Men and women | Hit virtual tennis ball:<br>median error and racket<br>acceleration                              | ST<br>NST                                              | NST: there is no<br>difference between<br>genders<br>Implicit: Experienced<br>from the opposite sex<br>Between-subjects<br>Explicit: verbal<br>ST: Information that the<br>task presents differences<br>between genders in this<br>task<br>NST: there is no<br>difference between<br>genders<br>Implicit: Experienced<br>from the opposite sex<br>Between-subjects<br>Explicit: verbal<br>ST: Information that the<br>task presents differences<br>between genders in this<br>task                                                                                                                                                                                                                                           | Endorsement of stereotypes | Performance    | Median Error/Racket<br>acceleration<br>Women<br>ST < NST<br>Men<br>There was no difference          |
| 43. <a href="#">Huber et al. (2015)</a><br>Experiment 3 | Gender     | Young adult<br>(n = 35)<br>Women         | Hit virtual tennis ball:<br>median error and<br>racket acceleration                              | ST<br>NST                                              | NST: there is no<br>difference between<br>genders<br>Implicit: Experienced<br>from the opposite sex<br>Between-subjects<br>Explicit: verbal<br>ST: Information that the<br>task presents differences<br>between genders in this<br>task<br>NST: there is no<br>difference between<br>genders<br>Implicit: characteristics<br>of the experimenter<br>Between-subjects.<br>Explicit: verbal<br>ST: Information that the<br>task presents differences<br>between genders in this<br>task<br>NT: there is no<br>difference between<br>genders<br>Implicit: characteristics<br>of the experimenter<br>Within-subjects<br>Implicit: use of images<br>Participants were<br>exposed to<br>“stereotypical” images<br>of boys or girls | Endorsement of stereotypes | Performance    | Median error/Racket<br>acceleration<br>ST > NST                                                     |
| 44. <a href="#">Huber et al. (2016)</a>                 | Gender     | Young adult<br>(n = 48)<br>Men and women | Hit virtual tennis ball:<br>percentage of successful<br>bounces, median error and<br>variability | ST<br>No Threat                                        | NST: there is no<br>difference between<br>genders<br>Implicit: characteristics<br>of the experimenter<br>Between-subjects.<br>Explicit: verbal<br>ST: Information that the<br>task presents differences<br>between genders in this<br>task<br>NT: there is no<br>difference between<br>genders<br>Implicit: characteristics<br>of the experimenter<br>Within-subjects<br>Implicit: use of images<br>Participants were<br>exposed to<br>“stereotypical” images<br>of boys or girls                                                                                                                                                                                                                                            | No                         | Performance    | Percentage of successful<br>bounces<br>ST > NT<br>Median error<br>ST = NT<br>Variability<br>ST < NT |
| 45. <a href="#">Jansen et al. (2015)</a>                | Gender     | Children<br>(n = 54)<br>Boys and girls   | Manual dexterity/<br>reaction time and accuracy                                                  | There was no<br>separation of<br>groups                | Within-subjects<br>Implicit: use of images<br>Participants were<br>exposed to<br>“stereotypical” images<br>of boys or girls                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | No                         | Performance    | There was no difference                                                                             |
| 46. <a href="#">Knight et al. (2004)</a>                | Gender     | Young adult<br>(n = 12)<br>Men and woman | Manual dexterity:<br>Time                                                                        | Feminine task<br>(Barbie)<br>Masculine task<br>(robot) | Between-subjects.<br>Implicit: stereotypical<br>toys<br>Manipulating<br>stereotypical toys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | No                         | Performance    | Feminine task (Barbie)<br>Woman > man<br>Masculine task (robot)<br>Man > woman                      |

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Table 1 (continued)

| Authors                  | Stereotype           | Population characteristic              | Task and measures                                | Groups or conditions                                                           | Manipulation                                                                                                                                                                                                                                                                | Other measures                                                  | Motor Behavior           | Results                                                                                                                                                                                         |
|--------------------------|----------------------|----------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 47. Krendl et al. (2012) | Racial               | Young adult (n = 74)<br>White people   | Basketball free throws:<br>Number of hits        | NS obs<br>NS not/obs<br>PS obs<br>PS not/obs<br>Control obs<br>Control not/obs | Between-subjects<br>Explicit: video<br>NS: They watched videos with texts and images of black players making free throws<br>PS: They watched videos with texts and images of white players making free throws<br>Control: They watched soccer players taking penalty kicks. | No                                                              | Performance              | Positive stereotype<br>PS obs < PS not/obs<br>PS not/obs > C e NS<br>PS obs = NS<br>Control<br>There was no difference with or without obs<br>Negative stereotype<br>NS obs = not/obs<br>NS < C |
| 48. Laurin et al. (2022) | Gender               | Young adult (n = 21)<br>women athletes | Isometric knee extension:<br>RFD                 | Neutral<br>ST<br>ST/image                                                      | Within-subjects<br>Explicit: verbal<br>ST: Information about comparison and superiority of the outgroup in the task<br>Implicit: characteristic of experiment                                                                                                               | Avoidance<br>Self-worth                                         | Performance              | Neutral > ST<br>Neutral = ST/image<br>ST < ST/image                                                                                                                                             |
| 49. Laurin (2013)        | Gender               | Teenagers (n = 161)<br>Boys and girls  | Basketball free throw:<br>Number of hits         | ST women<br>ST men<br>Control                                                  | Between-subjects.<br>Explicit: verbal<br>ST Information about comparison and superiority of the outgroup<br>Control: there is no difference between genders                                                                                                                 | Endorsement of the stereotype.<br>Anxiety somatic and cognitive | Performance              | Women<br>ST women < C < ST men<br>ST women > Control and ST men                                                                                                                                 |
| 50. Levy et al. (2014)   | Age                  | Elderly (n = 100)                      | Physical function<br>Strength, gait, and balance | PS/impl<br>PS/imp-exp<br>PS/exp<br>Control                                     | Between-subjects.<br>Explicit: text<br>PS: Write about a healthy elderly person<br>Control: Exposed to neutral conditions, without promoting or challenging stereotypes.<br>Implicit: Reading of positive words about aging                                                 | Age stereotypes<br>Self-perceptions of aging.                   | Performance              | PS/impl<br>Improved physical function<br>PS/impl surpassed PS/exp and control                                                                                                                   |
| 51. Lima et al. (2024)   | socioeconomic status | Yong adult (n = 30)<br>low -income     | Spatiotemporal accuracy<br>skill on the computer | ST<br>NST                                                                      | Between-subjects.<br>Explicit: verbal<br>ST: Information about superiority of the outgroup in the task<br>NST: there is no difference between socioeconomic status                                                                                                          | No                                                              | Performance/<br>learning | Performance<br>ST < NST (first block)<br>ST= NST (others blocks)<br>Learning<br>ST<NST                                                                                                          |

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Table 1 (continued)

| Authors                                   | Stereotype | Population characteristic                        | Task and measures                                                                                                                                                | Groups or conditions              | Manipulation                                                                                                                                                                                                                       | Other measures                                  | Motor Behavior | Results                                                                                                                                        |
|-------------------------------------------|------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 52. Marquet et al. (2018)                 | Age        | Elderly (n = 64)                                 | Timed Up and Go test<br>Comfortable/ rapid/<br>Tandem walking speed, Crossing over two different obstacles, One-leg standing test, Grip strength and persistence | Low-threat<br>High-threat         | Between-subjects<br>Explicit: verbal<br>High: Older adults have difficulty with balance<br>Low: The objective of the study was to investigate the underlying mechanisms of walking.<br>Implicit: Posters with negative stereotypes | Subjective age                                  | Performance    | Tandem walking<br>Low > High<br>No other measures showed a difference                                                                          |
| 53. Martiny et al. (2015)                 | Gender     | Young adult (n = 85)<br>Women soccer players     | Soccer dribbling: Movement Time                                                                                                                                  | Single identity<br>Dual identity  | Between-subjects<br>Implicit: questionnaire<br>Identification as women and/or identity as a member of a soccer team                                                                                                                | No                                              | Performance    | Dual Identity > Single Identity                                                                                                                |
| 54. Martiny et al. (2015)<br>Experiment 2 | Gender     | Young adult (n = 46)<br>Women basketball players | Basketball shots: Accuracy and timing                                                                                                                            | Single identity<br>Dual identity  | Between-subjects<br>Implicit: questionnaire<br>Identification as women and/or identity as a member of a basketball team, and female basketball players                                                                             | Cognitive anxiety<br>somatic anxiety            | Performance    | Single Identity<br>The greater the cognitive anxiety, the worse the accuracy<br>Dual Identity<br>No effect observed                            |
| 55. Miedema et al. (2023)                 | Gender     | Children (n = 84)<br>Boys and girls              | Fundamental manipulative skills<br>TGMD                                                                                                                          | There was no separation of groups | Within-subjects<br>Implicit: questionnaire<br>Questionnaires about awareness, flexibility, and endorsement with images boys and girls                                                                                              | Endorsement<br>Flexibility<br>Awareness         | Performance    | There was a negative association between endorsement, awareness, flexibility and girls' performance<br>No association were significant to boys |
| 56. Mo`e et al. (2015)<br>Experiment 1    | Gender     | Young adult (n = 81)<br>Women                    | Driving Simulator: Errors                                                                                                                                        | ST<br>Control                     | Between-subjects<br>Explicit: text<br>ST: Information that would compare driving ability between men and women<br>Control: They did not receive gender-related information                                                         | Intrinsic motivation<br>Performance expectation | Performance    | ST < C                                                                                                                                         |
| 57. Mo`e et al. (2015)<br>Experiment 2    | Gender     | Young adult (n = 70)<br>Women                    | Driving Simulator: Errors                                                                                                                                        | ST<br>Stereotype Boost            | Between-subjects<br>Explicit: text<br>ST: Information that would compare driving ability between men and women<br>Boost: Informed that the objective is to differentiate driving                                                   | Intrinsic motivation<br>Performance expectation | Performance    | ST < Stereotype Boost                                                                                                                          |

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Table 1 (continued)

| Authors                                             | Stereotype | Population characteristic     | Task and measures                                    | Groups or conditions          | Manipulation                                                                                                                                                                                                                                                                         | Other measures  | Motor Behavior           | Results                                                                                                                 |
|-----------------------------------------------------|------------|-------------------------------|------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 58. <a href="#">Moriello et al. (2013)</a>          | Age        | Elderly (n = 95)              | Balance, time fours meter walk and chair stand: time | ST<br>PS<br>Control           | ability between young and adult drivers.<br>Between-subjects<br>Implicit: Images<br>ST: Organize images of stereotypical objects about old age<br>PS: Organize images of positive objects about old age<br>Control: Organize images of neutral objects about old age                 | No              | Performance              | There was no difference between groups                                                                                  |
| 59. <a href="#">Mousavi et al. (2021)</a>           | Gender     | Children (n = 45)<br>Girls    | Kick ball at target: Precision                       | NS<br>PS<br>Control           | Between-subjects<br>Explicit: verbal<br>ST: Information of outgroup superiority in this task<br>PS: Information of ingroup superiority in this task<br>Control: there is no difference between gender<br>Implicit: video<br>Video with images of the opposite/ same/ balanced gender | Regulatory foci | Performance / learning   | Performance<br>C > NS<br>C = PS<br>Learning 24 h<br>C > NS<br>C = PS<br>Learning 48 h<br>PS > C<br>NS = C               |
| 60. <a href="#">Mousavi et al. (2023)</a>           | Gender     | Adolescents (n = 46)<br>Girls | Futsal kick: Accuracy                                | ST<br>Nullified<br>Stereotype | Between-subjects<br>Explicit: verbal/ text/ video<br>ST: Information of outgroup superiority in this task<br>NS: there is no difference between gender                                                                                                                               | No              | Performance/<br>Learning | Performance<br>ST < Nullified Stereotype<br>Learning Day 7/Day 12 (retention and transfer)<br>ST < Nullified Stereotype |
| 61. <a href="#">Mousavi et al. (2025)</a>           | Gender     | Children (n = 54)<br>Girls    | Kicking task<br>Accuracy                             | ST/EE<br>ST<br>NST            | Between-subjects<br>Explicit: verbal<br>ST: Information of outgroup superiority in this task<br>NST: there is no difference between gender                                                                                                                                           | No              | Performance/<br>Learning | Performance<br>There was no difference Learning<br>ST < ST/EE = NST                                                     |
| 62. <a href="#">Mousavi &amp; Soltanifar (2025)</a> | Gender     | Children (n = 42)<br>Girls    | Soccer-kicking<br>Throw tennis balls                 | ST<br>NST                     | Between/ within -subjects<br>Explicit: verbal<br>ST: Information of                                                                                                                                                                                                                  | No              | Performance              | Soccer task<br>ST < NST<br>Throw tennis balls task<br>No difference<br>(continued on next page)                         |

Table 1 (continued)

| Authors                                   | Stereotype | Population characteristic              | Task and measures                            | Groups or conditions                                                                           | Manipulation                                                                                                                                                                 | Other measures | Motor Behavior           | Results                                                                                                                                                                                                        |
|-------------------------------------------|------------|----------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 63. Nahidi et al. (2023)                  | Gender     | Yong adults (n = 60)<br>Women          | Soccer dribbling:<br>Time and error          | ST/inherent ability<br>Control/inherent ability<br>ST/acquired skill<br>Control/acquired skill | outgroup superiority in this task<br>NST: there is no difference between gender<br>Between-subjects<br>Implicit: characteristic of the experimenter                          | Work memory    | Performance/<br>Learning | Performance<br>Time: ST < C<br>Inherent < Acquired skill<br>Error: ST < C<br>Retention<br>Time: ST < C<br>Inherent < Acquired skill<br>Error: ST < C<br>Transfer<br>Time: ST < C<br>Error: No effect was found |
| 64. Pillaud et al. (2015)<br>Experiment 1 | Gender     | Young adult (n = 113)<br>Men and women | Move object by path:<br>Time and least error | ST women<br>ST men<br>Control                                                                  | Between-subjects<br>Explicit: verbal/ text<br>ST: Information of outgroup superiority in this task<br>Control: not refer to gender                                           | No             | Performance              | Women<br>ST woman < ST men<br>C= ST woman and ST men<br>Men<br>There was no difference                                                                                                                         |
| 65. Pillaud et al. (2015)<br>Experiment 2 | Gender     | Children (n = 300)<br>Boys and girls   | Move object by path:<br>Time and least error | ST girls<br>ST boys<br>Control                                                                 | Between-subjects<br>Explicit: verbal<br>ST: Information of outgroup superiority in this task<br>Control: not refer to gender                                                 | No             | Performance              | Girls<br>STgirls < ST boys<br>C= ST girls and ST boys<br>Boys<br>There was no difference                                                                                                                       |
| 66. Pillaud et al. (2015)<br>Experiment 3 | Height     | Young adult (n = 229)<br>Men and women | Balance task:<br>Number hits                 | PS Low<br>PS High                                                                              | Between-subjects<br>Explicit: verbal<br>PS: Information of superiority short or tall individuals in this task<br>Implicit: questionnaire<br>Indicate height in questionnaire | No             | Performance              | Short men<br>PS high < PS low<br>Tall men<br>There was no difference<br>Women<br>There was no difference                                                                                                       |
| 67. Rabeinia et al. (2021)                | Weight     | Children (n = 24)<br>Overweight girls  | Balance on the stabilometer: Time in balance | ST<br>Control                                                                                  | Between-subjects<br>Explicit: verbal and text<br>ST: Information that the task was influenced by individual characteristics such as weight<br>Control: Information           | No             | Performance/<br>Learning | Performance<br>ST < C<br>Learning<br>ST < C                                                                                                                                                                    |

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Table 1 (continued)

| Authors                                     | Stereotype                 | Population characteristic                            | Task and measures                              | Groups or conditions               | Manipulation                                                                                                                                                                                                                                                                                             | Other measures                                                                                                  | Motor Behavior | Results                                                              |
|---------------------------------------------|----------------------------|------------------------------------------------------|------------------------------------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------|
| 68. Raphael (2017)                          | Gender                     | Adolescents (n = 120)<br>Man and woman               | Stride jumps while jumping rode: distance (cm) | ST<br>SL<br>Control                | that the task is not influenced by individual characteristics, such as weight<br>Between-subjects<br>Explicit: Verbal<br>ST: Outgroup superiority information<br>SL: Outgroup inferiority information<br>Control: there is no difference between gender<br>Implicit: characteristics of the experimenter | Endorsement of the stereotype<br>Domain identification<br>Perceived ability                                     | Performance    | Men<br>LIFT > ST and C<br>ST = C<br>Women<br>There was no difference |
| 69. Rees & Salvatore (2021)                 | Gender and league position | Young adult (n = 80)<br>Women soccer/cricket players | Penalties soccer or Cricket pitch: hits        | Threat<br>Cognitive<br>Questioning | Within-subjects<br>Explicit: text<br>Threat: Information about outgroup superiority<br>Questioning: encouraged participants to question the validity and legitimacy of the stereotype                                                                                                                    | No                                                                                                              | Performance    | Threat < Cognitive<br>< questioning                                  |
| 70. Rees & Salvatore (2021)<br>Experiment 2 | Sports status              | Young adult (n = 98)<br>Soccer players               | Penalty soccer: hits                           | ST<br>Questioning                  | Between-subjects<br>Explicit: text<br>ST: Information that English people are bad penalty takers<br>Questioning: encouraged participants to question the validity and legitimacy of the stereotype                                                                                                       | No                                                                                                              | Performance    | ST < Questioning                                                     |
| 71. Rees & Salvatore (2021)<br>Experiment 3 | Sports status              | Young adult (n = 132)<br>Soccer players              | Penalty soccer: hits                           | ST<br>Questioning<br>Control       | Between-subjects<br>Explicit: text<br>ST: Information that English people are bad penalty takers<br>Questioning: encouraged participants to question the validity and legitimacy of the stereotype<br>Control: not refer to sport status                                                                 | Conscious experiences of monitoring<br>Without conscious experiences of monitoring<br>Worry about making errors | Performance    | ST < Questioning and C<br>Questioning = C                            |

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Table 1 (continued)

| Authors                       | Stereotype | Population characteristic                  | Task and measures                               | Groups or conditions                       | Manipulation                                                                                                                                                                                                                                      | Other measures                                         | Motor Behavior           | Results                                                                                                                                                                                                                                                                                             |
|-------------------------------|------------|--------------------------------------------|-------------------------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 72. Saemi et al. (2022)       | Gender     | Children (n = 204)<br>Girls                | Long jump with both feet:<br>Distance           | ST ex<br>ST im<br>ST ex/im<br>Control      | Between-subjects<br>Explicit: verbal<br>ST: Outgroup superiority information in this task<br>Control: not refer to gender<br>Implicit: characteristics of the experimenter                                                                        | Cognitive and somatic anxiety<br>Confidence            | Performance              | Trial 1 and 2<br>ST ex/im < C<br>ST im < C<br>ST ex = C<br>ST ex/ im = ST ex = ST im<br>Trial 3<br>ST ex/im < C<br>ST im < C<br>ST ex < C<br>ST ex/ im = ST ex = ST im<br>Trial 4<br>ST ex/im < C<br>ST ex < C<br>ST ex/ im < ST ex<br>Performance<br>C > ST > ST dual Learning<br>C > ST = ST dual |
| 73. Saemi et al. (2024)       | Gender     | Children (n = 150)<br>Girls                | Kick ball at target:<br>Precision               | ST<br>ST dual<br>Control                   | Between-subjects<br>Explicit: verbal<br>ST: Outgroup superiority information<br>Control: not refer to gender                                                                                                                                      | No                                                     | Performance/<br>Learning | Performance<br>Not difference<br>Learning/ transfer<br>Control > IS/CH and IS/ TH<br>IS/CH = IS/TH                                                                                                                                                                                                  |
| 74. Soltanifar et al. (2024)  | Gender     | Adolescents (n = 45)<br>Girls              | Throw a tennis ball toward a target<br>Accuracy | IS/CH<br>IS/TH<br>Control                  | Between-subjects<br>Explicit: verbal<br>ST: Stereotypical characteristics of the task<br>Implicit: characteristics of the experimenter                                                                                                            | No                                                     | Performance/<br>Learning | Performance<br>Not difference<br>Learning/ transfer<br>Control > IS/CH and IS/ TH<br>IS/CH = IS/TH                                                                                                                                                                                                  |
| 75. Stone (2002) Experiment 1 | Racial     | Young adult (n = 64)<br>White people       | Golf shots:<br>Task practice number             | ST<br>Low threat<br>Engaged<br>/Disengaged | Between-subjects.<br>Explicit: text<br>Implicit: Questionnaire<br>ST: Information about natural athletic abilities linked to the task.<br>LowT: Information about cognitive abilities linked to the task.<br>Racial characteristics questionnaire | Situational anxiety<br>Self esteem<br>Self-handcapping | Performance              | High threat < Low Threat<br>Engaged High threat < Engaged Low threat and disengaged high or low threat<br>Engaged low > disengaged High or low<br>disengaged High = disengaged low                                                                                                                  |
| 76. Stone (2002) Experiment 2 | Racial     | Young adult (n = 74)<br>Whites and Spanish | Golf shots:<br>Task practice number             | ST<br>RST                                  | Between-subjects.<br>Explicit: text<br>Implicit: questionnaire<br>ST: Information about natural athletic abilities or cognitive abilities, linked to the task.<br>Questionnaires on racial characteristics                                        | Situational anxiety<br>Self esteem                     | Performance              | Whites<br>Engaged < disengaged Spanish<br>Engaged > Engaged whites                                                                                                                                                                                                                                  |

