

Introduction

Background: Coughing, sneezing and laughing all produce high, quick intra-abdominal pressure. They also cause approximately 1:3 women to leak urine.

Speaking and shouting produce a range of low-high trunk pressures though voicing has never been investigated for how it affects pelvic floor muscle function or relates to stress urinary incontinence.

Study aims: Using trans-perineal ultrasound, identify how the pelvic floor muscles respond to a range of voicing tasks in asymptomatic women and those with stress urinary incontinence.

Hypothesis: Bladder neck will descend during voicing with greater descent during louder voicing. Women with symptoms will either displace much more or much less than the asymptomatic women.

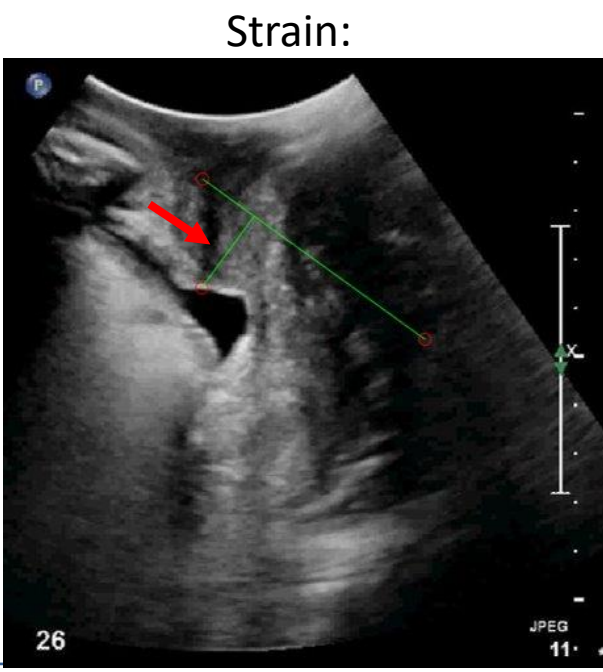
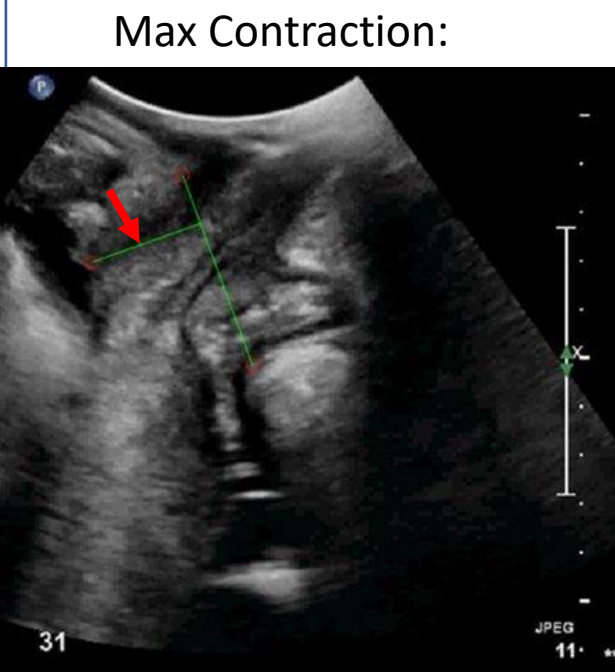
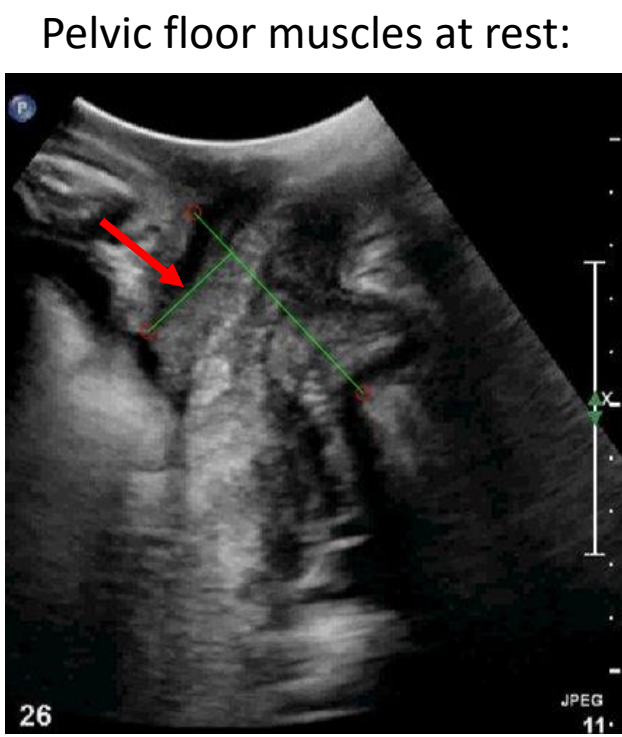
Study Design, Materials and Methods

Participants: 58 women, ages 20-69 (mean 40.3 years). Symptom severity was based on Australian Pelvic Floor Questionnaire q.6: Do you leak urine with coughing, sneezing, laughing, exercising?

Groups: 20 asymptomatic women, 29 with occasional leakage, 6 with frequent leakage, and 3 with daily leakage.

Outcome measurement: Trans-perineal, 2-dimensional, B-mode ultrasound.

