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**CORRELAÇÃO ENTRE AMPLITUDE DE MOVIMENTO DE
DORSIFLEXÃO DE TORNOZELO E VALGO DINÂMICO DO JOELHO
EM JOGADORAS DE FUTSAL**

Porto Alegre

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Trabalho de Conclusão de Curso apresentado ao curso de Bacharelado em Fisioterapia da Escola de Educação Física, Fisioterapia e Dança da Universidade Federal do Rio Grande do Sul como requisito parcial para obtenção do grau de Bacharel em Fisioterapia.

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RESUMO

No esporte, o papel da fisioterapia na redução de risco de lesões é indispensável, cada vez mais se faz fundamental detectar padrões de movimentos alterados. A presença de valgo dinâmico do joelho em tarefas dinâmicas vem sendo associada a déficit de amplitude de movimento de dorsiflexão de tornozelo em cadeia cinética fechada (Lima et al., 2018). O presente estudo teve como objetivo correlacionar a amplitude de movimento de dorsiflexão do tornozelo com o padrão valgo dinâmico do joelho em jogadoras de futsal. Vinte e duas atletas universitárias de futsal feminino participaram do estudo. A dorsiflexão do tornozelo foi avaliada a partir do *Lunge Test* e o valgo dinâmico do joelho analisado pelo *Lateral Step Down Test*. Uma significativa correlação negativa moderada foi encontrada entre a amplitude de dorsiflexão de tornozelo em cadeia fechada e a qualidade de movimento na tarefa de descida do degrau, indicando maior deslocamento medial do joelho na tarefa. Os resultados mostraram que o padrão maior de valgo dinâmico durante a descida de um degrau tem significativa correlação com menores amplitudes de dorsiflexão de tornozelo em atletas universitárias de futsal feminino.

Palavras chave: Amplitude Articular; Tornozelo; Joelho Valgo; Atletas Universitários; Futebol

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APRESENTAÇÃO

Minha história como atleta amadora (e as lesões que seguidamente me acompanharam) despertaram o desejo de me tornar fisioterapeuta ainda na adolescência. Porém, ao longo dos anos, a vida foi me conduzindo a conquistar outros papéis dos quais me orgulho muito, como profissional de Educação Física e professora de treinamento funcional, mas que, inevitavelmente, atrasaram meu desejo inicial. Desde a escolha pela Fisioterapia até o momento de concretização desse desejo (a chegar em 4 semanas) terão se passado quase 20 anos. Muito tempo! Mas se pudesse escolher um momento ideal para completar a graduação, por diversos motivos, escolheria esse.

Este trabalho representa muito dos últimos anos da minha trajetória profissional e acadêmica. A minha paixão pelo esporte e pelo treinamento funcional, juntamente com os avanços da fisioterapia esportiva e musculoesquelética na última década, me motivaram a escolher o tema. Fiz parte do futsal feminino universitário por muitos anos, atuo há bastante tempo na área do movimento como treinadora, tive a oportunidade de desenvolver e ministrar cursos e aulas sobre treinamento funcional, tenho imenso interesse de atuação na fisioterapia musculoesquelética e compreendo bem o potencial que o movimento tem na vida das pessoas. Portanto, este Trabalho de Conclusão de Curso tem um pouco de cada uma das minhas versões.

Espero que o presente estudo possa auxiliar na redução do risco de lesões em atletas mulheres, e sobretudo fomentar mais pesquisas nesta área e com essa população. Visto isto, o artigo científico, oriundo deste trabalho, será submetido na revista científica *Physiotherapists in Sports Medicine*. A formatação do trabalho se dará de acordo com as normas de submissão do jornal acima citado, conforme o Anexo I.

