

Patient Specific Functional Scale (PSFS): Reference Guide

Outcomes Research Committee Resource created by Boundless Biomechanical Bracing:
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Introduction

The Patient-Specific Functional Scale (PSFS) is widely investigated and among the most commonly used self-report, patient specific outcome measures.¹ This tool is designed to assess change in function, primarily in individuals who present with musculoskeletal conditions.²⁻⁴ Strengths of this tool include its application to a wide range of abilities, and its function-based, rather than impairment-based, approach.³

The scale is seen as an important tool in measuring functional change, it is a compulsory element of care for organizations such as the New Zealand Accident Compensation Corporation,⁵ and the Workplace Safety and Insurance Board of Ontario, Canada.⁶ Following a Delphi process including key stakeholders, Klokkerud et. al., reported that the PSFS should be included in a core set of outcome measures for individuals with musculoskeletal diseases in Norway to assess attainment of goals.⁷ In addition, the scale has been reported to map well to the activity component of the International Classification of Functioning.²

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Data Type: Ordinal
Assessment Type: Self-report
Assessment Area: Physical Function
Age Range: Adult, 18-64⁹

Psychometric Properties

Reliability

The PSFS is considered to be a reliable tool for measuring perceived functional change in various conditions.^{3,10,11} This outcome measure has demonstrated excellent test-retest reliability in individuals with chronic pain⁸ and knee dysfunction¹² and is considered adequate in those with spinal stenosis.¹³ In addition, interrater reliability was found to be excellent in individuals with low back pain (LBP),¹⁴ upper extremity musculoskeletal disorders,¹⁵ and lower limb amputations.¹⁶

Patient Population	Reliability	Intraclass Correlation Coefficient (ICC)
Spinal Stenosis	Test-Retest	0.59 (adequate) ¹³
Chronic Pain	Test-Retest	0.907 (excellent) ⁸
Knee Dysfunction	Test-Retest	0.84 (excellent) ¹²
Low Back Pain	Interrater	0.92 (excellent) ¹⁴
Lower Limb Amputees	Interrater	0.83 (excellent) ¹⁶
Upper Extremity MSK	Interrater	0.713 (excellent) ¹⁵

Validity

The PSFS is also reported to demonstrate good validity, ⁴ with excellent construct validity identified in individuals with spinal stenosis ($r=0.69$)¹³ and excellent criterion (concurrent) validity with Roland-Morris disability questionnaire ($r=-0.67$).⁸

Sensitivity

The PSFS is reported to be more sensitive to change than some other self-report measures.^{17,18} Its sensitivity is expressed as a function of the minimal detectable change (MDC) and the standard error of measurement (SEM). The MDC ranged from 1.4 (LBP)¹⁴ up to 2.4 points (spinal stenosis).¹³ The SEM recorded values of 0.62 for five activities (knee dysfunction),¹² up to 1.03 (spinal stenosis).¹³ The PSFS has been reported to display less floor and ceiling effect than other patient specific outcomes.^{1,3,16} Although some floor effects were observed in knee dysfunction patients,¹² no floor or ceiling effect were found in persons with lower limb amputation.¹⁶

Patient Population	SEM	MDC	MCID
Spinal Stenosis	1.03 points ¹³	2.4 points ¹³	1.34 points ¹³
Chronic Pain		2 points ⁸	
Knee Dysfunction	1.0 points (1 activity), 0.62 points (5 activities) ¹²	1.5 points ¹²	
Low Back Pain		1.4 points ¹⁴	
Lower Limb Amputees	1.4 (Activity 1) 1.8 (Activity 2) 1.3 (Activity 3) 1.9 (Activity 4) 1.3 (Activity 5) ¹⁶	3.3 (Activity 1) 4.2 (Activity 2) 3.1 (Activity 3) 4.5 (Activity 4) 3.1 (Activity 5) ¹⁶	
Upper Extremity MSK			1.2 points ¹⁵

Responsiveness

Investigation by Abbott and Schmitt (2014) found that the PSFS is valid for use in group level data, and is reported to demonstrate excellent responsiveness to change in individual level scores.¹

The PSFS is considered to be highly responsive to measuring change^{10,17} over time in certain musculoskeletal conditions.³ Its minimal clinically important difference (MCID) is reported to range between 1.2-2.3 depending on the region of the body being assessed.^{4,13,15}