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Table 1 (continued)

| Authors                                 | Stereotype        | Population characteristic                      | Task and measures                                     | Groups or conditions                                                                                | Manipulation                                                                                                                                                                                        | Other measures                                                            | Motor Behavior | Results                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------|-------------------|------------------------------------------------|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 77. Stone et al. (1999)<br>Experiment 1 | Racial            | Young adult (n = 80)<br>Black and White people | Golf shots<br>Measure: Accuracy and number of strokes | Natural athletic ability<br>Sports intelligence<br>Factors psychological (implicit and no-implicit) | Between-subjects.<br>Explicit: text<br>Implicit: questionnaire identity racial<br>ST: Information about natural athletic abilities or cognitive abilities, linked to the task.                      | Situational anxiety<br>Self-handcapping<br>Expectancies about performance | Performance    | Blacks<br>Athletic ability > sports intelligence and factors psychological implicit; sports intelligence and factors psychological implicit < factors psychological no-implicit<br>Whites<br>sports intelligence and factors psychological implicit > athletic ability<br>sports intelligence = no-implicit<br>athletic ability = no-implicit |
| 78. Stone et al. (1999)<br>Experiment 2 | Racial            | Young adult (n = 94)<br>White people           | Golf shots<br>Measure: least number of strokes        | ST<br>RST<br>Engaged/<br>Disengaged<br>Misattribution: high/low                                     | Between-subjects.<br>Explicit: text and verbal<br>ST: Information about natural athletic abilities, linked to the task.<br>RST: task related to psychological factors                               | Anxiety<br>Self-worth<br>Athletic disengagement                           | Performance    | ST engaged < ST disengaged                                                                                                                                                                                                                                                                                                                    |
| 79. Stone & McWhinnie (2008)            | Gender and racial | Young adult (n = 110)<br>White women           | Golf shots<br>Measure: Accuracy and number of strokes | ST racial<br>ST gender<br>Control<br>Explicit/ implicit                                             | Between-subjects.<br>Explicit: text and verbal<br>Implicit: gender experimenter<br>ST: Stereotypical information about gender or race differences<br>Control: task related to psychological factors | Performance expectation                                                   | Performance    | Strokes<br>ST gender < ST race and C;<br>ST race = C<br>Gender experimenter: No difference<br>Accuracy: Gender experimenter Women implicit condition < women not implicit<br>Exp: No difference                                                                                                                                               |

ST, stereotype threat; C, control; RT, R (reduced ST); PS, positive stereotype; NS, negative stereotype; N, nullified; NS, nullified stereotype; IS, implicit stereotype; ES, explicit stereotype; EE, enhanced expectancy; TH, threat; CH, challenge; E, elderly; SL, stereotype lift.

(Soltanifar et al., 2024), long jump (Dehkordi et al., 2024) and running (Allen et al., 2023). It is noteworthy that different contexts involving gender stereotypes showed similar effects: endorsing stereotypical information impacted girls' soccer performance (Chalabaev et al., 2009) and fundamental motor skills (Miedema et al., 2023). Mental practice during isometric strength tasks reduced the effects of the threat (Laurin et al., 2022), as did women who questioned the veracity of gender stereotypes in soccer (Rees & Salvatore, 2021). Martiny et al. (2015) observed that adding a second identity, such as sports experience, benefited performance. Additionally, the combination of gender stereotypes with other stereotypes, such as race, has also been explored. Black women in basketball tasks (Howard & Borgella, 2018) and White women in golf (Stone & McWhinnie, 2008) performed worse under gender stereotypes, but not under racial stereotypes, suggesting that positive racial stereotypes may have a beneficial effect. However, some studies did not find negative effects of stereotype threat in less complex tasks, such as hand grip strength (Deshayes et al., 2020), cycling endurance (Deshayes et al., 2019), isometric elbow (Deshayes et al., 2023) and knees contraction (Deshayes et al., 2020). In simple tasks, negative stereotypes may act as motivation, improving performance (Harkins, 2006; Jamieson & Harkins, 2007). Furthermore, Deshayes et al. (2024) did not observe any impairments in performance on a soccer dribbling task, regardless of the participants' level of identification with soccer. However, this experiment only included one post-intervention trial, and the authors suggest that a longer period may be necessary for the effects to become more pronounced.

Respecting gender stereotypes with male participants, 18 of the 22 studies included both sexes, while 4 involved only men. Unlike the studies with women, only four studies observed that the stereotype threat (ST) group performed worse than the others. These effects were recorded in tasks such as golf (Beilock et al., 2006, Exp. 1), virtual tennis ball hitting (Huber et al., 2015, Exp. 1), and dance pirouettes (Bastos et al., 2023). Knight et al. (2004) also observed that men completed a "masculine" task (manipulating a Transformer toy) more quickly than women, while women were faster in a "feminine" task (dressing a Barbie) than men. In contrast, no significant effects were observed in tasks such as object relocation (Pillaud et al., 2015). Other studies on isometric contractions (Chalabaev et al., 2013) balance (Cardozo et al., 2022; Chalabaev et al., 2008), gait (Allen et al., 2023), virtual tennis ball hitting (Huber et al., 2015, Exp. 2), jump rope (Raphael, 2017), and basketball shooting (Laurin, 2013) showed no significant differences. In two studies that presented stereotypical images to boys and girls, boys were positively affected, but no effect was found in boys in the second study (Jansen et al., 2015; Miedema et al., 2023). Studies providing derogatory information about women (stereotype lift) indicated positive effects for men, such as in tasks involving virtual tennis ball hitting (Huber et al., 2016), isometric contraction (Deshayes et al., 2020; Deshayes et al., 2023), and endurance on ergometric bicycles (Deshayes et al., 2019). Similar effects were observed in dance tasks (Bastos et al., 2023), although without an impact on motor learning in balance tasks (Cardozo et al., 2022). Additionally, the inclusion of a mental task during golf shots mitigated the negative effects of the stereotype, enhancing the performance of players (Beilock et al., 2006). However, basketball shooting tasks focused on concentration or speed did not show significant differences, regardless of the stereotype condition (Hively & El-Alayli, 2014). In general, the studies suggest that negative gender stereotypes impact men less than women, with stereotype lift acting as a facilitator of performance and learning.

### 3.3.2. Age stereotype

The age stereotype threat was investigated in fifteen experiments ( $n = 15$ ), thirteen of which assessed the stereotype in isolation and two compared it to the stereotype of disability. The population included older adults ( $n = 12$ ) and young adults ( $n = 1$ ), with the combined studies including young adults without disabilities ( $n = 2$ ). The effects of the age stereotype varied across experiments. Explicitly stating that older adults have difficulty with balance impaired their speed and increased errors in a challenging gait task with a narrower base, but had no effect on an easier task with a normal base. These effects were not observed in participants who received neutral information (Barber et al., 2020). However, while this did not impact various motor tests, such as strength, walking speed, or obstacle crossing, it did impair performance in the Tandem walking test (Marquet et al., 2018). Additionally, another study indicated that informing participants that young adults would also be evaluated negatively affected their dynamic balance, especially as task difficulty increased (Borel et al., 2024). Exposure to negative words associated with aging reduced driving simulation speed compared to the control group, even when the participants were young adults (Branaghan & Gray, 2010). On the other hand, older adults exposed to negative age-related words, such as "senile" and "dependent," did not show a reduction in walking speed, but the group exposed to positive words, such as "insightful" and "accomplished," increased their speed (Hausdorff et al., 1999) and improved the performance of older adults, as observed in tests measuring physical function (Levy et al., 2014). Additionally, older adults who organized images associated with aging (negative, positive, or neutral) did not show significant differences in motor tasks, such as single-leg balance, 4-meter walk, and chair lift (Moriello et al., 2013). Other contexts also influenced motor performance or learning. Older adults who believed they were being compared to older individuals learned better a balance task compared to those who thought they were being compared to younger individuals (Chiviawowsky et al., 2018). A similar manipulation did not affect performance of walking speed, but did influence results on cognitive tests (Chalabaev et al., 2020). In another study, older adults under age stereotype threat who were informed that strength is a malleable skill showed a significant improvement in performance, while groups with fixed instructions or control did not demonstrate the same effect (Emile et al., 2017). Moreover, both older adults exposed to positive and negative stimuli exhibited greater strength in a handgrip task compared to the control group. This effect was only observed at "easy" or "difficult" difficulty levels, not at moderate intensities (Deshayes et al., 2022). Furthermore, participants in the control condition were more inactive than those in the negative stereotype and neutral conditions (Deshayes et al., 2022). However, no differences were observed between the negative stereotype and nullified groups in fatigue and time to exhaustion during a knee extension task (Deshayes et al., 2020).

The age stereotype was compared to the disability stereotype in two experiments (Ginsberg et al., 2012). In the first experiment, young adults without disabilities were divided into three groups: age stereotype, disability stereotype, and control. Both stereotyped groups performed worse in the speed of a pin organization task with the non-dominant hand compared to the control group. In the

second experiment, significant effects occurred only in the disability stereotype group, suggesting that the disability stereotype threat impaired performance more due to the stereotype's association with motor coordination difficulties.

### 3.3.3. Race stereotype

Racial stereotype was the second most common theme in studies on motor performance ( $n = 9$ ), being investigated either in isolation ( $n = 7$ ) or compared to gender stereotypes ( $n = 2$ ). The studies predominantly involved White individuals ( $n = 4$ ), in addition to groups composed of White and Black individuals ( $n = 1$ ), White and Hispanic individuals ( $n = 1$ ), and White and Asian individuals ( $n = 1$ ). Two studies compared racial and gender stereotypes with White women (Stone & McWhinnie, 2008) and Black women (Howard & Borgella, 2018).

The pioneering study by Stone et al. (1999) compared participants exposed to racial stereotype threats (ST) with those in groups with positive stereotypes or a control group. The results showed that White participants in the natural athletic ability group performed worse than White participants in the intellectual ability group, while Black participants demonstrated the opposite effect, performing better in the athletic ability group. Subsequent studies investigated domain identification and stereotype threat, as seen in Stone et al. (1999) and Stone (2002), revealing that White participants with high identification with golf performed worse than Hispanic and low-identified White participants. Furthermore, strategies such as emphasizing "points gained" or "points lost" in golf shots showed that participants under stereotype threat performed worse than the control group, while for the control participants, being informed of "points gained" proved beneficial. These effects were not significant among participants in the threat condition (Grimm et al., 2016). The inclusion of mental tasks (dual tasks) also improved the performance of experienced players (Beilock et al., 2006). Another study investigated the influence of practice observation, dividing participants into groups exposed to negative, positive, or control stereotypes. The ST group performed worse than the positive and control groups, but observation harmed the performance of the positive stereotype group, which performed worse than the no-observation group (Krendl et al., 2012). Finally, studies on racial and gender stereotypes showed that, for both White and Black women, information about gender stereotypes was more detrimental to performance than information about racial stereotypes, as already discussed in the gender stereotype section (Howard & Borgella, 2018; Stone & McWhinnie, 2008).

### 3.3.4. Weight stereotype

The weight-related stereotype was investigated in three experimental studies ( $n = 3$ ), involving different populations. Participants included women with a perception of overweight (covering both overweight and non-overweight women; Cardozo & Chiviawowsky, 2015), individuals with a healthy weight (Dupraz et al., 2023), and overweight children of both sexes (Rabeinia et al., 2021). In the studies that assessed motor learning, a balance task on a stabilometer was used. Participants were divided into two experimental groups: the weight stereotype threat group (ST), informed that success in the task depended on individual characteristics, such as weight, and the control group, informed that performance was not related to personal characteristics. The results showed significant differences in motor performance and learning, with significantly shorter balance times for the groups under stereotype threat compared to the control groups, both in adult women (Cardozo & Chiviawowsky, 2015) and children (Rabeinia et al., 2021). The study by Dupraz et al. (2023) explored the relationship between body representation and perceived physical abilities, using a locomotor imagery task in the context of avatar embodiment. Participants alternated between performing the task with an avatar representing overweight and one with a healthy weight. The results indicated that when using the overweight avatar, participants took longer to complete the tasks, especially over longer distances, supporting the hypothesis that body representation influences expectations of physical performance.

### 3.3.5. Low performance in penalty kicks of English people stereotype

Rees and Salvatore (2021) (Experiments 2 and 3) investigated whether the cultural belief in England that English soccer players are not good at penalty kicks could affect performance, in two experiments ( $n = 2$ ). Both used a stereotype threat (ST) condition, where participants, soccer players, were informed that "many people think that English people are bad at penalty kicks and cannot handle the pressure of this moment," or a reduced stereotype (RST) condition, where they received information questioning the validity of these beliefs. The difference is that in Experiment 3, a control group was added. In both experiments, the ST group had worse scores in penalty kicks compared to the questioning group and, additionally, compared to the control group in Experiment 3. When comparing the control group with the questioning group, no difference was observed.

### 3.3.6. Nonexerciser stereotype

Two motor performance experiments investigated the stereotype associated with non-exercisers ( $n = 2$ ). The first examined this effect in people with HIV. In this experiment, subjects showed poorer performance in a manual grip task when exposed to this stereotypical information. Additionally, the authors found that inducing an increase in participants' self-efficacy reduced the detrimental effects of the threat (Gray et al., 2022). On the other hand, the second study, through an intermittent strength test to exhaustion, found that both sedentary and physically active participants improved their performance when performing the task under threat condition, compared to attempts under the condition without threat (Gray et al., 2022), which contradicts most findings.

### 3.3.7. Height stereotype

Height stereotype was investigated with adult men and women (Pillaud et al., 2015, experiment 3). Participants were divided into two groups: one informed that short individuals performed better in a one-foot balance task, and the other that tall individuals performed better. A control group received no height-related information. The results showed that the stereotype negatively affected men

who considered themselves short in the "tall perform better" condition, while no differences were found for those who considered themselves tall. Among women, no significant differences were observed between groups. The authors suggest that, although there is no evidence that height influences performance, they expected the stereotype to affect men more due to cultural factors, which was confirmed.

### 3.3.8. Socioeconomic status stereotype

The stereotype threat related to socioeconomic status was investigated in individuals identified as low status (Lima et al., 2024). In this study, participants from a lower social class were exposed to information that a computer task, involving hitting targets as quickly as possible, was better performed by individuals from a higher social class. In contrast, participants in the stereotype-nullified group were informed that there was no performance difference between social classes. As hypothesized, the stereotype threat group showed poorer scores on the motor learning test.

## 4. Manipulation of stereotype

The way the stereotype is manipulated in experiments can be explicit, for example, through reading texts or verbal information, as well as implicit or subtle, such as through the physical characteristics of the experimenter, images related to the stereotype, or even asking participants to indicate their own characteristics in questionnaires (Cardozo et al., 2021). It is worth noting that stereotypes are often implicitly present in studies on the topic, even if not explicitly mentioned as such. In this review, the experiments were classified into three distinct categories related to stereotype manipulation, with the criterion for this classification being the type of stereotype manipulation mentioned in the procedure section of the experiments.

### 4.1. Explicit manipulation

In most experiments, it was observed that informing individuals that an external group excels in a task impacted the performance of stereotyped participants. Verbally informing male players that women were superior in golf task performance (Beilock et al., 2006), as well as informing women that men were superior in soccer, cricket, and basketball tasks (Deshayes et al., 2024; Grabow & Kühl, 2019; Laurin, 2013; Mousavi et al., 2023, 2025; Mousavi & Soltanifar, 2025; Rees & Salvatore, 2021; Saemi et al., 2024), or that individuals from higher socioeconomic backgrounds perform better in computer-based target hitting tasks (Lima et al., 2024) impaired performance. Similarly, explicit manipulation through videos showing the superiority of an external group (Black players) in basketball was enough to hinder the performance of White players, resulting in fewer points in free throws (Krendl et al., 2012). In other studies, however, explicitly negatively stereotyped information did not affect men's motor performance and learning, but stereotype lift did, improving performance (Cardozo et al. 2022; Deshayes et al., 2020; Deshayes et al., 2020).

Another way of explicitly activating stereotypes was by suggesting that the physical or motor characteristics required for good performance in the task were stronger traits of an external group. For example, informing women that the task involves strength and speed (Heidrich & Chiviawsky, 2015), to older adults that the task requires balance (Barber et al., 2020; Marquet et al., 2018) or informing overweight individuals that the task is influenced by personal characteristics such as weight (Cardozo & Chiviawsky, 2015; Rabeinia et al., 2021) seems to impair participants under explicit threat, just as informing participants that they will be directly compared to individuals from the external group does (Chiviawsky et al., 2018; Moe' et al., 2015) or simply inform older adults that young people will participate in the same study (Borel et al., 2024; Deshayes et al., 2022; Deshayes et al., 2020).

### 4.2. Combination of explicit and implicit manipulation

Some experiments investigated the impact of combining explicit instructions and the presence of an opposite-gender experimenter (implicit threat) on performance. Huber et al. (2015, 2016), for example, instructed participants about the gender skill differences in a task of rhythmically hitting a virtual tennis ball, with women being observed by a male experimenter. Similar studies with tasks like carrying objects (Pillaud et al., 2015) and jumping rope (Raphael, 2017) also showed negative effects on female performance, but not on male performance, suggesting that the presence of an opposite-gender experimenter, combined with explicit threat, affects women more (Huber et al., 2015, Exp. 1 and 2; Pillaud et al., 2015; Raphael, 2017). In two other experiments, the combination of explicit and implicit threat more negatively impacted motor performance and learning compared to the control group and with only subtle or only explicit threat (Cardozo et al., 2021; Saemi et al., 2022). Interestingly, the separate analysis of threats showed that while explicit threat negatively impacted the later trials in long jump performance, implicit threat affected the first trials (Saemi et al., 2022).

