

Isokinetic strength of foot dorsal and plantar flexor muscles in young male orienteers

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Map and compass allow orienteers navigating point to point in unfamiliar and uneven grounds. High levels of fitness and running speed are requested to cover successfully long distances and climbs. Lower limb muscular strength is necessary to sustain challenging descents on rough terrains (Fong et al., 2007). Eight male junior (age, 19±1.6yr) Italian national team orienteers (OR), and 8 cross country track and fields (TF) experienced runners (20±4.5yr), all with right lower limb dominance volunteered. Ages, weights, heights, and BMI of OR and TF did not differ (ANOVA, $p>0.05$). Each participant performed, and an isokinetic dynamometer measured 5 repetitions of right and left foot dorsal and plantar flexions at the angular speeds of 60-120-180deg/sec respectively. Each value was normalized to the body weight of the respective subject. Descriptive statistics were computed within subject, group, movement, angular speed, and side. For each movement, the effects of group and side on the peak torques at different speeds were compared by ANOVA (statistical significance 5%). On average in both groups, right foot dorsal and plantar flexor muscles were stronger than those of contralateral limb, for all the angular speeds, but no significant differences were found. OR performed peak torques larger than those obtained by TF, in both sides and movements. Differences were significant in foot plantar flexor muscles at 60-120-180deg/sec, and in foot dorsal flexor muscles at 60-120deg/sec ($p\leq 0.04$ for all comparisons). The investigation should be extended to a larger group of participants and to other muscular districts. Data could be of interest for athletes, coaches, and physicians to set a correct training planning, to prevent accidental injuries, or to quantify the effects of rehabilitation (Fong et al., 2007).

References

- [1] Fong et al. (2007) A systematic review on ankle injury and ankle sprain in sports. *Sports Med* 37: 73-94.

Key words

Foot dorsal flexion, foot plantar flexion, isokinetic dynamometer, muscular strength, orienteering.