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Effect of core stability exercises on balance between trunk muscles in healthy adult individuals

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Background: Core stability training has recently attracted attention for optimizing performance and improving muscle balance for healthy and unhealthy individuals. The purpose of this study was to investigate the effect of beginner's core stability exercises on the trunk flexors'/extensors' peak torque ratio and trunk flexors' and extensors' peak torques.

Methods: Thirty five healthy individuals, randomly assigned into two groups; experimental (group I) and control (group II), participated in the study. Group I involved 20 participants (10 male & 10 female) with mean \pm SD age, weight, and height of 20.7 ± 2.4 years, 66.5 ± 12.1 kg and 166.7 ± 7.8 cm respectively. Group II involved 15 participants (6 male & 9 female) with mean \pm SD age, weight, and height of 20.3 ± 0.61 years, 68.57 ± 12.2 kg and 164.28 ± 7.59 cm respectively. Data were collected using the Biodex Isokinetic system. The participants were tested twice; before and after a 6-week period during which the experimental group performed a core stability training program.

Findings: Statistical analysis using the 2x2 Mixed Design ANOVA revealed that there were no significant differences in the trunk flexors'/extensors' peak torque ratio between the "pre" and "post" tests for either group ($p > 0.025$). Moreover, there were no significant differences in the trunk flexors'/extensors' ratios between both groups at either test ($p > 0.025$). Meanwhile, the 2x2 Mixed Design MANOVA revealed that there were significant differences in the trunk flexors' and extensors' peak torques between the "pre" and "post" tests for group I ($p < 0.025$), while there were no significant differences in between for group II ($p > 0.025$). Moreover, there were no significant differences between both groups for the tested muscles' peak torques at either test except for that of the trunk flexors at the "post" test only ($p < 0.025$).

Interpretation: The improvement in muscle performance indicated by the increase in the trunk flexors' and extensors' peak torques in the experimental group recommends including core stability training in the exercise programs that aim to improve muscle performance.

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