Another way to combine explicit and implicit threats was through questionnaires on stereotypical traits, as in the studies by Chalabaev et al. (2008), which associated gender stereotypes with soccer, and Stone (2002) and Stone et al. (1999), which associated racial stereotypes with athletic skills. These studies also showed that the combination of threats negatively impacted performance. In a study by Stone and McWhinnie (2008), White women faced gender and race stereotypes during a golf task, with the presence of a male experimenter influencing their accuracy. Additionally, the combination of opposite-gender role models in videos with explicit information was explored in studies with balance tasks (Chalabaev et al., 2008), dance (Bastos et al., 2023), and soccer (Mousavi et al., 2021), all of which impaired motor performance and learning. Furthermore, an image where a man was winning a race against a woman, accompanied by explicit information about male superiority, negatively affected the performance of women in the race. This effect was not observed in men (Allen et al., 2023). In older adults, physical performance, measured over a period, improved after participants were explicitly asked to reflect on and write about mentally and physically healthy older adults. However, the effects were

even more pronounced when the manipulation was implicit, through reading positive words associated with aging (Levy et al., 2014). Another study involving older adults used explicit information about the poor balance of elderly individuals, combined with posters highlighting this characteristic, which impaired performance on a narrow walking task (Marquet et al., 2018). Finally, Emile et al. (2017) suggested that the perception of strength as a malleable skill in older adults could mitigate the effects of implicit stereotypes, as the group believing in the malleability of strength performed better.

#### 4.3. Implicit manipulation

The body of research on subtle or implicit stereotype threat suggests that stereotypes can negatively affect performance, even when it is not explicitly presented. Steele (1997) proposes that stereotype threat can be "in the air" and is culturally ingrained, harming individuals from stigmatized groups. For example, the mere presence of a male experimenter impaired the long jump performance of girls (Dehkordi et al., 2024). Older adults exposed to words like "senile" and "ill" walked more slowly, while those exposed to positive words like "intelligent" walked faster (Hausdorff et al., 1999), as also observed in individuals exposed to words associated with age and disability, impairing the performance of young people in motor tasks (Ginsberg et al., 2012). The use of negatively stereotyped images negatively impacted the performance of girls, but not boys, in fundamental skills (Miedema et al., 2023) and showed no difference in manual dexterity tasks in children (Jansen et al., 2015) or in motor tests in older adults (Moriello et al., 2013).

### 5. Underlying mechanisms explaining stereotype effects

In addition to investigating the effects of stereotype threat on motor performance and learning, some studies analyzed the underlying mechanisms ( $n = 34$ ). Among these, only a portion directly examined whether these mechanisms mediated or were correlated with motor performance and learning.

Some of the mechanisms involved motivational variables as perceptions of competence, self-efficacy, performance expectations, and factors such as self-confidence, self-esteem, and engagement, with significant variations across contexts. Intrinsic motivation for example, was lower in men under gender stereotype threat compared to the "Lift" condition (Cardozo et al., 2022). The perception of competence was lower in individuals under weight stereotype threat (Cardozo & Chiviawowsky, 2015). Older adults exposed to negative stereotypes performed worse when they perceived the task as challenging and felt they lacked the necessary resources to complete it (Barber et al., 2020). Moreover, stereotype influenced their subjective age, causing participants under threat to perceive themselves as older than they were (Deshayes et al., 2020; Marquet et al., 2018). Racial stereotypes affect performance expectations in individuals with high identification with the motor domain (Stone et al., 1999), while gender stereotypes reduce women's expectations compared to racial stereotypes and control groups (Stone & McWhinnie, 2008), decreasing self-efficacy in inexperienced women (Heidrich & Chiviawowsky, 2015). In simple, nontechnical tasks, male self-efficacy tends to be higher when exposed to stereotype lift, while women show no significant differences between threat and control groups (Deshayes et al., 2019). Regarding physical self-esteem, men generally have higher levels than women, regardless of condition (Chalabaev et al., 2013). Gray et al. (2022) showed that increased self-efficacy through instructions can improve performance, suggesting that it may mitigate the negative effects of stereotype threat, especially in sedentary individuals, although other studies found no significant effects (Gray et al., 2022; Stone, 2002). Deshayes et al. (2019) recorded an increase in heart rate, suggesting a physiological challenge effect, particularly in men in the Lift group and women under threat.

In some other studies on these motivational variables, the mediating or correlational effects of such mechanisms on performance were directly observed. Gender stereotype threat reduced self-efficacy, which mediated poorer performance in goal-kicking tasks in female soccer players (Grabow & Kühl, 2019). Women in groups under gender stereotype threat reported making more errors and had lower self-evaluations related to their driving experience, which was correlated with poorer performance (Mo'e et al., 2015). Perceived ability mediated the relationship between stereotype endorsement and performance; girls who endorse the negative stereotype in soccer experience a decrease in their perceived ability, which, in turn, impacts their performance. (Chalabaev et al., 2009). In adolescents, although gender stereotype threat affected the girls, perceived ability was not a mediator of the effects of threat or lift on performance in girls and boys (Raphael, 2017). The positive effect of the stereotype lift on men's performance was mediated by increased self-confidence and heart rate reactivity prior to the task, indicating greater engagement, but these effects were not observed in women (Chalabaev et al., 2008). These results may indicate gender as a potential moderator of stereotype effects. Interestingly, in low-complexity tasks, gender stereotype threat may act as a positive motivator for women, making them more determined to overcome the stigma (Deshayes et al., 2023). In this study, women under threat showed greater motivation to outperform men in the task, as well as increases in MRCP amplitudes (movement-related cortical potentials) in the prefrontal cortex. This variable, however, did not mediate the relationship between the negative stereotype and performance. Such positive effect on the performance of simple tasks may indicate the type of task as also a potential moderator of stereotype effects. For men in the "stereotype lift" condition, no significant effects on motivation or MRCPs were observed. Lastly, presenting positive information about aging improved positive perceptions of this stage of life, which impacted performance, with positive self-perception acting as a mediator in this process (Levy et al., 2014). Other mechanisms underlying stereotype threat effects are anxiety and related factors such as flow, worry, nervousness, avoidance, and fear of making mistakes, impacting motor performance in different ways. Both explicit and implicit threats increased cognitive and somatic anxiety in girls performing long jumps (Saemi et al., 2022). Worry impacted the anxiety of participants under racial stereotype threat (Stone, 2002; Stone et al., 1999). Achievement goals were as well explored, suggesting that individuals under gender stereotype threat tend to use prevention strategies, avoiding errors, while those under reduced threat conditions tend to use promotion strategies, even if they take greater risks (Chalabaev et al., 2008; Mousavi et al., 2021). On the other hand, avoidance (Laurin et al., 2022) and

working memory (Nahidi et al., 2023) were not affected by gender stereotype threat, contrary to the hypotheses of the studies. In one study (Martiny et al., 2015), activating a positive social identity protected against the effects of anxiety during performance, without affecting somatic anxiety in female basketball players.

Mediating effects of mechanisms related to anxiety and related factors, and performance, were also directly observed. Stereotype threat increased anxiety levels, which in turn mediated reduced performance in forward and backward running tasks in women but not in men (Allen et al., 2023). The fear of making mistakes mediated poorer performance in penalty kicks in soccer, regardless of the manipulation, but did not affect flow or worry in soccer dribbling (Hermann & Vollmeyer, 2016). Although worry impacted the anxiety of participants under racial stereotype threat, did not mediate the effects on motor performance (Stone, 2002; Stone et al., 1999). Additionally, cognitive anxiety predicted worse accuracy in women under gender stereotype threat (Laurin, 2013) and somatic anxiety seems to have a facilitating mediating effect on the relationship between the gender-condition (control or female threat) interaction and free-throw performance in a gender-neutral task.

Endorsing the negative stereotype is another variable observed to influence stereotype effects in motor performance studies. Huber et al. (2015) found that both men and women under stereotype threat believed in male superiority in tasks like hitting a virtual tennis ball. On the other hand, basketball was seen as a neutral task between men and women (Laurin, 2013; Raphael, 2017), and Hively and El-Alayli (2014) observed that men believed in male superiority in basketball and tennis, but women did not endorse this belief. Some studies have also more directly investigated the relationship between levels of stereotype endorsement and motor performance. Chalabaev et al. (2009) found that girls who believed soccer was not well played by their group had worse results, with these effects mediated by a reduced perception of competence. Miedema et al. (2023) found a negative association between stereotype endorsement and motor performance in young girls, but not in boys. This relationship was also investigated between domain identification and performance. For example, Grabow & K  hl (2019) found no direct relationship between motor performance, stereotype threat, and identification with gender or soccer in female players. Deshayes et al. (2024) as well did not observe any effects on dribbling performance in inexperienced women, regardless of their level of identification with the domain. Raphael (2017) observed differences between boys and girls: for boys in the Lift condition, high identification with the domain was associated with better results, while girls with low identification with the sport were more vulnerable to the effects of gender threat. High identification with the stereotyped social group or the domain investigated predicted performance impairments in individuals under stereotype threat compared to those with low identification with golf (Stone et al., 1999).

Another mechanism of stereotype threat effects observed is positive affect, which was lower in women exposed to gender stereotype threat (Cardozo et al., 2021). In this study a regression analysis demonstrated a marginal relationship of end-of-practice performance with positive affect, suggesting that those with worse performance may have experienced slightly lower levels of positive affect. However, affective levels did not predict the retention performance.

Finally, some studies examined self-handicapping. In Stone et al. (1999) study, participants in the stereotyped groups reported fewer hours of sleep and higher levels of nervousness compared to the control group. Moreover, most subjects in the ST group indicated that the motor task was biased. In Stone (2002), one hypothesis was that individuals under racial stereotype threat, with high domain identification, would use self-handicapping strategies during practice, i.e., they would practice the golf task less than those in the control group or those with low domain identification, which indeed occurred.

## 6. General discussion and conclusion

The aim of this systematic review was to investigate the impact of stereotype threat on motor behavior by surveying studies addressing motor tasks and performance or learning measures between 1995 and 2025. The review also sought to identify the types of stereotypes investigated, the populations involved, the forms of threat, the underlying mechanisms, the methodologies used, and the main observed effects. Finally, we suggest forms to reduce or eliminate the negative effects, to facilitate motor performance and learning. The results of this review confirm the hypothesis suggested by earlier research in motor performance (Stone et al., 1999) and motor learning fields (Cardozo & Chiviacowsky, 2015; Heidrich & Chiviacowsky, 2015), that stereotype threat impairs the performance and learning of individuals belonging to stigmatized groups. These deleterious effects were found across various types of stereotype threat, including gender, race, age, weight, disability, height, physical inactivity, socioeconomic status, and even beliefs about English soccer players in penalty kicks. However, the methodological diversity of the analyzed studies and some discrepant findings suggests that the manifestation of stereotype threat may vary depending on the context, the population, and the task.

The most investigated type of stereotype is gender, representing more than 65 % of the studies. Women are often negatively affected in the sports context. While biological differences can explain some performance gaps, psychological and cultural factors, such as higher male participation, motivation, and self-esteem, also play a significant role. Studies demonstrate consistent detrimental effects of gender stereotypes on motor performance and learning, both in inexperienced (Heidrich & Chiviacowsky, 2015) and experienced (Chalabaev et al., 2008) women, as well as in adolescents (Mousavi et al., 2021), suggesting that stereotypes influence motor skill acquisition from childhood. Although men and boys can be affected by negative stereotypes (Bastos et al., 2023; Beilock et al., 2006), the effects are less significant compared to women (Huber et al., 2015, exp 2; Pillaud et al., 2015, exp 1).

It is important to highlight the strong trend of studies on gender stereotypes, particularly those involving women, from the first experiments (Chalabaev et al., 2008) to the more recent ones (Mousavi et al., 2025). Among the various stereotypes present in the sports world and analyzed in this review, we believe that the gender stereotype, particularly the one directed at women and girls, has a significant impact on their daily choices, leading them away from sports participation. This contributes to the perpetuation of the idea that men are superior in motor skills. Understanding how this phenomenon occurs can be crucial for developing strategies to combat these negative effects and bring more women into sports. Moreover, an aspect that stands out is the cultural diversity found in the

studies. Focusing solely on gender stereotypes, we observe experiments involving women from various countries, such as Brazil, Iran, France, Germany, and the United States, for example. It would be interesting to conduct new studies investigating the role of culture in the effects of stereotype threat.

Besides gender, other types of investigated stereotypes such as race (Grimm et al., 2016; Stone et al., 1999; Stone, 2002), age (Barber et al., 2020; Chiviawsky et al., 2018; Ginsberg et al., 2012), height (Pillaud et al., 2015), weight (Cardozo & Chiviawsky, 2015), etc., also showed, in most experiments, detrimental effects on motor performance and learning of individuals who performed motor tasks under threat conditions. However, such studies are still scarce. Stereotypes related to body type, such as weight and height, can be determinant for choosing and participating in certain sports and require further investigation into their influence on performance and learning. Similarly, age-related stigmas can also be a limiting factor in maintaining a more active lifestyle, and there is a need for more research, especially in older adults' motor skill learning.

A series of mechanisms explain the detrimental effects of stereotypes on motor performance. Regarding gender, stereotype threat can lead to explicit monitoring, disrupting automatic processes essential for skilled performance (Beilock et al., 2006; Beilock & McConnell, 2004), resulting in goal adoption to avoid low performance (Chalabaev et al., 2008), decreased self-efficacy (Grabow & Kühl, 2019), confidence (Saemi et al., 2022), and intrinsic motivation (Moe et al., 2015), and reduced performance expectations (Stone & McWhinnie, 2008; Moe et al., 2015) in both novice and expert women. Increased cognitive and somatic anxiety has been observed in children (Saemi et al., 2022), adolescents (Laurin, 2013), and adults (Martiny et al., 2015) under threat conditions. Interestingly, endorsing negative stereotypes often harms performance (Chalabaev et al., 2009), yet highlighting gender-neutral tasks can also lead to deficits (Laurin, 2013; Raphael, 2017). Some studies, however, show women endorsing stereotypes may perform better than those with egalitarian views (Hively & El-Alayli, 2014), and gender stereotype threat in non-technical tasks (e.g., cycling endurance) can enhance performance by increasing heart rate (Deshayes et al., 2019). For racial stereotypes, anxiety and performance expectations were negatively affected by stereotype threat, though it did not mediate golf performance (Stone et al., 1999; Stone, 2002). White participants with high domain identification under threat exhibited more self-handicapping behaviors (Stone, 2002). Regarding mechanisms in motor learning, gender stereotypes reduce self-efficacy (Heidrich & Chiviawsky, 2015), positive affect (Cardozo et al., 2021), and create a prevention focus (Mousavi et al., 2021) in soccer tasks among women, while men showed lower satisfaction and enjoyment in balance learning (Cardozo et al., 2022). Weight stereotypes also reduce perceived competence in women with perceived overweight or obesity (Cardozo & Chiviawsky, 2015). Other mechanisms, like decreased attention, affects, and anxiety, still need further exploration. The effects of stereotype threat in disrupting "goal-action coupling" (Wulf & Lewthwaite, 2016), a mechanism suggested to facilitate motor learning, needs also investigation.

Regarding ways to manipulate stereotype threat, both explicit manipulations, such as verbal or textual information (Ginsberg et al., 2012; Grimm et al., 2016), and implicit manipulations, such as experimenter characteristics (Huber et al., 2015) or marking features like gender or race on forms (Howard & Borgella, 2018), or even through stereotypical toys or words (Knight et al., 2004; Ginsberg et al., 2012), are sufficient to activate negative stereotypes and impact motor performance. Notably, studies comparing these two types of manipulation have shown that both explicit and implicit forms of stereotype manipulation were detrimental to motor performance and learning (Cardozo et al., 2021; Saemi et al., 2022), with combined explicit and implicit threats being even more harmful. However, it seems that these two models may affect learners differently. While implicit threat may require attention to cognitive and emotional resources, interfering with performance aspects that require working memory, explicit threat may lead to a preventive focus, meaning learners try to avoid failure by refuting stereotypical information, thereby interfering with the automated processes of task execution (Stone & McWhinnie, 2008). It would be important for future research to unravel how and whether implicit and explicit threats truly affect motor performance and learning in distinct ways. Additionally, it would be relevant to examine the influence on motor performance and learning concerning the target or source of the threat (Heidrich et al., 2025), as proposed by Shapiro and Neuberg (2007). For example, the target of the stereotypical information, suggesting that the test outcome will jeopardize the individual's or group's reputation, may negatively influence individuals in different ways. The same could occur with the source of the threat, with manipulations suggesting that the person will be evaluated by members of their own social group or by members of an external group, which may yield different results.

Regarding the effects of stereotypes, as observed, the vast majority of experiments present results confirming the initial hypotheses for motor performance (Stone et al., 1999) and motor learning (Heidrich & Chiviawsky, 2015; Cardozo & Chiviawsky, 2015), demonstrating negative effects of stereotype threat on both phenomena. It is also important to highlight, however, that we found some discrepant results, mainly because of methodological inconsistencies across studies. Such inconsistencies may explain the mixed findings rather than indicate lack of effects, suggesting that certain factors are possibly determinants for replicability of the responses to stereotype threat. For example, the diverse complexity level of the tasks used, the different experimental designs, especially regarding the type of control groups used or the way the manipulation was induced (whether or not creating pressure on the participants), and, of course, the characteristics of the research participants. In relation to the complexity of the task, in experiments using maximal quadriceps muscle contraction strength (Chalabaev et al., 2013), manual strength (Deshayes et al., 2020), isometric elbow contraction (Deshayes et al., 2023), and cycling endurance (Deshayes et al., 2019), participants in the "threat" condition showed equal or better performance compared to those without threat. The authors suggest that, since these are simpler tasks with few degrees of freedom, the stereotype manipulation may not have generated enough concern to impair performance and may even act as a motivational factor. Huber et al. (2015) also suggest that the most likely response in performance is repeated after stereotype manipulation. Thus, in easy tasks with few degrees of freedom, presenting success in the initial trials tends to lead to repeated successful attempts, as suggested by the mere effort proposition (Harkins, 2006). Thus, the task must be sufficiently challenging, and the evaluation context must create sufficient pressure for stereotype threat to manifest; otherwise, ST effects may be masked by a ceiling effect or counteracted by a motivational boost. Regarding control groups, some studies compared stereotype threat groups with groups that had the

threat nullified (Heidrich & Chiviawsky, 2015; Lima et al., 2024; Mousavi et al., 2023), while others used control groups without manipulating the stereotype (Cardozo et al., 2022; Chalabaev et al., 2008) where the testing environments may still implicitly activate stereotype-related concerns ("threat in the air"). Thus, a true reduced threat condition must be implemented to better observe the stereotype threat effects. In the same line, who the stereotype is directed toward can influence the observed effects. For example, in gender stereotypes in sports, women in control groups where stereotypes were not manipulated may be affected due to the nature of the task, which is likely not to affect men in the same way (Allen et al., 2023; Chalabaev et al., 2013; Huber et al., 2015). Thus, it is still necessary to investigate how and for whom the effects manifest, since the absence of threat manifestation in a given population does not rule out the possibility that it may occur in another. Furthermore, such effects may also depend on the combination of the target (individual or collective) and the source of the threat (the self, the ingroup or the outgroup) (Shapiro & Neuberg, 2007).

The reviewed studies have mapped which forms of stereotype threat exist and how they impair motor performance and learning. The results also contributed to explain discrepancies in findings, identifying which studies adhered, and which did not, to the necessary experimental conditions to observe ST effects, helping to explain and guide future research toward more rigorous study designs. The results are important not only for unraveling variables and mechanisms that can undermine motor performance and learning but also for opening avenues of investigation that help develop strategies to neutralize or mitigate such negative effects. Indeed, the provision of explicit information that devalues members of an external group to elevate the internal group - stereotype "lift" - (for a meta-analysis, see (Walton & Cohen, 2003)), for example, has been shown to increase self-efficacy (Mo'è et al., 2015) and improve the performance and learning of complex motor skills, such as balance on a stabilometer (Cardozo et al., 2022; Chalabaev et al., 2008), free-throw shooting in basketball (Laurin, 2013), rope jumping (Raphael, 2017), as well as simple motor skills, like running technique (Allen et al., 2023), self-paced cycling (Deshayes et al., 2019), self-paced intermittent isometric elbow contraction (Deshayes et al., 2023), isometric handgrip contraction (Deshayes et al., 2020), and quadriceps contraction (Chalabaev et al., 2013).