CORRELAÇÃO ENTRE AMPLITUDE DE MOVIMENTO DE DORSIFLEXÃO DE TORNOZELO E VALGO DINÂMICO DO JOELHO EM JOGADORAS DE FUTSAL

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Introdução

Na fisioterapia esportiva cada vez mais busca-se ampliar o olhar para o atleta, relacionando funções e disfunções de diferentes estruturas do corpo. Já se sabe que déficits de mobilidade articular, por exemplo, podem acarretar alterações em padrões de movimentos devido ao processo compensatório de estruturas próximas. Estes padrões de movimentos alterados podem intensificar a carga em articulações, tornando-as mais suscetíveis a desgaste e possíveis lesões (Hewett col., 2005; Rabin et al., 2014; Malloy, 2015; Sigward, 2008; Stiffler, 2018; Kaufman et al., 1999; Witvrouw et al., 2000). É imprescindível que profissionais da área compreendam essas relações, para serem capazes de propor intervenções mais assertivas para o atleta.

Algumas evidências demonstram que a diminuição da mobilidade de dorsiflexão de tornozelo em cadeia cinética fechada, por exemplo, pode ter relação com comportamento alterado do joelho, como presença de valgo dinâmico, caracterizado por um deslocamento medial acentuado do joelho em tarefas dinâmicas (Lima et al., 2018). Por sua vez, o valgo dinâmico está bem associado ao principal mecanismo de lesões no joelho, sobretudo na ruptura do ligamento cruzado anterior (Hewett col., 2005), além de ter relação com outros tipos de lesão (Rabin et al., 2014; Hewett e Myer, 2011; Malloy, 2015; Sigward, 2008). Sendo assim, a identificação da presença de valgo em atletas e a identificação das possíveis causas desse comportamento tornam-se fundamentais na tentativa de melhorar o padrão de movimento desses atletas.

Levando esta análise para o contexto do futsal e futebol feminino, percebe-se uma carência de estudos que tratem especificamente desse tema. Questão que precisa de atenção considerando que as lesões de joelho estão entre as de maior incidência nesta modalidade e população (Crossley et al., 2020; Elsner et al., 2007; Junge e Dvorak, 2004 e 2010).

É importante salientar que a dorsiflexão do tornozelo é uma característica modificável, e ao considerar o déficit neste movimento como fator de risco para lesões e redução de

desempenho, os profissionais têm a possibilidade de, ao aumentar a amplitude de dorsiflexão, regredir o quadro de uma condição já instalada, auxiliando na redução do risco de lesões e atuando no aumento do desempenho.

Portanto, este estudo teve como objetivo correlacionar a amplitude de movimento de dorsiflexão do tornozelo com o padrão valgo dinâmico do joelho em atletas de futsal feminino. Nossa hipótese é que a amplitude de dorsiflexão de tornozelo em cadeia fechada reduzida apresenta relação com a presença de valgo dinâmico no joelho em jogadoras de futsal, tendo relação inversamente proporcional, ou seja, quanto menor a amplitude de dorsiflexão maior o nível de deslocamento medial do joelho (valgo dinâmico).

Métodos

Tipo de Estudo

Esta pesquisa se refere a um estudo observacional correlacional (Thomas e Nelson, 2012). O estudo foi aprovado pelo Comitê de Ética em Pesquisa da Universidade Federal do Rio Grande do Sul, sob o número 65145722.8.0000.5347.

Participantes

Vinte e duas atletas de futsal do sexo feminino integrantes das equipes universitárias da Universidade Federal do Rio Grande do Sul (UFRGS) e da Sociedade Ginástica de Porto Alegre (SOGIPA) participarem deste estudo. As participantes não apresentavam nenhum tipo de lesão no momento da avaliação, faziam parte da equipe por pelo menos 6 meses e tinham mais de 18 anos. O recrutamento ocorreu através de contato direto com integrantes das comissões técnicas das equipes que autorizaram o contato com as atletas. O tamanho da amostra foi calculado por meio do software G Power (versão 3.1.9.1). O cálculo amostral foi realizado a partir da média e do desvio padrão da variável independente - a amplitude de dorsiflexão do tornozelo em cadeia fechada - apresentadas no estudo de Hoch e McKeon (2011). Além disso utilizou-se a equação para população infinita com nível de significância de

0,05 e margem de erro de 10%, resultando em um número amostral de 21 sujeitos (Santos, Abbud e Abreu, 2007).

