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### Effect of core stability exercises on trunk muscles time to peak torque in healthy adults

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**Background:** Core stability training has recently attracted attention for optimizing performance and improving muscle recruitment and neuromuscular adaptation 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' and extensors' time to peak torque.

**Methods:** Thirty five healthy individuals randomly assigned into two groups; experimental (group I) and control (group II). Group I involved 20 participants (10 male & 10 female) with mean  $\pm$ SD age, weight and height of  $20.7 \pm 2.4$  years,  $66.5 \pm 12.1$  kg and  $166.7 \pm 7.8$  cm respectively. Group II involved 15 participants (6 male & 9 female) with mean  $\pm$ SD age, weight, and height of  $20.3 \pm 0.61$  years,  $68.57 \pm 12.2$  kg and  $164.28 \pm 7.59$  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.

**Results:** Statistical analysis using the 2x2 mixed design ANOVA revealed that there were no significant differences in the trunk flexors' and extensors' time to peak torque between the "pre" and "post" tests for control group ( $p > 0.05$ ). Also, there were no significant differences in the trunk flexors' and extensors' time to peak torque between both groups at the "pre" test ( $p > 0.05$ ). Meanwhile, the 2x2 mixed design ANOVA revealed that there were significant differences in the trunk flexors' and extensors' time to peak torque between the "pre" and "post" tests for group I ( $p < 0.0001$ ). Moreover, there were significant differences between both groups for the tested muscles' time to peak torques at the "post" test ( $p < 0.0001$ ).

**Interpretation:** The improvement in muscle response indicated by the decrease in the trunk flexors' and extensors' time to peak torques in the experimental group recommends including core stability training in the exercise programs that aim to improve neuromuscular adaptation and fitness.

#### Biography

Amir A Beltagi, PT, MSc, is an Assistant Lecturer of Biomechanics, Faculty of Physical Therapy, Cairo University. He is also PhD exchange student at the Biomechanics Research Lab, Department of Orthopedics, College of Medicine at University of Illinois in Chicago (UIC). His research project is entitled "Biomechanical changes of the spine after induced fixation: A finite element". He is an active researcher who presented his research work at many international conferences in USA, Germany and Egypt and also published his research findings in peer-reviewed journals.

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