Master's thesis

NTNU
Norwegian University of Science and Technology
Faculty of Medicine and Health Sciences
Department of Neuromedicine and Movement Science

Bijaya Phuyal

Measures of low back pain related disability: association between a clinical performance test, self-reported disability, and fear avoidance beliefs

Master's thesis in Master of Science in Physical Activity and Health
Supervisor: Monica Unsgaard-Tøndel
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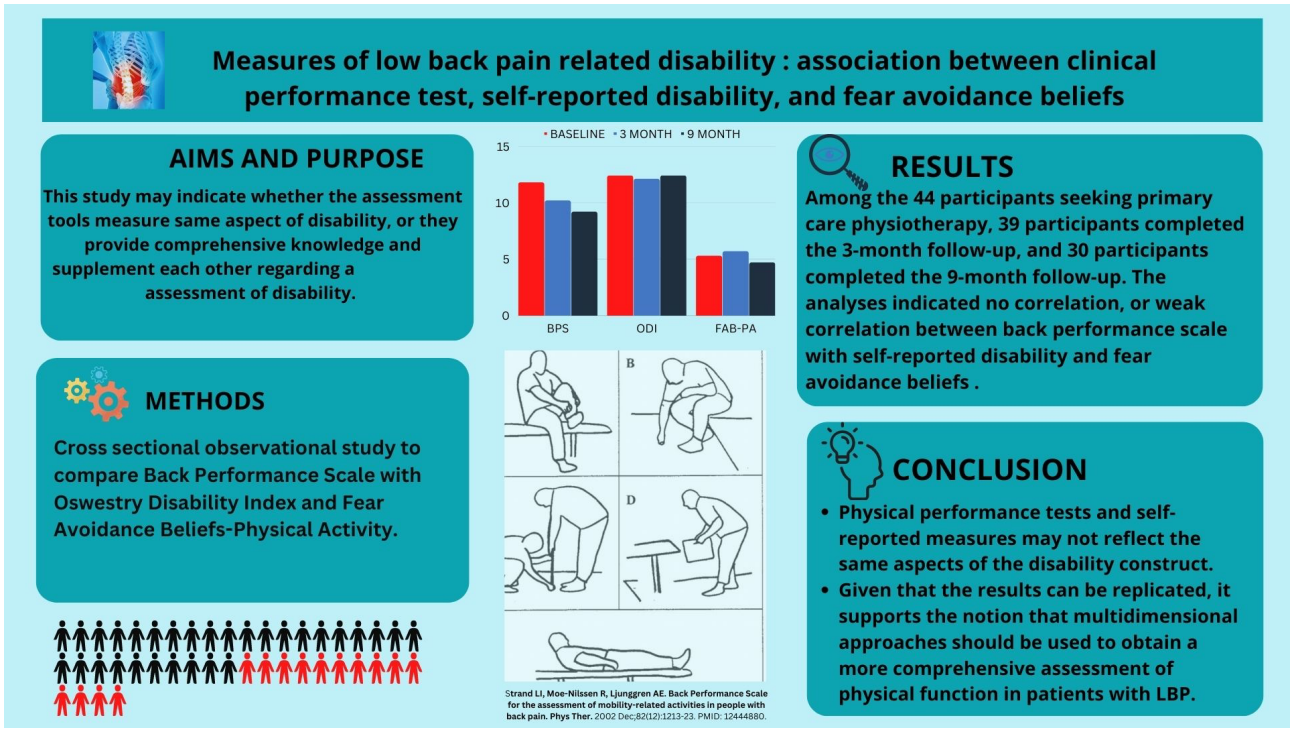

Measures of low back pain related disability: association between a clinical performance test, self-reported disability, and fear avoidance beliefs

ABSTRACT

Background: Patient's self-report measures and clinician-measured performance tests are used to evaluate disability outcome in low back pain (LBP) patients. The level of agreement between self-report measure and clinical performance test are not well established. Furthermore, clinical performance test can be influenced by fear avoidance beliefs buts its relation is not fully understood.

Objective: We aimed to investigate the association of clinician measured performance test with self-reported disability and fear avoidance beliefs in patients with LBP.

Design: Cross-sectional observational exploratory study.

Methods: 44 patients with age above 16 years, receiving primary care physiotherapy were included. Clinician-measured performance test was evaluated with back performance scale (BPS), self-reported disability was evaluated with Oswestry Disability Index (ODI) and fear avoidance beliefs was evaluated with fear avoidance belief questionnaire for physical activity (FAB-PA) at baseline, three months, and nine months.

Results: Among the 44 included patients, 30 persons completed the study. At baseline, the correlation between BPS and ODI was weak, statistically significant with r=0.37 (p = 0.012) and there was no correlation between BPS and FAB-PA (r=0.06, p=0.704). At 3 months, the correlation between BPS and ODI was poor (r=0.27, p=0.089) and the correlation coefficient between BPS and FABQ-PA was weak, statistically significant with r=0.43 (p= 0.008). At 9 months, correlation between BPS and ODI was also weak with statistically significant at p = 0.015 with r= 0.44. There was no correlation between BPS and FAB-PA (r=0.21, p=0.275).

Conclusion: Clinician-scored performance test and self-reported measures was not, or only weakly correlated in the present study, and the instruments may reflect different aspects of the disability construct. If the results of the present study can be replicated, it supports the notion that multimethod, and multidimensional approaches should be used to obtain a more comprehensive assessment of physical function in patients with LBP.

