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Abstract

Knee and hip muscle strength of professional football players from different competitive levels

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In football, knee and hip muscle strength assessment have been recommended for injury prevention (Mosler et al., 2017; Namazi et al., 2019). Additionally, bilateral strength differences in the knee and hip joints have been related to an increased risk of injury. The aims of this study were threefold: (1) to compare knee and hip muscle strength

performance between professional players competing at different levels; (2) to assess bilateral strength differences according to the preferred leg (PL) and the non-preferred leg (NPL); and (3) to compare knee and hip muscle strength performance in two-time moments of the season. This study considered 33 professional football players: 13 were in the elite group (EG) competing in the First Portuguese Football League, and 20 were in the sub-elite group (SEG) competing in the Fourth Portuguese Football League. Participants were assessed for body composition, isokinetic knee strength at 60º/s, and hip adduction strength at two-time moments (TM) separated by five months. Peak torque normalised by bodyweight (PT/BW) of knee extensors (KE) and knee flexors (KF) were used for analysis. The differences between groups in strength were analysed using the Mann-Whitney U test. The Wilcoxon Signed Rank Test was conducted to verify differences between the performance of the PL and NPL in each group and to compare the performance between TM1 and TM2. At TM1, the EG presented a significantly better performance in KF PT/BW and hip adduction strength for the PL and NPL ($p \leq 0.01$). In TM2, the EG performed substantially better in KE PT/BW and KF PT/BW ($p \leq 0.01$). In both groups, no substantial bilateral strength differences were observed in knee and hip adduction performance. From TM1 to TM2, significant increases were found in knee strength in both groups ($p \leq 0.01$). Overall, the EG players outperformed their lower-division peers in strength assessments significantly. The results also indicate significant knee and hip muscle strength increases during the season (except for the EG in hip adduction strength), probably as a response to the exposure to training and competition.

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