Application of the Patient Specific Functional Scale to an Individual with Shoulder Dysfunction in a Workers’ Compensation Case

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Abstract

Background and purpose: Safe and early return to work (RTW) following a work related injury is important for all constituents, and is typically determined through the use of a Functional Capacity Evaluation (FCE). When FCEs are not conducted, utilization of an outcome measure to provide the clinician with a systematic approach for determining change should be applied. The Patient Specific Functional Scale (PSFS) is a measure that can aid in determining progress towards the specific tasks of a job, and ultimately RTW status.

Case Description: The patient was a 25 year old female, working as a certified nursing assistant, who injured her shoulder while at work. The patient had impairments and limitations in the ability to perform her required job responsibilities.

Outcomes: The patient identified 4 limitations on the PSFS which included working out, pushing wheelchairs, transferring residents, and driving. After 6 visits the patient improvement ranged between 3 and 8 points out of ten in each of the four areas identified at initial administration. Work related tasks improved to 9/10 and 10/10. Nineteen days after injury, the patient was able to RTW.

Discussion: The PSFS is a self-determined and rated measure that can be specific to any job requirement, an advantage over other validated condition-specific measures. The PSFS is a validated, responsive, individualized scale that in this case provided the clinical decision for the patient to RTW. Additional research is necessary to investigate a link between the PSFS and FCE to determine RTW.
Background and purpose

Work related injuries (WRIs) among skilled nursing facility (SNF) employees are higher than in mining, construction and manufacturing jobs. Many nursing home personnel are injured while performing lifting and transfer tasks which are essential components of their job description. Certified nursing assistants (CNAs) have high rates of back, neck, and shoulder injuries.

Many transfers that are required of staff at a SNF result in the upper extremity (UE) being placed in an awkward position in order to maintain grip on a gait belt and can predispose a CNA to injury. Reported in 2002, 13.5 per 100 workers in nursing homes had injuries requiring medical attention and or loss of time at work, while mining, constructing, and manufacturing followed with 5.0, 7.9, and 8.1 per 100 respectively. Injuries occurring at a place of employment often lead to an impaired ability to perform all of the job requirements until full healing and recovery has occurred.

Safe and early return to work (RTW) is important for all constituents, including employers and the injured employee. A standardized means of determining safe RTW is through the use of a Functional Capacity Evaluation (FCE). However, FCEs are not conducted in all physical therapy (PT) clinics where work related injury (WRI) treatment is performed despite their validated ability to replicate job requirements. If the use of FCEs are not added to a company’s protocol, clinics should develop a process of utilizing another means to determine a patient’s ability to RTW. Utilization of an outcome measure provides the clinician with a systematic approach for determining change in status and ultimately RTW progress.

There is little consensus regarding the best means to measure work outcomes, and there is little to no consistency between states. One difficulty in choosing an outcome measure in a physical therapy workers’ compensation setting is that few measures exist that fully incorporates
the tasks of a job. General health status questionnaires and condition-specific scales can aid in identifying a change in status, but typically do not capture the specifics of a patient’s job requirements.\textsuperscript{7, 9}

Condition specific scales focus on many functional tasks related to ADLs and may include work-related tasks, often in a limited capacity, as part of the questionnaire.\textsuperscript{9} There is no gold standard when choosing a shoulder disability questionnaire as even the most extensively studied measures have limitations in their design.\textsuperscript{9}

