Crisp for supporting us and guiding us precisely so that we could be generating new research.

Ethics committee approval: Not applicable.

https://doi.org/10.1016/j.bjpt.2024.100865

269

RELATIONSHIP BETWEEN TRUNK AND LOWER KICKING LIMB MOMENT AND MAXIMUM KICK POWER IN SOCCER

Lucas Valentim de Freitas[1], Douglas Pereira de Oliveira[1], Breno Monção de Andrade[1], Sabrina Penna Cintra[1], Diego da Silva Carvalho[1], Thales Rezende de Souza[1]
[1] *Federal University of Minas Gerais (UFMG), Belo Horizonte, Minas Gerais, Brazil*

Background: Kicking is a sporting gesture that generates high stress demands on the musculoskeletal system. The participation of the trunk in the kick has been studied since the flexion-extension and rotation moments of the trunk and pelvis can favor the energy transmission mechanism for the kicking lower limb. This allows the performance of the maximum kick with sharing of demands between the trunk and the lower limb. Thus, the magnitude of the joint moment produced in the trunk during the kick can influence the magnitude of the moment produced in the lower limb and the power of the kick. However, there are no reports on the existence of these possible relationships.
Objectives: To investigate the relationship between bisegmented trunk moments (thoracolumbar and lumbopelvic) and kicking lower limb moments, as well as kick power (foot velocity pre-impact with the ball) in a maximum instep soccer kick.
Methods: Cross-sectional study carried out with eighteen male volunteers who practiced soccer as a recreational activity (1x/week, for at least 1 year and without musculoskeletal injuries in the last 6 months), between 18 and 35 years old, with a body mass index ≤ 25 kg/m^2. Data collection was carried out at the Movement Analysis Laboratory (LAM), at the Federal University of Minas Gerais (UFMG). The variables collected were the peak moment of ipsilateral thoracolumbar and lumbopelvic flexion and rotation, peak moment of flexion of the right hip, peak moment of extension of the right knee, and peak velocity of the foot pre-impact with the ball. Pearson's correlation analyzes were performed to investigate the relationships between trunk moment and lower limb moment and pre-impact foot velocity.
Results: Peak thoracolumbar flexor moment had a moderate to good significant negative correlation with knee extensor peak moment (r= -.519, $p < 0.05$). Peak ipsilateral thoracolumbar and lumbopelvic rotator moments, and peak knee extensor and hip flexor moments had significant positive correlations, from moderate to good, with pre-impact foot velocity peak ($.481 \leq r \geq .677$ $p < 0.05$). Peak ipsilateral thoracolumbar and lumbopelvic rotator moments had significant positive correlations, from moderate to good, with peak hip flexor moment (r= .671, $p < 0.01$; r= .659, $p <$ 0. 01, respectively).
Conclusion: There are relationships between the magnitudes of trunk moment, the magnitudes of hip and knee moments and kick power. There seems to be a compensatory relationship in which the knee extension moment is greater in those individuals who produce lower thoracolumbar flexion moment. In addition, more powerful kicks are related both to greater hip flexion and knee extension moments and to greater thoracolumbar and lumbopelvic rotation moments in the transverse plane.
Implications: The findings make it possible to explain possible mechanisms of stress demands that can lead to typical kicking injuries, providing the planning of prevention and rehabilitation strategies.
Keywords: Soccer, Kick, Trunk

Conflict of interest: The authors declare no conflict of interest.
Acknowledgment: To the development agencies National Council for Scientific and Technological Development (CNPq), Research Support Foundation of the State of Minas Gerais (FAPEMIG) and CAPES
Ethics committee approval: Federal University of Minas Gerais (UFMG) CAAE – 42162915.9.0000.5149

https://doi.org/10.1016/j.bjpt.2024.100866

270

ASSOCIATION BETWEEN POSTURAL BALANCE AND LEVEL OF PHYSICAL ACTIVITY IN PATIENTS ON HEMODIALYSIS

Luciana Angélica da Silva de Jesus[1], Cristino Carneiro Oliveira[2], Carlos Miguel Brum da Silva[1], Keller Soares Ávila[1], Leda Marília Fonseca Lucinda[1], Maycon Moura Reboredo[1]
[1] *Federal University of Juiz de Fora (UFJF), Juiz de Fora, Minas Gerais, Brazil*
[2] *Federal University of Juiz de Fora (UFJF), Governador Valadares, Minas Gerais, Brazil*

Background: Patients on hemodialysis have lower level of physical activity due cardiovascular and musculoskeletal changes caused by chronic kidney disease and the hemodialysis process. The lower level of physical activity can contribute to the impairment of physical function, however, the relationship between postural balance and level of physical activity needs further investigation.
Objectives: To evaluate the association between postural balance and level of physical activity in patients on hemodialysis.
Methods: A cross-sectional study was carried out with patients who were 18 years of age or older and who were on regular hemodialysis for at least three months. Patients unable to perform the proposed assessments, with psychiatric impairments and severe and/or unstable comorbidity were excluded. Postural balance was assessed by the Mini Balance Evaluation Systems Test (Mini-BESTest) and the level of physical activity was investigated by the daily steps count recorded by the accelerometer Actigraph wGT3X-BT. Data normality was verified using the Shapiro-Wilk test. The correlation between the Mini-BESTest score and the daily steps was calculated using the Spearman correlation coefficient (ρ) and the association between these variables was investigated using a multivariate linear regression model. The significance level was $p < 0.05$.
Results: Ninety-six patients (59.2 $\pm$ 12.3 years; 57.3% male) were evaluated. The median of the Mini-BESTest score was 22.0 (4.0) and the median of daily step count was 3750 (3009). The Mini-BESTest score was positively correlated with the daily step count ($\rho = 0.449$; $p < 0.001$). This association remained statistically significant after adjusting for age, gender, time on hemodialysis, hemodialysis efficacy index, and presence of neurological disease ($R = 0.540$; $R^2 = 0.292$; adjusted $R^2 = 0.243$; $p < 0.001$).
Conclusion: This study showed that a better performance in postural balance was associated with a higher level of physical activity in hemodialysis patients.
Implications: Increasing the level of physical activity can be suggested in rehabilitation programs for hemodialysis patients and can contribute to improving the postural balance of these patients.
Keywords: Renal Dialysis, Postural Balance, Exercise

Conflict of interest: The authors declare no conflict of interest.
Acknowledgment: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior. Fundação de Amparo à Pesquisa do Estado de Minas