Feasibility

The PSFS is considered quick and simple to administer, ^{17,19} and does not require specialized training to implement. ⁹ It is typically reported to require four or less minutes to administer. ¹⁹ In a study of 7670 consecutive patients Nicholas, Hefford and Tumilty (2012), found that Physiotherapist collected PSFS in 84.2% of initial visits and 54.8% at discharge. The authors suggested that attrition of data collection may be a result of patients not attending discharge appointment, as the compliance of data collected increased to 85% when a complete discharge was made. ⁵

Required Resources

Time: 4 minutes or less ¹⁹

Personnel: Participant and Test Administrator

Equipment: pen and paper tool

Space: no additional requirement for space ¹⁹

Cost: Free

Test Administration

This pen and paper tool asks participants to identify 1-7 activities that are important to them, and that they are having difficulty with or are unable to do. Participants then rate their ability to perform the identified items on a scale of zero to ten, where a lower score means greater disability. ⁸

Baseline data is collected at the initial appointment and at follow up. The test is administered as follows;

1. At the initial appointment after history is taken and before physical assessment the Test Administrator reads the following;
 - 1.1. “I am going to ask you to identify up to three [or insert the number of items the Administrator aims to collect] important activities that you are unable to do or are having difficulty with as a result of your _____ problem. Today, are there any activities that you are unable to do or having difficulty with because of your _____ problem?”
 - 1.2. The Test Administrator then shows the scale to the participant and records the score.

0	1	2	3	4	5	6	7	8	9	10
Unable to perform activity										Able to perform activity at pre-injury level

2. At the follow-up appointment the Test Administrator reads the following:
 - 2.1. “When I assessed you on (state previous assessment date), you told me that you had difficulty with (read all activities from list at a time). Today, do you still have difficulty with: (read and have patient score each item in the list)?
 - 2.1.1. The Test Administrator records the score. ⁸

Interpretation (Normative Data)

As the PSFS is a personalised tool, it does not lend to an established normative data set. Rather, the tool focuses on the individual patient’s perceived change in function. Higher scores equate to better perceived function.

The tool allows for 1-7 activities to be identified and scored. Activities may be scored as a single item or if multiple items are identified an average may be used to establish the change in function. For a single activity a MDC (90% CI) of 3 is considered indicative of a change in function. ^{4,19} For the average of multiple items the threshold for change in function is somewhat lower with a MDC (90% CI) of 2. ⁴

Limitations

Some authors have cautioned the use of the PSFS in group level data, ² however work by Abbott and Schmitt (2014) suggests that the PSFS is an appropriate measure for statistical comparison in clinical research. ¹

It is important that patients receive an adequate period of acclimation before the final collection of data, however the work by Nicholas, Hefford and Tumilty (2012) suggests that attrition in patient attendance can hamper the collection of data at follow up or discharge. ⁵

The use of the word “activity” in the standardized script may limit some participants ability to identifying potentially useful items. Fairbairn et. al. (2011) suggested that the PSFS should be supplemented by outcome measures that address impairment. ²

Deterioration in condition may be a challenge to identify in some patient-specific scales. ¹⁹ The terminology used in the scale may be difficult to relate to for chronic or congenital conditions where the patient is unable to reference their pre-injury capacity to participate in an activity. However it is note-worthy that the original investigators acknowledge and endorsed the practice of choosing a word or phrase that is meaningful to the patient in cases that are not the result of injury. ⁸

Documentation in Clinical Notes

Example: The PSFS was administered during the initial assessment on dd/mm/yy. The patient identified X number of activities with an average score of XYZ for activities ABC. At today’s follow up appointment, the patient reports wearing their orthosis full-time for X weeks and the PSFS was re-administered. Today’s score was XYZ indicating a change of X which is above/below the MDC/MCID value.