The Disability of Arm, Shoulder, Hand (DASH) appears to have the best results for its psychometric properties (test-retest reliability ICC = 0.92 and internal consistency $\alpha = 0.96$)\textsuperscript{11} in a population with mean age of 45 years and with patients who have either surgical or nonsurgical musculoskeletal UE disorders. The support for the application of the DASH is compared to Shoulder and Pain Disability Index (SPADI),\textsuperscript{9, 10, 11} Simple Shoulder Test (SST),\textsuperscript{9, 11} Oxford Shoulder Questionnaire (OSQ),\textsuperscript{9} Shoulder Disability Questionnaire (SDQ),\textsuperscript{9, 11} Upper Extremity Functional Scale (UEFS),\textsuperscript{9, 11, 12} and American Shoulder and Elbow Surgeons Standardized Shoulder Assessment Form (ASES).\textsuperscript{9} The DASH consists of 30 items scored using a 5 point Likert scale, with optional performance sport/music and work sections consisting of 4 questions each.\textsuperscript{11} Values are assigned to each response which are averaged and converted to be scored 0-100. The closer the score is to 100, the greater the disability according the DASH.\textsuperscript{13} The measure takes 5-7 minutes to administer and 5 minutes to score.\textsuperscript{12} For clinicians who do not use outcome measures, 52\% according to a study by Jette et al,\textsuperscript{14} a total of 10-12 minutes may be too long to spend on an outcome measure with each patient. This is suggested based on the same study providing the top two reasons clinicians do not use outcome measures are length of time to administer and length of time to interpret.\textsuperscript{14}
The time needed to completed the DASH compared to the Upper Extremity Functional Index (UEFI) is greater, as the latter can be administered in 3-5 minutes and scored in 20 seconds. Despite the UEFI not being as familiar to many clinicians and potential difficulties communicating outcomes to others as a result, the psychometrics of the UEFI are comparable to that the DASH according to a recently published study. This evidence would support the use of the UEFI in situations where time is the deciding factor in choosing an outcome measure.

Despite the evidence for the use of the DASH and UEFI, a potential problem exists in that neither measure completely incorporates all the of job responsibilities of a patient who presents with a WRI, and may inhibit the ability to determine a safe RTW.

An outcome measure that is quick (approximately 4 minutes), easy, and can aid in determining progress towards the specific tasks of a job is the Patient Specific Functional Scale (PSFS). The PSFS is a clinician assisted and patient determined questionnaire that assesses functional limitations and disabilities. Job specific limitations are identified by the patient and given a rating based on the ability to perform the listed task. The PSFS is an individualized scale as it is self-determined and self-rated. Several studies have identified the scale as a reliable and valid measure specifically for neck and knee dysfunction, and has recently been determined to have construct and predictive validity when used with patient who have WRIs.

Although the use of the PSFS has been investigated with individuals injured at their place of employment, there remains a gap in the literature regarding its application for determining RTW status. The purpose of this clinical measure procedure case report was to use the Patient Specific Functional Scale as a tool to determine safe return to work for a 25 year old female after a work related shoulder injury.
Case Description: Patient History and Review of Systems

The patient in this case report was a 25 year old female, working as a CNA at a SNF, injured at work while transferring a resident from the floor to a wheelchair. The patient opted to seek treatment 5 days after initial injury, stating that her pain had not improved. She was referred to physical therapy with a diagnosis of right shoulder strain by a physician at the same clinic. The physician recommended light duty restrictions (no lifting or pushing/pulling over 20 pounds of force and no reaching above shoulders) and 550 mg Naproxen twice a day. Written and verbal consents were obtained from the patient at both the physician’s office and physical therapy department.

When the injury occurred the patient experienced a “click” in her right shoulder with accompanying anterior shoulder pain. Symptoms continued and worsened into the following days. The patient reported to physical therapy with complaints of right anterior shoulder pain, weakness, pain reaching behind or overhead, difficulty with work related tasks, interrupted sleep, and the inability to participate in normal fitness activities. Other medical history relevant to the shoulder diagnoses was a right ulnar nerve neuropathy secondary to ulnar dislocation at the elbow three years prior, with intermittent tingling along ulnar nerve distribution. The patient denied numbness or tingling symptoms since the time of the shoulder injury. The patient rated her pain on the Numeric Pain Rating Scale (NPRS) (0 = no pain, 10 = worst imaginable pain) at best 2/10, worst 8/10, and current 2/10. The NPRS, a reliable and valid outcome measure, used to assess subjective pain report, has a clinically meaningful result for patients with shoulder pain when a change of 1.1 points is noted.\textsuperscript{20}
**Clinical Impression 1**

This patient was appropriate to administer the PSFS because she had a work related injury, was referred to physical therapy, had attempted to complete functional tasks since the time of injury, was able to rate pain with an understanding of the 0-10 scale, and could describe activities that altered symptoms. To further determine appropriateness for application of the scale, an examination was performed to determine the patient’s specific impairments.