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ABBREVIATIONS:

LBP = Low Back Pain

ODI = Oswestry Disability Index

BPS = Back Performance Scale

FAB = Fear Avoidance Beliefs

FABQ-PA = Fear Avoidance Scale Questionnaire for Physical Activity

NPRS = Numeric Pain Rating Scale

BMI = Body Mass Index

INTRODUCTION:

Low back pain (LBP) represents the leading cause of years lived with disability globally, ranking first in both developed and developing countries (1). The mean lifetime prevalence of LBP is estimated to be 39%, with a mean point prevalence of 18% (2). The costs of LBP constitute a major burden to health care systems and society (3). LBP is the most frequent musculoskeletal symptom with a 1-year prevalence of 53% reported in Norway (4). Most commonly, a specific pathoanatomical cause cannot be identified for LBP, so its most prevalent form is nonspecific LBP (nsLBP) (5). LBP is commonly accompanied by limitations in daily living (6). Reduction of pain and restoration of function seem to be main treatment goals in patients treated by physiotherapists in the primary health care service (5, 7, 8). Good back function is associated, among other things, with the back being able to move with less pain and freely in all planes (9, 10). To adapt therapeutic strategies for functional restoration, it is important to identify modifiable barriers for physical function by adequate assessment tools.

Clinical evaluation of physical functioning in patients with chronic pain relies on a combination of anamnesis, observation of spontaneous behavior, clinical assessment of impairments, instructed movements and physical functions, and patient self-report by questionnaires. Patients' self-reported measures of functional abilities are valued as they capture how patients experience pain interference in daily activities. The Oswestry Disability Index (ODI) is a commonly used and recommended condition-specific questionnaire for measuring perceived disability due to back pain (8-10). It has demonstrated good psychometric properties in a wide variety of clinical care and research settings(11).

The use of self-reported disability questionnaires is an inexpensive, practical and useful disability measure, however the information from these questionnaires may not necessarily reflect the real capacity and disability in daily functioning (12). Self-reported measures of disability may be subject to a perceptual or belief mismatch. There may be differences between patients' actual function and how they perceive their function (13), and there may be differences in what patients report and in what practitioners conclude based on clinical evaluation. Consequently, assessing disabilities using different perspectives such as the patient's self-report combined with performance testing may give a better basis for adapting treatment strategies and individually tailoring the management.

There have been substantial efforts among researchers to develop physical performance tests of activity limitation in back pain (14-17). Preferably, simple standardized tests that require minimal equipment and are easy to administer and interpret should be

applied in general clinical practice, as well as in clinical research. The Back performance Scale (BPS) consists of five physical tests of compound activities requiring dynamic flexibility of the trunk (18). Internal consistency of test scores has been shown to be high, and the BPS has been found to be a reliable and valid outcome measure, as well as responsive to clinically important change (15, 17). Previous research indicate that the impact of certain psychosocial factors on clinician-measured performance tests is different from that on patient self-reports of activity limitation (19). Although patients' attitudes, expectancies of pain or reinjury, and psychologic distress levels can have some effect on patients' performance, the impact of such factors seem to be stronger on patient self-reporting of activity limitation (19-21).

During this decades, explanatory models of back pain adopted by the medical professions have changed from the traditional biomedical and postural model to the biopsychosocial model (22). The fear avoidance model describes a cascade of events after pain that is perceived as threatening (23). Fear avoidance beliefs refers to avoidance of movements or activities due to fear of reinjury. It has been identified in previous studies as a predictor for disability correlating strongly with self-reported measures on pain-related disability in chronic LBP (24, 25) . Another study has indicated that pain-related fear has significant association with physical functions and performance in acute LBP, showing pain-related fear (resulting in activity avoidance) can predict physical function and performance (26). Elevated fear avoidance beliefs have been shown to be correlated to reduced performance measured by back performance scale in one previous study ($r = 0.685$, P value < 0.01) (27). However, another study (15) found no correlation between BPS and FABQ in patients with back pain ($r = 0.05$, $P < 0.80$). Further studies are needed to understand the relation between fear avoidance beliefs and physical performance test as most of the previous studies used self-reported measures.

In summary, the level of discrepancy/connection between self-report and performance tests is still unclear. To apply disability and fear avoidance measures for outcome evaluation, the association between the measurements for patients attending therapy needs to be established, since the outcomes of self-report and performance tests have shown varying and modest correlation in previous studies (15, 28-31). It is also important to understand whether the various tools are equally efficient to provide comparable results if these measurements are to be used to evaluate outcomes repeatedly.

Therefore, the purpose of this study is to investigate whether a clinician-measured performance test is correlated with self-reported disability and fear avoidance beliefs in patients with LBP seeking primary care physiotherapy. The result of this study may

be useful to indicate whether the instruments measure same aspect of disability, or they provide comprehensive knowledge and supplement each other in the assessment of pain-related disability.

Purpose and research question

The aim of the project is to investigate the correlation between the Back performance scale and i) Oswestry disability index and ii) Fear-avoidance beliefs questionnaire for physical activity in patients attending physiotherapy for LBP. Specifically, we will investigate the correlation between the instrument scores at three time points (baseline, 3 and 9 months).

