

Pelvic Physical Therapy Distance Journal Club

February 8, 2023

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Is it time to rethink using digital palpation for assessment of muscle stiffness? Davidson MJ, Nielsen PMF, Taberner AJ, et al. *Neurourol Urodynam* 2020; 39:279-285.

Doi:10.1002/nau.24192.

Introduction: Muscle strength (voluntary active contractile force) testing using digital palpation methods have been studied for validation and reliability. Muscle stiffness (a measure of the extent of a muscle's resistance to deformation in response to applied force) and therefore "tone" has no validated scales for reliably defining this variable.

Aim/Primary Aim: (1) assess physiotherapists' ability to assign a stiffness value on a 7 point scale when provided a stiffness and (2) determine how consistently the scale was applied (3) the probabilities of each category of the scale being applied to similar values (4) if duration of clinical experience or area of clinical focus influenced results

Study Design/Study Format: prospective observational

Methods: "Palpation instrument" developed for this study to be the "stiffness" monitor with a plunger end that is compressed and mimics pressure applied to small muscles of the body. The 7 point Reissing Scale stiffness data points were assigned by volunteer input on pressure used in clinical assessment, plus the ends of the scale were expanded. Stage 1: Physios were told the Reissing Scale # and had to adjust the machine to match
Stage 2: Instrument set to random stiffness between 1-1050 N/m and Physios assigned the category on Reissing scale. Each stage: 3 trials x 7 sets = 21 data points each stage. Data collected/rep: Displacement of plunger, force, and stiffness

Results: 125 participants; only 43 participated in both stages.

Years of clinical practice: 3 months to 56 years, various

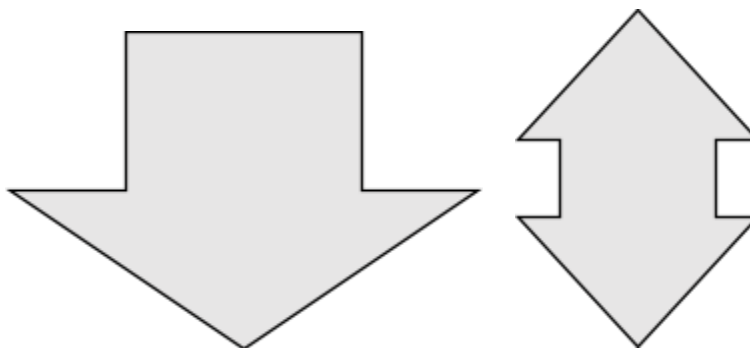
Palpation techniques: pelvic floor= index pad; msk physios = index pad, index+middle finger pad, thumbs.

Stage 1 results: no participants were able to consistently apply the scale. 72% of participants used the scale with 11-30% margin of stiffness. Therefore, 28% over 30% margin.

Stage 2 results: Large variations among individuals in assigning categories when provided stiffness by the machine, ranging from 1-92% of the time.

Overall: Years of experience DID NOT matter NOR type of therapist. Pressure/force used during stiffness estimations was linear overall (Fig 2).

No resistance	-3
	-2
	-1
Normal	0
	+1
	+2
Very firm resistance and minimal movement of ms	+3



Discussion: This was a novel experiment that did not find consistent ability in Pelvic floor or musculoskeletal therapists' ability to assign consistent stiffness values to a provided stiffness nor adjust stiffness to match a provided number on the Reissing Scale, with no bearing on the # of years of clinical experience.

Strengths: this is a good step in looking at improving consistency in palpation across providers.

Weaknesses: Results were poor, only really valuable at the extremes of the scale (Fig 3).

Conclusion/Summary: While digital palpation is a financial wise choice clinically, it is wise to consider how therapists can incorporate other devices that measure stiffness more accurately such as the elastometer or the dynamometer OR improve our palpation skills and training. Limitations for these alternate devices include costs, clinical availability.

Clinical Application

List discussion questions

1. If palpation remains the primary means of assessing stiffness, what modifications would you suggest for training therapists to improve consistency?
2. How were you trained in assessing the “tone” of the pelvic floor?
3. Do you often find that your Physical Therapy assessment of “tone” DOES or DOES NOT match what data you find within a medical chart review (assuming referring provider performed/documented some type of palpation)?

Other References:

Kruger JA, Nielsen PMF, Budgett SC, Taberner AJ. An automated hand-held elastometer for quantifying the passive stiffness of the levator ani muscle in women. *NeuroUrol Urodyn*. 2015;34(2):133-138.

Morin M, Gravel D, Bourbonnais D, Dumoulin C, Ouellet S, Pilon JF. Application of a new method in the study of pelvic floor muscle passive properties in continent women. *J Electromyography Kinesiol*. 2010;20:795-803.