

ORIGINAL RESEARCH

THE EFFICACY OF AN EIGHT-WEEK CORE STABILIZATION PROGRAM ON CORE MUSCLE FUNCTION AND ENDURANCE: A RANDOMIZED TRIAL

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ABSTRACT

Background: Body armor is credited with increased survival rates in soldiers but the additional axial load may negatively impact the biomechanics of the spine resulting in low back pain. Multiple studies have found that lumbar stabilization programs are superior to generalized programs for patients with chronic low back pain. It is not known if such programs produce objective changes in trunk muscle function with wear of body armor.

Hypothesis/Purpose: An eight-week core stability exercise program would result in a larger improvement in physical endurance and abdominal muscle thickness than a control intervention. The purpose of this study was to assess the effectiveness of an eight-week core stability exercise program on physical endurance and abdominal muscle thickness with and without wear of body armor.

Study Design: Randomized controlled trial

Methods: Participants (N = 33) were randomized into either the core strengthening exercise group or the control group. Testing included ultrasound imaging of abdominal muscle thickness in hook-lying and standing with and without body armor and timed measures of endurance.

Results There were statistically significant group by time interactions for transversus abdominis muscle contraction thickness during standing, both with ($p = 0.018$) and without body armor ($p = 0.038$). The main effect for hold-time during the horizontal side-support ($p = 0.016$) indicated improvement over time regardless of group. There was a significant group by time interaction ($p = 0.014$) for horizontal side-support hold-time when compliance with the exercise protocol was set at 85%, indicating more improvement in the core stabilization group than in the control group.

Conclusion: Performing an eight-week core stabilization exercise program significantly improves transversus abdominis muscle activation in standing and standing with body armor. When compliant with the exercises, such a program may increase trunk strength and muscle endurance.

Levels of Evidence: Therapy, Level 2b

Key Words: Body armor, lumbar stabilization, transversus abdominis

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