

CRITICAL REVIEW ON ASSESSMENT TECHNOLOGIES OF PELVIC FLOOR MUSCLES

Hypothesis / aims of study

The aim of this study was to conduct a critical review to systematize the information contained in the databases about technologies for the assessment of pelvic floor muscles (PFM). The hypothesis of this review is related to the falls of that technologies used in the evaluation of PFM and discuss the limitations of each technology.

Study design, materials and methods

Papers were searched in Medline, PubMed, Lilacs, SciELO and Cochrane Library, were selected to assess the female PFM by means of surface electromyography, dynamometry and perineometry, including articles in Portuguese (p) and english. Was used to search the following descriptors: eletromiografia (p), dinamômetro (p), perineômetro (p), assoalho pélvico (p), electromyography, dynamometer, perineometer and pelvic floor.

Results

There are many devices found in the literature to assess of the PFM, highlighting the electromyography (EMG), dynamometry and perineometer. The EMG records the amplitude of contraction in microvolts (μV), and then it shows the function and not the force like some researchers say. In the EMG devices, they have some different probes that change conform the model (1). This makes confuse comparison of data between papers and also on the diameter of the probe, whether it is in contact with the vaginal wall as there are different diameters of the vaginal canal which depend on age and other factors. The perineometer keeps records of vaginal squeeze in which, depending on the device being used, the probe inserted into the vaginal canal can be manual inflated until the patient reports that coupling in the vaginal wall, or perform the insufflation automatically. However, in some cases the probe is coupled to the vaginal wall and can change the real dates, or is not enough near the vaginal wall. Other difference between the probes of perineometer is on standardization in the measurement record, that vary in mmHg or cmH_2O (2). The dynamometer records the pelvic floor muscle strength in Newton, and has been highlighted in the assessment of pelvic floor. Most equipment consists of two blades with strain gauges, however, one accomplish that laterally rating is poor, moreover, the diameter of the device has a minimum and maximum manually regulated opening which may negatively influence the results (3). We note that many papers try to compare one contraction with another contraction of PFM in the same patient, either the same or different equipment, it is not viable because a contraction is different by other, further because of their muscle composition, 70 % of tonic fibers and 30 % of phasic fibers. Therefore, to compare different devices with different contractions in the same patient, can result in erroneous assessment.

Interpretation of results

Equipment have been developed in recent years to separate the assessment of pelvic floor, however, there are still biases to be improved and perfected. It is essential that there is an objective and complete assessment of MAP for the assessment of each woman to be more effective and faster. Each device has already developed a unique probe evaluation, however only one was found who had two sizes. We know that every woman has a different dimension, and thus, the probe must respect the anatomic profile of each woman, which can influence the data. The location of the sensors in the probe is also a concern and there is still doubt the best location of these. It is noticed that in many papers there is a great concern that is always the same so there is an evaluator reliability of the data, including the verification of the reliability of the equipment. This feature is considered negative, it is critical that no investigator bias, since this should reproduce their data objectively.

Concluding message

The data obtained by EMG, perineometer and dynamometer are very important, however as the divergence of the apparatus, probe and method of assessment to be used complicate their inter and intra data reliability and reproducibility. There is no standardization on the questions presented above, which are of great importance, making it impossible to comparison between researches. The development of a device that records the profile of MAPs in a single contraction (force, pressure and amplitude of contraction at the same time), it is necessary, since a contraction will always be different from each other, making it difficult to compare the data obtained by different equipment. Considering the results, we propose the development of a device that minimizes the biases of each device and having reliable data, so you get wide clinical application, without the worry of the influence of the evaluator on the results, in other words, to provide data objective and easily reproducible profile of the pelvic floor by any reviewer.

References

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Disclosures

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