References

1. Abbott JH, Schmitt JS. The Patient-Specific Functional Scale was valid for group-level change comparisons and between-group discrimination. *Journal of Clinical Epidemiology*. 2014;67(6):681-688. doi:10.1016/j.jclinepi.2013.11.002
2. Fairbairn K, May K, Yang Y, Balasundar S, Hefford C, Abbott JH. Mapping Patient-Specific Functional Scale (PSFS) Items to the International Classification of Functioning, Disability and Health (ICF). *Phys Ther*. 2012;92(2):310-317. doi:10.2522/ptj.20090382
3. Horn KK, Jennings S, Richardson G, Van Vliet D, Hefford, Abbott JH. The Patient-Specific Functional Scale: Psychometrics, Clinimetrics, and Application as a Clinical Outcome Measure. *J Orthop Sports Phys Ther*. 2012;42(1):30-42. doi:10.2519/jospt.2012.3727
4. Riebel M, Crowell M, Dolbeer J, Eliza Szymanek, Goss D. Correlation of Self-Report Outcome Measures and the Selective Functional Movement Assessment (SFMA): An Exploration of Validity. *The International Journal of Sports Physical Therapy*. 2017;12(6). doi:10.16603/ijsp20170931
5. Nicholas P, Hefford C, Tumilty S. The use of the Patient-Specific Functional Scale to measure rehabilitative progress in a physiotherapy setting. *Journal of Manual & Manipulative Therapy*. 2012;20(3):147-152. doi:10.1179/2042618612Y.0000000006
6. Workplace Safety and Insurance Board. Musculoskeletal Program of Care (MSK POC). http://www.wsib.on.ca/WSIBPortal/faces/WSIBArticlePage?fGUID=307702590437000201&_adf.ctrl-state=5mc3wk8u4_4&_afLoop=950815004638000&_afWindowMode=0&_afWindowId=null#%40%3F_afWindowId%3Dnull%26_afLoop%3D950815004638000%26_afWindowMode%3D0%26fGUID%3D307702590437000201%26_adf.ctrl-state%3D1jeih2lo4_4. Accessed November 7, 2018.
7. Klokke M, Dagfinrud H, Uhlig T, et al. Developing and testing a consensus-based core set of outcome measures for rehabilitation in musculoskeletal diseases. *Scandinavian Journal of Rheumatology*. 2018;47(3):225-234. doi:10.1080/03009742.2017.1347959
8. Stratford P, Gill C, Westaway M, Binkley J. Assessing disability and change on individual patients: a report of a patient specific measure. *Physiotherapy Canada*. 1995;47(4).
9. Patient Specific Functional Scale. Shirley Ryan AbilityLab - Formerly RIC. <https://www.sralab.org/rehabilitation-measures/patient-specific-functional-scale>. Accessed October 10, 2018.
10. Berghmans DDP, Lenssen AF, van Rhijn LW, de Bie RA. The Patient-Specific Functional Scale: Its Reliability and Responsiveness in Patients Undergoing a Total Knee Arthroplasty. *Journal of Orthopaedic & Sports Physical Therapy*. 2015;45(7):550-556. doi:10.2519/jospt.2015.5825

11. Wright HH, O'Brien V, Valdes K, et al. Relationship of the Patient-Specific Functional Scale to commonly used clinical measures in hand osteoarthritis. *Journal of Hand Therapy*. 2017;30(4):538-545. doi:10.1016/j.jht.2017.04.003
12. Chatman AB, Hyams SP, Neel JM, et al. The Patient-Specific Functional Scale: Measurement Properties in Patients With Knee Dysfunction. *Physical Therapy*. 1997;77(8):820-829. doi:10.1093/ptj/77.8.820
13. Cleland JA, Whitman JM, Houser JL, Wainner RS, Childs JD. Psychometric properties of selected tests in patients with lumbar spinal stenosis. *The Spine Journal*. 2012;12(10):921-931. doi:10.1016/j.spinee.2012.05.004
14. Maughan EF, Lewis JS. Outcome measures in chronic low back pain. *European Spine Journal*. 2010;19(9):1484-1494. doi:10.1007/s00586-010-1353-6
15. Hefford C, Abbott JH, Arnold R, Baxter GD. The Patient-Specific Functional Scale: Validity, Reliability, and Responsiveness in Patients With Upper Extremity Musculoskeletal Problems. *Journal of Orthopaedic & Sports Physical Therapy*. 2012;42(2):56-65. doi:10.2519/jospt.2012.3953
16. Resnik L, Borgia M. Reliability of Outcome Measures for People With Lower-Limb Amputations: Distinguishing True Change From Statistical Error. *Physical Therapy*. 2011;91(4):555-565. doi:10.2522/ptj.20100287
17. Donnelly C, Carswell A. Individualized Outcome Measures: A Review of the Literature. *Canadian Journal of Occupational Therapy*. 2002;69(2):84-94. doi:10.1177/000841740206900204
18. Resnik L, Borgia M. Responsiveness of outcome measures for upper limb prosthetic rehabilitation. *Prosthetics and Orthotics International*. 2016;40(1):96-108. doi:10.1177/0309364614554032
19. Jolles BM, Buchbinder R, Beaton DE. A study compared nine patient-specific indices for musculoskeletal disorders. *Journal of Clinical Epidemiology*. 2005;58(8):791-801. doi:10.1016/j.jclinepi.2005.01.012



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Outcome Measure

Patient Specific Functional Scale (PSFS)

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