METHODS

Design and Study population

The study population in the current study is based on a prospective observational study of patients with non-specific LBP receiving primary care physiotherapy in the period from May 2014 to March 2017 (32, 33). Inclusion criteria for participating in this study were current non-specific LBP as the primary complaint and age above 16 years. Participants that were unable to read or understand Norwegian language, had severe neurologic signs, were pregnant, had recent back surgery, and who were not working (i.e., reported to be retired or students) were excluded. Eligible patients were invited to the study by their physiotherapists at the first time of contact. The baseline data collection was performed before the first consultation with the physiotherapist, and follow-up measures was performed at approximately three and nine months.

Variables

Evaluation of activity limitation by physical performance will be compared to evaluation by self-report.

Clinical performance test

Physical function was evaluated clinically by the Back performance scale (BPS). BPS is a validated and clinically useful test battery for examining mobility in the back and trunk when performing activities (15, 34, 35). It consists of five tests (Figure 1); sock test, pick up test, roll up test, fingertip to floor test and lifting test. The test is scored on a four-part scale from 0-3, which together gives a sum score from 0-15 where a high score indicates a significant functional limitation. The complete test protocol is presented in Magnussen et al. (15).

The back performance test includes the following components:

Sock test

The simulated activity of putting on a sock is performed in a standardized way. The participant sits on a firm, high bench, the feet not reaching the floor and is asked to grab the toes with both hands, one leg at the time. The least reach is scored.

Pick-up test

The participant picks up a curled piece of paper from the floor in an optional way.

Roll-up test

The participant rolls up slowly, with arms relaxed, from supine to a long-sitting position.

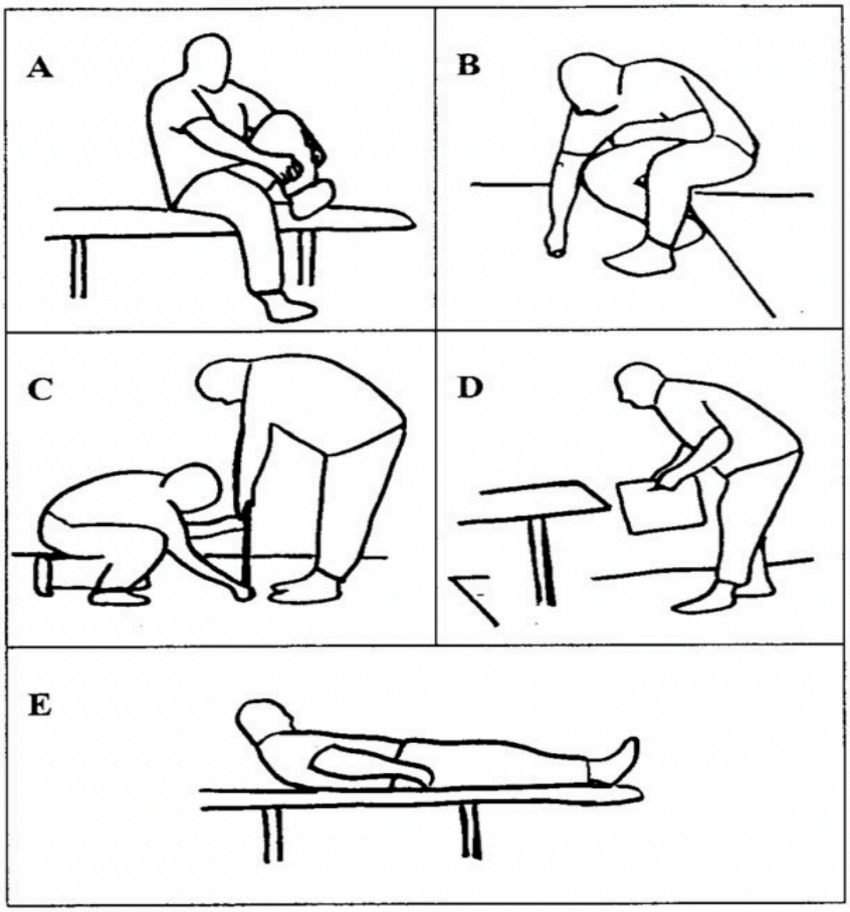
Fingertip-to-floor test

The participant stands on the floor, feet 10 cm apart and knees straight, and is asked to reach to the floor with the fingertips. The distance between the tip of the middle finger and the floor is recorded.

Lift test

The patient is asked to repeat lifting a box (1.35 kg, sized 0.36cm */0.36cm */0.25cm, containing a sandbag of 5 kg from the floor to a table (height76 cm) and back to the floor for 1 min. The number of lifts is recorded.

Figure 1. Test tasks in Back Performance Scale. (A) Sock Test (B) Pick-up Test, (C) Fingertip-to-Floor Test, (D) Lift Test, (E) Roll-up Test. (34)



Self-reported disability

Self-reported disability was measured by the Oswestry Disability Index (ODI). ODI is a reliable and validated outcome measure for evaluation of LBP (11). It includes 10 items (pain intensity, personal care, lifting, walking, sitting, standing, sleeping, work, social life and travelling) with 6 score levels from 0 to 5 points. This total score of 0-50 points is transformed to 0-100 scale by multiplying the score by 2. The final scores are interpreted as: between 0-20 have minimal disability, between 21-40 have moderate disability, between 41-60 have severe disability, between 61-80 are crippled and between 81-100 are bed-bound or exaggerating their symptoms.