More applicable strategies, not explicitly devaluing external groups, can be used for this objective. Adding a dual task enhanced the performance of already automated movements, as it shifts focus away from negative thoughts triggered by stereotype threat (Beilock et al., 2006). This was observed in golfers experienced in the motor task. According to the authors, dividing attention between task execution and another activity helped reduce pressure on the participants. However, this effect was not observed with girls who were beginners in a target shooting task (Saemi et al., 2024). Indirect information suggesting the superiority of the internal group compared to traditionally stereotyped groups has also been shown to mitigate the effects of stereotype threat. For instance, informing elderly individuals that their performances would be compared to those of individuals twenty years older (Chiviawsky et al., 2018) or telling adult women that their driving task performance would be compared to older individuals (Mo'è et al., 2015), resulted in superior motor performance and learning.

In fact, changing individuals' thoughts and beliefs through several different motivational practice conditions that support the psychological needs of competence, autonomy, and social relatedness (Chiviawsky, 2020, 2022; Ryan & Deci, 2000; Wulf & Lewthwaite, 2016), may combat the detrimental effects of stereotype threat on both, the immediate effects on performance and the relatively lasting effects on motor learning. For instance, valuing the physical abilities involved in a skill and suggesting that it is equally well performed by both men and women (Chalabaev et al., 2008; Heidrich & Chiviawsky, 2015); highlighting that motor ability is not influenced by individual differences (Cardozo & Chiviawsky, 2015); inducing a malleable conception of ability (Emile et al., 2017; Nahidi et al., 2023); increasing performance expectations through relatively easy criteria of success (Mousavi et al., 2025); providing positive social comparative feedback (e.g., "informing individuals that their performance is within the top 10 % compared to individuals of similar age and gender") (Gray et al., 2022); offering positive performance feedback ("points gained") (Grimm et al., 2016); providing information that values the in-group performance over the out-group (Deshayes et al., 2022; Mousavi et al., 2021); using words, implicitly induced, that evoke positive stereotypes (Hausdorff et al., 1999); and questioning the validity of the stereotype (Rees & Salvatore, 2021), are effective alternatives that have been shown to mitigate the effects of stereotype threat on motor performance or learning in different populations.

Increasing the sense of belonging to a social group may also be an effective tool for improving the performance of participants who are targets of stereotype threat, since relatedness support has been shown to increase positive emotions, self-efficacy, enjoyment, effort, and the perception of positive social relatedness in motor performance and learning (Gonzalez & Chiviawsky, 2018; Kaefer & Chiviawsky, 2021; 2022). Women evaluated by female researchers, for example, showed more efficient performance and learning compared to those evaluated by male researchers (implicit threat) in a soccer skill (Cardozo et al., 2021) and in the long jump among children (Saemi et al., 2022). Receiving questions about the validity of the stereotype, posed by a male experimenter (subtle gender stereotype), such as "Who said girls aren't good jumpers? Girls are capable of making great jumps," seems to attenuate the effects of stereotype threat in girls (Dehkordi et al., 2024). Positive social identity was observed to reduce the harmful effects of negative gender stereotypes (Martiny et al., 2015; Howard & Borgella, 2018). More specifically, identifying as a Black person benefited performance in a free-throw shooting task among female athletes (Howard & Borgella, 2018), and identifying as a soccer player reduced dribbling time in women (Martiny et al., 2015).

Based on the data found in this review, some conclusions are drawn. Stereotype threat negatively influences motor performance and learning, and this is the most compelling among the conclusions. Furthermore, there are more studies involving gender stereotypes, and in most cases, with a focus only on motor performance and not on learning. The way stereotypical information is provided to the subject can be done explicitly or implicitly and both acting together have been shown to impact motor performance and learning even more, although there is little evidence on the effects of implicit threat, especially in motor learning. Finally, the underlying measures investigated suggest explanations for the deleterious effects of stereotype threat, such as lower levels of intrinsic motivation, self-efficacy, and positive affect, and high levels of anxiety. Thus, individuals belonging to stereotyped social groups or whose reputation is at stake may suffer cognitive, affective, and motivational interferences, impairing their motor performance and learning.

Some limitations of this study can be highlighted. First, although we acknowledge that platforms such as Google Scholar cover a substantial number of articles, we chose not to use it, as we believe that traditional databases such as Scopus, Web of Science, PubMed, and PsycINFO already index the most relevant studies on the topic. Another limitation concerns the high methodological diversity of the included studies. By encompassing all research involving motor tasks, we encountered such a wide variety — including threat reduction interventions, investigations of underlying mechanisms, comparisons between groups and individuals, and studies involving distinct groups with different characteristics — that it became unfeasible to conduct a more precise comparative analysis of the findings. Nevertheless, we believe that we achieved our goal of providing a comprehensive overview of the field, which can help researchers gain a complete perspective on the subject.

Many research gaps in the field of motor behavior and stereotype threat can be observed. Regarding the investigated population, most experiments were with young adults, with few involving children, the elderly, and special populations. Observing the elderly in different stereotype situations, is important, since physical exercise is fundamental for healthy and functional aging. Additionally, sports choice and healthy habits are developed in childhood, and understanding how to mitigate stereotypes that can interfere with these choices, modifying perceptions from an early age, can be crucial for greater pursuit of an active life. Furthermore, few studies related to individual characteristics were found. Three studies investigated overweight (Cardozo & Chiviawowsky, 2015; Dupraz et al., 2023; Rabeinia et al., 2021) and one investigated height (Pillaud et al., 2015). Stereotyped sports for tall, short, lighter, or heavier individuals, with greater or lesser wingspan, are also present in the sports environment and may present interesting findings. These are just a few examples for future investigations, observing stereotype threat effects in different tasks, contexts, and populations as well as different ways to reduce its negative influences on motor performance and learning.

### CRedit authorship contribution statement

**Suzete Chiviawowsky:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Priscila Cardozo:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Caroline Valente Heidrich:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

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## **5. ARTIGO 2**

### ***Multiple Gender Stereotype Threats in Motor Performance and Learning***



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# Multiple Gender Stereotype Threats in Motor Performance and Learning

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## ABSTRACT

**Purpose:** Stereotype threat occurs when individuals from stereotyped groups fear confirming a negative stereotype, which undermines performance and learning. This study compared the effects of multiple gender stereotype threats (ST) on motor performance and learning of a soccer dribbling task. **Method:** One hundred women, with low domain identification (mean age = 27.1 years, SD = 7.0), twenty per group, were randomly assigned to four ST groups, considering the target (self or group) and the source (ingroup or outgroup) of the stereotype: ST/self-outgroup, ST/self-ingroup, ST/group-outgroup, ST/group-ingroup, and a nullified-stereotype threat group (NST). After the pretest (1 trial) and before practice (15 trials), the NST group was informed that no gender differences existed in the task, while the ST groups were told that men perform better in dribbling. Participants in the self or group as targets conditions were respectively informed that their individual performance or the performance of women as a group would be evaluated. The outgroup as source groups were assessed by male players, and the ingroup as source groups by female players. Retention and transfer (adding a cone) tests (5 trials each) were conducted next day. Perceived self-efficacy and stereotype endorsement were also examined. **Results:** The NST group outperformed the ST groups at all phases of the experiment, with no differences between the ST conditions. Also, the participants endorsed the negative stereotype, and self-efficacy was lower in the self/in and group/out groups. **Conclusion:** The multiple gender stereotype threats equally impair motor performance and learning among women with low domain identification.

## ARTICLE HISTORY

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## KEYWORDS

Gender; motor learning; multiple threats; stereotype threat

A phenomenon extensively investigated in the cognitive domain (Lamont et al., 2015; Spencer et al., 2016), as well as in motor performance (Beilock & McConnell, 2004; Chalabaev et al., 2013) and learning (Cardozo et al., 2021; Heidrich & Chiviacowsky, 2015), is stereotype threat. This phenomenon demonstrates how social stigmas can undermine the performance of individuals who fear confirming a negative stereotype associated with a group to which they belong (Steele & Aronson, 1995).

While substantial evidence indicates that negatively stereotyped individuals often experience performance impairments, questions remain regarding how and for whom these effects are most pronounced. From the perspective of the Multi-Threat Framework (Shapiro & Neuberg, 2007), stereotype threat (ST) is understood as a universal concept encompassing multiple forms of stereotype-related experiences. Broadly, the authors identify six distinct STs that arise from the combination of two dimensions. The first dimension examines the target of the ST, that is, who the actions and judgments are directed toward, which can be either the “self” or the “group to which I belong.” The second dimension concerns the source of the ST, encompassing who may judge these actions, with two main possibilities: from “the group to which one belongs” or “an external group,” and also from “the self.”

According to the threat target, Shapiro and Neuberg (2007) suggest that this distinction may produce different effects depending on whether the target is directed toward personal reputation (“self-as-target”) or group reputation (“group-as-target”). For instance, individuals negatively stereotyped due to their religion,

ethnicity, or race tend to be more affected by “group-as-target” stereotypes, whereas those stigmatized because of overweight, obesity, or mental illnesses are more influenced by “self-as-target” stereotypes (Shapiro, 2011; Van Laar et al., 2008). In the context of gender stereotypes, the results vary. Women appear to be equally impacted, regardless of the target (“group” or “self”), in video game performance (Pennington et al., 2018). However, the effect of “group-as-target” but not the “self-as-target” stereotypes was moderated by gender identification in mathematical performance (Wout et al., 2008); while both high- and low-identified women underperformed under self-as-target threat, only women highly identified with their gender underperformed under the group-as-target threat. Another study investigated female rugby players who were asked to imagine themselves in a training scenario in the presence of male spectators (Laurin, 2017). They were asked to report, through questionnaires, the situations in which they felt most affected. Examples of the described situations included: “I would be concerned that, if I performed poorly, other men might think I have the characteristics attributed to women in rugby” (“self-as-target”) and “Performance affects the image that men have of women’s ability to play rugby” (“group-as-target”). The results showed that the more players experienced an individual stereotype threat (“self-as-target”), the more they tended to rate men’s ability positively and women’s ability negatively. On the other hand, the more players experienced a group stereotype threat (“group-as-target”), the more they rated women’s ability positively. Additionally, women were more affected by the “self-as-target” condition when identifying

a math test with their own name compared to those who associated the test with fictitious names (Zhang et al., 2013).

Regarding the source of the threat, stereotyped individuals may be affected by judgments from members of their own stigmatized group (ingroup-as-source), members of an external group (outgroup-as-source), or even from themselves (self-as-source) (Shapiro, 2011; Shapiro & Neuberg, 2007). In two experiments, no differences were observed when comparing the effects of judgments made by men (outgroup-as-source) or women (ingroup-as-source) on women's performance in video games (Pennington et al., 2018) and on female physical education students imagining being observed by both men and women in a training scenario (Laurin, 2019).

In motor learning, stereotypes related to age (Chiviawowsky et al., 2018), weight (Cardozo & Chiviawowsky, 2015; Rabeinia et al., 2021), socioeconomic status (Lima et al., 2024), and gender (Bastos et al., 2023; Cardozo et al., 2021, 2022; Heidrich & Chiviawowsky, 2015; Mousavi et al., 2021, 2023; Nahidi et al., 2023; Saemi et al., 2025) have resulted in impairments in the acquisition of distinct motor skills. These stereotypes have also led to a decrease in self-efficacy (Heidrich & Chiviawowsky, 2015), perceived competence (Cardozo & Chiviawowsky, 2015; Cardozo et al., 2022), and positive affect (Cardozo et al., 2021), in addition to promoting a prevention focus (Mousavi et al., 2021).

Although previous studies have shown the negative gender stereotype effects on motor learning, they have manipulated stereotype targets and sources separately, without comparing the different threats. For example, informing participants that the personal performance of each older individual will be evaluated (Chiviawowsky et al., 2018), or that the performance of a person with socioeconomic vulnerability will be compared to that of people from higher social classes (Lima et al., 2024), could be considered as self-target threats. On the other hand, communicating that the performance of the social group is being compared to an external group could be characterized as group-target threat (Bastos et al., 2023; Cardozo et al., 2021, 2022; Heidrich & Chiviawowsky, 2015; Mousavi et al., 2021, 2023; Rabeinia et al., 2021; Saemi et al., 2025). Both types of threats have impaired learning. Other studies have examined the effects of subtly induced sources of stereotype threat, such as women performing tasks in the presence of male (Cardozo et al., 2021; Nahidi et al., 2023; Saemi et al., 2023; Stone & McWhinnie, 2008), and have shown that outgroup as source threat is also detrimental to motor performance and learning.

Another relevant aspect of the impact of stereotype threat is the level of identification that the stigmatized individual maintains with the domain in question. In highly identified individuals, stereotype threat may be intensified, as the group-related threat is often perceived as a personal threat as well (Raphael, 2017). In contrast, when performance in a domain is less relevant to an individual's sense of self-worth, the impact of stereotype threat on behavior tends to be reduced, mediated by the degree of dependence or independence of self-esteem on external judgment (Steele, 1997; Stone, 2002; Stone et al., 1999). However, the absence of identification with the domain does not exclude the possibility that an individual may still

experience multiple threats (Shapiro & Neuberg, 2007). In a recent study exploring within-subjects moderation effects on motor performance (Deshayes et al., 2024), the participants' domain identification did not moderate performance in a stereotype threat situation, which highlights the need for further investigations on the topic. To our knowledge, there is no evidence exploring whether individuals with low identification with the domain may be impacted differently by multiple threats in motor performance and learning.

Considering the negative gender stereotype effects previously observed and the importance of comparing the effects of multiple stereotype threats on motor performance and learning, we chose to observe from which source, and for which target this effect is most pronounced in the learning of a soccer motor skill, culturally considered a male-dominated domain, in women with low domain identification. Despite soccer often being referred to as the "national passion" and Brazil as the "land of cleats," women and girls remain underrepresented in this sport, as evidenced by the scarcity of championships, limited media coverage, and lack of incentives for participation in schools and recreational spaces (Goellner & Kessler, 2018). Specifically, the objective is to compare in which target—focused on personal reputation ("self-target") or the reputation of women as a group ("group-target")—and which source of the judgment—coming from an outgroup or ingroup—the effects in motor performance and learning will be most pronounced. Additionally, we explore underlying mechanisms, such as stereotype endorsement and self-efficacy.

The results will advance knowledge in different ways. No study has investigated the effects of multiple stereotype threats, comparing the effects different targets (self or group) and sources (outgroup or ingroup) on motor performance and learning. Also, while a few studies have examined the effects of stereotype threat manipulations through the experimenter's gender (Cardozo et al., 2021; Nahidi et al., 2023; Saemi et al., 2023), the present study used explicit sources of stereotype threat: participants were informed that their performance would be evaluated by individuals from either the outgroup or the ingroup. In addition, no experiment have used as an inclusion criterion only participants who reported a low level of identification. Previous studies selected the sample based on a high level of participants' identification with soccer (Mousavi et al., 2021; Saemi et al., 2025) or did not selected participants according with identification with the activity.

The first hypothesis suggests that participants exposed to stereotype threat will exhibit inferior performance compared to the NST group, given that soccer is traditionally perceived as a male domain (Heidrich & Chiviawowsky, 2015; Mousavi et al., 2021). Furthermore, based on previous studies (Cardozo et al., 2021), there is a possibility that participants evaluated by an "outgroup-as-source" will demonstrate poorer performance than those evaluated by an "ingroup-as-source." Additionally, considering the participants' low identification with the sports domain, it may happen that judgments directed at personal reputation ("self-as-target" condition) will have a more pronounced negative impact than judgments targeting women as

a group (Shapiro & Neuberg, 2007). Also, considering the chosen motor skill in which the domain is traditionally male and that individuals with low social identification with the stereotyped group tend to reinforce stereotypical information about that group (Shapiro & Neuberg, 2007), it is expected that the participants will equally endorse negative stereotype that women are inferior to men in soccer. Finally, based on studies investigating self-efficacy in women performing soccer dribbling tasks and gender stereotypes (Heidrich & Chiviawowsky, 2015), it is expected that participants exposed to stereotype threat conditions will report significantly lower levels of self-efficacy compared to the NST group.

## Method

### Participants

One hundred women, with a mean age of 27.1 (SD = 7.0) years, inexperienced in the task and with low identification with soccer, participated in the study. The a priori power analysis, performed in G\*Power 3.1 (Faul et al., 2007), suggested a minimum sample size of 100 participants. The analysis was based on a repeated measures ANOVA design on the last factor, involving five groups and five measures in time and assuming a significance level of ( $\alpha$ ) of 0.05, power of  $(1-\beta)$  0.80 and effect size of  $f$  .072, estimated in a previous study of gender stereotype threat (Cardozo et al., 2021). Participants included adult women (ages 18 to 40), residing in a city in southern Brazil, who had never played soccer (except in school physical education classes) and who scored below 4 on the adapted version of the Athletic Disengagement Scale (ADS). This questionnaire included the following statements: “My athletic performance on the soccer field is very important to me,” “Soccer is important to me and is a fundamental part of who I am,” and “My performance in soccer tests is important to my athletic self-esteem.” Responses ranged from 1 (strongly disagree) to 7 (strongly agree) (Stone, 2002; Stone et al., 1999). Participation was voluntary, and consent was obtained through the signing of the Informed Consent Form. The experiment was approved by the Research Ethics Committee of the Federal University of Pelotas, Brazil.

### Apparatus and task

Similar to previous studies (Chalabaev et al., 2008; Heidrich & Chiviawowsky, 2015), the task consisted of dribbling a soccer ball as quickly as possible through a slalom course with 5 cones, spaced one meter apart (Figure 1). Participants were required to complete the round-trip course without touching the cones, using one or both feet. The timer started on the experimenter’s signal and stopped when the participant and the ball returned to the starting line. In the transfer test, an additional cone was added. A tripod with a cell phone, positioned next to the first cone, was included as part of the manipulation, which is described later. The movement time in seconds was considered the dependent variable.

To measure self-efficacy, as in Heidrich and Chiviawowsky (2015) participants indicated in a questionnaire (Bandura, 2006), how confident they were that, by the end of the fifteen attempts, they would be able to complete the course in 30, 25, 20, and 15 seconds, at the end of practice (after the pretest), tomorrow (after practice), and today (before retention), on a scale from 0 (not at all confident) to 10 (extremely confident). To assess whether participants endorsed the stereotype, their perception of soccer as a masculine, feminine, or neutral activity was measured (Bonnot & Croizet, 2007), using items such as: “Personally, I think the performance of women in soccer is” and “Personally, I think the performance of men in soccer is,” on a scale from 1 (very poor) to 7 (very good).

### Procedure

The participants were randomly allocated and equally stratified by age into five experimental groups, with a total of 20 participants in each group. The entire experiment was conducted individually in a room, in the presence of a female experimenter. On the first day, participants performed the pretest (1 trial) and the practice phase (15 trials). On the second day, they performed the retention phase (5 trials) and transfer phase (5 trials) (see the organizational diagram in Figure 2). Initially, participants performed the pretest after receiving general information about the task. The experimental manipulation was presented through text reading and verbally by the experimenter before the three blocks of five trials during the acquisition phase, along with reinforcement between each five trials during this phase.