Procedimentos

A coleta se deu em encontro único dos avaliadores com as atletas no próprio local de treino da equipe, sob orientação dos treinadores. Primeiramente foi explicado o estudo para a participante e apresentado o Termo de Consentimento Livre e Esclarecido. Após o aceite, a atleta forneceu dados de identificação e caracterização da amostra, e só então foram realizados os testes.

Avaliação da Dorsiflexão de Tornozelo

Para mensuração da dorsiflexão de tornozelo foi utilizado o *Lunge Test* (Bennell et al., 1998). A avaliadora fixou uma fita métrica no solo perpendicular à uma parede, e uma fita adesiva na parede formando o ângulo de 90° com a fita métrica do solo. A participante posicionou o segundo dedo sobre a fita métrica, com o pé perpendicular à parede e, em um primeiro momento, avançou o joelho à frente até que tocasse a parede, sem elevar o calcanhar do solo. Caso necessário, o pé foi progressivamente (de 1cm em 1cm) posicionado mais atrás ou mais à frente até que o joelho tocasse a parede, com o calcanhar permanecendo em total contato com o solo, essa foi a amplitude de dorsiflexão máxima atingida (Figura 1). Neste ponto máximo de amplitude a avaliadora posicionou o inclinômetro 15 centímetros abaixo na tuberosidade tibial, obtendo o ângulo de dorsiflexão do tornozelo em cadeia fechada. Além desse dado, a avaliadora registrou a distância mensurada na fita métrica, entre o segundo dedo do pé e a parede (Bennell et al., 1998).

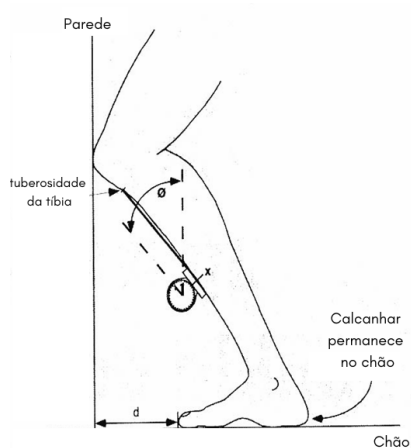


Figura 1. *Lunge Test*
 (Ø: ângulo de dorsiflexão, d: distância entre pé e a parede)

Avaliação do Valgo Dinâmico

Para avaliação da presença de valgo dinâmico do joelho foi utilizado o *Lateral Step Down Test* (Piva e col., 2006). Para realização do teste a avaliadora fixou um marcador na tuberosidade anterior da tíbia da participante e marcadores próximos às bordas de um step. O segundo dedo do pé da participante foi posicionado sobre o marcador do step de aproximadamente 20 centímetros de altura. O membro inferior não testado foi posicionado lateralmente ao step com extensão do joelho e dorsiflexão do tornozelo. As mãos permaneceram posicionadas sobre as espinhas ilíacas ântero superiores durante a execução do teste. A participante realizou flexão, de aproximadamente 60°, de joelho, juntamente com flexão de quadril e tornozelo, caracterizando a descida do degrau, até que o calcanhar do membro inferior oposto tocasse no solo, sem descarregar o peso (Figura 2) e retornou à posição inicial. A participante executou uma repetição para a familiarização ao movimento, e o teste se deu por mais cinco repetições do movimento registradas através de filmagem (Piva e col., 2006).



Figura 2. *Lateral Step Down Test* (Fonte: Autora)

O teste foi filmado por câmera embutida em *smartphone* posicionada a dois metros de distância, e posteriormente, a filmagem foi utilizada para análise da cinemática do joelho durante o movimento. A pontuação do teste se deu através dos critérios apresentados pela Tabela 1. A pontuação final variou entre 0 e 6, sendo a classificação apresentada pela Tabela 2 (Piva et al. 2006).