Fear-Avoidance Beliefs Questionnaire for physical activity

Fear-avoidance beliefs were assessed using fear avoidance belief questionnaire (FABQ), which is a self-report health questionnaire. It is a well-adapted and validated measure for patients with low back pain (25). It consists of two categories of sub-scales of fear avoidance beliefs related to physical activity and fear avoidance beliefs related to work activity. The total score on FABQ-PA (range 0–24) was calculated based on four items. Higher scores in the scale indicate more fear-avoidance beliefs in individuals.

Other variables

We assessed other variables as age (years), gender, body height (cm), weight (kg), education, work status and number of pain sites by questionnaire. Pain intensity was calculated using Numeric Pain Rating scale (NPRS). The scale consists of number between 0 to 10, where 0 indicate "no pain" and 10 indicate "worst possible pain". Patient indicated their number of pain sites by marking pain-affected areas on a pain diagram with nine possible musculoskeletal pain areas: neck, shoulders/upper arms, upper back, elbows, low back, wrists/hands, hips, knees, and ankles/feet.

Statistical analysis

Data analysis was conducted using the SPSS (version 27) statistical software program. Descriptive statistics were used to examine the demographic and test data. Q-Q plot and histogram were used to examine the normality of the data. Due to the non-normality distributed data, a non-parametric mode was used. The strength of the relationship between variables were calculated using Spearman´s rho correlation(r). This correlation reflects the association between the two variables. In Spearman's correlation coefficient, intervals ranges from +1 to -1, where +1 is positive and strong correlation and -1 is negative strong correlation and 0 is considered having no correlation. Magnitude of correlation coefficients were interpreted as "little to no relationship" in between 0.00–0.25, "weak" in between 0.25–0.50, "moderate to good" within 0.50–0.75, and "good to excellent" above 0.75 (36). The level of statistical significance was set at $p < 0.05$.

Research ethics

The mother study, Physiotherapy for Low back pain in Trondheim (PLOT) was approved by the Regional Committee for Ethics in Medical Research (project no. 2013/2244 REK Mid-Norway), and the participants provided written informed consent. An extended project period was approved by the committee to include this master study, The study was carried out according to the Declaration of Helsinki. The PLOT study has been registered at clinicaltrials.gov.

RESULTS:

Among the 44 participants, 39 participants completed the 3-month follow-up, and 30 participants completed the 9-month follow-up. The descriptive data of the participants at baseline, 3 months and 9 months are presented in Table I. At baseline, 28 out of 44 participants were female and mean age at baseline was 42.8 years.

At baseline, the BPS mean score was 5.5 (SD =3.3), ODI mean score was 23.6 (SD =12.4) and average score of FABQ-PA was 8.8 (SD=5.3). (Table I)

After 3-month follow up, the BPS mean score was 2.9 (SD =2.8), ODI mean score was 14.4 (SD =12.1) and average score of FABQ-PA was 5.9 (SD=5.7). The mean scores for ODI, BPS and FAB-PA showed decrease in its value compared with baseline, indicating lower levels of disability and fear avoidance beliefs in that timepoints respectively. Similar to three months, the mean scores (SD) for BPS, ODI and FAB-PA were 2.1(2.6), 12.4(10.6) and 4.4 (4.7) respectively at nine months follow up.

Table I: Participant characteristics at each time of follow-up (baseline, three months, and nine months)

Characterstics	Baseline	3 months	9 months
Number of participants	44	39	30
Age, mean (SD)	42.84 (14.82)	41.67 (15.05)	45.1 (14.7)
Gender, female, n (%)	28 (64)	25 (63)	17 (57)
Height, mean (SD)	1.72 (0.93)	1.72 (0.93)	1.76 (0.76)
Weight, mean (SD)	76.4 (17.1)	76.9 (17.7)	80 (16.6)
BMI, mean (SD)	25.4 (4.8)	25.5 (5.1)	25.6 (4.5)
Average pain', mean (SD)	5.4 (2.2)	2.6 (2.1)	2.6 (2.3)
Pain sites, mean (SD)	2.9 (1.6)	3 (1.5)	2.6 (1.4)
BPS*, mean (SD)	5.5 (3.3)	2.9 (2.8)	2.1 (2.6)
ODI, mean (SD)**	23.6 (12.4)	14.4 (12.1)	12.4 (10.6)
FABQ-PA*, mean (SD)**	8.8 (5.3)	5.9 (5.7)	4.4 (4.7)

' Numeric pain rating scale: 0 = 'no pain'; 10 = 'worst possible pain'

*BPS: Back Performance Scale. Range: 0 = 'not disabled at all'; 15 = 'completely disabled'.

**ODI: Oswestry Disability Index. Range: 0 = 'not disabled at all'; 100 = 'completely disabled'.

***FABQ-PA: Fear Avoidance Beliefs Questionnaire for physical activity. Range: 0 = 'no beliefs'; 30 = 'strong belief'.

Table II: Correlation between back performance scale with Oswestry disability index and fear-avoidance beliefs for physical activity.

