103 - IDENTIFICATION OF BILATERAL ASSYMMETRY IN LOWER LIMBS OF FUTSAL PLAYERS BY MOTOR TEST

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Introduction

Bilateral asymmetries in force magnitude are frequently found in lower limbs (LL) and they are related with the preference to use the limbs (dominant and non-dominant) and with the motor performing (D'OTTAVIO & CASTAGNA, 2002). Also in terms of specificity many activities (soccer, volleyball, basketball) require unilateral propulsion either in the vertical or horizontal directions, therefore, unilateral assessment would appear to better represent the power specific to these movement patterns. (MAULDER, CRONIN, 2005).

Assessments unilateral leg functions is necessary after injury to effectively evaluation and monitor the progress of the subject during the rehabilitation process (McCURDY, LANGFORD, 2005) and for prevention (KROSSHAUG *et al.*, 2005).

Motor tests as the single hop test for distance (HOPPER *et al.*, 2002; FITZGERALD *et al.*, 2001) and as the velocity/agility test (MENZEL, 1995) have been used to identification lateral asymmetries in LL.

Whether the limb asymmetry index is 85% or more, improve significantly the risk of injuries in LL (PESTSCHNIG, BARON, ALBRECHT, 1998; NOYES, BARBER, MANGINE, 1991).

Therefore the aim in this study was the identification of lateral asymmetries in LL of futsal players by motor test.

Materials and Methods

Subjects

The subjects of this study were 13 female, futsal players of the juniors category. The means of the age, height, weight of athletes were 17 ± 0, 51; 165, 2 ± 12, 0; 60,02 ± 5, 4**,** respectively (table 1).

To be included in the study, subjects had been the following criteria: no prior history of pain or injury to trunk, hip, knee and ankle. All subjects signed written informed consent forms that were reviewed by the UFMG´ ethic committee.

Table 1: Antrophometric datas

Variable	Mean ± sd	N
		13
Age (years)	17 ± 0,51	13
height (m)	165, 2 ± 12,09	
weight (Kg)	60,02 ± 5,4	13

Data collection

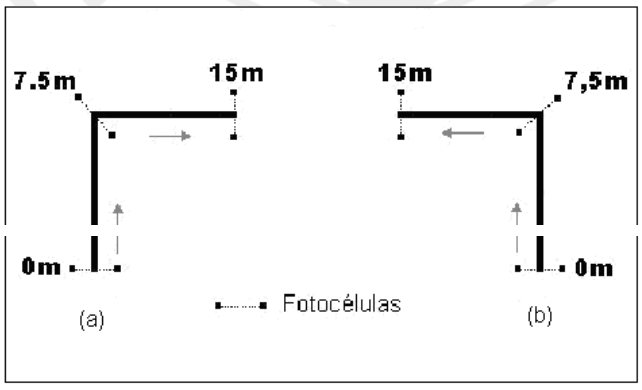
To measure the capacity of acceleration and change of direction was used the Menzel' (1995) protocol. Three pairs of electric photo-cell were put in the floor for measure subject velocity.

Before the situation experimental, all the subjects performed two familiarizations sessions with the protocols chosen.

Protocols

In the agility/velocity test, the subject stood before the floor's mark and performed the maximal velocity running over a distance of 15 meters in two different trajectories. The trajectories were characterized by 7,5 meters in recta line and 7,5 meters in recta line with direction change (90°) for the right (Figure 1-a) or the left (Figure 1-b). Three trials were performed with rest of 5 minutes between trials.

Figure 1 (a) e (b)- Velocity/agility (MENZEL, 1995).



The order test was patterned: 1º) velocity/agility test with direction change for left , 2º) velocity/agility test with direction change for right.

Data Analysis

To quantify the asymmetries index lateral was calculated the difference between running time (t) for right and left (Dt = tr - tl) and performing (p) in hop test with LL right and left (Dp = dd-dl). Positives values show great velocity for direction change to left and great muscle strength in right lower limb. Negatives values show great velocity for direction change to right and great muscle strength in left lower limb.

Statistical analysis included paired sample t-test to identification bilateral asymmetries between the LL in velocity/agility test.

The index limb symmetry was calculated by Barber *et al*., (1990) e Clark, (2001) equal that deducting the less score of the limb by the greatest score of the limb, and the result was divided by the greatest score and then multiplied by 100.

Results

The paired t-test showed no lateral asymmetries significance between LL in motor test (Table 1). Furthermore, the subjects showed greatest velocity with direction change for right.

Table 2 - Significance level resulted by identification bilateral asymmetries in LL.