**Examination**

The patient presented to physical therapy with UE guarding, mild scapular winging bilaterally, tenderness, increased muscle tone of the right upper trapezius and levator scapulae and weakness for C5 and C7 myotomes. Sensation and deep tendon reflexes were not impaired. Active range of motion (AROM), obtained per Norkin and White,\(^2^1\) using a universal goniometer (Intrarater ICC = 0.87 - 0.99)\(^2^2\) was within normal limits for cervical, bilateral shoulders and elbows with pain at the shoulder when returning to neutral from end range. Manual muscle testing, based on Berryman-Reese,\(^2^3\) was performed (test-retest reliability 0.63 to 0.98 at \(p > 0.05\))\(^2^4\) and revealed weaknesses in all shoulder muscles tested at either 4/5 or 4+/5, and were limited by pain. Special tests for the shoulder were performed with negative results for the Neers impingement and AC compression tests, and positive results for the Hawkins-Kennedy, speeds sign, crank test, drop arm test, and empty can tests.

**Clinical Impression 2**

The patient presented to physical therapy with full painful range of motion, UE strength deficits, postural impairments, and positive special tests which indicated shoulder dysfunction.
Use of the PSFS would help identify the patient’s impairments, functional limitations and disabilities, and would aid to focus intervention and safe return to work.

**Measurement Procedure**

The patient was seen 3 times per week for a total of 6 visits. The patient identified 4 limitations on the PSFS which included working out, pushing wheelchairs, transferring residents, and driving. The patient was not instructed to provide work-related tasks, but did on her own in the order listed above. Since two of the measures were work related, these were specifically used to determine RTW status. The scale was utilized each visit as a means to assess progress towards work related limitations.

The PSFS is a generic outcome measure that allows the patient to assess areas of difficulty, and give a rating based on the degree of difficulty. The patient is asked to identify up to five activities that he or she is having difficulty performing. Once determined, the patient then rates each activity on a scale from 0 (unable to perform activity) to 10 (able to perform activity at the same level as before injury or problem). The identified limitations are reassessed without the patient looking at the previous score at a clinician determined interval. Comparisons can be made utilizing the average score or change in score for each activity. The literature does not identify how often the scale should be utilized, only stating that it is administered at subsequent reassessments.

The PSFS is not intended to be used for comparison of disability between persons, rather a tool to measure change within an individual. Several studies have had similar results with a reported test-retest reliability of ICC = 0.97. Concurrent validity has been demonstrated with each of the following measures, Roland Morris Disability Questionnaire, physical component of
the SF-36, and the Neck Disability Index. According to the review performed by Donnelly et al, the PSFS was more sensitive to change in each of the studies reviewed than the validated and reliably scale in which they were compared. The PSFS was shown to have an average administration time of 4 minutes and requires a two point change to be clinically meaningful. The scale was completed at each visit and required approximately 2 minutes to complete.

After 6 visits the patient’s improvements ranged between 3 and 8 points in each of the four areas identified at initial administration. (See table 1.)

**Clinical Impression 3**

The PSFS along with impairments identified at initial evaluation helped determine the interventions for the patient’s episode of care which included strengthening, stretching, manual therapy, postural education, and neuromuscular re-education of the shoulder complex. The outcomes from the PSFS indicate that the patient had clinically meaningful improvements with all functional limitations listed. (See table 1). Changes ranged from 3 to 8.

The ability to push a wheelchair and transfer residents improved at clinically meaningful results with ratings from 4/10 and 1/10, to 10/10 and 9/10 respectively, at the final visit. Utilizing these measures for RTW, the author would not have allowed the patient to return to full work duties. Since the original injury occurred while performing a transfer, it was desired to have this measure at 10/10 or being able to perform activity at the same level as before her injury. At least one additional visit would have been desired with additional intervention focus on components essential to performing both easy and difficult transfer tasks. This was not carried out due to the patient being discharged from care per MD orders. However the patient was likely at an acceptable level to RTW with regards to transferring residents as evident by her...
ability to lift 35 pounds floor to waist as well as push and pull a sled with 30 pounds of force, but if RTW status was determined based on the PSFS, additional visits would have been utilized.