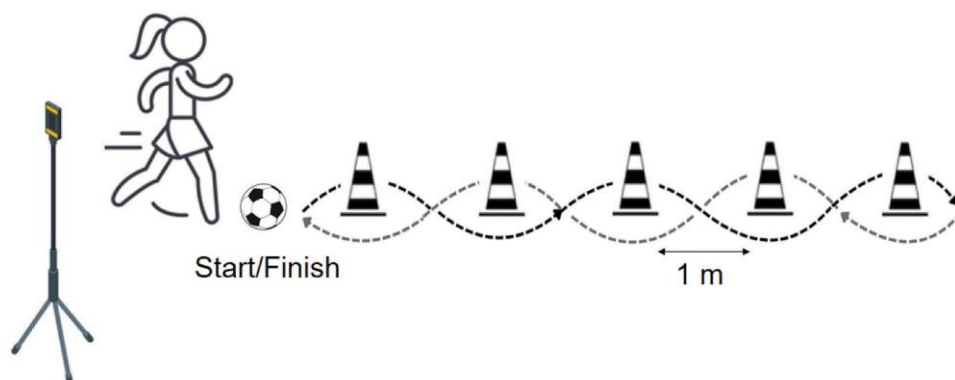
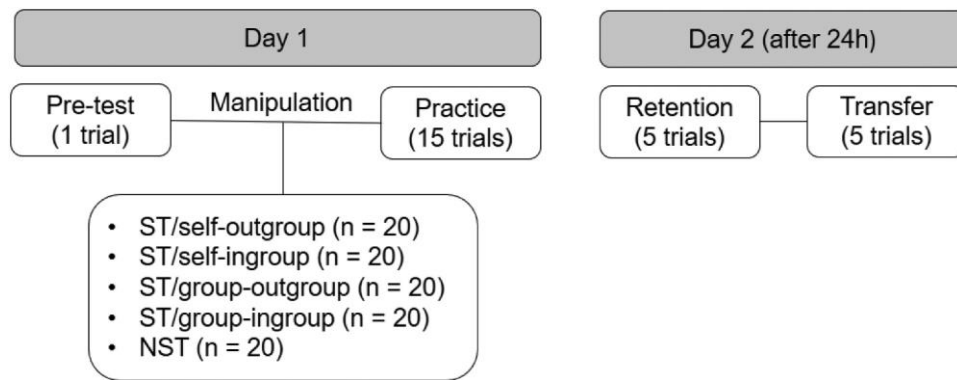


Figure 1. Experimental set-up.



**Figure 2.** Flowchart of the experimental procedure, presenting the experimental sessions (Days 1 and 2) as well as the study phases: pre test, group formation through manipulation, practice phase, retention, and transfer, along with the number of trials in each phase.

In the stereotype threat (ST) groups, participants were informed (based on Heidrich & Chiviacowsky, 2015) that: “Soccer is the most popular sport in Brazil, known as ‘national passion.’ However, female participation is significantly lower than male participation. You will perform soccer dribbles, which require explosive strength and speed—abilities in which men generally perform better.” Furthermore, the manipulation varied according to the source (outgroup or ingroup) and the target (self or group) of the threat. In the “self-as-target” condition, the instructions questioned the participant’s self-integrity: “In this study, we want to measure your individual ability to perform this standardized test correctly.” In the “group-as-target” condition, the instructions suggested that the participant’s performance would influence the reputation of women: “We want to measure women’s ability to perform this standardized test correctly.” In the “Outgroup-as-source” condition, participants were informed that their performance would be evaluated by two male soccer players, with the fictitious information: “The performance will be recorded through this camera to be evaluated by two professional soccer players,” whose names and photos were presented. In the “Ingroup-as-source” condition, the manipulation was similar but referred to evaluation by female soccer players. The nullified stereotype group (NST) group received the following information: “You will perform soccer dribbles, which require agility and coordination—abilities well developed by both men and women. We want to measure these abilities in different people, and your performance will be recorded for possible results verification.”. This resulted in five groups: 1) Stereotype threat/self as target and outgroup as source (ST self/outgroup); 2) Stereotype threat/self as target and ingroup as source (ST self/ingroup); 3) Stereotype threat/group as target and outgroup as source (ST group/outgroup); 4) Stereotype threat/group as target and ingroup as source (ST group/ingroup); 5) NST. No feedback was provided to the participants at any stage of the practice.

The following day, participants performed the retention and transfer tests (the latter adding one cone to the course), consisting of 5 trials in each test, without the induction of the experimental manipulation. The self-efficacy questionnaires were administered after the pretest, at the end of the practice phase, and the following day before the retention test. After the

transfer test, the questions regarding stereotype endorsement were administered. At the end of the study, all information related to the stereotype threat was removed.

### Data analysis

The dependent variable was the movement time to complete the course. The time scores were analyzed using a 5 (groups: ST self/outgroup; ST self/ingroup; ST group/outgroup; ST group/ingroup; NST)  $\times$  15 (trials) Analysis of Variance (ANOVA) with repeated measures on the last factor for the practice phase. The retention and transfer tests were analyzed separately using a 5 (groups: ST self/outgroup; ST self/ingroup; ST group/outgroup; ST group/ingroup; NST)  $\times$  5 (trials) two-way ANOVA, with repeated measures on the last factor. One-way ANOVAs were used to separately analyze the pretest and data from each of the self-efficacy questionnaires. Tukey post-hoc tests were used for follow-up analysis. For stereotype endorsement measures, the two-way repeated measures ANOVA was used. Partial eta squared was employed to estimate effect sizes. A significance level of 0.5% was adopted for all analyses.

## Results

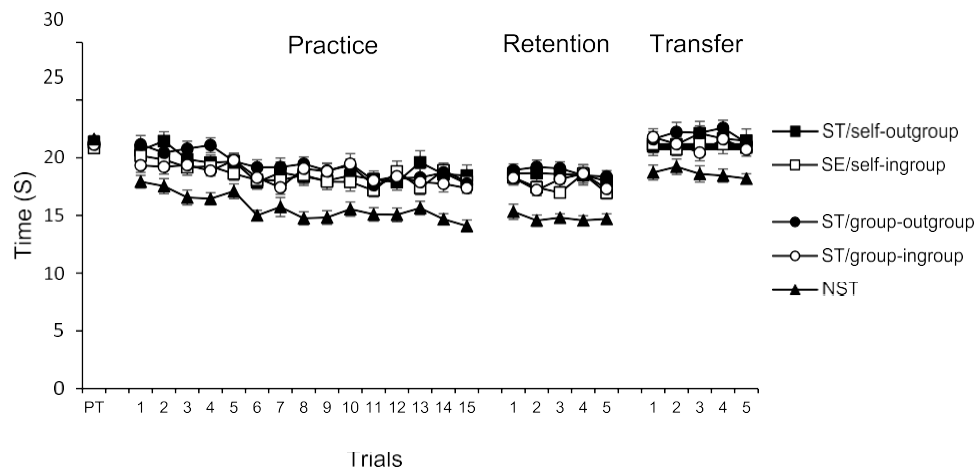
### Movement time

#### Pre-test

The groups did not show differences,  $F(4,95) = .639$ ,  $p = .631$ ,  $\eta_p^2 = .026$  (Figure 3).

#### Practice

During the practice phase, the time taken to complete the course decreased across the trials (Figure 3). The main effect of trials was significant,  $F(14, 1330) = 14.963$ ,  $p = .000$ ,  $\eta_p^2 = .136$ . There were significant differences between the first and the third ( $p = .028$ ), fourth ( $p = .004$ ), fifth ( $p = .007$ ), and all the next trials ( $p < .001$ ). No other differences were found. The main effect of group,  $F(4, 95) = 9.983$ ,  $p = .000$ ,  $\eta_p^2 = .296$ , was also significant. The NST group performed



**Figure 3.** Time of the course for the stereotype threat groups ST/self-outgroup, ST/self-ingroup, ST/group-outgroup, ST/group-ingroup, and NST in the pretest (pt), during practice (day 1), and in the retention test (day 2). *Note.* Error bars indicate standard errors.

better than all the ST groups ( $p < .001$ ). Among the ST groups, there was no significant difference ( $p > .05$ ). The interaction between trials and groups was not significant,  $F(56, 1330) = 1.251$ ,  $p = .104$ ,  $\eta p^2 = .050$ .

### Retention

The main effect of trials was significant,  $F(4, 380) = 2.602$ ,  $p = .036$ ,  $\eta p^2 = .027$ . There was a significant difference between the first and fifth trials ( $p = .003$ ) and between the fourth and fifth trials ( $p = .014$ ). No other differences were found between trials. The main effect of groups was also significant,  $F(4, 95) = 13.463$ ,  $p = .000$ ,  $\eta p^2 = .362$ . Tukey's post-hoc test revealed that the NST group performed better than all the ST groups ( $p < .001$ ). No differences were observed between the ST groups ( $p > .05$ ). There was no significant interaction between trials and groups,  $F(16, 380) = .972$ ,  $p = .486$ ,  $\eta p^2 = .039$  (Figure 3).

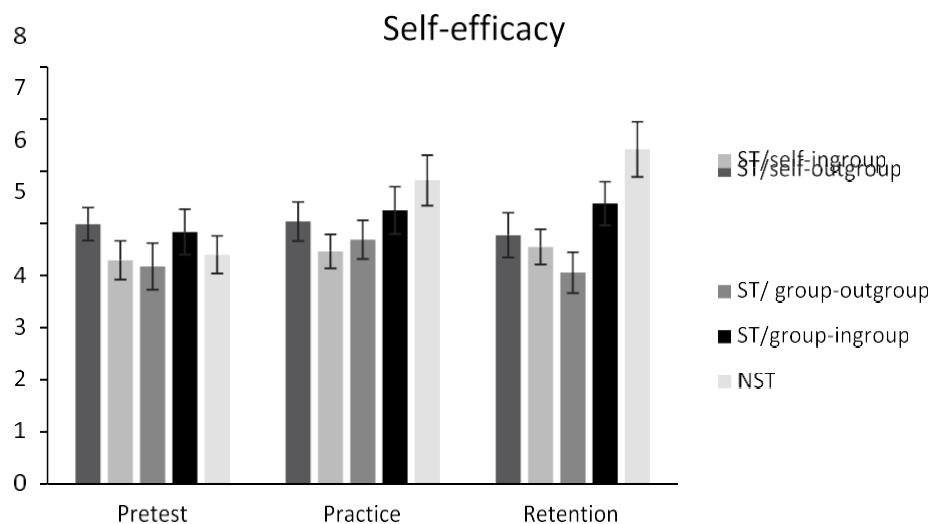
### Transfer

The main effect of trials was not significant,  $F(4, 380) = 1.105$ ,  $p = .354$ ,  $\eta p^2 = .011$ , and the interaction between trials and groups was also not significant,  $F(16, 380) = .844$ ,  $p = .634$ ,  $\eta p^2 = .034$ . However, the main effect between the groups was significant,  $F(4, 95) = 5.371$ ,  $p = .001$ ,  $\eta p^2 = .184$ . The NST group performed better than the self/ingroup ( $p = .030$ ), the self/outgroup ( $p = .005$ ), group/ingroup ( $p = .018$ ), and group/outgroup ( $p = .0001$ ) groups. There was no significant difference between the ST groups ( $p > .05$ ) (Figure 3).

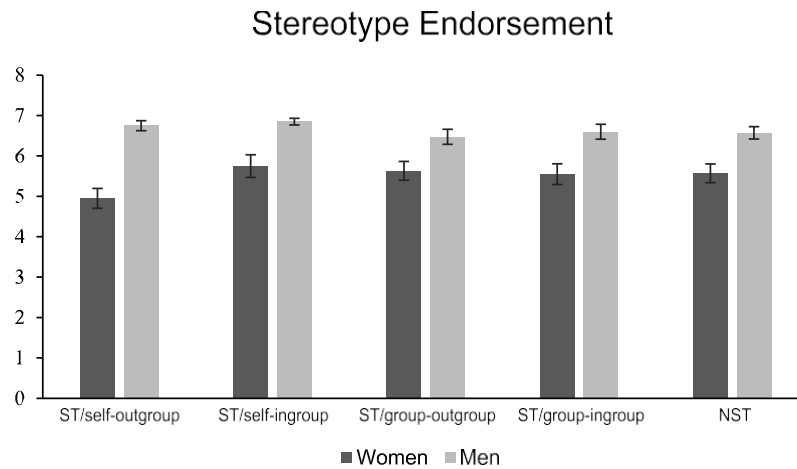
### Questionnaires

#### Self-efficacy

There was no difference between the groups regarding self-efficacy levels after the pretest,  $F(4, 95) = .835$ ,  $p = .506$ ,  $\eta p^2 = .034$  (Figure 4). However, a significant difference was observed after the practice phase,  $F(4, 95) = 3.089$ ,  $p = .019$ ,



**Figure 4.** Ratings of self-efficacy scale scores for the ST/self-outgroup, ST/self-ingroup, ST/group-outgroup, ST/group-ingroup, and NST groups after the pretest, after practice, and before retention. Error bars represent standard errors.



**Figure 5.** Stereotype endorsement scale scores for the ST/self-outgroup, ST/self-ingroup, ST/group-outgroup, ST/group-ingroup, and NST groups.

$\eta p^2 = .015$ . The NST group showed significantly higher self-efficacy levels than the ST self/ingroup group ( $p = .015$ ) and the ST group/outgroup group ( $p = .046$ ). On the second day, before the retention test, a similar difference was observed between the groups,  $F(4, 95) = 3.950$ ,  $p = .005$ ,  $\eta p^2 = .143$ . The NST group had significantly higher self-efficacy levels than the ST self/ingroup ( $p = .020$ ) and the ST group/outgroup ( $p = .005$ ) groups. A marginal difference was observed between the NST group and the ST self/outgroup group ( $p = .056$ ). No other differences were observed.

### Stereotype endorsement

The two-way repeated measures ANOVA revealed that participants significantly endorse the stereotype that men's performance in soccer ( $M = 6.65$ ,  $SD = 0.67$ ) is better than women's performance ( $M = 5.49$ ,  $SD = 1.13$ ),  $F(1, 95) = 91.505$ ,  $p = .000$ ,  $\eta p^2 = .491$  (Figure 5). The interaction between groups and questions 1 (endorsement of women) and 2 (endorsement of men),  $F(4, 95) = 1.996$ ,  $p = .101$ ,  $\eta p^2 = .078$ , as well as the effect between groups,  $F(4, 95) = 1.105$ ,  $p = .359$ ,  $\eta p^2 = .044$ , were not significant.

### Discussion

This study investigated the effects of multiple gender stereotype threats on motor performance and learning in women with low identification with the soccer domain. Although previous research has explored the effects of gender stereotype threat on motor performance (Chalabaev et al., 2008; Grabow & Köhl, 2019) and motor learning (Cardozo et al., 2021; Heidrich & Chiviakowsky, 2015), we did not find studies in the literature examining the impact of multiple threats related to the target or source of the threat.

According to our hypothesis and in line with the multi-threat framework (Shapiro & Neuberg, 2007), which posits that individuals with low social identification with the stereotyped group tend to endorse negative stereotypes associated with the group, the participants in this study endorsed the negative stereotype related to women and

soccer, demonstrating agreement with the stereotype that men perform better in soccer than women. This result is consistent with previous research that investigated gender stereotype endorsement in motor tasks (Chalabaev et al., 2009; Huber et al., 2015; Miedema et al., 2023). The data also revealed that, regardless of the target of the threat or the source of the judgment, all groups exposed to stereotype threat performed worse during the practice phase, retention test, and transfer test, compared to the group without threat. These findings corroborate studies that highlight the harmful effects of stereotype threat on performance and learning in sports tasks, observed in both inexperienced women in soccer (Cardozo et al., 2021; Heidrich & Chiviakowsky, 2015), as well as experienced players (Chalabaev et al., 2008; Hermann & Vollmeyer, 2016) and girls with high identification with the sport (Mousavi et al., 2021). Similar results have also been reported in sports considered gender-neutral, such as basketball, tennis, and golf (Hively & El-Alayli, 2014; Huber et al., 2015; Stone & McWhinnie, 2008).

We expected, however, that women with low identification with soccer would show less learning when personal reputation was at risk. However, we did not find significant differences regarding the target of the threat, even though our sample showed a high level of stereotype endorsement, as hypothesized by Shapiro and Neuberg (2007). The gender stereotype associated with women in soccer, deeply ingrained in Brazilian culture, had an equal impact regardless of whether the "self" or the "group" was the target of the threat. We believe that the pressure of being evaluated by experts (both men and women) amplified the harmful effects of the threat, and the participants may have felt apprehensive about being seen as representatives of women by these experts, even if they did not consider their personal performance relevant to their self-esteem. The results are in line with studies exploring multiple gender stereotype threats suggesting that, regardless of the target, women can be equally affected. This was observed in video games (Pennington et al., 2018) and in women highly identified with the group when imagining

themselves in soccer (Laurin, 2019) or rugby (Laurin, 2017) training situations.

Similarly, the results show that the source of the threat, regardless of whether the judgment was made by male or female players, negatively affected the participants compared to the NST group, with no significant differences between them. Studies have shown that a subtly presented source of judgment, such as the presence of a male investigator, harmed the performance and learning of inexperienced women in soccer (Nahidi et al., 2023) and in long jump in girls (Saemi et al., 2023). This implicit threat was exacerbated when combined with explicit stereotypical information (Cardozo et al., 2021; Saemi et al., 2023). In the present study, the suggestion that professional male and female players would evaluate performance may have equally intensified the pressure on inexperienced participants with low identification with the sport, especially the idea of being judged by experts. Additionally, unlike previous studies, the threat related to the source of the judgment was presented explicitly for all ST groups, which may explain this discrepancy. On the other hand, our findings align with those of Pennington et al. (2018), who found no difference between threat sources in the performance of women in video games, and with Laurin (2019), who observed effects in women imagining themselves in a soccer task, regardless of whether the sources were internal or external. Shapiro et al. (2013) suggests that individuals who endorse negative stereotypes and do not identify with the group may be impacted by external judgments regardless of whether they are from outgroup or ingroup, as they do not want to be negatively judged, either personally or as representatives of the group.

Interestingly, self-efficacy was significantly influenced by some, but not all, of the multiple gender stereotype threats. Participants who were informed that their individual reputation would be evaluated by other female players (ST/self-in) exhibited a reduction in self-efficacy compared to the NST group. Similarly, a decrease was observed among participants who were told that women's performance as a group would be evaluated by male players (ST/group-out). It is possible that external judgment generates greater social pressure on women in the "group-as-target" condition due to fear of not being perceived as good representatives of their in-group. On the other hand, when the threat is directed toward the self and originates from in-group members, internal social threat may undermine confidence, especially in women with low domain identification, who may perceive the group of women as critical of gender stereotypes. These scenarios, which tend to lower performance expectations, can negatively affect self-confidence, restricting dopaminergic responses associated with enhanced optimal performance (Wulf & Lewthwaite, 2016). The expectation of good performance was reduced in individuals subjected to racial stereotype threats (Stone et al., 1999) and in women exposed to gender stereotypes, compared to those subjected to racial stereotypes (Stone & McWhinnie, 2008). Stereotype threat also affected self-efficacy in both inexperienced women (Heidrich & Chiviacowsky, 2015) and female soccer players (Grabow & Kühl, 2019). In these studies, participants in the NST group, who were informed that the task required physical abilities where no differences exist

between men and women, demonstrated higher levels of self-efficacy.

Through the results found, it is concluded that multiple gender stereotype threats, regardless of the target (self or group) and the source (internal or external to the group), impair the motor performance and learning of women with low identification with sports compared to the NST group. Future studies should investigate whether these effects also apply to experienced women with high identification with sports, as well as to other stereotyped groups, such as older adults, overweight individuals, and racial stereotypes. Additionally, it would be relevant to investigate the effects of multiple stereotype threats in studies involving non-technical tasks. Evidence suggests that women were not affected by gender stereotype threat in quadriceps isometric contraction tasks for maximum strength assessment (Chalabaev et al., 2013) or in isometric contractions performed on dynamometers (Deshayes et al., 2019). Contrary to what the literature has indicated, stereotype threat appears to have improved performance, compared to the control group, in tasks performed on an ergometer bike (Deshayes et al., 2020) and in quadriceps isometric contractions. Could different sources or targets of the threat influence these effects?

