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Book of Abstracts

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Oral presentations

OP-PM25 Balance

THE RELATION OF ASYMMETRY IN POWER AND BALANCE IN THE LOWER EXTREMITIES

BLIEKENDAAL, S., PLOMP, S., RICHARDSON, A., STUBBE, J.

Amsterdam University of Applied Sciences

Introduction Asymmetry in the lower extremities can affect performance (Portegijs et al., 2005) and increase injury risk (Smith et al., 2015). Common ways to identification asymmetry are single legged measures of power or balance. However, there is little understanding about the relation between asymmetries in these capacities (Overmoyer et al., 2013). This study aims to explore the relation between asymmetry in power and balance in the lower extremity in a young athletic population. **Methods** A total of 196 subjects participated in this study. All participants were first year physical education students with a mean age of 19.5 (± 2.4) years for men (N=132) and 18.3 (± 2.6) years for woman (N=60). Balance was determined by anterior reach of the Starr Excursion Balance Test (Hertel et al., 2006). Jump height of single legged counter movement jumps were used to calculate power for each leg with the Sayers formula and normalized for body weight. **Results** Anterior reach was on average 66.5% (± 5.6) of leg length for men and 68.9% (± 4.0) of leg length for woman. Anterior reach asymmetry was on average 2.4% (median: 1.7; range: 0.0-20.2) for men and 2.5% (median: 1.8; range: 0.0-17.0) for woman. Average power was 29.9 W/Kg (± 2.8) for men and 24.4 W/Kg (± 2.4) for woman. Power asymmetry was 1.6 W/Kg (median: 1.4; range 0.1-6.2) for men and 1.6 W/Kg (median: 1.1; range: 0.1-7.1) for women. Values for power and anterior reach did not correlate ($p=0.078-0.636$). Asymmetry in power and anterior reach significantly correlated for women ($r=0.393$, $p=0.004$). This relation was not significant for men ($r=0.162$, $p=0.083$). **Discussion** Small asymmetries in balance and power are common in a healthy and active population. In few cases asymmetry was found to be large. Values for power and balance did not correlate. Asymmetries in power and balance have a weak relation for woman. This implies that asymmetry in balance or power are to a large extent independent of each other. Asymmetry in power and balance should therefore be identified complementary. **References** Portegijs, E., Sipilä, S., Alen, M., Kaprio, J., Koskenvuo, M., Tiainen, K., Rantanen, T. (2005). Extension Power Asymmetry and Mobility Limitation in Healthy Older Women. *Arch Phys Med Rehabil.* 86:1838-42. Smith C.A., Chimera N.J., Warren M. (2015). Association of y balance test reach asymmetry and injury in division I athletes. *Medicine and Science in Sports and Exercise.* 47(1):136-141. Overmoyer, G.V., Reiser, R.F. (2013). Relations between asymmetries in functional movements and the star excursion balance test. *Journal of Strength and Conditioning Research.* 27(7):2013-2024. Hertel, J., Braham, R.A., Hale, S.A., Olmsted-Kramer, L.C., (2006). Simplifying the Star Excursion Balance Test: Analyses of Subjects With and Without Chronic Ankle Instability. *J Orthop Sports Phys Ther.* 36(3),131-137.