	Correlation (r) (95% Confidence Interval)	**Significance level**
Baseline		
BPS - ODI	0.37 (0.080 - 0.611)	0.012
BPS - FAB PA	0.06 (-0.251 - 0.036)	0.704
3 Month		
BPS - ODI	0.27 (-0.053 - 0.551)	0.089
BPS - FABQ PA	0.43 (0.114 - 0.662)	0.008
9 Month		
BPS - ODI	0.44 (0.081 - 0.695)	0.015
BPS - FABQ PA	0.21 (-0.181 - 0.543)	0.275

BPS= back performance scale; ODI= Oswestry Disability Index; FABQ-PA= fear avoidance belief-physical activity. $p < .05$

At baseline relation between BPS and ODI was found statistically significant ($p = 0.012$). Correlation (r) value of 0.37 indicated that there was a weak correlation between these two measures. (Table II). the correlation between BPS and FAB-PA was poor ($r=0.06$, $p=0.704$)

At 3 months, the correlation between BPS and ODI was ($r=0.27$, $p=0.089$). The correlation coefficient between BPS and FABQ-PA was statistically significant at 95% CI ($p= 0.008$), indicating a weak correlation ($r=0.43$) based on the established cut-offs.

At 9 months, correlation between BPS and ODI was found statistically significant at ($p = 0.015$) with $r= 0.44$ indicating weak association. The correlation between BPS and FAB-PA was poor ($r=0.21$, $p=0.275$). (Table II).

DISCUSSION:

This study assessed the relation between BPS and self-reported disability measured by ODI and fear avoidance beliefs (FAB-PA) at three timepoints. Overall, the study did not find strong correlation between back performance scale and self-reported disability. However, on baseline and 9 month follow up we could see weak correlation between BPS and ODI. For BPS and FABQ-PA, only for 3-month follow-up, the relation was significant with weak correlation.

The result of our study was in line with the previous study of non-specific chronic LBP patients where cross sectional correlation between BPS and ODI was moderate; r=0.49 (31). This comprehensive study stated that the construct of the self-reported measure is moderately different from the construct of BPS, as ODI was more strongly associated with 6-minute walking distance test than BPS. In a previous study of LBP population using BPS and RMDQ, a different self-report disability measure, there was moderate correlation similar to our study (15). The correlation between back performance scale and ODI was also comparable to other studies which applied different functional scale and self-reported scales for disability measurement (37-39). These studies of LBP population used mainly RMQD as self-report measure, but different set of battery of test as clinician-measured test that was used to measure ability to perform certain tasks. The set of battery of tests in previous studies included various activities like lifting and carrying to lumbar flexion, 5-minute walk, 50-foot walk, loaded reach, sit to stand in another study and Isernhagen work system for functional evaluation capacity was also used. The test-retest reliability for these instruments varied from fair to good, while BPS had excellent reliability and validity. Based on this study, although the assessment goals of the various tools are similar, the findings of self-report and clinician-measured disability measurements are different, and correlations between the measures point to weak concurrent validity.

Secondly, we found weak correlation (on 3-month) to no correlation between BPS and FABQ over the three timepoints. This is in more accordance with similar studies done previously (15, 40). The present study had used the subscales of FABQ for physical activity. In a prior study of LBP population, it was determined that there is no correlation between fear in LBP and the total score of BPS (15). The lack of correlation was explained in the way that fear associated with LBP is associated with the future rather than the current situation, but BPS is not predictive (15). The FABQ is a tool that predicts long-term disability in low back pain population (41). However, in a study of chronic LBP population, the correlation between BPS and FABQ was strong (0.685, $p < 0.01$) indicating elevated levels of avoidance activity due to fear is associated with

impairments in performance (27). According to Waddell (41), the key point is that fear of pain is more about expectancy of future pain than about current condition. In addition to this, a study of LPB patient group states that being a patient specific phenomenon, fear avoidance belief may have limited efficacy for capturing fear of patient´s specific activities and disability outcome compared to existing general psychological measures (42). A study of LBP population, suggested self-efficacy is more important than fear-avoidance beliefs in mediating the relationship between pain and disability outcomes (43). This study showed in the longitudinal analyses, only improvements in self-efficacy beliefs partially mediated the relationship between changes in pain and changes in disability over a 12-month period but there was no support for the theory that fear of movement beliefs mediate this relationship. Other previous studies which focused the relevance of pain-related fear, one of the strongest predictors of observable physical performance, was found to be highly correlated with self-reported disability in sub-acute and chronic pain(44-46). However, we could not confirm this in our study.

Provided that results can be replicated, the present study indicate that different dimensions of the disability construct appear to be measured by the tools of self-report and clinical performance tests. Additionally, patient self-reports of activity limitation, as well as clinician performed tests are selected samples of physical function. The ODI was designed as a condition-specific self-report measure for physical disability or function. Nevertheless, 4 out of 10 items address health constructs other than physical functioning, namely pain intensity, social life, traveling and sleep(11). The BPS was developed as a test battery of daily physical functioning, including five tests of activities requiring mobility of the trunk, primarily in the sagittal plane(15). In comparison, ODI items qualitatively evaluate the physical function on the day of assessment compared with past idea (e.g., WALKING, “I can only walk...”) or present intention (e.g., LIFTING “I can lift heavy weights...”), this could be influenced by patients’ moods and beliefs. Some previous studies showed that self-reported disability measure is more affected by patients' psychological state than clinician-measured test(19-21). Self-report measures not only measure physical functions but also psychological and social contributors to disability. This finding may be explained by self-efficacy, or a person's perception of their functional capacity. Although performance on functional capacity tests is only moderately connected with self-efficacy(19, 47), it is substantially correlated with self-reported disability in LBP patients (48). More conclusive studies with sufficient sample size and validated tools are needed to better understand association between disability outcomes and psychological factors in patients with LBP. Applying only one measurement

instrument may provide an uncomplete view of actual functional limitation in patients seeking LPB management. Therefore, it is useful that clinicians implement a multidimensional and multimethod assessment to optimize the management of LBP patients(39).

