Pelvic floor muscle strength testing

Description

Manual or digital muscle testing (DMT) of pelvic floor muscle (PFM) strength is used by physiotherapists and other clinicians who assess and treat patients presenting with weakened PFMs, often with symptoms of incontinence or prolapse. The scale can be used to assess PFM strength per vaginum or per rectum, and has been applied in both adult female and male populations.

Instructions to patient and rating: The first step is to ensure the patient is able to contract the PFM correctly via a tightening and drawing in of the superficial (perineal) and deep (levator ani) layers of the PFM. Visual observation can confirm perineal/sphincter tightening and in-drawing, but does not give further information of the levator ani strength. Digital palpation is required for evaluation. The patient is instructed to ‘squeeze and lift the PFM’. Sometimes further explanation is required to elicit the correct technique. The time taken to score the strength grade is quite short, usually the best of 3 maximum voluntary contractions, held for 3–5 seconds. Determination of the grade applied is subjective, as it relies on the clinician’s interpretation of the amount of squeeze +/− lift present. As the PFM is a dome-shaped muscle, voluntary contraction is thought to occur in 3 planes: medio-lateral occlusion, postero-anterior draw, and cephalad displacement. Grading of this complex contraction, where components of movement (of varying degrees) may be perceived in 1, 2 or all 3 planes with the final grade applied being a ‘net’ effect of these movements felt by the examining finger(s), requires a ‘best guess’ on the part of the clinician.

Reliability and validity: Over 20 different scales for digital/manual grading of PFM function have been reported in the literature (Van Kampen et al 1996). The scale used most commonly by physiotherapists is the Modified Oxford Scale (MOS). This is a 6-point scale described as: 0 = no contraction, 1 = flicker, 2 = weak, 3 = moderate (with lift), 4 = good (with lift), 5 = strong (with lift) (Laycock & Jerwood 2001). Commonly, clinicians aim to increase the sensitivity of this scale by incorporating ‘half-grades’ (eg, 3+ or 3–) which results in a 15-point scale. The MOS scale demonstrates variable reliability with kappa and correlation values ranging from moderate to very good. The variation in results may also be explained by the subjective nature of the grading system. The addition of ‘half-grades’ to the MOS DMT has been found to reduce intra-therapist reliability significantly (Frawley et al 2006). Digital muscle testing scales are often validated against other ‘gold standard’ or more objective measures of PFM contractility, such as pressure manometry (measures the occlusive aspect of a PFM contraction) and transperineal or transabdominal ultrasound (measures the elevating aspect). Higher correlations for the MOS and manometry have been reported (Isherwood & Rane 2000) than between ultrasound and the MOS (Thompson et al 2006), suggesting that no single measurement tool tests all aspects of PFM contractility.

The current recommendation by the International Continence Society (Messelink et al 2005) is to adopt a new, simpler grading scale of 4 points: absent, weak, normal (interpreted as ‘moderate’) and strong to reflect the total of the tightening, lifting and squeezing action. Reports of validity/reliability testing of this new scale have not yet been published. Clinicians and researchers are encouraged to record exact positioning of the patient, number of examining digits (1, 2), position of digits (vertical/horizontal position, pads up/down) as all these variations can affect the strength grade ascribed.

Commentary

Knowledge of PFM anatomy and clinical experience in per vaginum and per rectum palpation of PFM contractility is required to apply a strength grading system accurately. Digital muscle testing using any of the currently described strength grading scales may not be suitable to grade the contractility of overactive PFM, which are often present in patients who present with pelvic/perineal pain and/or vaginismus disorders. There has been even less published on appropriate muscle grading scales for overactive/painful PFM.

While DMT is a low cost technique, relatively easy to conduct once sufficient instruction has occurred, and is well tolerated by patients; its value in scientific research is debatable. The ability of the clinician to digitally discriminate squeezing versus lifting activity in the PFM is unclear, hence the most appropriate grading scale to record this has yet to be determined. Interpretation of the values of the DMT is limited as normative data on the strength of the PFM have not been reported. Furthermore, while statistically significant change in PFM strength measured by DMT has been reported following PFM training, the clinical significance of this change is unknown.

Grading of the strength of the PFM via a DMT is a useful clinical, and possibly research, tool, despite the shortcomings outlined. Future research and testing of the newly proposed scale will bolster the confidence clinicians have in utilising DMT.

Helena Frawley
The University of Melbourne

References

Clinical diagnostic tests for the sacroiliac joint: motion and palpation tests

Description
Dysfunction of the sacroiliac joint (SIJ) is defined as a state of relative hypomobility within a portion of the joint’s range of motion with subsequent altered structural (positional) relationships between the sacrum and ilium (Dreyfuss et al 1994).

Numerous motion tests for diagnosing SIJ dysfunction have been described in the literature (van der Wurff et al 2000a & b). None is superior to another illustrating that physiotherapists should be suspicious with regard to the clinical relevance claimed by some authors. In general, motion tests of the SIJ can be reduced to 3 main directions: backward motion of the ilium (‘spine test’), forward motion of the ilium (‘overtake phenomenon’, forward flexion test, Gillet test, standing flexion test), and lateral motion of the ilium (latero-flexion test). As an example we shall focus on the Gillet test, the most extensively described test in this field (Gillet & Liekens 1981).

Requirements for testing, instructions to client and monitoring: The patient stands with the lumbar spine toward the seated examiner, with hands grasping a table on either side to maintain balance. The examiner applies a set of 8 manual contacts (4 on each side), described as:
1. One thumb is placed on the L5 spinous process. The other thumb is placed cranialateral to the posterior superior iliac crest (PSIS).
2. One thumb is placed on the S1 spinous process. The other thumb is placed on the outer rim of the PSIS.

Commentary
Recently, Laslett (2006) published an excellent commentary on pain provocation tests for diagnosis of SIJ pain. He stated that ‘SIJ pain is quite different from SIJ dysfunction and the concept is hypothetical at best’. I am in complete harmony with his opinion. The premise that the SIJ is a source of low back pain is attributed to the assumption that the SIJ is capable of motion. Walker (1992) concluded, after a review of 96 articles, that very small motion of the SIJ (‘a few degrees of rotation or millimeters of translation’) occurs as a coupling mechanism. Motion at the SIJ suggests a quantity of motion similar to other synovial joints which, it appears, is not the case. From a clinical perspective it is preferable to first identify a subgroup of low back pain patients with SIJ pain using the strategy proposed by Laslett in 2005. Within the subgroup of patients with SIJ pain, the therapist can then apply the mobility test for the SIJ in an attempt to localise the direction of dysfunction. Future research should focus on this hypothesis.

In summary, mobility tests applied solely for the SIJ seem to be not valid. The most appropriate algorithm is to identify patients with SIJ pain where the pain is not central, the pain is localised over the ‘SIJ area’ and not over the ‘ischial tuberosity area’, and three or more positive SIJ provocation tests are present. In addition, the mobility test for the SIJ can at best give some information about the quality of motion in the SIJ.

Peter van der Wurff
University Medical Centre Utrecht, The Netherlands

References