Optimal core function is a critical component for normal trunk and extremity movement. Researchers have used EMG activity to quantify muscle activation during a variety of core stabilization exercises. Data from investigations regarding ACL injury have shown that males and females generate different EMG activity during various tasks. To date, researchers have not determined if sex-differences exist with respect to EMG activation during core stabilization exercises. Identification of differences in EMG activity will provide important clinical information regarding the need for sex-specific interventions.

The purpose of this study was to determine if sex differences exist for muscle activation during core stabilization exercises. We hypothesized that all subjects, regardless of sex, would generate similar EMG muscle activity during the core stabilization exercises.

Cross-sectional observation study

Subjects performed 5 commonly prescribed rehabilitation exercises:
- Prone bridge and side plank (core endurance)
- Single leg bridge (specific strengthening)
- Side lunge and front lunge (dynamic stability)
- EMG activity was collected for the rectus abdominis (RA); abdominal obliques (AO); lumbar extensors (LE); gluteus maximus (GMX); and gluteus medius (GM).
- Separate 2 (sex) X 5 (exercise) mixed ANOVA with repeated measures were used to determine differences in muscle amplitudes.
- The level of significance was established at 0.05.
- Significant differences for muscle amplitudes between exercises were determined using the Bonferroni-Holm test.

Researchers have quantified EMG activity during exercise as follows: low level (<20% MVIC), moderate level (21% -40% MVIC) for endurance and neuromuscular re-education effects, high level (>40% MVIC) for strengthening effects.

Males, on average, had low trunk activation among all exercises, indicating the need for additional strengthening exercises to effectively strengthen the core.

Females may get AO strength gains from the prone and side plank exercises.

Females also generated greater LE activity during the side plank exercise, which may reflect a compensatory mechanism for weaker AO.

Females, on average, generated GMX activity among all exercises sufficient for endurance and neuromuscular re-education effects.

Our findings suggest the need for sex-specific core stabilization exercises.