Strength and limitations

The strength of this study is that validated clinical instruments commonly applied in LBP research were used, which suggests the results of this study supplements to the existing body of knowledge with regards to the psychometric properties and clinical utility of commonly used instruments. There were some limitations in this study. The study had relatively small sample size and thirty-three percent did not participate at follow-up. So, we cannot rule out possibilities for bias due to missing data which can impact the internal validity of the study. Another limitation is the heterogeneity of the primary care patient population, as inclusion of patients with both acute, subacute, and chronic LBP.

Clinical implications

This study may provide some insight that may lead to better management for patients with non-specific LBP. The poor correlation between self-report measure and clinician performed test indicate difference in their underlying construct. If these instruments reflect partly overlapping aspects of LBP-related disability, they may supplement each other and the other components in the clinical assessment to give a more comprehensive clinical picture. Complementary assessment combining performance testing with self-report by these validated instruments could increase the accuracy of management. Clinicians should understand the variability of these measures and assessment must be performed accordingly as a single measure may not provide all the information of the factors contributing to LBP-related disability. Also, psychological factors should be considered an important aspect in management of LBP that can influence disability outcomes. Combining the instruments may help in uncovering the barriers for function and provide an entrance to communicating around pain interference in daily activities.

Future research

As the relation between self-reported measure and physical performance test are ambiguous and not well established, replication of these type of studies with similar design and larger population are recommended. Further, research should be focused on

developing and validating a single measurement tool with best underlying construct from both self-reported measure and physical performance tests. Also, other psychological measure like self-efficacy, non-psychological factors like social factors should be explored to find its relationship with disability outcome in LBP.

CONCLUSION

This exploratory study showed poor correlation between back performance scale with both ODI and FABQ. The results suggest that physical performance tests and self-reported measures do not provide same aspect of disability construct and are in line with some previous studies. The measures may be affected differentially by physical and psychosocial factors, each providing unique and complementary information of assessment of disability or to the construction of physical function. Based on these results, a multimethod, and multidimensional assessments are recommended to obtain a more comprehensive assessment of physical function in patients with LBP.

Risk assessment of the project

Not applicable given that data collection has been finished.

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APPENDICES

Table 2.
Back Performance Scale (BPS) With Operational Definitions of Ordinal Scores

Tests	Task/Movement	Scores	Categories of Performance
Sock Test	From a sitting position: grab the toes with fingertips, the leg flexed in the sagittal plane, one leg tested at the time, scoring the least reach	0 1 2 3	Can easily grab the toes with fingertips of both hands Can grab the toes with fingertips, but with effort Can reach beyond the malleoli, but not reach the toes Can hardly, if at all, reach as far as to the malleoli
Pick-up Test	From a standing position: pick up a piece of paper from the floor, 2 or 3 times in varied ways	0 1 2 3	Can do the task with ease in varied ways Can do the task with minor effort or some decreased flexibility Can do the task with marked effort or lack of flexibility, may need support of hand on thigh Cannot perform the task at all or need external support
Roll-up Test	From a supine position: roll up slowly into a long-sitting position, arms relaxed	0 1 2 3	Can roll up with ease to long-sitting position Can roll up with marked effort or partially to long-sitting position Can roll up in supine position between the 8th and 12th thoracic vertebrae Can roll up in supine position above the 8th thoracic vertebra
Fingertip-to-Floor Test	From a standing position: feet 10 cm apart and knees straight, reach toward the floor with fingertips	0 1 2 3	Can reach to the floor, distance=0 cm Can reach to a distance >0 cm, ≤20 cm Can reach to a distance >20 cm, ≤40 cm Can reach to a distance >40 cm
Lift Test	From a standing position: repeat lifting a box (1.35 kg, sized 0.36×0.36×0.25 cm) containing a sandbag of 5 kg, for 1 min, from the floor to the table (height=76 cm), technique optional	0 1 2 3	Can do the lifting task >15 times Can do the lifting task >10, ≤15 times Can do the lifting task >0, ≤10 times Cannot/will not do the lifting task=0
	BPS sum scores	0–15	

Magnussen L, Strand LI, Lygren H. Reliability and validity of the back performance scale: observing activity limitation in patients with back pain. Spine (Phila Pa 1976). 2004 Apr 15;29(8):903-7. Doi: 10.1097/00007632-200404150-00017. PMID: 15082994.

Fear-Avoidance Beliefs Questionnaire (FABQ)
Waddell et al (1993) Pain , 52 (1993) 157 - 168

Here are some of the things which other patients have told us about their pain. For each statement please circle any number from 0 to 6 to say how much physical activities such as bending, lifting, walking or driving affect or would affect *your* back pain.

