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Test–retest reliability and comparability of paper and computer questionnaires for the Finnish version of the Tampa Scale of Kinesiophobia

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Abstract

Objectives To estimate the internal consistency, test–retest reliability and comparability of paper and computer versions of the Finnish version of the Tampa Scale of Kinesiophobia (TSK-FIN) among patients with chronic pain. In addition, patients' personal experiences of completing both versions of the TSK-FIN and preferences between these two methods of data collection were studied.

Design Test–retest reliability study. Paper and computer versions of the TSK-FIN were completed twice on two consecutive days.

Participants The sample comprised 94 consecutive patients with chronic musculoskeletal pain participating in a pain management or individual rehabilitation programme. The group rehabilitation design consisted of physical and functional exercises, evaluation of the social situation, psychological assessment of pain-related stress factors, and personal pain management training in order to regain overall function and mitigate the inconvenience of pain and fear-avoidance behaviour.

Results The mean TSK-FIN score was 37.1 [standard deviation (SD) 8.1] for the computer version and 35.3 (SD 7.9) for the paper version. The mean difference between the two versions was 1.9 (95% confidence interval 0.8 to 2.9). Test–retest reliability was 0.89 for the paper version and 0.88 for the computer version. Internal consistency was considered to be good for both versions. The intraclass correlation coefficient for comparability was 0.77 (95% confidence interval 0.66 to 0.85), indicating substantial reliability between the two methods.

Conclusion Both versions of the TSK-FIN demonstrated substantial intertest reliability, good test–retest reliability, good internal consistency and acceptable limits of agreement, suggesting their suitability for clinical use. However, subjects tended to score higher when using the computer version. As such, in an ideal situation, data should be collected in a similar manner throughout the course of rehabilitation or clinical research.

Keywords: Fear avoidance; Test–retest; Intraclass correlation; Chronic pain

Introduction

Psychological factors are implicated in the transition to chronic low back pain [1], as well as in predicting a patient's return to work [2]. Research shows that pain-related fear can be more disabling than the pain itself [3]. A previous study demonstrated that fear of movement and fear of (re-)injury are better predictors of functional limitations than biomedical parameters [4]. In particular, fear of movement is significantly associated with disability in patients with chronic low back pain [5,6]. Decreasing fear of movement is one goal in pain management and rehabilitation; reduction in pain-related anxiety seems to predict improvement in functioning, affective distress, pain and pain-related interference with activity [7].

The Tampa Scale of Kinesiophobia (TSK) is one of the most frequently employed measures for assessing

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pain-related fear. It has been translated into Dutch [8], Swedish [9], French [10], Norwegian [11], Portuguese [12], Italian [13] and Spanish [14]. The psychometric properties of the TSK have been tested widely in different patient populations. Its internal consistency has been found to be acceptable within the general population [15] and in patients with acute low back pain [16,17], chronic low back pain [8,13,18,19], fibromyalgia [18] and chronic fatigue syndrome [20–22], as well as among mixed acute [14] and chronic pain populations [14,23]. The test–retest reliability of the scale has been found to be acceptable in patients with acute low back pain [16], chronic low back pain [13,19], mechanical neck pain [24], shoulder pain [25] and chronic fatigue syndrome [21]. Its validity has been demonstrated within the general population [15] and in patients with acute low back pain [16], chronic low back pain [13,19], neck pain [24], chronic fatigue syndrome [20,22], shoulder pain [25] and temporomandibular disorders [26], as well as among mixed acute and chronic pain populations [14].

The up-to-date psychometric properties of the Finnish version of the TSK (TSK-FIN) have not been studied, and, to the authors' knowledge, there are no studies providing information on the comparability of different methods for completing the TSK.

In clinical research and rehabilitation, most outcome measures are self-reported questionnaires, traditionally completed with paper and pencil. A computer-based questionnaire offers a number of advantages over paper-and-pencil versions. Missing values or incomplete data can be reduced by requiring completion of an item before the patient can move on to the next question, and out-of-range values can be eliminated. Personnel time can be saved by reducing the amount of time spent entering data and handling paper, which also increases the accuracy of data by reducing typing errors. In addition, computer software scores the patient responses immediately and creates summary information [27,28]. A meta-analytic review by Gwaltney *et al.* [29] concluded that extensive evidence indicates that paper and computer versions of self-reported questionnaires are equivalent.

Objectives

The aim of this study was to estimate the internal consistency, test–retest reliability and comparability of paper and computer versions of the TSK-FIN among patients with chronic pain. In addition, patients' personal experiences of completing both versions of the TSK-FIN and their preferences were studied.

Methods

Patients

In total, 134 consecutive patients with chronic musculoskeletal pain were recruited; these patients were referred by the Social Insurance Institution of Finland to the inpatient pain management programme or another individual rehabilitation programme at ORTON Rehabilitation Centre between 2005 and 2006. None of the patients declined to participate. Due to the overlapping activities in the rehabilitation programme (e.g. individual meetings with rehabilitation experts), complete data were obtained for 94 patients. The main goal of the pain management and individual rehabilitation programmes was for patients to regain their overall functioning. Other goals included mitigating the inconvenience of pain and strengthening their own means of survival. The group rehabilitation design consisted of physical and functional exercises, evaluation of the social situation, psychological assessment of pain-related stress factors and personal pain management training. The programme was conducted by a multidisciplinary rehabilitation team, including a physician, psychologist, social worker, two physiotherapists and an occupational therapist.

The exclusion criteria of the pain management programme were primary fibromyalgia and major psychiatric disorders. Prior to the pain management programme, the pain had been examined carefully by a specialist at the pain clinic of Helsinki University Central Hospital in order to identify conditions for specific treatment, and to plan and adjust pain-related and other medication.

All patients participated in routine rehabilitation, volunteered to participate in the study and gave their informed consent. The patients did not receive any compensation for participating in the rehabilitation programme.

Measurements and evaluations

Questionnaires completed at the time of admission to the rehabilitation programme provided baseline and clinical data. During the rehabilitation programme, all subjects completed paper and computer versions of the TSK-FIN on two consecutive days with an interval of 7 to 8 hours. The two versions of the TSK-FIN were introduced in blocks of five to eight patients in a random order on the morning of Day 1. If a subject completed the paper version in the morning of Day 1, they subsequently completed the computer version in the afternoon of the same day. On Day 2, the order was reversed.

Kinesiophobia

The TSK-FIN was used to assess fear of movement/(re-)injury. The original English version [30] was translated into Finnish and then translated back into English by authorised translators. The English versions were then compared, and the translators and the original author of the article resolved differences via the consensus procedure. The TSK-FIN is a 17-item questionnaire, with four possible responses for each item (strongly disagree, disagree, agree and strongly agree). After inverting Items 4, 8, 12 and 16, a sum score is calculated.