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PP71A—Acute effects of trampoline training session on leg stiffness

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Purpose: SuperJump® workout is an innovative training modality that allows aerobic work by making the most of the potential of a jump training. Unlike jumping on the floor, it minimizes the stress on the joints, thus lowering the risk of microtraumas and injuries. Although SuperJump® is thought to stimulate higher muscle activations than traditional floor jumping exercises, only limited information is available on its acute effects on lower limbs stiffness performance. Therefore, this study aimed to evaluate the acute effects of a SuperJump® workout on lower limb stiffness, also in relation to sex.

Methods: 20 participants (11 females, age: 24.4 ± 1.0 yrs; 9 males, age: 27.3 ± 2.9 yrs) were administered continuous jump repetitions (CJs) before (PRE) and after (POST) a 30-min SuperJump® session including a warm-up with breathing and mobility exercises, a central phase with jumping exercises alternating movements of the upper and lower limbs and a cool-down phase. The CJs testing session consisted of 3 trials (5 CJs at preferred jumping Hz) with a 1-min recovery in between. They were asked to jump upwards without bending the knees with the arms on the hips and were instructed to jump as high as possible and as fast as possible. For each of the 3 trial the means of the 5 CJs was taken into consideration. Data were collected by a Quattro Jump force plate connected with a data acquisition system by means of a charge amplifier that allows the detection of force, power, and flight time. Vertical stiffness was evaluated by dividing the peak change in vertical force by the change in vertical displacement during contact. Multilevel regression models were performed to examine the effects of a SuperJump® training session on the subject's stiffness in relation to sex. After Bonferroni correction statistical significance was set at $p < 0.008$.

Results: No sex differences emerged. For both sexes, lower limb stiffness slightly decreased after SuperJump® training, however no significant differences were found from PRE to POST values. Women reported lower stiffness values than men both PRE (females: 23.94 ± 4.21 kN/m, males: 38.77 ± 9.41 kN/m) and POST (female: 23.83 ± 2.71 kN/m, males: 38.09 ± 9.53 kN/m).

Conclusions: Findings indicate that SuperJump® as a form of exercise is useful to maintain and improve leg stiffness performances. However, it would also be necessary to record neurophysiological parameters to evaluate the possible mechanism underlying the observed stiffness variations.

PP71B—Relationships between balance, hip strength, single leg vertical jump and complex motor task

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Purpose: The use of a complex motor task such as the Y Balance Test (YBT) is widespread among professionals as functional and motor evaluation procedure. At the same time, the specific goal of this test is not clear at all, indeed several researches found contrasting correlation between this test and other motor and physical evaluations^{1,2,3}. The aim of this study is to expand the knowledge about the relationships between YBT and other functional assessments.

Methods: Fifteen healthy and fitness volunteer (28.1 ± 6.7 yrs; 169.3 ± 5.1 cm; 65.5 ± 11.0 kg;) were tested for single leg stability using a pressure platform (FreeMed, Sensor Medica, Guidonia-RM, Italy); for gluteus medius (Gm), gluteus maximum (GM) and quadriceps (Q) strength with manual muscle test using an hand held dynamometer (FGP, Verona, Italy); for single leg CMJ height using an inertial sensor (Beyond, Motustech, Guidonia-RM, Italy); and for complex motor task skills using YBT. Data were analyzed with Pearson correlation in order to find out significant relationships. Significant level was set for $P < 0.05$.

Results: No significant relationships were found both for dominant and not dominant lower limb between YBT and static single leg stability. No significant relationships were found between not dominant limb and hip strength or CMJ. Significant relationships were found only for dominant limb between YBT anterior performance and Gm strength ($R -0.55$); YBT postero-medial, postero-lateral and composite score performance and single leg CMJ ($R 0.52, 0.61, 0.54$ respectively).

Conclusions: Our results are consistent with previous literature regarding the absence of relationships between YBT and hip strength assessed with manual muscle tests, except for the dominant leg were the strength of the Gm seems to limit the YBT anterior performance. The novelty of our investigation is the use of single leg CMJ. This choice led us to find a moderate but significant relationship between YBT performance and CMJ height observed only for dominant leg. Previous research did not investigate this aspect. These results allow us to repeat the study with other different kind of samples such as sportsmen or inactive people, in order to understand better this behavior.

References:

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PP71C—The distribution of pressure on the saddle in young off-road cyclists: a pilot survey in both sexes

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Purpose: While pedaling cyclists distribute their body weight on the pedals, handlebars, and saddle. It would appear that the pressure on the saddle can compress specific neurovascular tissues of the perineum leading to acute and chronic genital pathologies. This study aimed to investigate the distribution of pressure on the saddle in order to prevent acute and chronic genital pathologies in young off-road