	Completely disagree			Unsure			Completely agree
1. My pain was caused by physical activity……..	0	1	2	3	4	5	6
2. Physical activity makes my pain worse…….	0	1	2	3	4	5	6
3. Physical activity might harm my back……..	0	1	2	3	4	5	6
4. I should not do physical activities which (might) make my pain worse	0	1	2	3	4	5	6
5. I cannot do physical activities which (might) make my pain worse…...	0	1	2	3	4	5	6

The following statements are about how your normal work affects or would affect your back pain

	Completely disagree			Unsure			Completely agree
6. My pain was caused by my work or by an accident at work……	0	1	2	3	4	5	6
7. My work aggravated my pain……	0	1	2	3	4	5	6
8. I have a claim for compensation for my pain……	0	1	2	3	4	5	6
9. My work is too heavy for me……..	0	1	2	3	4	5	6
10. My work makes or would make my pain worse……..	0	1	2	3	4	5	6
11. My work might harm my back……..	0	1	2	3	4	5	6
12. I should not do my normal work with my present pain…….	0	1	2	3	4	5	6
13. I cannot do my normal work with my present pain……...	0	1	2	3	4	5	6
14. I cannot do my normal work till my pain is treated……..	0	1	2	3	4	5	6
15. I do not think that I will be back to my normal work within 3 months.	0	1	2	3	4	5	6
16. I do not think that I will ever be able to go back to that work……...	0	1	2	3	4	5	6

Scoring
Scale 1: fear-avoidance beliefs about work – items 6, 7, 9, 10, 11, 12, 15.
Scale 2: fear-avoidance beliefs about physical activity – items 2, 3, 4, 5.

Source: Gordon Waddell, Mary Newton, Iain Henderson, Douglas Somerville and Chris J. Main, A Fear-Avoidance Beliefs Questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability, *Pain*, 52 (1993) 157 – 168, 166.

Oswestry Low Back Pain Disability Questionnaire

Sources: Fairbank JCT & Pynsent, PB (2000) The Oswestry Disability Index. *Spine*, 25(22):2940-2953.

Davidson M & Keating J (2001) A comparison of five low back disability questionnaires: reliability and responsiveness. *Physical Therapy* 2002;82:8-24.

The Oswestry Disability Index (also known as the Oswestry Low Back Pain Disability Questionnaire) is an extremely important tool that researchers and disability evaluators use to measure a patient's permanent functional disability. The test is considered the 'gold standard' of low back functional outcome tools [1].

Scoring instructions

For each section the total possible score is 5: if the first statement is marked the section score = 0; if the last statement is marked, it = 5. If all 10 sections are completed the score is calculated as follows:

Example: 16 (total scored)

50 (total possible score) x 100 = 32%

If one section is missed or not applicable the score is calculated:

16 (total scored)

45 (total possible score) x 100 = 35.5%

Minimum detectable change (90% confidence): 10% points (change of less than this may be attributable to error in the measurement)

Interpretation of scores

0% to 20%: minimal disability:	The patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting sitting and exercise.
21%-40%: moderate disability:	The patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means.
41%-60%: severe disability:	Pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation.
61%-80%: crippled:	Back pain impinges on all aspects of the patient's life. Positive intervention is required.
81%-100%:	These patients are either bed-bound or exaggerating their symptoms.

Oswestry Low Back Pain Disability Questionnaire

Instructions

This questionnaire has been designed to give us information as to how your back or leg pain is affecting your ability to manage in everyday life. Please answer by checking ONE box in each section for the statement which best applies to you. We realise you may consider that two or more statements in any one section apply but please just shade out the spot that indicates the statement which most clearly describes your problem.

Section 1 – Pain intensity

- ☐ I have no pain at the moment
- ☐ The pain is very mild at the moment
- ☐ The pain is moderate at the moment
- ☐ The pain is fairly severe at the moment
- ☐ The pain is very severe at the moment
- ☐ The pain is the worst imaginable at the moment

Section 2 – Personal care (washing, dressing etc)

- ☐ I can look after myself normally without causing extra pain
- ☐ I can look after myself normally but it causes extra pain
- ☐ It is painful to look after myself and I am slow and careful
- ☐ I need some help but manage most of my personal care
- ☐ I need help every day in most aspects of self-care
- ☐ I do not get dressed, I wash with difficulty and stay in bed

Section 3 – Lifting

- ☐ I can lift heavy weights without extra pain
- ☐ I can lift heavy weights but it gives extra pain
- ☐ Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently placed eg. on a table
- ☐ Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned
- ☐ I can lift very light weights
- ☐ I cannot lift or carry anything at all

Section 4 – Walking*

- ☐ Pain does not prevent me walking any distance
- ☐ Pain prevents me from walking more than 3"Okng
- ☐ Pain prevents me from walking more than 114"Okg
- ☐ Pain prevents me from walking more than 322"{ctfu
- ☐ I can only walk using a stick or crutches
- ☐ I am in bed most of the time

Section 5 – Sitting

- ☐ I can sit in any chair as long as I like
- ☐ I can only sit in my favourite chair as long as I like
- ☐ Pain prevents me sitting more than one hour
- ☐ Pain prevents me from sitting more than 30 minutes
- ☐ Pain prevents me from sitting more than 10 minutes
- ☐ Pain prevents me from sitting at all

Section 6 – Standing

- ☐ I can stand as long as I want without extra pain
- ☐ I can stand as long as I want but it gives me extra pain
- ☐ Pain prevents me from standing for more than 1 hour
- ☐ Pain prevents me from standing for more than 30 minutes
- ☐ Pain prevents me from standing for more than 10 minutes
- ☐ Pain prevents me from standing at all