Future investigations could also explore new strategies to mitigate stereotype threat from the perspective of multiple threats. The multiple stereotype threat framework (Shapiro & Neuberg, 2007) suggests that, because individuals can be impacted in distinct ways, strategies to mitigate this phenomenon may vary in their effectiveness (Shapiro, 2011). In the present study, the NST group received information aimed at neutralizing the gender stereotype threat related to the task, emphasizing that it involved no differences between men and women, as it required skills like coordination and agility. This strategy has proven effective, as evidenced by previous studies (Cardozo & Chiviacowsky, 2015; Chalabaev et al., 2008; Heidrich & Chiviacowsky, 2015). Another way to increase participants' expectations of good performance and reduce the negative impact of stereotypes is to use easier success criteria (Mousavi et al., 2025). Other strategies, such as emphasizing an out-group's ineptitude regarding the task (stereotype lift) (Bastos et al., 2023; Cardozo et al., 2022; Chalabaev et al., 2008) and informing older adults that their results would be compared to those of individuals older than themselves, also enhanced their performance (Chiviacowsky et al., 2018). Challenging the validity of negative gender stereotypes associated with the long jump task also effectively reduced stereotype threat in girls (Dehkordi et al., 2024). Additionally, strategies such as the inclusion of an extra task during the test practice (dual task) (Saemi et al., 2025) and the indication that the motor task is challenging (Soltanifar et al., 2024), have also been investigated.

For instance, it would be interesting to examine the impact of using successful models from the target group, particularly among individuals with high social identification, by employing videos or performance rankings in the proposed task. Strategies that reduce the perceived difficulty of the task could alleviate concerns and increase learners' confidence, thereby promoting improvements in performance and learning (Chiviacowsky & Wulf, 2007;

Chiviacowsky et al., 2012; Emile et al., 2017; Gray et al., 2022; Nahidi et al., 2023).

Understanding the different ways stereotypes influence individuals is crucial to explaining why certain approaches are effective for some groups while others yield different results. It is essential for developing strategies to mitigate these negative effects, making sports more appealing and enhancing the sense of belonging and competence.

### What does this article add?

This study provides an innovative contribution to the literature on stereotype threat in motor performance and learning. While previous research has explored the impact of gender stereotype threat on female sports performance, this is the first study to examine how different sources and targets of this threat affect women with low identification with the sport. Stereotype threat impaired performance regardless of how it was manipulated, suggesting that in sports traditionally stereotyped as masculine, women are systematically disadvantaged. Furthermore, to the best of our knowledge, it is the first study to investigate these effects exclusively in women with low identification with the domain. The results indicate that, contrary to previous hypotheses, even these women are negatively affected. The findings highlight the importance of considering the direction and nature of the threat for a more precise understanding of the phenomenon. Additionally, identifying which sources and targets are most detrimental to different groups helps prevent misinterpretations regarding the influence of stereotype threat. Finally, this innovative approach to investigating stereotype threat, combined with the analysis of its effects on individuals with varying levels of identification with the sport, can enrich the debate and contribute to practical applications, such as the development of strategies to mitigate its impact on sports performance and learning.

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## **6. ARTIGO 3**

***Effects of multiple gender stereotype threats on motor learning in female futsal players***

Effects of multiple gender stereotype threats on motor performance and learning in female  
futsal players

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### **Abstract**

This study examined the effects of multiple gender stereotype threats on motor performance and learning in female futsal players with high sport identification. The investigation focused on the impact of an external (male) threat source combined with two different stereotype threat (ST) targets: one directed at individual performance and another at women in general. Forty-eight participants were assigned to one of three groups: ST targeting the group (STG), ST targeting the self (STS), and a stereotype-nullified group (NST). The task involved kicking a moving ball toward a goal containing various targets with different point values. After a pretest (10 trials), participants in the stereotype threat groups were told that men typically perform better on the task and that their performance would be evaluated by two male players. In addition, in the STG condition, participants were told that women's performance in general would be evaluated, whereas in the STS condition, participants were informed that their individual performance would be evaluated. The NST group was told there were no gender differences in task performance. The practice phase (three blocks of 10 trials) took place on Day 1, followed by a retention test (10 trials) and a transfer test (10 trials with the ball rolling in the opposite direction) on Day 2. Additional measures included self-efficacy, stereotype endorsement, and regulatory focus. Results indicate that the female futsal players with high sport identification do not endorse the gender stereotype and generally adopt a promotion focus, regardless of group. However, self-efficacy scores were lower in the ST groups compared to the NST group. In addition, stereotype threat impaired performance, with the STG condition being most affected. In terms of learning, the NST group outperformed both STG and STS groups. ST groups did not differ significantly from each other.

**Keywords:** motor learning, motivation, stereotype threat, gender, multiple threats.

## Introduction

Imagine a female futsal player participating in a championship where most of the coaches and spectators are men. Before the match begins, she completes a questionnaire that requires her to indicate her gender. Although this seems like a simple procedure, the questionnaire reminds her of her minority status in the sporting context, potentially triggering a fear of confirming, to herself, the stereotype that women are not as skilled as men in futsal (Scenario 1). As the game starts, she feels the critical gaze of other female players watching from the sidelines (Scenario 2), along with the judgment of the male audience with each missed pass or shot (Scenario 3), fearing that her mistakes will not be seen as individual shortcomings but as confirmation of the stereotype regarding female athletic incompetence. The player then becomes concerned about the impact her performance might have on her personal image as an athlete (Scenario 4) and on how the performance of women in futsal is perceived more broadly (Scenario 5), fearing that she might reinforce the notion of female inferiority in sports.

These dynamics illustrate the multiple stereotype threats described in the Multi-Threat Framework (Shapiro & Neuberg, 2007), a model developed to explain the potential different causes and effects of stereotype threat—a psychological phenomenon in which individuals belonging to a stigmatized group fear confirming a negative stereotype associated with themselves or their social group (Steele, 1997). This threat has been shown to impair performance in various situations, such as cognitive tests (Steele & Aronson, 1995) and motor tasks (Heidrich, et al., 2025a). According to this model, stereotype threat is experienced through the interaction of two key dimensions: the target and the source of the threat. The source refers to the agent issuing the judgment—it can be the individual themselves (self-as-source, as in Scenario 1), members of the same group (ingroup-as-source, Scenario 2), or members of an outgroup (outgroup-as-source, as in Scenario 3). The target refers to the focus of the judgment and may relate either to the individual's personal reputation (self) or to the reputation of their

social group (group). In the case of the futsal player, she may fear that her performance will negatively affect her personal image (Scenario 4), as well as perceptions of women as a group in futsal (Scenario 5). Thus, the combination of these dimensions results in different forms of stereotype threat, offering a broader understanding of the various contexts in which this experience may arise (Shapiro & Neuberg, 2007).

Studies in different domains have shown that stereotype threat directed at the self (self-as-target) or at the group (group-as-target), can affect performance in different ways. For instance, individuals with a history of weight-related stereotype threat reported higher levels of self-directed threat compared to group-directed threat (Carels et al., 2013; Shapiro, 2011), a pattern also observed among individuals with mental illness or acquired blindness (Shapiro, 2011). Black and Latino students with high ethnic identification performed worse under group-directed threat, and those with low identification were more affected by self-directed threat (Laar et al., 2008).

In the context of gender stereotype threat, findings are inconsistent. Regarding mathematics performance, women with high gender identification performed worse under group versus self-directed threat, but those with low identification were negatively affected regardless of threat type (Wout et al., 2007). Also, women who signed math tests with their real names (self-as-target) performed worse than those who used fictitious names, suggesting concern with personal reputation (Zhang et al., 2013). In video game tasks, women were similarly affected whether the threat was self- or group-directed (Pennington et al., 2018). In another study, rugby players evaluated female athletic ability more positively under group-directed threat but more negatively under self-directed threat (Laurin, 2017). These findings suggest that, particularly in the context of gender stereotypes, the relationship between threat target and its effects still requires further investigation.

To the best of our knowledge, only one study has directly investigated the effects of multiple stereotype threats on motor performance and learning (Heidrich et al., 2025b). The experiment observed the learning of a soccer-related task among inexperienced women with low identification with the sport. In that study, results showed that regardless of the target (self or group) combined with different sources (ingroup or outgroup) of threat, participants' motor performance and learning were impaired when compared to those in a stereotype-nullified condition, in which participants were informed that there were no gender differences in soccer dribbling performance.

Motor learning studies, although not directly investigating it, have directed stereotype threat toward different targets. Group-focused threats (group-as-target) were induced by informing participants that their social group performs worse on the task (e.g., gender: Bastos et al., 2023; Mousavi et al., 2021; 2025a; 2025b; Saemi et al., 2025; weight: Cardozo & Chiviawsky, 2015; Rabeinia et al., 2021). Self-focused threats (self-as-target) were observed when individual performance evaluation was emphasized (e.g., age: Chiviawsky et al., 2018; gender: Soltanifar et al., 2024; socioeconomic status: Lima et al., 2024). Both types of threat impaired performance, except for group-as-target gender stereotype in adult men (Cardozo et al., 2022). In addition, through subtle manipulation, the presence of male evaluators (outgroup-as-source) negatively affected girls and women (Cardozo et al., 2021; Soltanifar et al., 2024). These studies were conducted exclusively with participants inexperienced, with low domain identification, in the motor tasks. Only Mousavi et al. (2021; 2025a) and Saemi et al. (2025) selected participants with high domain identification, despite their lack of experience. In the remaining motor learning studies, there is no information about identification or how relevant the task was to participants' self-esteem—a factor that may influence the effects of stereotype threat (Stone et al., 1999; Stone, 2002) and aid in interpreting the results.

Motor performance studies, on the other hand, have investigated with greater intensity the impact of stereotype threat on experienced athletes. Golf (Beilock et al., 2006), soccer (Chalabaev et al., 2008; Grabow & Köhl, 2019; Hermann & Vollmeyer, 2016), and basketball players (Howard & Borgella, 2018; Martiny et al., 2015) showed worse performance when exposed to negative stereotypes. Additionally, identification with the sport can amplify this effect (Stone et al., 1999; Stone, 2002).

In addition to examining the effects of stereotype threat on motor learning, some studies in this field have investigated the underlying mechanisms of this phenomenon, which are considered potential explanations for the observed outcomes. Evidence suggests that participants under stereotype threat may exhibit reduced levels of intrinsic motivation (Cardozo et al., 2022), positive affect (Cardozo et al., 2021), self-efficacy (Heidrich et al., 2025b; Heidrich & Chiviakowsky, 2015), lower perceived competence (Cardozo & Chiviakowsky, 2015; Mousavi et al., 2025b), higher level of conscious motor processing (Mousavi et al., 2025b) and the adoption of prevention-focused strategies aimed at avoiding failure (Mousavi et al., 2021). In fact, when performance expectations are elevated, motivation and positive affective levels may increase, potentially facilitating learning. However, when such expectations are not met, this may lead to impairments in performance and learning.

Given the scarcity of studies comparing multiple stereotype threats in motor learning and the effects of these threats on individuals with high domain identification, such as experienced female players, it is important to investigate whether the effects observed in inexperienced women with low domain identification (Heidrich et al., 2025b) also apply to players or manifest differently. Thus, the present study aims to investigate the impact in women futsal players, with high identification with the domain, of an external (male) gender stereotype threat source combined with two different stereotype threat targets: one directed at individual performance or reputation (self-as-target) and another at women in general or collective

reputation (group-as-target). Mechanisms such as stereotype endorsement, self-efficacy, and regulatory focus will also be investigated.

We expect participants in the stereotype threat groups to show worse performance and learning compared to the nullified threat group (Cardozo et al., 2021; Heidrich & Chiviacowsky, 2015; Heidrich et al., 2025b). Since they are futsal players with high domain identification, we believe those informed that the evaluation will focus on the performance of women in general (group-as-target) will be more impacted than those informed that their individual performance will be evaluated (self-as-target) during the practice, retention, and transfer phases (Shapiro, 2011; Stone et al., 1999). Additionally, we expect participants not to endorse negatively stereotyped information about women's performance in futsal (Shapiro & Neuberg, 2007), but that their self-efficacy in the threat groups will be lower compared to the stereotype-nullified group (Heidrich & Chiviacowsky, 2015). Furthermore, under stereotype threat, it is expected that participants will adopt a prevention focus, while the stereotype-nullified group will adopt a promotion focus (Mousavi et al., 2023).

## **Method**

### **Participants**

Forty-eight adult women, with an average age of 25.65 years ( $SD = 5.28$ ), futsal players with high domain identification, participated in this study. The participants were futsal players from university teams during the 2023/2024 seasons who reported high domain identification, meaning they scored above 4 on the adapted version of the Athletic Disengagement Scale (ADS). This questionnaire included the following statements: "My athletic performance on the futsal court is very important to me", "Futsal is important to me and is a fundamental part of who I am", and "My performance in futsal tests is important to my athletic self-esteem." Responses ranged from 1 (strongly disagree) to 7 (strongly agree) (Stone et al., 1999; Stone, 2002). Participation was voluntary, and consent was obtained through the signing of the

Informed Consent Form (ICF). The experiment was approved by the Research Ethics Committee of the Federal University of Pelotas, Brazil.

### **Apparatus and task**

The task, adapted from previous studies (Mousavi et al., 2023), consisted of kicking a rolling ball toward different scoring zones to measure shot accuracy. The setups were modified and adjusted to ensure that the task was innovative and challenging for adult futsal players. The futsal goal (official size: 3m × 2m) was subdivided into 12 zones (length: 0.6 meters; height: 1 meter). To create uniform conditions in terms of speed, direction, and ball position, the ball was rolled down a small ramp (height: 40 cm; length: 70 cm), positioned at a 45° angle and 3 meters from the shooting area. The distance between the goal and the shooting area was 9 meters, with the ramp positioned on the participants' dominant foot side (right side for right-handed individuals and left side for left-handed individuals) during the pre-test, practice, and retention phases, and on the opposite side during the transfer test. The participants were instructed to position themselves 2 meters behind the shooting area, run toward the zone where the ball was located, and kick it in motion toward the targets. Additionally, they were informed that the upper zone of the targets was worth more than the lower zone, and that the extremes were worth more than the center. In this way, the lower center was worth 1 point, the zones immediately adjacent were worth 3 points, and the lower extremes were worth 5 points. The upper center was worth 2 points, followed by 4 points for the adjacent zones and 6 points for the extremes (see Fig. 1). After the pre-test, a tripod with a cellphone was positioned 1 meter behind the shooting zone, as part of the stereotype threat manipulation, as will be detailed below. In the retention and transfer tests, the tripod was removed.

----- Insert Figure 1 here-----

To measure self-efficacy, the participants indicated, in a questionnaire (Bandura, 2006), the degree of confidence they had in hitting the most valuable zones (5 and 6) at least 2, 4, 5, or more times during the practice trials. The assessment was made at the following moments: after the pre-test, after practice, and before retention, using a scale from 0 (not confident at all) to 10 (extremely confident). In order to identify whether the participants endorsed the gender stereotype, their perception of futsal as a male, female, or neutral activity was measured (Bonnot & Croizet, 2007), based on statements such as: “Personally, I think the performance of women in futsal is...” and “Personally, I think the performance of men in futsal is...,” on a scale from 1 (very bad) to 7 (very good). These questions were answered one week before the test, along with the domain identification questionnaire. To review the strategy adopted by the participants, they were asked to respond to the following questions: a) During the task, was I taking many risks to score the highest number of points on each shot (e.g., aiming mainly at zone 6)? b) During the task, was I taking few risks to ensure I would score points on each shot (e.g., aiming mainly at zone 1)? c) During the task, was my goal to score the highest number of points on each shot, even if the probability of missing the targets increased (e.g., aiming mainly at zone 6)? d) During the task, was my goal to always hit the targets, even if it meant not scoring the highest number of points on each shot (e.g., aiming mainly at zone 1)? A 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree), was used for responses. The questions referring to a promotion focus (A and C) were combined for data analysis, while the questions measuring the intention to adopt a prevention focus (B and D) were also combined for analysis.

## **Procedure**

The participants were randomly allocated and equally stratified by age into three experimental groups, with a total of 16 participants in each group. The entire experiment was conducted individually on the futsal court, in the presence of two female experimenters.

Initially, the participants performed 10 pre-test trials after receiving general information about the task. The experimental manipulation was presented through a text reading by the participants and verbally by the experimenter before the 3 blocks of 10 trials in the practice phase, with verbal reinforcement between the blocks in the same phase. In the stereotype threat (ST) groups, the participants were informed that: "Today and tomorrow, you will perform a task of kicking a rolling ball toward targets. Scientific studies indicate that men are better than women at motor skills such as target kicking, which require abilities such as explosive power and precision." The reading sheet included the image of two male players, who would evaluate performance through the recording made by the cellphone, mounted on a tripod. Additionally, in the ST targeting group (STG) condition, the instructions suggested that women's abilities, in general, would be evaluated by the players: "In this study, we aim to assess the ability of women to perform this task correctly. For analysis purposes, the test will be recorded, and the performance of women will be evaluated by two futsal players mentioned below." In the ST targeting self (STS) condition, the instructions suggested that the individual participant's ability would be evaluated: "In this study, we aim to assess your individual ability to perform this task correctly. For analysis purposes, the test will be recorded, and your personal performance will be evaluated by two futsal players mentioned below." The stereotype-nullified group (NST) received the following information: "Today and tomorrow, you will perform a task of kicking a rolling ball toward targets. Scientific studies indicate that there is no difference between men and women in motor skills such as target kicking, which require abilities like motor coordination and precision. In this study, we aim to assess the ability of different individuals to perform this task correctly. For result checking purposes, the test will be recorded, and the findings will contribute to the progress of the study."

The following day, the participants performed the retention and transfer (the ramp was placed on the opposite side, maintaining the same angle and distance) tests, consisting of 10

trials for each test, without the experimental manipulation induction. Regulatory focus questionnaires were applied after the pre-test, at the end of the practice phase, and the next day, at the end of data collection. The self-efficacy questionnaire was applied after the pre-test, as well as after the practice phase and, the following day, before retention. At the end of the experiment, all stereotyped information was removed.

### **Data analysis**

The dependent variable was the average score of successful hits across the blocks. Performance scores were analyzed using a 3 (groups: STG; STS; NST)  $\times$  3 (practice blocks) repeated-measures Analysis of Variance (ANOVA) on the last factor, for the practice phase. The pre-test, retention test, and transfer test were analyzed separately using one-way ANOVAs with 3 levels (groups: STG; STS; NST), as were the self-efficacy questionnaire scores. For the analysis of stereotype endorsement and regulatory focus, two-way ANOVAs with repeated measures on the last factor were conducted (groups: STG; STS; NST)  $\times$  (questions: men stereotypes; women stereotypes and (groups: STG; STS; NST)  $\times$  (focus: promotion; prevention), respectively.

## **Results**

### *Kicking Accuracy*

#### *Pre-test*

The groups did not show differences,  $F(2,47) = .369$ ,  $p = .693$ ,  $\eta p^2 = .016$ .

#### *Practice*

During the practice phase, the main effect of blocks was not significant,  $F(2, 45) = 1.836$ ,  $p = .165$ ,  $\eta p^2 = .039$ . There was no significant interaction between blocks and groups,  $F(4, 90) = 1.637$ ,  $p = .172$ ,  $\eta p^2 = .068$ . However, the main effect of groups was significant,  $F(2, 45) = 45.272$ ,  $p < .001$ ,  $\eta p^2 = .668$ . Specifically, the stereotype-nullified group outperformed

both the STG ( $p < .001$ ) and the STS ( $p < .001$ ). Additionally, the STG group performed significantly worse than the STS group during this phase ( $p < .001$ ).

### *Retention*

The main effect of groups was significant,  $F(2, 45) = 30.461$ ,  $p < .001$ ,  $\eta^2 = .575$ . Specifically, the stereotype-nullified group performed significantly better than both the STG and STS ( $p < .001$ ). Although the STG group ( $M = 2.43$ ) exhibited lower scores than the STS ( $M = 2.56$ ), this difference was not statistically significant in this phase ( $p = .455$ ).

### *Transfer*

A significant difference was observed between groups,  $F(2, 45) = 4.703$ ,  $p = .014$ ,  $\eta^2 = .173$ . The stereotype-nullified group outperformed both the STG group ( $p = .005$ ) and the STS ( $p = .038$ ). No significant difference was found between the stereotype threat groups in the transfer phase ( $p = .407$ ).

