DO VERBAL AND TACTILE CUING SELECTIVELY ALTER GLUTEUS MAXIMUS AND HAMSTRING RECRUITMENT DURING A BRIDGING EXERCISE? A RANDOMIZED CONTROLLED TRIAL

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BACKGROUND AND PURPOSE: Extending the hip with hamstring rather than gluteus maximus-dominant activation may increase anterior hip joint forces and cause injury. Verbal and tactile cuing during hip extension exercises may optimize gluteus maximus recruitment. We examined whether specific verbal and tactile cuing procedures enhance gluteus maximus recruitment while minimizing hamstring recruitment during a bridging exercise.

METHODS AND MATERIALS: We recruited 30 healthy female participants. They were randomly assigned to control and experimental cuing groups and participated in 2 testing sessions, 1 week apart, during which they performed 5 repetitions of a bridging exercise. Participants in the experimental group received verbal and tactile cuing during their second visit intended to maximize gluteus maximus recruitment. Gluteus maximus and hamstring recruitment were measured with bipolar surface electrodes and electromyography (EMG) instrumentation and normalized to maximal voluntary isometric contractions (MVICs).

ANALYSES: Normalized gluteus maximus and hamstring EMG values were analyzed with mixed model analyses of variance (alpha = .05).

RESULTS: Gluteus maximus recruitment was unchanged in the control group and increased from 17.9% MVIC to 32.3% MVIC in the cuing group (F = 19.189, p < .001). Hamstring recruitment was similarly unchanged in the control group but also increased from 15.2% MVIC to 32.4% MVIC in the cuing group (F = 9.390, p = .006). The effect size of the change in gluteus maximus recruitment in the cuing group (Cohen’s d = 1.3) was comparable to the effect size in hamstring recruitment (Cohen’s d = 1.2).

CONCLUSIONS: Verbal and tactile cuing intended to maximize gluteus maximus recruitment during the bridging exercise yielded comparable increases in both gluteus maximus and hamstring activation.

IMPLICATIONS: If a physical therapist’s intent during a bridging exercise is to promote hip extension by optimizing gluteus maximus recruitment while minimizing hamstring recruitment, the verbal and tactile cuing methods employed in this study may not produce the desired effect.