

THE RELATIONSHIP BETWEEN VERTICAL JUMP AND HOP TEST FOR DISTANCE (PILOT STUDY)

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INTRODUCTION: Lateral asymmetries in the lower limbs (LL) in motor actions are frequently treated as a dysfunction. In literature it has been reported that force differences of 15% between lower limbs increases the probability of injuries risk (Petschnig *et al.*, 1998). The purpose of this study was to determine the sensitivity of two functional tests in detecting asymmetries in the lower limbs (hop test and impulse in the double force platform) and to compare the indexes of asymmetry between tests.

METHOD: Eighteen healthy males and females with no prior history of knee injury (mean age $20,56 \pm 2,25$) volunteered. The Vertical jump - double force platform test evaluated the impulse in the countermovement jump (CMJ). The subjects performed three trials with two minutes rest between jumps and were instructed to keep the hands fixed on the hips. In the Hop Test for distance with countermovement (HTC) – having the subject standing on only the tested leg performed the jump, and each subject hopped once as far forward as possible, and landed on the same leg. The distance was recorded with the tape measure that was fixed to the ground. Each leg was tested three times. The impulse and hop index asymmetry was calculated by; high value minus the minor value divided by high value and then multiplied by 100. The jumps were randomly ordered. The Pearson product correlation coefficient and the paired t-test were used for the data analyses.

RESULTS: A significant relationship between limb scores was not found for mean distance recorded in HTC and mean impulse in CMJ on the double force platform. However, the correlation coefficient was high ($r=0,965$; $0,877$). The values for the HTC index when compared with impulse index asymmetry showed a positive and poor correlation between tests.

Table 1 Correlation coefficients and significance between the hop index and the impulse index

Test variable	Mean \pm SD		r	p (0,05)	r ²
Left leg and right left – HTC	130,12 \pm 31,14	132,18 \pm 30,29	0,96	0,262	0,931
Left leg and right left – Impulse	81,43 \pm 27,10	85,54 \pm 27,55	0,87	0,366	0,770
Hop test index - Impulse index	5,56 \pm 3,8	12,55 \pm 10,41	0,53	0,010	0,285

DISCUSSION: In this study it was found that a poor correlation existed between the asymmetry indexes in two functional tests to LL. Then it would seem that the platform measures might be more sensitive to limb asymmetry than the HTC. In contrast, Petschnig *et al.* (1998) found similar results for the limb symmetry index between the vertical test and hop test for distance.

CONCLUSION: The results indicate that the CMJ in double force platform is a more sensitive test in detecting asymmetries in LL when compared to the HTC.

REFERENCES:

Petschnig, R., Baron R., Albrecht M. (1998). The relationship between isokinetic quadriceps strength test and hop test for distance and one-legged vertical jump test following anterior cruciate ligament reconstruction. *Journal of Orthopedic & Sports Physical Therapy*, **28(1)**, 23-31.