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HOW SHOULD WOMEN BREATHE DURING LIFTING?
Influence of breathing variations on bladder neck and pelvic floor position in healthy and incontinent women

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INTRODUCTION

There are many recommendations with regard to activity restrictions like lifting after pelvic floor operations and childbirth to avoid undue increases in intraabdominal pressure (IAP) to protect pelvic organ descent. Most of them are not supported by rigorous data.

As shown previously, bladder neck (BN) and pelvic floor position (puborectalis muscle=PR) are associated with an increased IAP (1).

It remains unclear which breathing variation increases IAP most. Instructions, like lifting a weight "with forced expiration" in fitness studios, are given without evidence.

AIM

The purpose of this study was to determine the influence of lifting with different breathing variations on IAP and on BN and PR position using perineal ultrasound (PUS) in healthy women and women with stress or mixed incontinence.

MATERIAL

201 women (169 incontinent women and 34 healthy controls), participated in a study on the assessment of continence and incontinence mechanisms reported previously. PUS (GE Voluson E8) and IAP-recordings were measured simultaneously in standing and stored using a specific hard- and software (Noraxon Inc.) while a standardized weight was lifted. Afterwards, stored records were reviewed offline for complete and lifting measurements without artefacts. The height of BN and PR were calculated in relation to a horizontal line through the lower border of the pubic symphysis at rest and at lifting using a validated method (2) and the IAP at its peak was affirmed.

METHOD

While lifting, three different breathing variations were performed: 1 - naïve, without any instruction, 2 - hold breath and 3 - forced expiration. BN and PR descent were compared within and between the two groups.

A power analysis showed that 15 women in each group are necessary to demonstrate an established caudal descent of 5,6 mm with a power of 80% and α=0,05 and also to show a difference of 4,2 mm between the different breathing tasks (3).

RESULTS

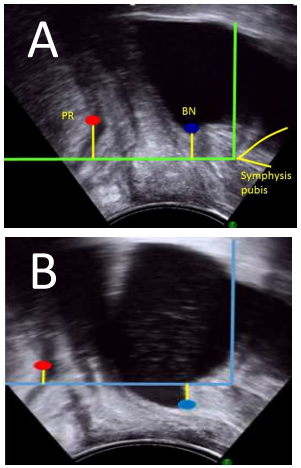
Recordings of 17 healthy and nulliparous and 17 urinary incontinent women were eligible for analysis assessed standing with perineal ultrasound.

During lifting with breath hold and forced expiration, BN descended significantly in healthy women (p=0.003 and p=0.017) and in incontinent women (p=0.004 and p<0.001).

The best results with least descent were obtained during naïve lifting without statistical difference between the two groups (p=0.228 and p=0.121, respectively).

Less descent of the pelvic floor correlated with decreased BN descent (r =0.658; r=0.490; r=0.681, respectively for the different breathing techniques: p<0.003).

IAP increase during lifting was similar between the two groups for all breathing variations (p=0.125, p=0.284, p=0.438).



Perineal ultrasound performed in standing: BN and PR height.
A rest, B lifting

		Healthy women n=17	PF-patients n=17	P
Age (years, min-max)		31 (22 - 60)	48 (27 - 72)	0.058
Body-Mass-Index (min-max)		22.4 (19.6 - 26.6)	23.0 (19.0 - 36.0)	0.087
Naïve lift	Δ BN height (mm)	0.6 (-10.9; 2.5) 0.906	-0.8 (-17.3; 3.1) 0.121	0.228
	Δ PR height (mm)	0 (-8.5; 3.7) 0.589	-1.4(-9.8; 2.5) 0.121	0.121
Lift with breath hold	Δ BN height (mm)	-1.4 (-14.1; 1.4) 0.003	-2 (-18.4; 7.1) 0.017	0.569
	Δ PR height (mm)	-1.6 (-8.8; 1.7) 0.023	-1.7 (-11.1; 4.2) 0.017	0.877
Lift with forced expiration	Δ BN height (mm)	-2.3 (-13.1; 2.0) 0.004	-3.7 (-20.2; 0) <0.001	0.056
	Δ PR height (mm)	-2.0 (-9.4; 10.8) 0.052	-5.2 (-14.9; 1.8) <0.001	0.408

Measurements during lifting tasks in continent and PF-patients median (range).
Statistics: Wilcoxon or Mann-Whitney-U test as appropriate.
BN=bladder neck; PR=puborectalis muscle; Δ=change rest to lifting task

CONCLUSIONS

In our study, giving no instructions during lifting obtained best results for the bladder neck and pelvic floor with least descent.

Especially incontinent women should refrain from forced expiration during lifting to avoid adverse bladder neck descent.

As bladder neck descent was dependent on pelvic floor position, instructions to perform a pelvic floor contraction before lifting might further reduce bladder neck descent.

REFERENCES

(1) Int Urogynecol J (2013) Vol 24; Suppl 1, S 91
(2) Int Urogynecol J (2001) 12:104–106
(3) Obstet Gynecol (2000) 95(4), 535-40

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