26/200.929/2022 and CAPES Finance Code 001.
Ethics committee approval: No. 7.212.202.
Registration: Not applicable.

https://doi.org/10.1016/j.bjpt.2025.101352

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CORRELATIONAL ANALYSIS BETWEEN BAROPODOMETRY AND THE MAXIMUM REPETITION TEST OF THE KNEE AND HIP OF JUNIOR FIELD SOCCER ATHLETES

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Background: Soccer imposes a series of physical and technical demands on its practitioners, especially of the lower limbs (MMII), such as jumping, kicking, attacking, turning, running, changing the rhythm and sustaining. An overloaded musculature can result in imbalances between the agonist and antagonist muscles, resulting in possible postural changes and impairment of the athlete's performance.
Objectives: Thinking about the challenges that the practice of soccer entails on the lower limbs, the present study aimed to analyze the correlation between baropodometry and the maximum repetition test of the knee and hip of junior field soccer athletes.
Methods: A cross-sectional observational clinical study was carried out with 33 amateur soccer athletes between 13 and 15 years old, in which the values of maximum repetitions (RM) and baropodometry were collected.
Results: In the maximal repetition analysis, the statistics revealed, during the driving with eyes closed, a moderate negative correlation between the maximum repetition of internal rotation of the right hip and the center of medial-lateral pressure, as well as between the maximal repetition of internal rotation of the left hip and the center of medial-lateral pressure. A weak negative correlation was also observed between the maximal repetition of left knee flexion and the anteroposterior center of pressure, as well as a moderate negative correlation between the maximal repetition of left external rotation of the hip and the maximal pressure exerted on the left foot during closed eyes. These correlations indicate that postural control and plantar pressure distribution in athletes are influenced by different factors such as muscle group, sports gestures, dominant and supportive limb, as well as the player's position on the field.
Conclusion: This study demonstrated moderate correlations between the muscle strength of knee flexors and internal and external hip rotators with the balance and distribution of plantar pressure oscillation in junior soccer players.
Implications: These results can help in the development of appropriate training protocols that can favor muscle strengthening and muscle rebalancing in soccer athletes, since this balance between agonist and antagonist is important, and can also favor physical and functional performance, reducing the risk of injuries.
Keywords: athletes, postural balance, lower extremity

Conflict of interest: The authors declare no conflict of interest.
Funding: Not applicable.
Ethics committee approval: No. 7.108.636.
Registration: Not applicable.

https://doi.org/10.1016/j.bjpt.2025.101353

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PHYSICAL FITNESS OF CHILDREN AND ADOLESCENTS WITH CHRONIC KIDNEY DISEASE ON HEMODIALYSIS: PARTIAL RESULTS OF A CROSS-SECTIONAL STUDY

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Background: Chronic kidney disease (CKD) is characterized by abnormalities in the structure or function of the kidneys that persist for more than three months, with specific implications for health. Hemodialysis is a widely used and well-established treatment to prolong the survival of patients with CKD. However, these patients often experience a reduction in physical capacity, limitations in activities of daily living (ADL), and a deterioration in quality of life.
Objectives: The aim of this study was to assess the physical fitness of children and adolescents with chronic kidney disease undergoing hemodialysis.
Methods: This cross-sectional study included patients aged between 6 and 16 years, of both sexes, who had been undergoing hemodialysis for at least three months. Medical records were reviewed, and physical fitness tests were conducted, including hand grip strength (HGS), the sit-to-stand test in 1 minute (STS1M), and the walking speed test (WST), along with upper and lower limb perimetry. The data were analyzed using Jamovi 2.3.28 software and presented using descriptive statistics (absolute and relative values, mean, standard deviation) and associations between results, with significance defined as $p = 0.05$.
Results: A total of 20 patients with chronic kidney disease undergoing hemodialysis were evaluated, with 55% being female. The mean age was 9.35 ± 2.89 years, and the average treatment duration was 14.3 ± 12.1 months. Upper limb perimetry (ULP) measurements showed a mean of 15.6 ± 2.66 cm for the right limb and 15.3 ± 2.31 cm for the left limb. Lower limb perimetry (LLP) measurements showed a mean of 27.3 ± 3.95 cm for the right limb and 26.9 ± 4.07 cm for the left limb. Dominant hand strength (DHS) had a mean of 11.9 ± 7.14 kgf, while non-dominant hand strength (NDHS) had a mean of 9.85 ± 6.69 kgf. The STS1M test showed a mean of 22.4 ± 5.45 repetitions, and the WST showed a mean of 0.958 ± 0.306 m/s. Correlations were observed between right upper limb perimetry and dominant hand strength ($r = 0.668$; $p = 0.001$), and between left upper limb perimetry and non-dominant hand strength ($r = 0.722$; $p < 0.001$). Correlations between lower limb perimetry and STS1M ($r = 0.397$; $p = 0.083$) and between left lower limb perimetry and STS1M ($r = 0.411$; $p = 0.072$) were not statistically significant. However, a significant correlation was observed between the walking speed test and the sit-to-stand test ($r = 0.711$; $p < 0.001$).
Conclusion: The results suggest that perimetry and hand grip strength values are below the expected range for children and adolescents in the age group studied, as described in the literature. Significant findings were observed in the correlations between left upper limb perimetry and non-dominant hand strength ($p < 0.001$) and between the walking speed test and the sit-to-stand test ($p < 0.001$).
Implications: The decline in physical fitness in children with CKD has significant physical, emotional, and social implications. Growth difficulties, influenced by factors such as malnutrition, hormonal imbalances, and bone disorders, result in reduced capacity to perform ADLs, participate in play, and engage in sports, thereby negatively impacting quality of life. This decline contributes to worsening cardiovascular conditions and, consequently, a poorer prognosis for disease progression.
Keywords: Renal dialysis, Physical fitness, Child health