

Dissertation submitted by Susanne Lüder

Title: AKTIKA – Capacity of activity (Aktivitätskapazität) of patients with back pain.

Development and evaluation of a test battery for measurement of physical
Activities in daily life

Published as eDiss at SUB Göttingen, 2014

List of contents

- 1 Introduction
- 1.1 Background
- 1.2 Explanation of main terms
- 1.3 Operationalizing of capacity of activity
- 1.4 Selection of test method
- 1.5 Aim of study
- 2 Theory: back pain
- 2.1 Definitions
- 2.2 Classification aspects
- 2.3 Epidemiological and social-economical importance
- 2.4 Management of patients with back pain
- 3 The project in „Deutscher Forschungsverbund Rückenschmerz“
- 4 Development of the test battery
- 4.1 Psychometrical properties of the test method
- 4.2 The AKTIKA test: first development steps including psychometrical results
- 5 Material and methods
- 5.1 Study design
- 5.2 Subjects
- 5.3 Parameters of study
- 5.4 Test execution
- 5.5 Statistical methods
- 6 Results
- 6.1 Sociodemographical data of patients and control participants
- 6.2 Data to the pain related parameters of the patient sample
- 6.3 Data to the severity grading of back pain of the patient sample
- 6.4 Results of the psychometrical characteristics
- 6.5 Results of the disability with respect to daily activities

6.6	Results of physical tests based on body structure and function (physical conditioning tests)
6.7	Results of the tests based on activities
7	Discussion
7.1	Discussion of social-demographical results
7.2	Discussion of results pain related parameters
7.3	Discussion of results to the severity grading of back pain
7.4	Discussion of the psychometrical characteristics
7.5	Discussion of the results of disability related to physical activity
7.6	Discussion of physical conditioning tests
7.7	Discussion of results of the maximal-lift testing
7.8	Limitations for interpretation of the study results
7.9	Summary
8	References
9	Appendix
10	Acknowledgement
11	Statutory declaration

Summary

Patients with back pain suffer basically from pain and physical activity limitations. Their performance capacity in physical activities and participation in life is reduced.

Also, national and international guidelines for back pain management contain interventions directed towards activity. An activity is the performing of a task or action and shows the personal resource of functional health.

Therefore, measurement of health-specific and physical activities are a broad Test-Outcome for health care. The question is how these activities can be measured and evaluated.

Several test methods exist which are mainly based on self-reported information or testing methods of body structure and functioning (impairment and body conditioning measurements), which give indirect knowledge of activity capacity. Recently several institutions dealing with functional restoration for working place have specialized in detailed evaluation of work specific activities, which are too expensive for wide-spread implementation.

After thorough research of scientific studies it becomes evident that there is a lack in a standardized and objective observer-based assessment method which uses real performance of physical activities. The aim of this study is the development and evaluation of such an assessment tool.

First, the usual psychometrical analyses of reliability were calculated using a new created test battery on 59 persons with back pain. Following this, an extensive analysis of concurrent validity was performed including psychological and physical conditioning test results. Finally, a cluster item analysis should reveal explaining factors.

The reliability analysis showed good results for Intra- and Retest-reliability with a comfortable practicability, and a moderate one for Inter-reliability.

It was found that AKTIKA was dependent on self-reported judgement of functional ability in the patient sample. This relation was not found in the control sample. Furthermore high correlations between results of AKTIKA-testing and body conditioning tests and fear-avoidance-beliefs was found in the patient sample. Only a moderate correlation was found in the control sample. Factor analysis in the patient sample found a single factor with 45%

explained variance. This can be interpreted as a lost variability of movement quality in the presence of back pain. This is an interesting result with potential for further research projects.

AKTIKA turns out as a test method which is economical, practical, time- and resource-efficient. Furthermore it is transparently communicated in a professional environment. It should be used for diagnostics, choice and control of therapy in a rehabilitative intervention.