Optimal core function is paramount for normal trunk and extremity movement. Researchers have used EMG activity to quantify muscle activation during a variety of core stabilization exercises. A limitation of prior works has been assessing EMG activity during exercises that are not necessarily representative of those developed and implemented in clinical practice. Core stabilization exercise may be prescribed for core endurance, specific strengthening, or dynamic stabilization effects to promote function. Determination of EMG activity during commonly-prescribed exercises performed in a clinically-relevant manner will provide important information. Quantification of EMG activity during specific exercises may help clinicians develop and implement individualized exercise programs for patients who may benefit from core stabilization exercises.

The purpose of this investigation was to determine the relative activation of trunk and hip muscles during a variety of core stabilization exercises prescribed in a manner representative of clinical practice. We hypothesized that subjects would generate similar trunk and hip muscle activity during core exercises prescribed for core endurance, specific strengthening, and dynamic stabilization.

Subjects performed 6 commonly prescribed rehabilitation exercises:
- Prone bridge and side plank (core endurance)
- Single leg bridge and alternating arm and leg lift in quadruped (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 1-way ANOVA with repeated measures were used to determine differences in muscle amplitudes among exercises.
- The level of significance was established at 0.05.
- Significant differences for muscle amplitudes between exercises were determined using the Bonferroni-Holm test.

The prone and side plank exercises would best benefit individuals needing to improve RA and AO endurance.
- The side plank exercise also may help improve LE endurance.
- Clinicians should prescribe the single-leg bridge exercise for individuals needing to target the GMX and GM.
- The dynamic stabilization exercises were best for addressing GMX and GM endurance.
- Future investigations should determine if sex-differences exist regarding muscle activation during core stabilization exercises.