
ORIGINAL RESEARCH

DIFFERENCES IN TRANSVERSE ABDOMINIS ACTIVATION WITH STABLE AND UNSTABLE BRIDGING EXERCISES IN INDIVIDUALS WITH LOW BACK PAIN

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ABSTRACT

Background. The transversus abdominis (TrA) is a spine stabilizer frequently targeted during rehabilitation exercises for individuals with low back pain (LBP). Performance of exercises on unstable surfaces is thought to increase muscle activation, however no research has investigated differences in TrA activation when stable or unstable surfaces are used.

Objective. The purpose of this study was to investigate whether TrA activation in individuals with LBP is greater when performing bridging exercises on an unstable surface versus a stable surface.

Methods. Fifty one adults (mean \pm SD, age 23.1 ± 6.0 years, height 173.60 ± 10.5 cm, mass 74.7 ± 14.5 kg) with stabilization classification of LBP were randomly assigned to either exercise progression utilizing a sling bridge device or a traditional bridging exercise progression, each with 4 levels of increasing difficulty. TrA activation ratio (TrA contracted thickness/TrA resting thickness) was measured during each exercise using ultrasound imaging. The dependent variable was the TrA activation ratio.

Results. The first 3 levels of the sling-based and traditional bridging exercise progression were not significantly different. There was a significant increase in the TrA activation ratio in the sling-based exercise group when

bridging was performed with abduction of the hip ($1.48 \pm .38$) compared to the traditional bridge with abduction of the hip ($1.22 \pm .38$; $p < .05$).

Conclusion. Both types of exercise result in activation of the TrA, however, the sling based exercise when combined with dynamic movement resulted in a significantly higher activation of the local stabilizers of the spine compared to traditional bridging exercise. This may have implications for rehabilitation of individuals with LBP.

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Key Words. Core stability, rehabilitation, Rehabilitative Ultrasound Imaging

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