	Mean	Std. Deviation	Sig. (2-tailed)
Test for velocity/agility	5,64	0,1726	0,411

Discussion

The correlation of analyzes variables in velocity/agility test did not show significance difference between LL. These results are consistent with the finding of Menzel *et al.* (2005) and Petschnig, Baron, Albrecht (1998) that did not find significance bilateral difference. An explanation for these results can be involved with no difference in group in motor and physiological profiles and practice time.

The symmetry between futsal players' MMII in the applied tests can be related to the motive actions that happen during the trainings and games involving accelerations, lockwires and direction changes. Such motive actions demand high levels of production of force of the sustentation member and of execution of the technical tasks (D'OTTAVIO & CASTAGNA, 2002).

Conclusion

With base in the results presented in study and presented discussions is ended that were not found significant differences and asymmetries between LL. Probably that result is owed to the motor and physiologic profile of the sample. That result can be related to the specificity of the muscular actions demanded in each test. Future studies with a larger sample and with different ages are necessary that are accomplished to the applicability of the results is sustained scientifically.

Key Words: Asymmetries, lower limbs, motor tests.

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ABSTRACT

Bilateral asymmetries in force magnitude are frequently found in lower limbs. The aim in this study was the identification of lateral asymmetries in LL of futsal players by motor test. Thirteen futsal players of the juniors category participated of this study. They performed the velocity/agility test. Bilateral asymmetries were identificated if the bilateral difference was greater than 15%. Lateral asymmetries significance don't was found between motor velocity with direction change, but the subjects showed greatest velocity with direction change for right. Future studies with a larger sample and with different ages are necessary to the applicability of the results is sustained scientifically.

KEY WORDS: Asymmetries, lower limbs, motor tests.

IDENTIFICATION DES ASYMÉTRIES BILATÉRALES DES MEMBRES INFÉRIEURS PAR DES JOUEURS DE FUTSAL ESSAI MOTEUR

RESUME

Asymétries bilatérales sont en vigueur ampleur se trouvent fréquemment dans les membres inférieurs. L'objectif de cette étude a été l'identification des latérale assymmetries en LL par des joueurs de futsal essai moteur. Treize joueurs de futsal de la catégorie junior ont participé de cette étude. Ils ont effectué la vitesse / agilité essai. Bilateral assymmetries identificated s'il était bilatéral différence était supérieure à 15%. Lateral ne asymetries importance a été trouvé entre la vitesse du moteur avec changement de direction, mais les sujets montré gratest vitesse avec changement de direction à droite. Les études futures avec un échantillon plus large et avec des âges différents sont nécessaires à l'applicabilité des résultats est soutenu scientifiquement.

MOTS CLES: asymétrires, members inférieurs, essai moteur

IDENTIFICACIÓN DE ASSYMMETRY BILATERALES EN LAS EXTREMIDADES INFERIORES DE LOS JUGADORES DE FÚTBOL SALA DE ENSAYO DE MOTOR

RESUMEN

Asimetrías bilaterales en vigor magnitud son con frecuencia se encuentran en las extremidades inferiores. El objetivo de este estudio fue la identificación de los laterales assymmetries LL en el futsal de los jugadores por los ensayos de motor. Trece jugadores de futsal de la categoría de jóvenes participaron de este estudio. Se realizó la velocidad y agilidad de prueba. Bilaterales assymmetries fue determinada si el bilaterales diferencia fue superior al 15%. Lateral asimetrías importancia no se encontró entre la velocidad del motor en la dirección del cambio, pero los temas mostró gratest velocidad con el cambio de dirección derecha. Los estudios futuros con muestras más grandes y con diferentes edades son necesarias para la aplicabilidad de los resultados se sustenta científicamente.

PALABRAS CLAVE: assymetry, extremidades inferiores, ensayo de motor.

IDENTIFICAÇÃO DE ASSIMETRIAS BILATERAIS NOS MEMBROS INFERIORES DE JOGADORAS DE FUTSAL POR MEIO DE TESTE MOTOR

RESUMO

Assimetrias bilaterais são na magnitude da força frequentemente encontrar nos membros inferiores. O objetivo deste estudo foi identificar assimetrias laterais em membros inferiores em jogadoras de futsal pelo teste motor. Treze jogadoras de futsal da categoria junior participaram deste estudo. Elas realizaram o teste de velocidade / agilidade. Assimetrias bilaterais eram consideradas se a diferença fosse superior a 15% entre os membros. Não foram encontradas assimetrias laterais significativas ente o teste motor de corrida de velocidade com mudança de direção, mas os jogadores mostraram uma maior velocidade na mudança de direção para a direita. Futuros estudos com uma amostra maior e com idades diferentes são necessárias para a aplicação dos resultados seja sustentada cientificamente.

PALAVRAS CHAVE: assimetrias, membros inferiores, teste motor.