Section 7 – Sleeping

- ☐ My sleep is never disturbed by pain
- ☐ My sleep is occasionally disturbed by pain
- ☐ Because of pain I have less than 6 hours sleep
- ☐ Because of pain I have less than 4 hours sleep
- ☐ Because of pain I have less than 2 hours sleep
- ☐ Pain prevents me from sleeping at all

Section 8 – Sex life (if applicable)

- ☐ My sex life is normal and causes no extra pain
- ☐ My sex life is normal but causes some extra pain
- ☐ My sex life is nearly normal but is very painful
- ☐ My sex life is severely restricted by pain
- ☐ My sex life is nearly absent because of pain
- ☐ Pain prevents any sex life at all

Section 9 – Social life

- ☐ My social life is normal and gives me no extra pain
- ☐ My social life is normal but increases the degree of pain
- ☐ Pain has no significant effect on my social life apart from limiting my more energetic interests eg, sport
- ☐ Pain has restricted my social life and I do not go out as often
- ☐ Pain has restricted my social life to my home
- ☐ I have no social life because of pain

Section 10 – Travelling

- ☐ I can travel anywhere without pain
- ☐ I can travel anywhere but it gives me extra pain
- ☐ Pain is bad but I manage journeys over two hours
- ☐ Pain restricts me to journeys of less than one hour
- ☐ Pain restricts me to short necessary journeys under 30 minutes
- ☐ Pain prevents me from travelling except to receive treatment

.

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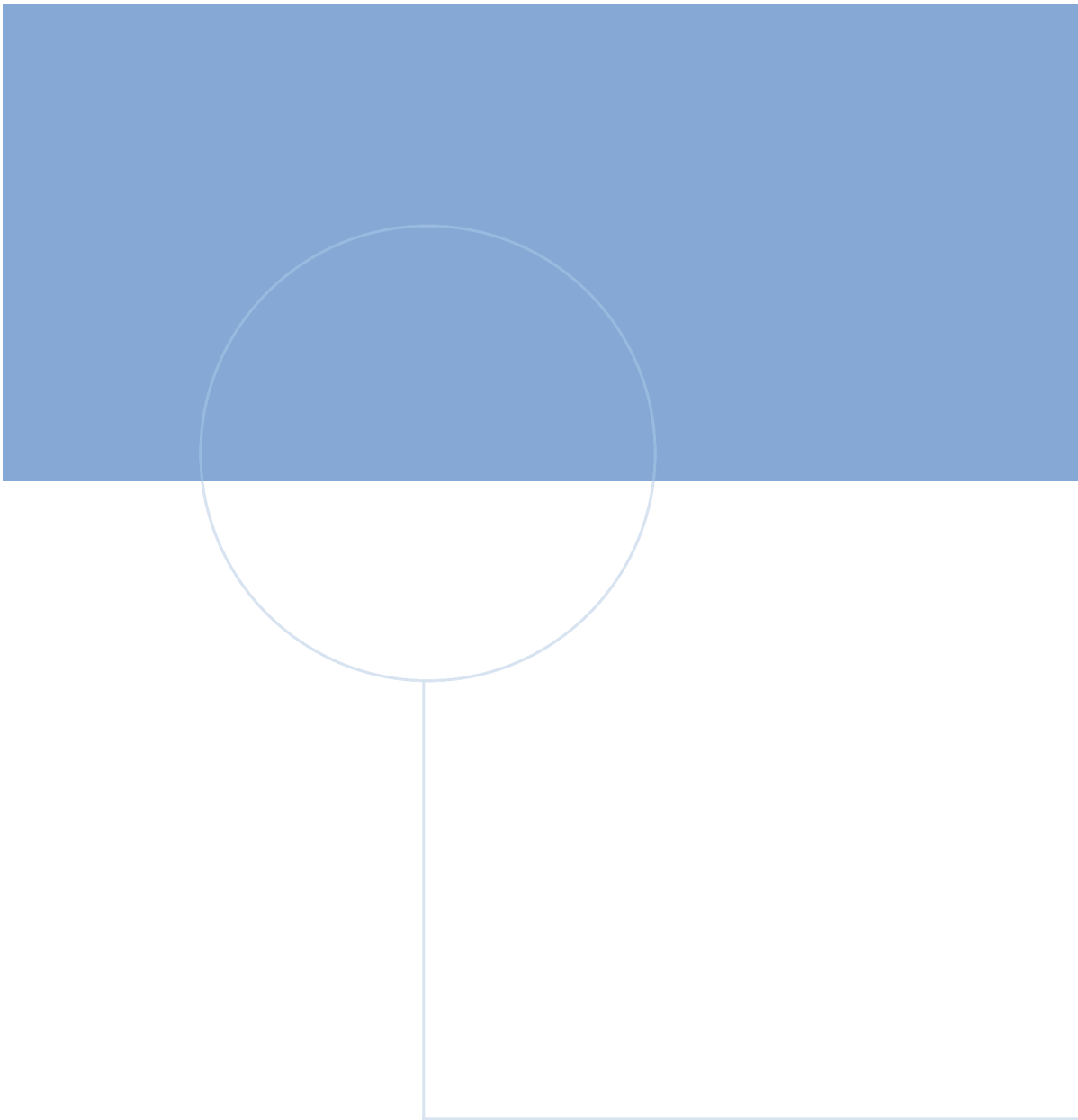

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Science and Technology