

Acute Effects of Active Dynamic, Static Stretching and Passive Static Stretching Exercise on Hamstrings Flexibility and Muscle Strength

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Abstract : Stretching treatments enhanced flexibility. On the other hand, decreases in hamstrings strength have been reported after stretching, especially with static stretching or passive stretching. Stretching has been shown to be more effective than static stretching to improve muscle performance, but a clear consensus for the effect of dynamic stretching on muscle performance has not been achieved. The purpose of this study was to compare the acute effect of a dynamic stretching, static stretching and eccentric exercise protocol on hamstrings stiffness, flexibility and muscle strength. Forty-five healthy active men (height 179.9 cm; weight 71.5 kg; age 22.5 years) were participated in 3 randomly ordered testing sessions: dynamic stretching (DS), active static stretching (ASS), and passive static stretching (PSS). All the stretch were performed 30 seconds and repeated 6 times. There was a 30-second interval between repetitions. The outcome measures were isokinetic concentric contraction (60°/s), eccentric contraction (30°/s) peak torque, muscle flexibility after stretching. The results showed that the muscle flexibility (3.6%, 3.9% and 1.59%, respectively) increased significantly after DS, PSS and ASS. Hamstring isokinetic concentric peak torque (-6.4%, -8.0% and -5.8%, respectively) and eccentric peak torque (-5.8%, -4.5% and -5.4%, respectively) decreased significantly after DS, PSS and ASS. Hence, although the stretching protocols improve hamstrings flexibility immediately, reduced hamstring muscle eccentric and concentric peak torque.

Keywords : hamstrings injury, warm-up, muscle performance, muscle stretching

Conference Title : ICPASS 2016 : International Conference on Physical Activity and Sports Science

Conference Location : Osaka, Japan

Conference Dates : October 10-11, 2016