Tabela 1: Critérios para pontuação no *Lateral Step Down Test*

Critérios	Interpretação	Pontuação
Membros Superiores	Remover as mãos da cintura	1
Alinhamento do Tronco	Inclinar em alguma direção	1
Plano Pélvico	Perda do plano horizontal	1
Posição do Joelho	TAT posicionada medialmente ao segundo metatarso	1
	TAT posicionada medialmente à borda medial do pé	2
Postura Estável	Participantes perdeu o equilíbrio ou precisou descer	1

TAT: tuberosidade anterior da tíbia

Tabela 2: Classificação do *Lateral Step Down Test*

Pontuação Final	Qualidade de Movimento
0 a 1	Boa
2 a 3	Moderada
4 a 6	Pobre

Análise Estatística

Os dados foram submetidos ao teste de Shapiro-Wilk para verificar a normalidade dos dados. Após, foi realizado a análise descritiva com valor de média e desvio padrão. Para verificar a existência de correlação entre as variáveis foram realizados os testes de correlação de Pearson (dados paramétricos) ou Spearman (dados não-paramétricos). Foi adotada, para interpretação correlacional, a classificação de Gaya et al. (2008), categorizada em muito baixa ($r < 0,2$), baixa (entre 0,2 e 0,39), moderada (entre 0,4 e 0,69), alta (entre 0,7 e 0,89) e muito alta (0,9 a 1). Os dados foram analisados por meio do software SPSS v. 20.0, adotando o nível de significância de 0,05.

Resultados

O presente estudo foi composto por 22 atletas amadoras integrantes das equipes de futsal da Universidade Federal do Rio Grande do Sul e da Faculdade SOGIPA de Porto Alegre. As médias e os desvios-padrão dos dados de Caracterização da Amostra estão descritos na Tabela 3.

Tabela 3. Caracterização da amostra expressa em média (\pm DP).

	Atletas Futsal SOGIPA	Atletas Futsal UFRGS	Atletas Futsal (Todas)
n	15	7	22
Idade (anos)	23.8 \pm 6.61	20.7 \pm 0.95	22.8 \pm 5.62
Estatutura (cm)	163.7 \pm 3.57	161.5 \pm 9.10	163.0 \pm 5.76
Massa (kg)	63.4 \pm 8.79	62.5 \pm 13.46	63.1 \pm 10.17
Tempo de Prática (anos)	5.6 \pm 0.82	3.7 \pm 2.05	5.0 \pm 1.57

Os valores de médias e desvios-padrão do lado direito e esquerdo obtidos no *Lunge Test* avaliado pela distância do pé até a parede e pelo ângulo de dorsiflexão do tornozelo, assim como a pontuação obtida na execução do *Lateral Step Down Test* em cada lado estão apresentados na Tabela 4.

Tabela 4. Valores do *Lunge Test* e do *Lateral Step Down Test* expressos em média (\pm DP)

	Direito	Esquerdo
<i>Lunge Test</i> (cm)	10,80 \pm 2,73	10,18 \pm 2,65
<i>Lunge Test</i> (°)	42,50 \pm 7,42	41,55 \pm 7,41
<i>Lateral Step Down Test</i>	1,68 \pm 0,89	1,59 \pm 0,96

No que diz respeito aos dados de correlação, os valores de distância obtidos no *Lunge Test* mostraram uma significativa correlação negativa moderada com os dados do *Lateral Step Down Test* tanto para o membro inferior direito, quanto para o membro inferior esquerdo (Tabela 5). O mesmo ocorreu com os dados do *Lunge Test*, medidos pelo ângulo de dorsiflexão do tornozelo, foi encontrada uma significativa correlação negativa moderada com o *Lateral Step Down Test* tanto para membro inferior direito quanto para membro inferior esquerdo (Tabela 5). Ou seja, quanto menor a amplitude de movimento de dorsiflexão de tornozelo em cadeia fechada, menor a qualidade de movimento no agachamento unipodal.

