

COMPARISON OF BILATERAL ISOKINETIC STRENGTH OF KNEE MUSCLE CONTRACTIONS IN TWO DIFFERENT SOCCER PLAYERS' AGE-GROUPS

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Introduction

Muscular strength of the lower extremities in soccer is an important factor, both for high performance and injury prevention. Isokinetic strength knee testing is one of the most used methods to assess strength muscle balance between dominant (D)/non dominant (nD) and antagonist/agonist. The main purpose of this study was to describe and to compare isokinetic strength profiles (peak torque, bilateral strength differences between D/nD legs and antagonist/agonist ratios) between two different soccer players' age-groups.

Methods

Twenty-six Under 19 (U19) and 21 elite (A) male soccer players, aged 17.7 ± 0.5 and 24.6 ± 2.2 respectively, were evaluated using a Biodex isokinetic dynamometer. Maximal gravity corrected concentric (Con) and eccentric (Ecc) peak torques of both legs knee extensor (quadriceps, Q) and flexor (hamstrings, H) muscles were measured at angular velocities of 60, 120, 240, 300 and -60, -120°.s⁻¹ respectively.

Results & Discussion

Ecc and Con peak torques of knee extensors were greater in A group for both legs than for U19 players at all angular velocities. Better profiles were also found in A group for knee flexors. Whereas significant D/nD legs differences for U-19 group were found (Q: $p < 0.05$ at 60, 120, 180°.s⁻¹ and H: $p < 0.05$ at -120, -60, 60, 120, 180 and 300°.s⁻¹), no significances were recorded for A players. Concerning H/Q muscles balance, conventional ratios were similar for both groups on D side, excepted for 60°.s⁻¹ (U19: 0.62 ± 0.08 vs A: 0.57 ± 0.08). For nD leg, similar profiles were found, with significant lower ratios for A group at low velocities (60°.s⁻¹, $p < 0.05$) and greater values at high speeds (300°.s⁻¹, $p < 0.05$). No significant differences were found for functional ratio in both groups.

Conclusion

The findings of this study indicate that strength and D/nD legs differences are influenced by age. Moreover, although U19 and A groups do not differ concerning functional ratios, our data suggest that specific demands of soccer seem to influence isokinetic concentric H/Q ratios.