

## Formulation of Integrated Proprioceptive Screening Scale and Testing of its Sensitivity, Reliability and Validity

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### Abstract

Proprioception is the awareness of the body position, orientation, movement and sensation of force. Proprioception is necessary to establish an accurate, efficient and coordinated response of efferent system to the demands of environment. As an evaluation is important to establish the goal of intervention in any patient, so an integrated proprioceptive assessment tool is required to examine proprioception deficit qualitatively and quantitatively. There are no evidences found, regarding an integrated approach of evaluating proprioception. In this study an integrated proprioceptive assessment scale was formulated covering all possible and related proprioceptive testing methods. The mean and SD was taken for each quantitative testing procedure documented and furthermore the test-retest reliability for each new measurement procedure was tested. The sensitivity, validity and the reliability of the scale was examined.

**Key words: Angular error, Distance error, Proprioception score, Integrated Scale, Reliability, Sensitivity, Validity**

### Introduction:

The sensory motor system covers the whole process from a sensory stimulus to muscle activation; proprioception is the process occurring along the afferent pathways of sensory motor system. (Lephart *et al*, 2000). It is the awareness of the body position, orientation, movement and sensation of force (Sherrington, 1906). Disturbances of somatic sensation, especially proprioception may have detrimental functional implication consequent upon poorly controlled posture and movement. Evaluation of proprioception as a part of routine neurological examination is generally qualitative in nature, and it precludes accurate and reliable identification of subtle sensory variation (Leibowitz *et al*, 2008). In order to provide most appropriate, client centered

care it is most of importance to use standardized outcome measure for research and clinical practice. Unfortunately there are limited somatosensory evaluation tools (especially proprioception) with established reliability and validity available for clinical practice. The motor control and recovery are influenced by sensory impairments, the poor proprioception functioning has been shown to impact a person's rehabilitation outcomes and daily activities, also may lead to unsafe situation in the home and in social settings. It is therefore useful to assess to determine functional limitation and establish intervention goals. There are many assessments being used in clinical setting but those are lacking sufficient supporting evidence. The clinician using the conventional evaluation format should use them in combination with other