Tabela 5. Correlação entre os dados do *Lunge Test* e do *Lateral Step Down Test*

	<i>Lateral Step Down Test</i>		<i>Lateral Step Down Test</i>	
	Direito		Esquerdo	
	Coefficiente de Correlação	p	Coefficiente de Correlação	p
<i>Lunge Test</i>				
Direito	-0,538	0,010*		
Esquerdo			-0,476	0,025
<i>Lunge Test</i>				
Direito	-0,571	0,006*		
Esquerdo			-0,497	0,019

* diferença significativa

Discussão

Os resultados do presente estudo indicam que o valgo do joelho durante a tarefa de descida do degrau tem relação com baixa amplitude de dorsiflexão de tornozelo. As atletas com menores graus de dorsiflexão em cadeia fechada apresentaram maiores pontuações ou pior desempenho no *Lateral Step Down Test*, teste utilizado para avaliar o valgo dinâmico.

A relação entre as duas variáveis contidas neste estudo é amplamente estudada na literatura em diversas populações e diferentes formas de avaliação. Uma grande revisão sistemática com meta-análise realizada por Lima e col. (2018), incluiu a análise de 17 estudos, e teve o objetivo de avaliar a associação entre dorsiflexão do tornozelo e valgo dinâmico do joelho. Os autores encontraram resultados que corroboram com os do presente estudo, que determinada limitação de dorsiflexão está associada a indivíduos que apresentam padrão valgo dinâmico do joelho. Ainda, a análise mostrou consistentes resultados em relação às diferentes formas de medida da amplitude de dorsiflexão (cadeia aberta com joelho estendido, cadeia aberta com joelho flexionado e cadeia fechada) sendo todas elas significativamente associadas ao valgo dinâmico do joelho.

Os estudos que utilizaram duas formas de avaliar a dorsiflexão do tornozelo - cadeia cinética aberta e fechada - para relacionar ao valgo dinâmico (Rabin e col., 2016; Rabin e Kozol, 2010; Dill e col., 2014; Rabin, Kozol e Spitzer, 2014), não encontraram diferença entre elas nos resultados. A escolha da avaliação em cadeia fechada, neste estudo, se deu pela maior funcionalidade do teste devido a possibilidade de aplicação de um maior torque ao tornozelo, em comparação a mensuração convencional (sem apoio do pé no solo), portanto o teste se aproxima mais de tarefas funcionais (Bennell e col., 1998), principalmente quando a população em questão é de atletas. Visto isto, todos os estudos mencionados nesta discussão tiveram a cadeia fechada como forma de avaliação da dorsiflexão.

O valgo dinâmico é caracterizado por uma adução excessiva de quadril combinada a rotação interna de quadril e de joelho, gerando assim o deslocamento medial do joelho. Portanto, é considerado um padrão modificado de movimento de membros inferiores que gera alta carga à articulação do joelho em tarefas dinâmicas (Hewett e col., 2005). O valgo do joelho é considerado fator de risco para algumas lesões, entre elas síndrome da dor patelofemoral (Rabin et al., 2014) e lesão do ligamento cruzado anterior sem contato (Hewett e Myer, 2011; Hewett e col., 2005). A lesão de ruptura do ligamento cruzado anterior tem destaque por acometer 4 a 6 vezes mais atletas mulheres que homens, (Hewett e col., 2006) e por acontecerem em maior parte em lances sem contato (Hewett, 2005; Hewett e col., 2011). Este panorama mostra que fatores intrínsecos estão mais associados à causa da lesão de ruptura do ligamento cruzado anterior, como por exemplo, a presença do padrão valgo do joelho (Hewett e col., 2005).

O teste *Lateral Step Down* avalia compensações de membros inferiores através da qualidade de movimento de descida do degrau, padrão que se assemelha muito com o agachamento unipodal. A qualidade do movimento é uma variável que pode ser caracterizada pelo comportamento, principalmente, de tronco, pelve e joelho ao longo da tarefa, e neste ponto o valgo dinâmico é um dos principais componentes analisados (Piva e col., 2006).