Tasks: 2 for pelvic floor muscles with biofeedback: Max voluntary contraction, Strain. 4 voicing tasks: Count to 4 in one continuous exhale with the following voice combinations: Deep pitch / Speaking volume, Deep pitch / Shouting volume, High pitch / Speaking volume, High pitch / Shouting volume.



Results

- RMANOVA with Greenhouse-Geisser correction determined that mean bladder neck displacement differed statistically between tasks ((F(1.9, 108.04) = 54.97, P<0.001).
- Pairwise comparison showed there was no significant difference between bladder neck height for low pitch voicing compared to high pitch voicing.
- Speaking volume versus shouting volume in either pitch was significantly different with the bladder neck height lowering more during shouting (P< 0.001).
- Pelvic floor response was not affected by symptom severity.

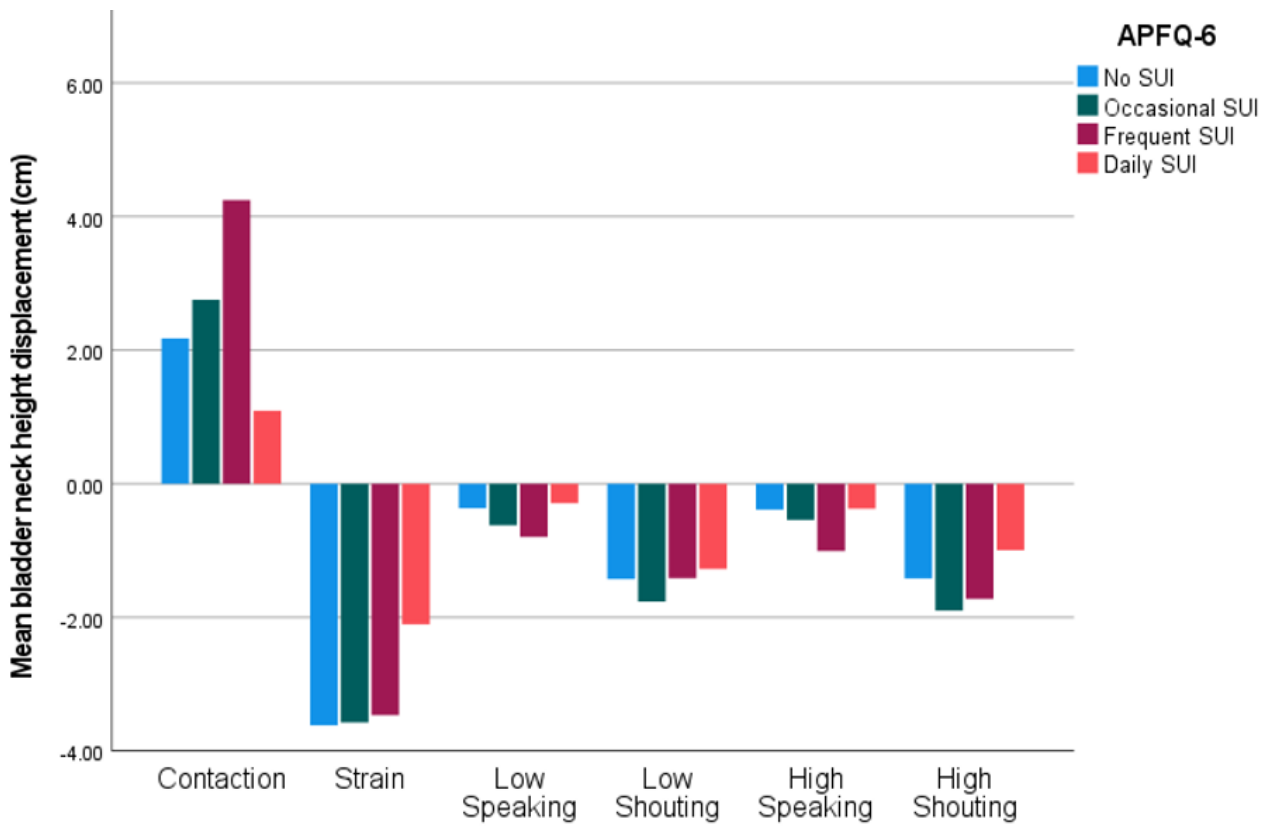


Chart 1. Changes in bladder neck height during pelvic floor and voicing tasks

Discussion

Because of the small and uneven distribution of women with varying symptom severity, a power analysis was not able to determine effect size. This likely contributed to no differences seen in group response as categorized by symptom severity.

Differences were seen across all participants for change in bladder neck height in response to the 6 tasks. Bladder neck height lowered (pelvic floor muscles lengthened) in response to the cue to strain as well as all voicing tasks. The magnitude of displacement increased with vocal loudness, but not vocal pitch.

These findings can be interpreted as pelvic floor muscles lengthen to varying degrees during voicing, regardless of symptoms. Pelvic floor straining/lengthening increases with louder voicing and not in response to vocal pitch.

Conclusions

Those at risk of urine leakage should be mindful of shouting as a potentially provocative activity.

Those with difficulty lengthening pelvic floor muscles may incorporate voicing to help them perform this task. Therapists may adjust vocal loudness to achieve the desired affect.

References

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