



Sensory profiles as indicators of low back pain chronification.

'It is more important to know what sort of person has a disease than to know what sort of a disease a person has' Hippocrates 260-377 B.C.

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ABSTRACT OF THE RESEARCH

Background: Low back pain is clinically heterogeneous. Individuals with comparable symptoms often follow different recovery trajectories. Despite numerous identified prognostic factors, existing models explain only a limited proportion of outcome variability. Sensory processing patterns may represent regulatory characteristics relevant to pain chronification in adults with low back pain.

Objective: This thesis examined sensory profiles, conceptualized within Dunn's Model of Sensory Processing, as indicators of load-recovery regulation in low back pain. The aims were to evaluate their measurement properties, determine their prognostic value within multivariable models, and clarify their conceptual position relative to experimentally assessed somatosensory function.

Methods: A multi-study design was applied. First, the measurement properties of the Adolescent/Adult Sensory Profile were systematically evaluated and validated in adults with chronic low back pain. Second, prospective cohort studies examined sensory profiles as prognostic factors and as components of multivariable prognostic models predicting symptoms associated with central sensitization at 12 weeks. Third, associations between sensory profiles and quantitative sensory testing were explored to delineate conceptual scope.

Results: The Adolescent/Adult Sensory Profile demonstrated acceptable internal consistency and short-term stability, although overall psychometric evidence remains variable. Baseline sensory sensitivity independently predicted symptoms of central sensitization at follow-up (12 weeks). It contributed additional explanatory value within multivariable models, although explained variance remained modest. Sensory profiles were not associated with pain intensity or somatosensory detection thresholds. This suggests that sensory profiles reflect perceptual-behavioral regulation rather than laboratory-based sensory detection mechanisms.

Conclusion: Sensory profiles function as indicators of sensory-regulatory differences associated with low back pain chronification in adults. Their potential role in treatment response remains to be established. However, they expand existing prognostic frameworks by incorporating regulatory trait characteristics that may condition how individuals tolerate and recover from cumulative sensory demands.

CURRICULUM VITAE

Pieter Jan Gräper graduated as a physiotherapist from Leiden University of Applied Sciences in 2002 and subsequently specialized in manual therapy, obtaining an MSc in Manual Therapy from SOMT University of Physiotherapy and a Master-after-Master in Manual Therapy from Vrije Universiteit Brussel. His professional career combines clinical physiotherapy with experience in the Dutch Armed Forces. From 2004 to 2008, he served in the Royal Netherlands Marine Corps, followed by a position as captain and physiotherapist in the Royal Netherlands Army from 2008 to 2017. Since 2016, he has worked as a manual physiotherapist in private practice in Dalfsen and Zwolle, the Netherlands. In 2021, he started his doctoral research at Vrije Universiteit Brussel. His research focuses on sensory processing in low back pain, with particular emphasis on the measurement and prognostic relevance of sensory profiles in the transition from acute to persistent low back pain.

