

## DIFFERENCES BETWEEN THE VALSALVA MANOEUVRE AND STRAINING TO GENERATE A RISE IN INTRA-ABDOMINAL PRESSURE (IAP).

### Hypothesis / aims of study

In Urogynaecology, the term Valsalva is used to describe the manoeuvre used to increase intra-abdominal pressure when assessing pelvic organ prolapse (POP) and urine incontinence (1). Studies rarely report on details of performing the manoeuvre. Anecdotal evidence suggests that clinicians and researchers use the terms Valsalva and straining interchangeably. Dynamic MRI studies have shown that these manoeuvres involve different biomechanics, and result in opposite respiratory patterns with different pelvic floor positions and contraction status (2,3).

We aimed to investigate whether there is a difference between the intra-abdominal pressure (IAP) generated during Valsalva and straining in healthy volunteers.

Table 1: Intra-abdominal pressures on Valsalva and straining

Position	Gender	Strain mean IAP +/-SD (cmH <sub>2</sub> O)	Valsalva mean IAP +/-SD (cmH <sub>2</sub> O)	Paired t test
Supine	Males	116.6 +/- 56	92.0 +/- 47	P= 0.04
Standing	Males	143.4 +/- 63	106.5 +/- 50	P<0.0001
Supine	Females	84.2 +/- 21	69.2 +/- 22	P<0.0001
Standing	Females	102.6 +/- 32	88.6 +/- 26	P= 0.1

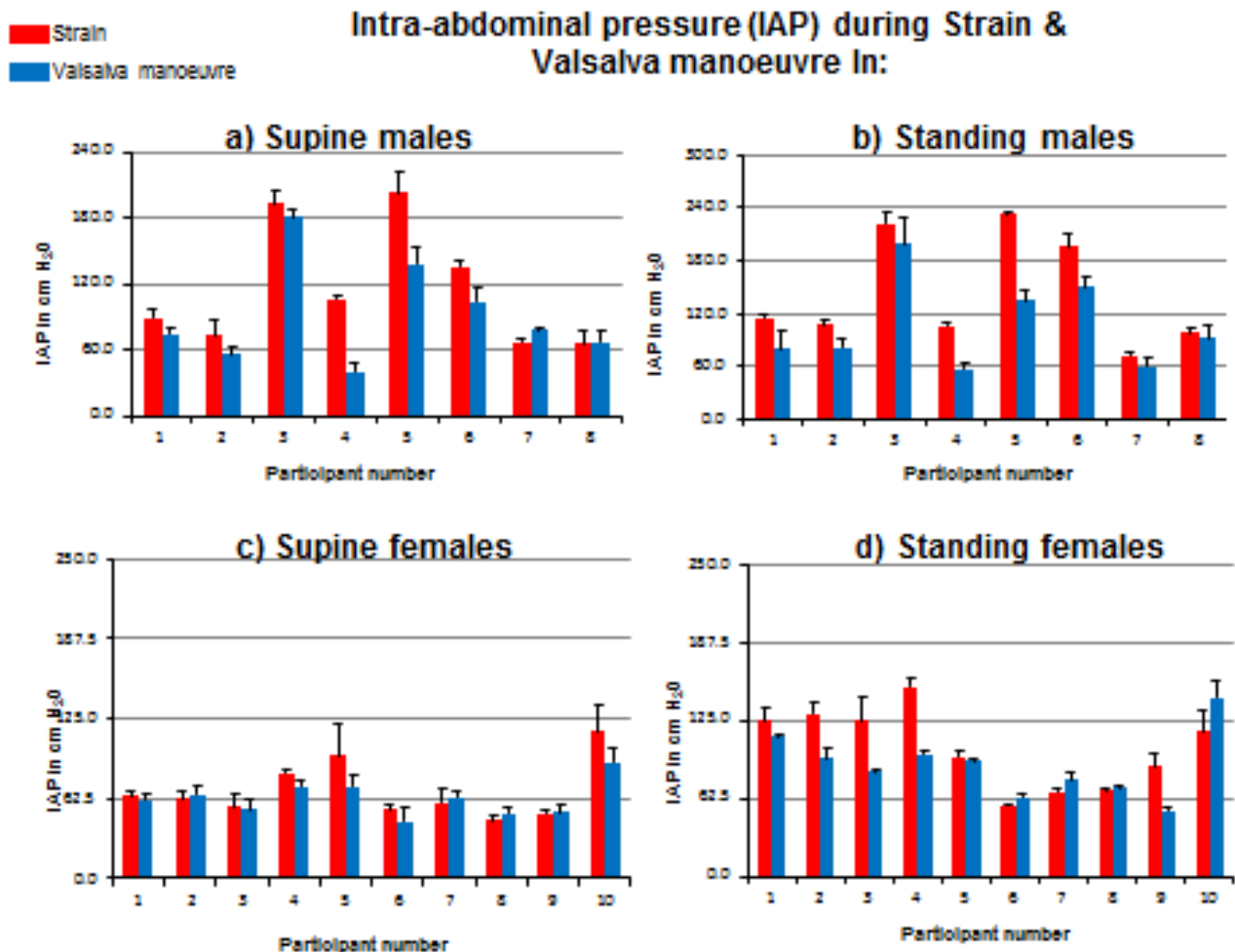


Figure 1: IAP in supine and standing positions in both genders; a) supine males b) standing males c) supine females d) standing females.

### Study design, materials and methods

Eighteen healthy volunteers (10 females and 8 males) were asked to both perform a Valsalva manoeuvre by blowing into a manometer and to strain. Standardised instructions of how to perform these manoeuvres were given. Both manoeuvres were performed in standing and supine positions, with each manoeuvre repeated three times in either position. Allocation to positions and manoeuvres was randomly assigned. Intra-abdominal pressures were recorded using a rectal balloon catheter (TDoc) connected to a pressure sensor. Pressures were recorded and stored on Dantec Jive Uromanometry system.

This is a pilot study, so formal power calculation was not required. Mean IAP and standard deviation (SD) were calculated for each manoeuvre in either position for both genders. Paired t test was used to calculate P values, with 0.05 cut off being statistically significant.

### Results

Table 1 shows a summary of intra-abdominal pressure measurements in supine and standing positions in both genders.

### Interpretation of results

In males, both supine and standing, the mean IAP was significantly higher during straining than during Valsalva manoeuvre. In females the mean IAP pressure on straining was significantly higher than on Valsalva in supine position but not on standing (Table 1).

### Concluding message

We have demonstrated a difference in IAP between the Valsalva manoeuvre and straining. The different IAP also depends on gender and position. Researchers and clinicians need to be mindful of the difference between the two manoeuvres and clarify the terminology of their method of raising IAP on assessment of POP and incontinence when reporting outcomes.

### References

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3. Talasz H, Kofler M, Lechleitner M. Misconception of the Valsalva maneuver. *International Urogynecology Journal and Pelvic Floor Dysfunction* 2011;22:1197–8.

### Disclosures

**Funding:** This research was funded by CMFT charitable funds and supported by NIHR Devices for Dignity HTC. The views expressed are those of the authors and not necessarily those of the UK NHS, the NIHR or the Department of Health  
**Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** North West - Greater Manchester West Research Ethics Committee: No. 15/NW/60. **Helsinki:** Yes **Informed Consent:** Yes