----- Insert Figure 2 here-----

### *Questionnaires*

#### *Self-Efficacy*

No differences were observed between groups regarding self-efficacy levels after the pre-test,  $F(2, 47) = 1.495$ ,  $p = .235$ ,  $\eta^2 = .062$ . Following the practice phase, a marginal significant difference emerged,  $F(2, 47) = 3.073$ ,  $p = .056$ ,  $\eta^2 = .120$ . Follow-up analysis showed that the stereotype-nullified group reported significantly higher levels of self-efficacy compared to the STG ( $p = .034$ ) and the STS ( $p = .042$ ) groups. On the second day, prior to the retention test, no group differences were observed,  $F(2, 47) = 2.791$ ,  $p = .072$ ,  $\eta^2 = .110$ .

----- Insert Figure 3 here-----

### *Stereotype Endorsement*

The participants in the study did not endorse the information that men's futsal performance ( $M = 1.73$ ) is better than women's ( $M = 1.79$ ),  $F(1, 45) = .310$ ,  $p = .580$ ,  $\eta p^2 = .007$ . When comparing the groups, no significant differences were observed,  $F(2, 45) = 1.345$ ,  $p = .271$ ,  $\eta p^2 = .056$ .

----- Insert Figure 4 here-----

### *Regulatory Focus*

Regardless of the group they were in, the participants adopted a promotion-focused regulatory focus,  $F(1, 45) = 23.513$ ,  $p = .000$ ,  $\eta p^2 = .343$ . No significant differences between the groups were found,  $F(2, 45) = .432$ ,  $p = .652$ ,  $\eta p^2 = .019$ .

----- Insert Figure 5 here-----

## **Discussion**

The present study aimed to investigate the effects of multiple gender stereotype threats, specifically the combination of an external source with different targets—self or group—on the motor performance and learning of futsal players with high domain identification. In line with the first hypothesis, participants in the ST groups demonstrated poorer performance and learning compared to those in the NST group. A substantial body of research suggests that gender stereotype threat negatively impacts women's performance in sports-related tasks, particularly in sports traditionally perceived as male-dominated (for reviews, see Chalabaev et al., 2013; Heidrich et al., 2025a), affecting both novice women (Cardozo et al., 2021; Heidrich & Chiviacowsky, 2015; Mousavi et al., 2021; 2023; 2025a; Nahid et al., 2023) and experienced players (Chalabaev et al., 2008; Grabow & Köhl, 2019; Hermann & Vollmeyer, 2016). One

possible explanation for this effect lies in the chosen source of the stereotype threat: participants in the ST groups believed they were being evaluated by male players (outgroup-as-source), whereas those in the NST group received no information about the evaluators. Supporting our findings, women and girls who performed tasks in the presence of men showed poorer performance and learning compared to those who performed in the presence of women (Cardozo et al., 2021; Dehkordi et al., 2024; Nahid et al., 2023). Furthermore, stating that the task required physical abilities in which men generally outperform women may have amplified the negative effects, as previously observed in professional female soccer players (Chalabaev et al., 2008; Hermann & Vollmeyer, 2016).

Regarding the target of the threat, it was hypothesized that, given the profile of the participants—futsal players with high identification with the sport—the information that women's performance in general would be evaluated (group-as-target) would be more detrimental than information suggesting that their individual performance would be assessed (self-as-target). This hypothesis was partially confirmed. In motor performance (practice phase), the STG group indeed performed significantly worse than the STS group. We believe that the high level of domain identification may have made the participants more sensitive to information targeting their social group, as proposed by the Multi-Threat Framework (Shapiro & Neuberg, 2007). Upon being informed that male evaluators would assess the performance of women in general, participants may have feared confirming negative stereotypes associated with their gender, diverting cognitive resources from the task. Additionally, the repeated emphasis of this information between practice blocks may have intensified the expected immediate effects. However, although the STG group scored lower than the STS group in the next day, in the learning tests, no significant differences were found between these two ST groups, with both performing similarly worse than the NST group. One possible explanation for this outcome may lie in the impact of the external source of threat and the participants'

profiles. A previous study with women who had low identification with soccer (Heidrich et al., 2025) found similar detrimental effects for both self and group targets in all phases of the study. These findings suggest that the effects of gender stereotype threat in women learning soccer skills may not depend on the target (self or group) and task identification level (low or high), when the threat comes from an external source. The weight of the external source may have amplified the threat effects. Thus, we suggest that future research examine whether women with high identification with sports, when exposed to other sources of threat (self-as-source and ingroup-as-source), would exhibit different responses to self- and group-targeted threats.

Another confirmed hypothesis was that participants would not endorse negative stereotypes about women's futsal. Given their high identification with the sport, we suggested that they would reject such stereotypes, which was supported by the findings of Shapiro and Neuberg (2007). Some studies have linked girls' lower performance to a high level of gender stereotype endorsement regarding women (Chalabaev et al., 2009; Miedema et al., 2023). However, our study reveals that this factor is not a decisive determinant of impairments in motor performance and learning. In fact, experienced individuals often attempt to disprove negative stereotypes associated with their group, which increases their concern about performing well, thereby diverting attention from the task and impairing performance (Spencer et al., 1999).

Participants' self-efficacy was influenced by the stereotypical information provided to their group. Participants in the ST groups (both group and self-conditions) reported lower levels of self-efficacy compared to the control group on the first day, after the practice phase, when asked about their expectations for the following day. Previous studies suggest that participants' self-efficacy is reduced when exposed to stereotype threat, which can hinder performance in both skilled female athletes and inexperienced women (Grabow & Kuhl, 2019; Heidrich & Chiviakowsky, 2015; Heidrich et al., 2025b). The superior performance of the NST group may be attributed to elevated performance expectations relative to the ST groups, as they were

informed that women perform as well as men in this task, and attributed success to precision and focus. Indeed, enhancing performance expectancies is a key determinant in optimizing motor learning (Wulf & Lewthwaite, 2016), as observed in a recent study, girls exposed to stereotype threat but given relatively easy task-related success criteria showed results similar to those of the nullified threat group and better than those subjected to stereotype threat without this adaptation.

Our findings partially contradict our hypotheses regarding the regulatory focus adopted by participants, as no significant differences were found between groups—all participants adopted a promotion focus, regardless of the study phase and group. In previous studies, participants under stereotype threat reported focusing on achieving gains or “not being worse” than others, while those not exposed to stereotypical information reported an opposite approach (Chalabaev et al., 2008; Grimm et al., 2016). Regarding promotion (aiming to score more points despite higher risk of error) versus prevention focus (opting for easier targets worth fewer points), previous research found that girls under stereotype threat adopted a prevention focus and showed worse learning outcomes than those exposed to a positive stereotype, who adopted a promotion focus (Mousavi et al., 2021). However, that study involved inexperienced girls, which may explain the discrepancy in relation to our participants, who were experienced futsal players. According to regulatory fit theory (Higgins, 2000), when individuals are motivated by gains and adopt a promotion focus—as was the case in our study—outcomes tend to be positive. However, when motivation centers on avoiding failure while still maintaining a promotion focus, regulatory misfit may occur, potentially impairing performance. The successive errors observed during the practice phase, particularly among participants in the stereotype threat groups, may have led to a sense of “not being allowed to fail,” which, combined with a promotion focus, may have further hindered their performance.

To the best of our knowledge, this is the first study to investigate motor learning in a population of experienced futsal players. We considered it relevant to explore whether these women—whose self-esteem is closely linked to their on-court performance and who do not endorse negative stereotypes about women's abilities in futsal—would have their learning of a novel task influenced by different stereotype threat targets presented by a male evaluator. Previous studies have demonstrated the negative effects of gender stereotypes on girls and women who are novices in sports. However, understanding how this phenomenon manifests in experienced athletes is essential for developing more effective strategies that not only increase interest in sports participation but also support the continued involvement of women in historically male-dominated contexts such as futsal, where women's access remains limited and positions of power (e.g., coaches, referees, administrators) are still largely held by men.

Within the field of motor learning, researchers have explored ways to mitigate the deleterious effects of stereotype threat. For instance, informing participants that the task can be performed equally well by members of the stereotyped group has been shown to increase performance expectations and self-efficacy, thereby reducing the threat's effects (Cardozo et al., 2015; Cardozo et al., 2021; Chiviacowsky et al., 2018; Heidrich et al., 2025b; Heidrich & Chiviacowsky, 2015; Mousavi et al., 2021; 2023; 2025b exp.1). Other effective strategies include showing videos of ingroup models performing the task (Bastos et al., 2023) or framing intermediate targets—not only the most difficult ones—as indicators of good performance (Mousavi et al., 2025a). Suggesting an external focus of attention benefited the learning of a ball-throwing aiming task in adolescent girls under stereotype threat, compared to those who practiced with an internal focus or received only threat-related information (Mousavi et al., 2025b exp.2). Conversely, conceptions of ability (Nahidi et al., 2023) or presenting the task as a challenging activity (Soltanifar et al., 2024) did not affect the effects of gender stereotype threat among adolescents and young adults. Additionally, attempting to use dual-task conditions

to buffer stereotype threat, which proved ineffective for golfers (Beilock et al., 2006), did not impair children's performance and learning (Saemi et al., 2025). These results align with the Multi-Threat Framework (Shapiro & Neuberg, 2007; Shapiro et al., 2013), which emphasizes the need to understand how stereotype threat operates in specific groups before designing effective interventions.

It is concluded that multiple gender stereotype threats—specifically, the combination of an external source with different targets (self or group)—similarly negatively affect motor performance and learning in futsal players who strongly identified with the domain, as well as reduced their levels of self-efficacy. In terms of performance, the “group-as-target” condition produced the worst results, suggesting that for highly identified athletes, negative stereotypes directed at the group may be particularly detrimental. Moreover, participants did not endorse the stereotypical information and adopted a promotion regulatory focus regardless of group assignment. For future studies, we suggest investigating whether these findings hold under different threat sources, such as “ingroup-as-source” versus “outgroup-as-source.” Additionally, it would be worthwhile to explore the combination of different targets under a “self-as-source” threat condition to determine whether the observed effects were amplified by external evaluation.

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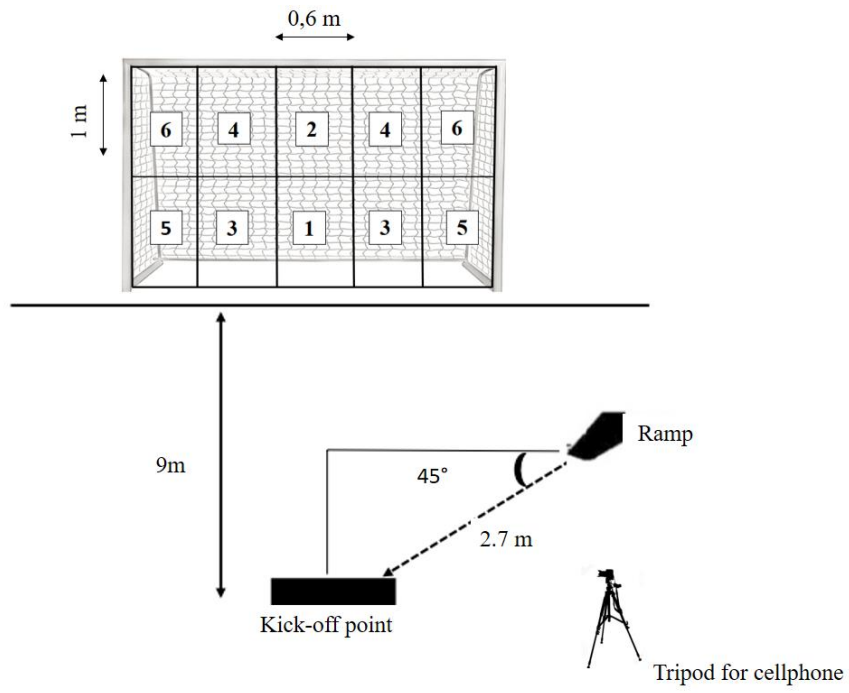
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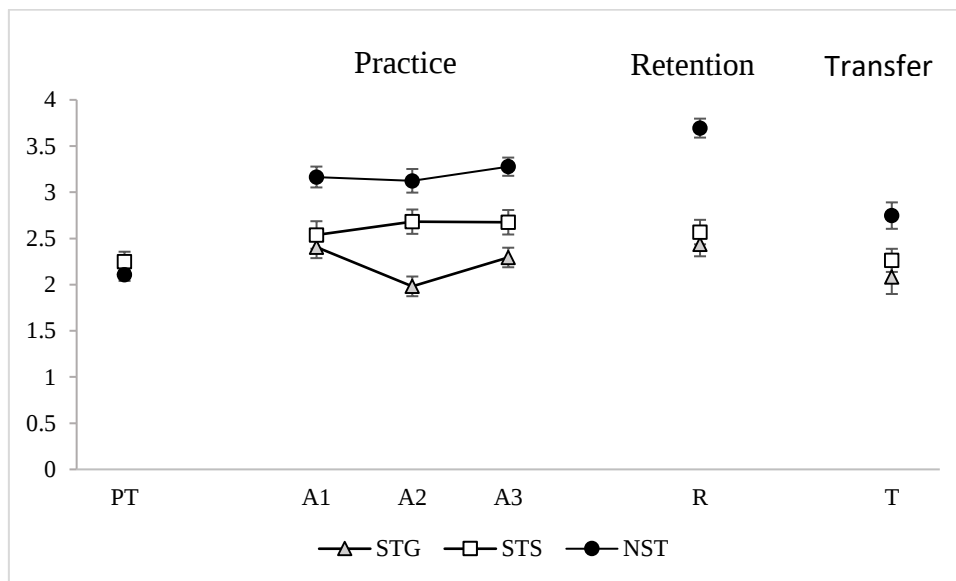
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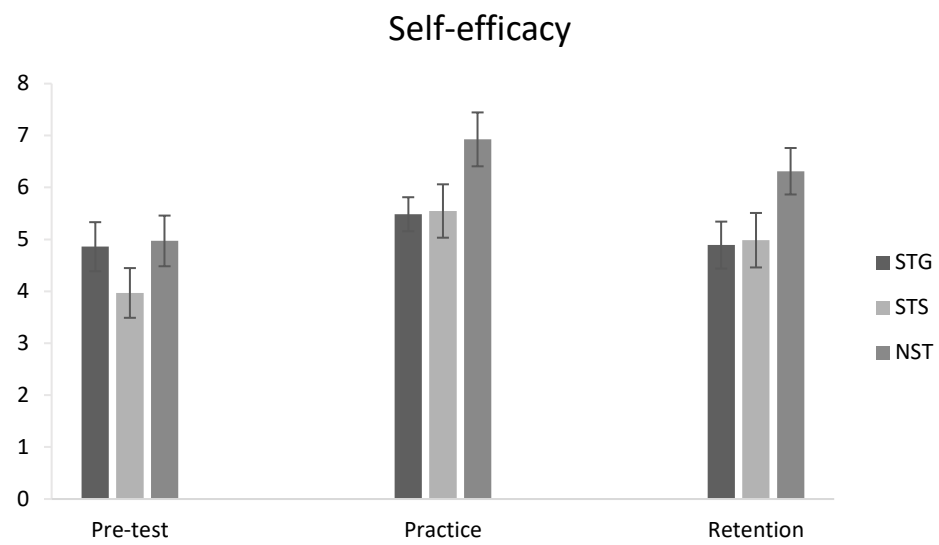
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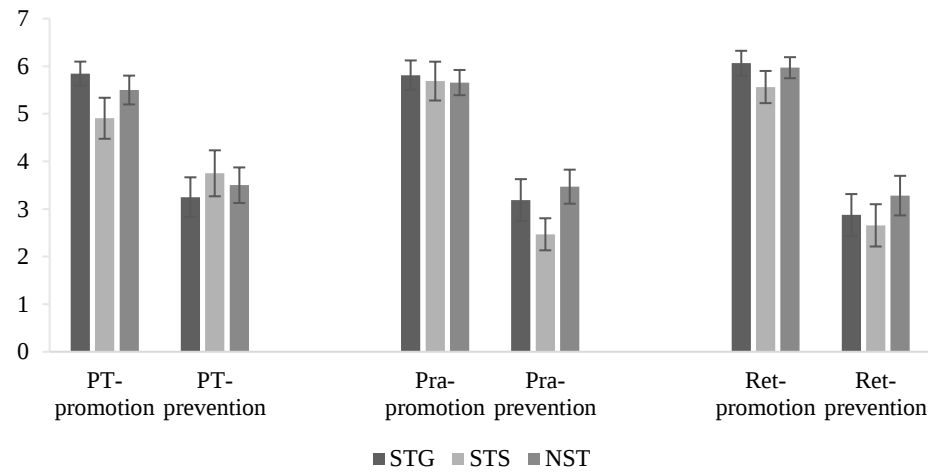
**Figure 1:** Schematic of the Experimental Set-Up



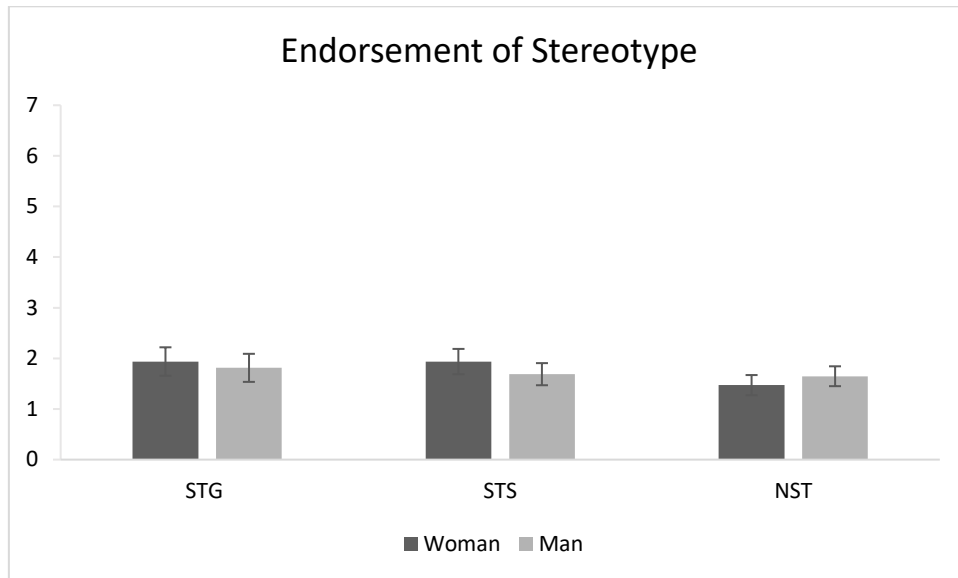
**Figure 2:** Mean of attempt blocks for the stereotype threat groups STG, STS, and NST in the pre-test (pt), during practice (day 1), and in the retention and transfer test. Note: The error bars represent the standard errors



**Figure 3:** Ratings of self-efficacy scale scores for the STG, STS, and NST groups after the pretest, after practice, and before the retention test. Error bars represent standard errors.



**Figure 4:** Ratings of regulatory focus scores (promotion or prevention focus) for the STG, STS, and NST groups after the pretest, practice, and retention. Error bars represent standard errors.



**Figure 5:** Stereotype endorsement scale scores for the STG, STS and NST groups.

**7. CONCLUSÃO**  
*(Tese de Caroline Valente Heidrich)*

## Conclusão

A presente tese teve como objetivo investigar os efeitos das múltiplas ameaças de estereótipo de gênero na aprendizagem motora em mulheres com diferentes níveis de identificação com o domínio esportivo, buscando contribuir para o aprofundamento teórico sobre o fenômeno da ameaça de estereótipo. Ao longo do trabalho, reuniram-se evidências que reforçam a importância de compreender como, em quem e de que forma a ameaça de estereótipo pode se manifestar e influenciar o desempenho e a aprendizagem motora.

