

Muscular imbalances, determined by isokinetic and functional tests, in professional basketball players



M. SCHILTZ¹, C. LEHANCE², D. MAQUET², T. BURY²,
J.M. CRIELAARD², J.L. CROISIER²

¹ Service de Médecine Physique, Clinique Saint-Jean, Bruxelles
² Département des Sciences de la Motricité, Université de Liège

Email : mschiltz@clstjean.be

Context: Studies of dominant limb effect in elite athletes often neglect injury history while lower limb injury rate is high in basketball.

Objective: Determine lower limb explosive strength asymmetries in professional basketball players in comparison to junior basketball players and control subjects.

Design: Cohort study.

Setting: Academic medical institution.

Patients or Other Participants: 15 professional and 10 junior basketball players, and 20 healthy males.

Data collection and Analysis: Isokinetic examination evaluated knee extensors (Ext) and flexors (Fl) peak torque (PT) at 60{degree sign}-sec-1 and 240{degree sign}-sec-1 concentric, 30{degree sign}-sec-1 and 120{degree sign}-sec-1 eccentric(Fl only). Functional evaluation included: counter movement jump (CMJ), CMJ with arms, 10m sprint, single leg drop jump and single leg 10s continuous jumping. Variables were compared between groups using analysis of variance (GLM) or a generalized linear mixed model (GLMM) for bilateral variables.

Results: The two basketball players groups recorded in general significantly better isokinetic and functional performances than the control group. No functional or relative isokinetic parameters (Nm·kg-1) could demonstrate a significant difference between professional and junior basketball players. Professional players with a history of knee injury failed to reach normal knee extensor strength at 60{degree sign}-sec-1. Knee Ext (60{degree sign}-sec-1), Fl (Ecc 120{degree sign}-sec-1) as well as 10s continuous jumping scores were significantly higher in professional players without than with knee injury history. The injury history group maintained leg asymmetry ratios > 10 % for almost all isokinetic and > 15% for unilateral functional parameters.

Conclusions: Relative isokinetic and functional performances of professional basketball players are similar to junior players, with no dominant side effect. A history of knee injury in the professional athlete however translates into significant bilateral isokinetic and functional asymmetries and must be considered in future explosive strength studies.

Key words: Isokinetic - Muscular Balance - Injury History – Knee.