



ORIGINAL ARTICLE

Comparative assessment of tactile sensitivity between undergraduate and postgraduate health sciences students



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Received 17 December 2014; revised 26 July 2015; accepted 10 September 2015

KEYWORDS

Undergraduate education;
Postgraduate education;
Palpation;
Touch perception;
Teaching

Abstract *Background:* Manual tactile sensitivity is a necessary skill for accurate manual palpation. Although manual palpation is a core subject in most health sciences curricula; no studies have analyzed the evolution of touch sensitivity during the different educational levels.

Objective: The present study aims to compare manual tactile sensitivity in two groups of physical therapists: undergraduate-trained vs. postgraduate trained.

Methods: Twenty-two physical therapists with an undergraduate education and 17 physical therapists with postgraduate school education completed a haptic test consisting in the tactile recognition of two geometric figures. The accuracy of figure reproduction, time of figure exploration and student's perception of task difficulty were scored.

Results: Therapists with postgraduate school training showed better accuracy than undergraduate students in the reproduction of the more difficult figure. Moreover,

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postgraduate students spent less time on exploration, and they rated the recognition of the simpler figure easier than the undergraduate-trained students.

Conclusions: Postgraduate school-trained physical therapists presented greater touch sensitivity than undergraduate-trained physical therapists. Teaching strategies used during the different educational periods may contribute to the enhancement of tactile sensitivity and to the improvement of manual palpation accuracy in health science students.

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Implications for practice

- Touch sensitivity is a paramount skill for developing expertise in manual palpation.
- Touch sensitivity is higher in physical therapists with postgraduate education than in those with undergraduate education.
- Several teaching strategies, such as repetitive practice, the provision of feedback and the emphasis on anatomical description may contribute to the development of tactile sensitivity in manual palpation.

Background

Manual palpation constitutes an essential element of diagnosis in many medical procedures and can be considered an essential basic method.¹ Manual palpation is one of the components of clinical examination most commonly taught and practiced in health sciences curricula as a means to identifying anatomical regions; exploring pain, consistency, resistance and mechanosensitivity of body tissues and evaluating symmetry and movement quality.^{2,3} Manual palpation is standard procedure for detecting organ abnormalities, for example, in breast or lymph nodes^{4,5} or perineal alterations.^{6,7} Furthermore, it has been proven effective for the diagnosis of many neuromusculoskeletal dysfunctions, such as the detection of muscle, tendon and ligament injuries,^{8–10} problems of muscle strength and contractility^{11,12} and joint dysfunction.^{13,14}

Manual palpation of body structures is a core topic in the teaching curricula in health sciences. Progressive acquisition of motor and sensory skills required for clinical practice are aimed to be developed throughout the educational period.¹⁵ Specific training has shown to be fundamental in the improvement of palpation skills.^{16,17} In addition, some studies have reported that the level of studies (undergraduate or postgraduate) affects

reproducibility and validity in manual palpation.^{18–20}

The validity of palpation techniques as diagnostic tools depends on the reliability, sensitivity and specificity of the procedure,²⁰ which are key factors for diagnostic accuracy.^{21,22} Nevertheless, despite the continuous technique evaluation and the improvement of teaching strategies, intra- and inter-examiner reliability of palpatory assessments remains low in some procedures, such as in the determination of mechanosensitivity in nerve palpation.^{2,23} Moreover, scores of specificity and sensitivity do not always coincide in manual palpation diagnostic procedures. Thus, manual palpation has shown good specificity but low diagnostic validity in discriminating between patients and controls in some dysfunctions, such as temporomandibular disorders,²⁴ and, on the other hand, some other manual palpation techniques (e.g., tendon palpation in patellar tendinopathy, joint-line tenderness palpation in meniscal pathology) have shown good positive predictive values but poor specificity.^{25,26}

Poor reliability in manual palpation may lead to a questionable validity of the procedure, thereby challenging its clinical applicability.²⁷ Moreover, some studies have associated the lack of precision in identifying some anatomical locations to errors in kinematic measurement and inconsistencies in the diagnosis and subsequent treatment.^{28,29} Palpation accuracy varied depending on the anatomical body region, presence of anatomical abnormalities, patient characteristics (ex. obesity), palpation technique and examiner experience.^{19,30} Some authors have suggested that poor reliability of manual judgment may be due to the difficulty in judging the different tactile components of the body structure.³¹

It seems plausible that touch sensitivity increases with training, yet there is little research about the influence of educational level in health students' touch sensitivity. This study aims to compare touch sensitivity in physical therapists with two levels of education (undergraduate-trained physical therapists vs. physical therapists

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