A revisão sistemática realizada indicou que a maioria dos estudos se concentra no desempenho motor, totalizando 51 estudos, enquanto poucos abordam também os efeitos sobre a aprendizagem, totalizando 14 estudos. Os estereótipos mais investigados foram os de gênero, seguidos por idade, raça, peso, deficiência, sedentarismo, capacidade de jogadores de futebol ingleses (em cobranças de pênaltis), altura e status socioeconômico. Em relação a população, em sua maioria, contemplava adultos, seguido de crianças, idosos e, em menor número, adolescentes. De forma consistente, os resultados sugerem que a ameaça de estereótipo prejudica tanto o desempenho quanto a aprendizagem motora, seja por meio de manipulações explícitas ou sutis. Foram identificados diversos mecanismos subjacentes. Especificamente nos estudos de aprendizagem motora, constructos como motivação intrínseca, autoeficácia, afetos positivos e foco regulatório explicam os efeitos da ameaça de estereótipo. Os efeitos da ameaça também dependem de fatores como identificação com o domínio, nível de complexidade da tarefa e características dos participantes, por exemplo.

O segundo artigo demonstra que independentemente de a ameaça ser direcionada ao desempenho pessoal ou ao grupo (mulheres), e seja qual for a fonte do julgamento (homens ou mulheres), as múltiplas ameaças de estereótipo de gênero prejudicaram o desempenho e a aprendizagem motora em uma tarefa de dribles de futebol entre mulheres com baixa identificação com o domínio, em comparação com o grupo de ameaça anulada. No entanto, não foram observadas diferenças significativas entre os grupos sob ameaça de estereótipo. Em relação aos mecanismos subjacentes, as participantes, independentemente da condição experimental, endossaram estereótipos negativos sobre o futebol feminino. Além disso, a autoeficácia apresentou variações importantes: o grupo de ameaça anulada demonstrou níveis significativamente mais elevados de autoeficácia do que os grupos

ST/self-ingroup e ST/group-outgroup, sugerindo que a autoeficácia foi mais comprometida quando as participantes acreditavam que seu desempenho pessoal seria avaliado por outras mulheres ou que o desempenho das mulheres, enquanto grupo, seria julgado por homens.

No segundo experimento, realizado com jogadoras de futsal com alta identificação com o domínio, que executaram uma tarefa de chutes a diferentes zonas-alvo no gol, observou-se que o grupo de estereótipo anulado apresentou desempenho superior em comparação aos grupos sob ameaça de estereótipo. Quanto ao alvo da ameaça, o desempenho imediato foi mais prejudicado no grupo STG — informado de que o julgamento do desempenho realizado por homens seria direcionado ao grupo (mulheres) — em relação ao grupo STS, cujas participantes foram informadas de que o julgamento realizado por homens seria direcionado ao desempenho individual. No entanto, nas fases de retenção e transferência, ambos os grupos sob ameaça apresentaram desempenho inferior ao grupo STN, sem diferenças significativas entre si. No que diz respeito aos mecanismos subjacentes, as participantes não endossaram o estereótipo negativo, avaliando o desempenho do futsal feminino como semelhante ao masculino. O foco regulatório adotado foi de promoção: independentemente da condição experimental, as participantes optaram por estratégias de maior risco, buscando acertar os alvos mais valiosos. Por fim, a autoeficácia foi marginalmente menor nos grupos sob ameaça de estereótipo, em comparação ao grupo de ameaça anulada.

Conclui-se que as múltiplas ameaças de estereótipo de gênero afetam negativamente tanto o desempenho e a aprendizagem motora de tarefas de dribles de futebol em mulheres inexperientes e com baixa identificação com o domínio, quanto o desempenho e aprendizagem motora em tarefas de chutes à zonas-alvo em mulheres praticantes de futsal e com alta identificação com o mesmo.

Espera-se que esta tese contribua não apenas para o avanço do conhecimento científico sobre o tema, mas também para subsidiar práticas pedagógicas, esportivas e educacionais mais inclusivas, através de estratégias que ajudem a reduzir os efeitos prejudiciais da ameaça de estereótipo.

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## ANEXOS

## ANEXO A TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO (estudo 2)

Pesquisador responsável: Caroline Valente Heidrich  
 Instituição: Escola superior de educação física- Universidade Federal de Pelotas  
 Endereço: Rua Luis de Camões, 625. Três vendas  
 Telefone (aceito ligação à cobrar e contato via WhatsApp): (53) 981422894

Concordo em participar do estudo "*Aprendizagem motora de uma tarefa de futebol*". Estou ciente de que estou sendo convidado a participar voluntariamente do mesmo.

**PROCEDIMENTOS:** Fui informado de que o objetivo geral "investigar a aprendizagem motora de uma tarefa de futebol", cujos resultados serão mantidos em sigilo e somente serão usadas para fins de pesquisa. Estou ciente de que a minha participação envolverá "dribles de futebol".

**RISCOS E POSSÍVEIS REAÇÕES:** "Fui informado que os riscos são mínimos, mas posso sentir leve desconforto muscular devido ao número de tentativas. Para isso, serei orientado a descansar entre cada bloco de tentativa. Além disso, em caso de desconforto psicológico durante o preenchimento do questionário, posso interrompê-lo a qualquer momento.

**BENEFÍCIOS:** O benefício de participar na pesquisa relaciona-se ao fato de que aprenderei uma habilidade motora esportiva nova e que os resultados serão incorporados ao conhecimento científico e posteriormente a situações de ensino-aprendizagem.

**PARTICIPAÇÃO VOLUNTÁRIA:** Como já me foi dito, minha participação neste estudo será voluntária e poderei interrompê-la a qualquer momento.

**DESPESAS:** Eu não terei que pagar por nenhum dos procedimentos, nem receberei compensações financeiras.

**CONFIDENCIALIDADE:** Estou ciente que a minha identidade permanecerá confidencial durante todas as etapas do estudo.

**CONSENTIMENTO:** Recebi claras explicações sobre o estudo, todas registradas neste formulário de consentimento. Os investigadores do estudo responderam e responderão, em qualquer etapa do estudo, a todas as minhas perguntas, até a minha completa satisfação. Portanto, estou de acordo em participar do estudo. Este Formulário de Consentimento Pré-Informado será assinado por mim e arquivado na instituição responsável pela pesquisa.

Nome do participante/representante legal: \_\_\_\_\_  
 Identidade: \_\_\_\_\_

ASSINATURA: \_\_\_\_\_ DATA: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

**DECLARAÇÃO DE RESPONSABILIDADE DO INVESTIGADOR:** Expliquei a natureza, objetivos, riscos e benefícios deste estudo. Coloquei-me à disposição para perguntas e as respondi em sua totalidade. O participante compreendeu minha explicação e aceitou, sem imposições, assinar este consentimento. Tenho como compromisso utilizar os dados e o material coletado para a publicação de relatórios e artigos científicos referentes a essa pesquisa. Se o participante tiver alguma consideração ou dúvida sobre a ética da pesquisa, pode entrar em contato com o Comitê de Ética em Pesquisa da ESEF/UFPel – Rua Luís de Camões, 625 – CEP: 96055-630 - Pelotas/RS; Telefone:(53)3284-4332.

ASSINATURA DO PESQUISADOR RESPONSÁVEL \_\_\_\_\_

**ANEXO B TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO (estudo 3)**

Pesquisador responsável: Caroline Valente Heidrich  
Instituição: Escola superior de educação física- Universidade Federal de Pelotas  
Endereço: Rua Luis de Camões, 625. Três vendas  
Telefone (aceito ligação à cobrar e contato via WhatsApp): (53) 981422894

Concordo em participar do estudo "*Aprendizagem motora de uma tarefa de futsal*". Estou ciente de que estou sendo convidado a participar voluntariamente do mesmo.

**PROCEDIMENTOS:** Fui informado de que o objetivo geral "investigar a aprendizagem motora de uma tarefa de futsal", cujos resultados serão mantidos em sigilo e somente serão usadas para fins de pesquisa. Estou ciente de que a minha participação envolverá "realizar chutes a alvos, além de ler um texto e responder alguns questionários breves".

**RISCOS E POSSÍVEIS REAÇÕES:** "Fui informado que os riscos são mínimos, mas posso sentir leve desconforto muscular devido ao número de tentativas. Para isso, serei orientado a descansar entre cada bloco de tentativa. Além disso, em caso de desconforto psicológico durante o preenchimento do questionário, posso interrompê-lo a qualquer momento.

**BENEFÍCIOS:** O benefício de participar na pesquisa relaciona-se ao fato de que aprenderei uma habilidade motora esportiva nova e que os resultados serão incorporados ao conhecimento científico e posteriormente a situações de ensino-aprendizagem.

**PARTICIPAÇÃO VOLUNTÁRIA:** Como já me foi dito, minha participação neste estudo será voluntária e poderei interrompê-la a qualquer momento.

**DESPESAS:** Eu não terei que pagar por nenhum dos procedimentos, nem receberei compensações financeiras.

**CONFIDENCIALIDADE:** Estou ciente que a minha identidade permanecerá confidencial durante todas as etapas do estudo.

**CONSENTIMENTO:** Recebi claras explicações sobre o estudo, todas registradas neste formulário de consentimento. Os investigadores do estudo responderam e responderão, em qualquer etapa do estudo, a todas as minhas perguntas, até a minha completa satisfação. Portanto, estou de acordo em participar do estudo. Este Formulário de Consentimento Pré-Informado será assinado por mim e arquivado na instituição responsável pela pesquisa.

Nome do participante/representante legal: \_\_\_\_\_  
Identidade: \_\_\_\_\_

ASSINATURA: \_\_\_\_\_ DATA: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

**DECLARAÇÃO DE RESPONSABILIDADE DO INVESTIGADOR:** Expliquei a natureza, objetivos, riscos e benefícios deste estudo. Coloquei-me à disposição para perguntas e as respondi em sua totalidade. O participante compreendeu minha explicação e aceitou, sem imposições, assinar este consentimento. Tenho como compromisso utilizar os dados e o material coletado para a publicação de relatórios e artigos científicos referentes a essa pesquisa. Se o participante tiver alguma consideração ou dúvida sobre a ética da pesquisa, pode entrar em contato com o Comitê de Ética em Pesquisa da ESEF/UFPel – Rua Luís de Camões, 625 – CEP: 96055-630 - Pelotas/RS; Telefone:(53)3284-4332.

ASSINATURA DO PESQUISADOR RESPONSÁVEL \_\_\_\_\_

### **ANEXO C Questionários do estudo 2 (Identificação com o domínio- respondido 1 semana antes dos testes)**

Por gentileza, responda as seguintes perguntas:

Utilizando uma escala de 1 (discordo totalmente) até 7 (concordo totalmente), preencha as questões a seguir:

1- Nenhum teste de futebol jamais mudará minha opinião sobre o quão atlético eu sou”

|            |   |   |   |   |   |            |
|------------|---|---|---|---|---|------------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7          |
| Discordo   |   |   |   |   |   | Concordo   |
| totalmente |   |   |   |   |   | totalmente |

2- “O meu desempenho no futebol tem pouca relação com quem eu realmente sou”

|            |   |   |   |   |   |            |
|------------|---|---|---|---|---|------------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7          |
| Discordo   |   |   |   |   |   | Concordo   |
| totalmente |   |   |   |   |   | totalmente |

3- “Eu realmente não me importo com o que os testes dizem sobre minha habilidade em esportes”

|            |   |   |   |   |   |            |
|------------|---|---|---|---|---|------------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7          |
| Discordo   |   |   |   |   |   | Concordo   |
| totalmente |   |   |   |   |   | totalmente |

4- “Eu realmente não me importo com o desempenho das mulheres no futebol”

|            |   |   |   |   |   |            |
|------------|---|---|---|---|---|------------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7          |
| Discordo   |   |   |   |   |   | Concordo   |
| totalmente |   |   |   |   |   | totalmente |

5- “ O desempenho das mulheres no futsal tem pouco a ver com quem realmente sou”

|            |   |   |   |   |   |            |
|------------|---|---|---|---|---|------------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7          |
| Discordo   |   |   |   |   |   | Concordo   |
| Totalmente |   |   |   |   |   | totalmente |

### **Endosso do estereótipo (respondido ao final do estudo)**

Por gentileza, responda às seguintes questões, utilizando uma escala de 1 (muito ruim) a 7 (muito bom)

1- “Pessoalmente, de modo geral, acho que o desempenho das mulheres no futsal é”

|            |   |   |   |   |   |           |
|------------|---|---|---|---|---|-----------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7         |
| Muito ruim |   |   |   |   |   | muito bom |

“Pessoalmente, de modo geral, acho que o desempenho dos homens no futsal é”,

|            |   |   |   |   |   |           |
|------------|---|---|---|---|---|-----------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7         |
| Muito ruim |   |   |   |   |   | muito bom |

## ANEXO D - Questionários do estudo 2 (Autoeficácia após o pré-teste)

**Responda, por favor, às seguintes questões:**

1. Você está confiante de que, ao final das 15 tentativas de prática, conseguirá realizar o percurso em um tempo menor de 30 segundos?

|                |   |   |   |   |   |   |   |   |   |    |                           |
|----------------|---|---|---|---|---|---|---|---|---|----|---------------------------|
| Nada confiante |   |   |   |   |   |   |   |   |   |    | Extremamente<br>confiante |
|                | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |                           |

2. Você está confiante de que, ao final das 15 tentativas de prática, conseguirá realizar o percurso em um tempo menor de 25 segundos?

|                |   |   |   |   |   |   |   |   |   |   |                           |  |
|----------------|---|---|---|---|---|---|---|---|---|---|---------------------------|--|
| Nada confiante |   |   |   |   |   |   |   |   |   |   | Extremamente<br>confiante |  |
|                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                        |  |

3. Você está confiante de que, ao final das 15 tentativas de prática, conseguirá realizar o percurso em um tempo menor de 20 segundos?

|                |   |   |   |   |   |   |   |   |   |   |                           |  |
|----------------|---|---|---|---|---|---|---|---|---|---|---------------------------|--|
| Nada confiante |   |   |   |   |   |   |   |   |   |   | Extremamente<br>confiante |  |
|                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                        |  |

4. Você está confiante de que, ao final das 15 tentativas de prática, conseguirá realizar o percurso em um tempo menor de 15 segundos?

|                |   |   |   |   |   |   |   |   |   |   |                           |  |
|----------------|---|---|---|---|---|---|---|---|---|---|---------------------------|--|
| Nada confiante |   |   |   |   |   |   |   |   |   |   | Extremamente<br>confiante |  |
|                | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                        |  |

## ANEXO E- Questionários do estudo 2 (Autoeficácia após a prática)

**Responda, por favor, às seguintes questões:**

1. Você está confiante de que, ao final das 15 tentativas de prática, conseguirá realizar o percurso em um tempo menor de 30 segundos amanhã?

Nada confiante  
confiante

Extremamente confiante

1      2      3      4      5      6      7      8      9      10

2. Você está confiante de que, ao final das 15 tentativas de prática, conseguirá realizar o percurso em um tempo menor de 25 segundos amanhã?

Nada confiante

Extremamente confiante

0      1      2      3      4      5      6      7      8      9      10

3. Você está confiante de que, ao final das 15 tentativas de prática, conseguirá realizar o percurso em um tempo menor de 20 segundos amanhã?

Nada confiante

Extremamente confiante

0      1      2      3      4      5      6      7      8      9      10

4. Você está confiante de que, ao final das 15 tentativas de prática, conseguirá realizar o percurso em um tempo menor de 15 segundos amanhã?

Nada confiante

Extremamente confiante

0      1      2      3      4      5      6      7      8      9      10

**ANEXO F- Questionários do estudo 2 (Autoeficácia antes da retenção)****Responda, por favor, às seguintes questões:**

1. Você está confiante de que, ao final das tentativas, conseguirá realizar o percurso em um tempo menor do que 30 segundos hoje?

Nada confiante

Extremamente confiante

0      1      2      3      4      5      6      7      8      9      10

2. Você está confiante de que, ao final das tentativas, conseguirá realizar o percurso em um tempo menor do que 25 segundos hoje?

Nada confiante

Extremamente confiante

0      1      2      3      4      5      6      7      8      9      10

3. Você está confiante de que, ao final das tentativas, conseguirá realizar o percurso em um tempo menor do que 20 segundos hoje?

Nada confiante

Extremamente confiante

0      1      2      3      4      5      6      7      8      9      10

4. Você está confiante de que, ao final das tentativas, conseguirá realizar o percurso em um tempo menor do que 15 segundos hoje?

Nada confiante

Extremamente confiante

0      1      2      3      4      5      6      7      8      9      10

### **ANEXO G- Questionários do estudo 3 (Identificação com o domínio e endosso do estereótipo – enviado online)**

Este questionário faz parte de uma pesquisa acadêmica em andamento, com o objetivo de investigar a opinião de jogadores de futsal. A participação é voluntária, e todas as informações fornecidas serão tratadas de forma confidencial. Os dados coletados serão utilizados exclusivamente para fins acadêmicos e não serão divulgados de forma individual. Não há respostas certas ou erradas; estamos interessados nas suas opiniões e experiências pessoais. ANEXO questionário contém 10 perguntas e levará pouco tempo para ser concluído. Sua contribuição é muito valiosa para o avanço do conhecimento na área de psicologia do esporte e comportamento motor.

Ao iniciar o questionário, você está consentindo em participar da pesquisa. Caso tenha dúvidas ou precise de esclarecimentos, fique à vontade para entrar em contato conosco pelo Whatsapp (53) 981422894.

Agradecemos sua colaboração!

Utilizando uma escala de 1 (discordo totalmente) até 7 (concordo totalmente), preencha as questões a seguir:

1- Nenhum teste de futsal jamais mudará minha opinião sobre o quão atlético eu sou”

|            |   |   |   |   |   |            |
|------------|---|---|---|---|---|------------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7          |
| Discordo   |   |   |   |   |   | Concordo   |
| totalmente |   |   |   |   |   | totalmente |

2- “O meu desempenho no futsal tem pouca relação com quem eu realmente sou”

|            |   |   |   |   |   |            |
|------------|---|---|---|---|---|------------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7          |
| Discordo   |   |   |   |   |   | Concordo   |
| totalmente |   |   |   |   |   | totalmente |

3- “Eu realmente não me importo com o que os testes dizem sobre minha habilidade em esportes”

|            |   |   |   |   |   |            |
|------------|---|---|---|---|---|------------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7          |
| Discordo   |   |   |   |   |   | Concordo   |
| Totalmente |   |   |   |   |   | totalmente |

4- “Eu realmente não me importo com o desempenho das mulheres no futsal”

|            |   |   |   |   |   |            |
|------------|---|---|---|---|---|------------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7          |
| Discordo   |   |   |   |   |   | Concordo   |
| Totalmente |   |   |   |   |   | totalmente |

5- “ O desempenho das mulheres no futsal tem pouco a ver com quem realmente sou”

|            |   |   |   |   |   |            |
|------------|---|---|---|---|---|------------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7          |
| Discordo   |   |   |   |   |   | Concordo   |
| Totalmente |   |   |   |   |   | totalmente |

**ANEXO H- Questionários do estudo 3 (Identificação com o domínio e endosso do estereótipo – enviado online)**

Por gentileza, responda às seguintes questões, utilizando uma escala de 1 (muito ruim) a 7 (muito bom)

1- “Pessoalmente, de modo geral, acho que o desempenho das mulheres no futsal é”

|            |   |   |   |   |   |           |
|------------|---|---|---|---|---|-----------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7         |
| Muito ruim |   |   |   |   |   | muito bom |

“Pessoalmente, de modo geral, acho que o desempenho dos homens no futsal é”,

|            |   |   |   |   |   |           |
|------------|---|---|---|---|---|-----------|
| 1          | 2 | 3 | 4 | 5 | 6 | 7         |
| Muito ruim |   |   |   |   |   | muito bom |