LATERAL DIFFERENCES OF SPRINT AND COUNTERMOVEMENT JUMP PERFORMANCE OF SOCCER PLAYERS

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INTRODUCTION: Lateral differences concerning the magnitude of strength are often found in the lower limbs (LL) and a symmetry index lower than 85% indicates increasing injury risk. Furthermore, lateral differences may also affect the performance of sprints in soccer which are characterized by short distances and alterations of running direction (Young, James & Montgomery, 2002). Since Countermovement Jumps (CMJ) are an adequate method for the identification of lateral asymmetries (Menzel et al., 2006) and usually correlate significantly with sprinting time, the objective was to verify if lateral asymmetries of sprint performance also correlate significantly with lateral asymmetry of CMJ.

METHOD: 23 junior soccer players (age: 17 – 18 years) performed a sprint test with alteration of movement direction (15m run with a 90° turn to the right side and a 15m run with a 90° turn to the left side after 7.5m) and a CMJ on a double force platform so that maximal force (F_{max}), impulse (IMP) and peak power (PP) could be determined separately for each lower limb. The lateral asymmetries in the sprint test were correlated with those of F_{max}, IMP and PP of the CMJ. In order to verify the correspondence of lateral differences identified by the variables of the CMJ and the sprint test, contingency coefficients were calculated. Individual lateral differences greater than the mean difference ± standard deviation of the whole group were considered as a prevalent laterality.

RESULTS: Only very low, not significant correlations were found between the lateral differences in the sprint test and the variables of the CMJ (Table 1). No significant contingency coefficient was found between prevalent laterality identified by the running time differences in the sprint test and the analyzed variables of the CMJ (Table 1).

Table 1 Correlation (a) between lateral differences of sprint times and dynamic variables and contingency coefficients (b) for prevalent laterality determined by different variables.

	Fmax	IMP	PP
Time difference (a)	0,14 (p=0,52)	0,05 (p=0,83)	0,09 (p=0,68)
Time difference (b)	0,37 (p=0,46)	0,35 (p=0,52)	0,35 (p=0,52)

DISCUSSION: Whereas performance of CMJ correlates significantly with sprint performance, this could not be observed for lateral differences in the sprint test and CMJ. It seems that lateral differences of sprints with alterations of movement direction also depend on other factors such as movement pattern and technique.
Lateral differences of dynamic variables of the lower limbs might be one factor among others that affects the sprint performance with turns, but if a lateral prevalence of sprint performance occurs, individual movement technique and movement pattern should also be analyzed.

REFERENCES:

Young, W.B.; James, R. & Montgomery, I. (2002). Is muscle power related to running speed with changes of direction? *Journal Sports Physic Fitness*, 42, 282-288.
Menzel, H.J.; Chagas, M.H. & Cruz, G.H. (2006). Identification of bilateral asymmetries in lower limbs of soccer players by vertical jumps on a double force platform. Salzburg, Austria: *XXIV ISBS,* 727-730.