

## Relationship Between Dynamic Balance, Jumping Performance and Q-angle in Soccer Players

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**Abstract :** The soccer players need good dynamic balance and jumping performance for dribbling, crossing rival, and to be effective in high balls during soccer game. The quadriceps angle (Q-angle) is used to assess biomechanics of the patellofemoral joint in the musculoskeletal medicine. The Q angle is formed by the intersection of two lines drawing from the anterior superior iliac spine to the centre of the patella and to the midline of the tibia tuberosity. Studies have shown that the Q angle is inversely associated with quadriceps femoris strength. The purpose of this study was to investigate relationship between dynamic balance, jumping performance and Q-angle in soccer players. Thirty male soccer players (mean  $\pm$  SD: age,  $15.23 \pm 0.56$  years, height,  $170 \pm 8.37$  cm, weight,  $61.36 \pm 6.04$  kg) participated as volunteer in this study. Dynamic balance of the participants were evaluated at directions of anterior (A), posteromedial (PM) and posterolateral (PL) with Star Excursion Balance Test (SEBT). Each participant was instructed to reach as far as with the non-dominant leg in each of the 3 directions while maintaining dominant leg stance. Leg length was used to normalize excursion distances by dividing the distance reached by leg length and then multiplying the result by 100. The jumping performance was evaluated by squat jump using a contact mat. A universal (standard) goniometer was used to measure the Q angle in standing position. The Q angle was not correlated with directions of SEBT (A:  $p = 0.32$ , PM:  $p = 0.06$ , PL:  $p = 0.37$ ). The squat jump height was not correlated with Q-angle ( $p = 0.21$ ). The findings of this study suggest that there are no significant relationships between dynamic balance, jumping performance and Q-angle in soccer players. Further studies should investigate relationship between balance ability, athletic performance and Q-angle with larger sample size in soccer players.

**Keywords :** balance, jump height, Q angle, soccer

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