

**Effects of warm-up before stretching on flexibility and torque development in elderly #46**

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The purpose of the study was to analyze the effect of warm up exercises on flexibility and torque development of elderly subjects submitted to a protocol of hamstring muscles stretching. 28 subjects (9 men and 19 women), aged  $66.4 \pm 6$  years, volunteered for this study. Subjects were randomly divided into 2 protocols: a stretching protocol (group A) and a warm up and stretching protocol (group B). Both groups received the intervention for 4 weeks, with three sessions per week, consisting of 6 bouts of active stretching lasting 30 seconds. Subjects were evaluated on selection (T1), immediately before the intervention (T2), immediately after (T3) and a month after (T4) the intervention period for measures of knee extension range of motion (ROM) and angle with a goniometer and for active and passive peak torque ( $\text{Nm s}^{-1}$ ) at  $60^\circ/\text{s}$  and  $2^\circ/\text{s}$  respectively using a isokinetic dynamometer. Anova Two-Way and a *post hoc* analysis using the Tukey's test were applied to test the differences between and within groups. Both groups presented reduction of the knee extension range of motion deficit ( $p=0.001$ ), increase of the active peak torque flexor in eccentric ( $p=0.003$ ) and concentric ( $p=0.015$ ) phases, and reduction of the peak torque angle of the knee flexors in the eccentric phase ( $p=0.046$ ) when comparing T3 with T2 for both groups, without significant difference between groups. The passive peak torque did not vary significantly ( $p>0.05$ ) between the evaluations. The pre-exercise warm up was unable to elicit differences in flexibility and torque development of the hamstrings in elderly subjects.

**Key words:** flexibility; warm up; hamstrings.