Rabin e Kozol (2010) estudaram mulheres saudáveis e sem lesão com o objetivo de determinar a associação entre amplitude de movimento de tornozelo e qualidade do movimento de membros inferiores durante o teste *Step Down*. Eles encontraram que a dorsiflexão de tornozelo reduzida está associada a baixa qualidade de movimento na tarefa de descida do degrau nessa população. Um estudo semelhante realizado por Rabin, Kozol e Spitzer (2014), desta vez aplicado a homens ativos, avaliou as mesmas variáveis - dorsiflexão de tornozelo e qualidade de movimento - e comparou o lado dominante e o não dominante. Os autores também encontraram que a amplitude de dorsiflexão foi mais limitada entre os participantes com qualidade moderada de movimento em ambos os lados (dominante e não dominante) quando comparado a participantes com boa qualidade de movimento na descida do degrau.

O valgo dinâmico do joelho também pode ser avaliado através do ângulo de projeção do joelho no plano frontal durante um agachamento unipodal, e foi assim que Wyndon e col. (2016) investigaram a relação desta variável com mobilidade do pé e do tornozelo em adultos assintomáticos. Encontraram associação significativa entre maiores ângulos de projeção de joelho no plano frontal com menor mobilidade de mediopé e de dorsiflexão de tornozelo. Rabin e col. (2016) que, ao avaliar a cinemática do quadril e do joelho em indivíduos com baixa dorsiflexão de tornozelo, encontraram maior adução de quadril nesta tarefa. Assim como uma acentuada adução do quadril na tarefa de descida do degrau também foi observada em mulheres saudáveis com amplitude de dorsiflexão reduzida em um estudo realizado por Bell-Jenje e col. (2016). Além de maior adução do quadril, outras compensações que favorecem o aparecimento do valgo dinâmico podem ser desencadeadas pela restrição na amplitude de movimento do tornozelo como pronação do pé e rotação interna da tibia (Dill e col., 2014), acentuada rotação interna (Wyndow e col., 2016) e ainda queda da pelve (Rabin, Kozol e Moran, 2014).

Ainda, analisando de outro ponto de vista, o varo dinâmico do joelho é o movimento contrário ao valgo, sendo caracterizado pelo deslocamento lateral do joelho. Dill e col. (2014)

encontraram maior padrão varo do joelho no agachamento unipodal em indivíduos com maior dorsiflexão de tornozelo, em um estudo que teve como amostra adultos ativos. Estes achados complementam os mencionados aqui até então, visto que um determinado padrão varo tende a proteger o joelho de um acentuado deslocamento medial em tarefas dinâmicas.

A relação da diminuição da dorsiflexão e os mecanismos de compensação nos membros inferiores, caracterizando um valgo no joelho, foram identificados em população saudável e não esportiva e geram perda da qualidade de movimento em diversas tarefas diárias. A prática da atividade esportiva poderia levar a uma melhora desse padrão pela consciência corporal adquirida e pelo desenvolvimento de diversas valências físicas. No entanto, estudos envolvendo jogadoras de futebol também demonstraram associação do valgo dinâmico com diminuição de dorsiflexão do tornozelo. As lesões de joelho em jogadoras de futebol, sobretudo a ruptura de ligamento cruzado anterior, são o grande foco de estudos, devido a sua alta incidência nesta população (Crossley et al., 2020; Elsner et al., 2007; Junge e Dvorak, 2004 e 2010). Mecanismos que aumentem o risco para essa lesão são amplamente estudados na literatura, como o padrão de movimento de membros inferiores (Hewett e col., 2005), o controle neuromuscular e a carga em valgo (Hewett e col, 2006), a força da musculatura de quadril (Khayambashi e col., 2016) e a força de quadríceps e isquiotibiais (Myer e col., 2009). A análise específica entre as duas variáveis em questão - dorsiflexão de tornozelo e valgo dinâmico no joelho - em jogadoras de futebol ainda é pequena. Mecânicas de aterrissagem parecem ser mais estudadas, e podem contribuir para a presente discussão, pois o valgo dinâmico do joelho é um dos principais pontos a ser analisados em qualquer tipo de aterrissagem. Sigward e col. (2008) em um estudo aplicado a jogadoras de futebol em idade escolar (média de 15,5 anos), com o objetivo de determinar a associação entre ângulo de projeção do joelho no plano frontal durante o drop land (aterrissagem de queda a partir de uma caixa) com força da musculatura do quadril e amplitude de movimento de tornozelo e de quadril. Foi encontrado maior ângulo de projeção de joelho no plano frontal durante a

