Pelvic Physical Therapy Distance Journal Club
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What improvements in levator ani motor function lead to improvement in stress urinary incontinence signs and symptoms in females? Antonio FI, Rodrigues MP, Brooks K, et al. Int Urogynecol J 2022; 33:2735-2747. Doi:10.1007/s00192-021-04931-7.

Introduction: While we know pelvic floor muscle training (PFMT) programs are effective to improve continence, we do not know if improvements in function are due to improvements in levator ani muscle strength, motor control, or morphometry.

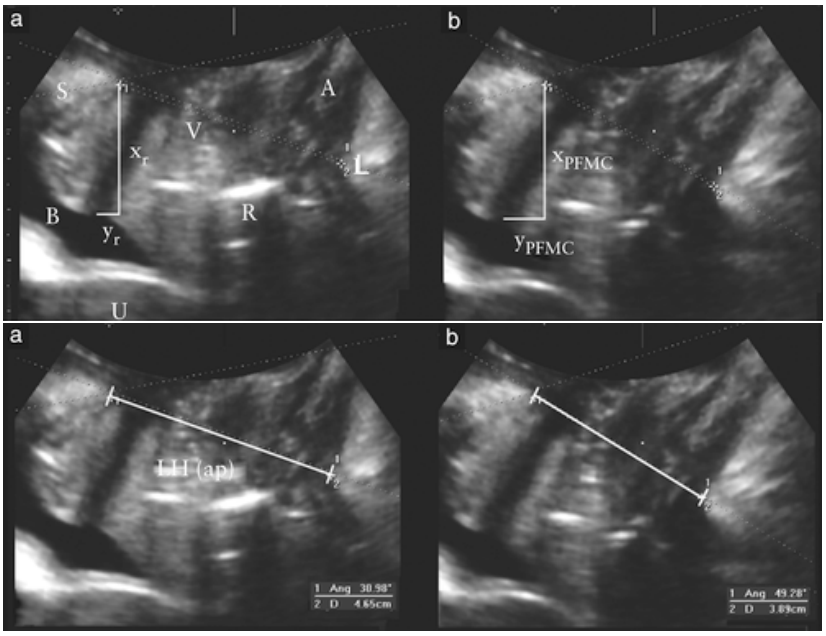
Aim: Do baseline pelvic morphometry or PERFECT scores correlate with signs and symptoms of SUI? Do these measures get better with PFMT? Do improvements in measures/scores correlate with improved outcomes?

Methods: Secondary analysis of a cohort study
Subjects: 74 subjects from either surgical waitlists for mid-urethral sling or physiotherapy clinics in Ottawa
Measures done by a research physio trained in POP-Q, US, and PERFECT scale
Measures:
PERFECT scale-

Terms used in this article	New ICS terms
P= performance 0 to 5 MVC	Strength
E= endurance - time in seconds an MVC can be held before strength is reduced 50%	Sustained contraction endurance test
R= repetitions - #of times the MCV can be repeated (4 second rest between)	Repeatability of contraction
F= fast, number of fast contractions up to 10	Number of rapid contractions performed
E= elevation - lifting of posterior PFM during MVC	Direction of PFM movement during contraction
C= co-contraction - co-contraction of lower abdominal muscle during MVC	Co-contraction
T= timing - involuntary contraction with cough	Co-ordination

- Table 1 created by Beth Shelly- see reference 1

Reissing scale for tone- Feb 2023 Pelvic PT Distance Journal discussed the Reissing scale and its poor reproducibility. Research does not support this as a reason for digital palpation
Real time Ultrasound



Images from reference 2

Outcomes:

ICIQ- FLUTS-UI subscale score (symptoms), **30 Minute Pad Test (30MPT) (signs)**

Results/Discussion:

Starting measures do not seem to correlate with SUI ***except timing/coordination***

- Weak correlations:
  - Higher **bladder neck** in standing & improved 30MPT
  - Better R/repeatability, F/# of contractions, and overall PERFECT scores & worse 30MPT

Some measures improved with treatment

- PERFECT scores
- Standing levator hiatus area w/ MVC
- Supine **bladder neck elevation** w/ MVC
- Outcome measures

Improved measures did not correlate with improved outcomes EXCEPT:

- Perineal lift with cough (if they weren't able to do so before)-> better outcomes

(Repeatability(R) & strength(P) were actually weakly correlated with ↓ improvements)

- **US-** Weak associations
  - Supine ↖**of bladder neck with MVC** -> better 30MPT
  - ↓ in standing levator plate length -> better 30MPT
  - ↓levator plate length with MVC in supine -> better symptoms
    - changes in levator plate length after tx were not significantly different than baseline

Starting PERF scores and morphometry measures & changes after tx didn't predict improvements in SUI

Conclusion/Summary:
PERFECT:
Of the PERFECT measures: The T of PERFECT (coordination) was the only measure that correlated with severity of incontinence and was the only finding that if newly learned correlated with improvements in continence.
These findings don't support digital palpation/PERF measures as part of an evaluation for SUI
Palpation might be a better as a training tool

Timing/coordination appears to be worth observing and possibly measuring w/ US

- Bladder neck measures in this study were weakly associated with severity/improvements in continence- it seems to be worth keeping an eye on bladder neck measures in the literature

This paper supports the timing/coordination of levator ani muscles as potentially playing a role in the mechanism of continence. Continuing to observe coordination (visually and potentially with US) and train it- especially in those who don't present with PFM contraction with cough at evaluation may be valuable

Limitations/strengths- >1/2 of subjects were from surgical waitlists others were from physio clinics. ½ in menopause, age: 50 ±10, BMI 28.29 ±6.84, parity spread between 0->3. Captures a wide group

Discussion questions
Does this paper change your evaluation approach and how you educate your patients?
Will you measure/observe bladder neck and levator plate on US (if you have access)?
Could certain measures be more important for different populations with SUI?
As subjects improved with pelvic floor muscle training- what do you think led to improvements? Impoved strength of urethral sphincter? Improved timing-> decreased urethral mobility? Other factors beyond the pelvis?
Do you think digital palpation may have value beyond teaching how to contract?

Other References:

1. Table created by Dr. Beth Shelly. Terminology from reference below:
2. Frawley H, Shelly B, Morin M, et al. An International Continence Society (ICS) report on the terminology for pelvic floor muscle assessment. Neurourol and Urodynam 2021;40:1217-1260.
3. Oversand SH, Atan IK, Shek KL, Dietz HP. Association of urinary and anal incontinence with measures of pelvic floor muscle contractility. Ultrasound Obstet Gynecol. 2016;47(5):642–5. https://doi.org/10.1002/uog.14902. https://obgyn.onlinelibrary.wiley.com/doi/10.1002/uog.14902
4. Thompson JA, O'Sullivan PB, Briffa NK, Neumann P. Assessment of voluntary pelvic floor muscle contraction in continent and incontinent women using transperineal ultrasound, manual muscle testing and vaginal squeeze pressure measurements. Int Urogynecol. 2006;17(6):624–30. Available from: http://link.springer.com/10. 1007/s00192-006-0081-2.