

January 2018 Pelvic Floor Distance Journal Club
Presented by Cynthia E. Neville, PT, DPT, WCS January 10, 2018

[Amorim AC¹](#), [Cacciari LP¹](#), [Passaro AC¹](#), [Silveira SRB²](#), [Amorim CF³](#), [Loss JF⁴](#), [Sacco ICN¹](#). Effect of combined actions of hip adduction/abduction on the force generation and maintenance of pelvic floor muscles in healthy women. [PLoS One](#). 2017 May 24;12(5):e0177575. doi: 10.1371/journal.pone.0177575. eCollection 2017. <http://journals.plos.org/plosone/article/metrics?id=10.1371/journal.pone.0177575#savedHeader>

Background: PTs use facilitation with hip abduction and external rotation to try to increase recruitment of PFM in patients with weak underactive PFM.

Janet Hulme has long promoted the use of hip abduction+ER and adduction+IR without active PFM contraction to treat POP and SUI.

(Supplementary free Article: : Hulme, Janet A. MA, PT, Clinical Commentary: Pelvic Organ Prolapse and Incontinence Theoretical Basis and Case Description of a Novel Conservative Treatment Approach Using Pelvic Muscle Exercise and Pelvic Inversion. Topics in Geriatric Rehabilitation: [October/December 2016 - Volume 32 - Issue 4 - p E1–E9](#) doi: 10.1097/TGR.000000000000124, Bladder Control)

Jorde (2014) concluded in a pilot study that both PFMT and RHR without active PFM contraction seem to be effective in the treatment of SUI.

(Jorde B, Schweinle W. Comparing Resisted Hip Rotation With Pelvic Floor Muscle Training in Women With Stress Urinary Incontinence: A Pilot Study. *JWHPT*. 38(2) May/Aug 2014)

Aim/Primary Aim: investigate the effects of isometric force from hip adduction and abduction on PFM force performance in healthy continent women. Authors hypothesize that the combined action between PFM contraction and hip isometric abduction force may be beneficial for intra-vaginal force generation and maintenance, but not the hip adduction combined action, because of the inexistence anatomical and mechanical relationship between hip adductors muscles and PFM.

Study Design/Study Format: cross sectional design, non-randomized
Subjects 20 healthy, nulliparous women (27.2±5.3 years, 22.7±3.1 kg/m² and 3.6±1.1 score on the Oxford scale) who were able to contract their PFMs correctly (2 according the 0–5 point Oxford grading system

Methods: Two measurement sessions 4 weeks apart were conducted using two strain-gauge dynamometers (one cylinder-like inside the vaginal cavity, and the other measuring hip adduction/abduction forces around both thighs) while performing three different tasks: (a) isolated PFM contraction; (b) PFM contraction combined with hip adduction (30% and 50% maximum hip force); and (c) PFM contraction combined with hip abduction (30% and 50% maximum hip

force). Those levels were determined in a pilot study during which we compared PFM forces while nine volunteers performed different levels of isometric hip force, together with PFM maximum contraction. In the 30% and 50% target levels, the subjects could perform both tasks simultaneously with a satisfactory level of PFM force.

Authors calculated a gradient between the isolated PFM contraction and each hip condition. We calculated a gradient to interpret the adduction and abduction tasks taking into account the isolated condition for all variables. They compared both conditions gradients in 30% and 50% by paired t-tests.

- Δ Adduction = isolated condition—adduction condition
- Δ Abduction = isolated condition - abduction condition.
- Maximum force (N)
- instant of maximum-force occurrence (s),
- mean force in an 8-second window (N),
- PFM force loss (N.s).

Results:

All variables did not differ between hip conditions both in 30% and 50% of maximum hip force ($p > .05$). PFM contraction combined with isometric hip abduction did not increase vaginal force in healthy and nulliparous women compared to PFM contraction combined with isometric hip adduction.

Discussion:

Strengths

- novel data acquisition set up using dynamometers
- Conditions randomized
- Visual confirmation of correct pfm contraction
- Young healthy

Limitations

- Dynamometer may not be sensitive enough to detect force increments during hip actions
- Type of feedback – visual augmented feedback for hip, only verbal feedback for pelvic floor,
- Difficulty in coordinating contractions should be considered- my patients always ask “ should I contract my hips first or my pelvic floor first”
- Instant of maximum force in isolated contraction was at 2.32, with hips closer to 3.5.
- What was the verbal cue during combined condition? "breathe normally while contracting the muscles of your PF, do not hold your breath").
- 10 second hold of hip muscles
- May have different results in older people or people with dysfunction

Conclusion/Summary:

Results do not support hypothesis, which states that PFM contraction combined with hip isometric abduction spontaneously benefits intra-vaginal force production and maintenance, when compared to the hip adduction combined action. T

Authors conclude that the immediate effect of combining PFM contraction with hip isometric abduction or adduction does not have the claimed benefit for sustained PFM contraction practices.

Clinical Application

1. Do you use hip abduction and/or adduction for PFM training , and with or without co-contraction of the PFM, and why?
2. How would POP impact this study design?
3. Do you think this study replicates how you perform this type of facilitation clinically?
4. How does this study change your thinking?