aterrissagem em atletas com menor mobilidade de tornozelo e quadril, não sendo encontrado relação com força de quadril. Analisando jogadoras universitárias de futebol, Malloy e col. (2015) tiveram o objetivo de analisar se a amplitude de dorsiflexão influenciava na cinemática e na cinética de aterrissagem durante salto vertical. Os resultados demonstraram que as atletas com menor mobilidade de dorsiflexão tiveram maior abdução do joelho e menor pico de flexão do joelho, caracterizando o deslocamento medial da articulação, durante a aterrissagem.

Por fim, mesmo os estudos com atletas, incluindo atletas universitárias de futebol, encontraram resultados que vão ao encontro dos achados do presente estudo com atletas de futsal, reforçando a relação da presença do valgo dinâmico com a diminuição de amplitude de dorsiflexão do tornozelo. Em relação especificamente ao futsal, não foram encontrados estudos na literatura que relacionassem essas variáveis. Dessa forma, o presente estudo traz informações relevantes sobre o tema para esta modalidade esportiva.

Conclusão

Por meio do presente estudo é possível concluir que o padrão maior de valgo dinâmico durante a descida de um degrau tem significativa correlação com menores amplitudes de dorsiflexão de tornozelo em atletas universitárias de futsal feminino. Estes resultados sugerem que a avaliação da dorsiflexão do tornozelo é fundamental em atletas pela grande relação com um dos padrões que mais aumentam risco de lesão - valgo dinâmico. Por ser uma condição modificável, ao avaliar e criar estratégias que aumentem a mobilidade de dorsiflexão, os profissionais da área estarão atuando de maneira mais assertiva na redução do risco de lesões nessa população.

Conflito de interesse

Os autores relatam que não há interesses concorrentes a declarar.

Financiamento

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Aprovação Ética

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ANEXO I – Normas para submissão no Association of Chartered Physiotherapists in Sports Medicine (ACPSM)

DESCRIPTION

Physical Therapy in Sport is an international peer-reviewed journal that provides a forum for the publication of research and clinical practice material relevant to the healthcare professions involved in sports and exercise medicine, and rehabilitation. The journal publishes material that is indispensable for day-to-day practice and continuing professional development. Physical Therapy in Sport covers topics dealing with the diagnosis, treatment, and prevention of injuries, as well as more general areas of sports and exercise medicine and related sports science. The journal publishes original research, case studies, reviews, masterclasses, papers on clinical approaches, and book reviews, as well as occasional reports from conferences. Papers are doubleblind peer-reviewed by our international advisory board and other international experts, and submissions from a broad range of disciplines are actively encouraged.

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Articular cartilage is a unique biphasic material that supports a lifetime of compressive and shear forces across joints. When articular cartilage deteriorates, whether due to injury, wear and tear or normal aging, osteoarthritis and resultant pain can ensue. Understanding the basic science of the structure and biomechanics of articular cartilage can help clinicians guide their patients to appropriate activity and loading choices. The purpose of this article is to examine how articular cartilage structure and mechanics, may interact with risk factors to contribute to OA and how this interaction provides guidelines for intervention choices This paper will review the microstructure of articular cartilage, its mechanical properties and link this information to clinical decision making.

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