Outcome

In addition to the previously mentioned changes on the PSFS, evaluation of specific tests and measures revealed improvements in all areas initially assessed, including negative findings with all special tests that were positive at initial evaluation. Pain rated by the NPRS at worst improved by 6 points, and 2 points at best to 0/10 pain, which were both clinically meaningful results.

Discussion

The purpose of this clinical measurement procedure case report was to investigate the use of the Patient Specific Functional Scale with a 25 year old female after a work related shoulder injury to determine safe return to work. This patient was appropriate to administer the PSFS due to her work related injury, attempts to complete functional tasks after initial injury, understanding of the 0-10 scale with regards to pain, and description of activities that altered symptoms. The patient had overall good results with resolution of impairments and clinically meaningful results in all identified impairments on the PSFS.

The use of outcome measures can be beneficial for clinicians to determine safe RTW. The province of Ontario, Canada, which has workers’ compensation system called the Workplace Safety and Insurance Board (WSIB), provides one example of the application of an outcome tool for determining RTW. The WSIB’s organized structure for RTW involves the health care provider utilizing the Functional Abilities Form for Planning Early and Safe Return
to Work (FAF). This form, filled out by a medical provider, helps determine the RTW status of the employee by focusing on abilities and limitations, and allows for recommendations from the clinician.\textsuperscript{25} The FAF provides a structured means for communication between all parties, and involves the clinician in determining RTW status, something that the United States has yet to develop.\textsuperscript{7,8} However this measure has limitations, despite providing tasks related to numerous labor intensive jobs, it lacks the ability to fully incorporate all the job requirements of an injured employee. The PSFS applied to injured workers attempts to identify specific functional limitations of one’s job as well as an outcome that suggests safe to RTW.

Lack of application of a FCE with the patient is a significant limitation of this case report. Training on administration of a FCE is suggested for accuracy and quality, and without this knowledge the author could not utilize an FCE as a means to determine RTW for the patient.\textsuperscript{6} By utilizing the results of an FCE and comparing them to the PSFS, the author could have obtained better quality results to aid in determining RTW status with this patient. This approach also would have provided care that was patient centered and consistent with best practice.\textsuperscript{26}

RTW at this site was not determined by an FCE, rather through a combination of physician examination (with discharge from care often before PT discharge was determined), resolution and/or improvement of impairments, and achievement of functional goals set at initial evaluation. These goals were based on patients’ subjective description of job requirements, not employer description, and typically consisted of lifting and push/pull tasks as many of the injured individuals had jobs requiring these abilities. The author of this case report determined the clinic could benefit from the addition of a simple to administer, validated and reliable outcome measure, such as the PSFS, to be used as a tool in determining safe RTW status.\textsuperscript{19}
There is little consensus regarding the best means to measure work outcomes.\textsuperscript{7,8} Incorporation of the PSFS could be a starting point in developing an agreement on a means to measure one aspect of work outcomes, return to work. The PSFS allows patients to describe and rate limitations specific to their job requirements, a feature that is lacking from the previously mentioned shoulder-specific scales.\textsuperscript{9-12,15-18} The PSFS requires an interpretation on the present situation and does not encourage focusing on the previous condition. This directed attention on the present has the potential to empower the patient with what they can do, rather than emphasizing what they cannot.

The patient of this case report had a full resolution of impairments and work related functional limitations as determined by the PSFS. The patient was considered safe to RTW based on the PSFS.

While the PSFS can be very useful in identifying patient limitations, guiding treatment, and determining RTW status, there are many limitations. Patients may have difficulty recalling activities that are difficult for them or have acute symptoms causing them to not have made attempts to perform items that may be potential limitations. Often patients struggle to give a pain rating, and the PSFS utilizes a similar 11 point scale that requires a patient to self assess a task that may be difficult. It may also be possible that patients do not provide any work related tasks which would make it difficult to use this scale as a means of determining treatment and RTW. Gross et al,\textsuperscript{16} who validated the use of the PSFS with patients after work injuries, found no significant differences in outcomes when functional limitations related to home or leisure activities were provided instead of work related tasks.\textsuperscript{16} This suggests intervention could likely be chosen without a work related task, and RTW would still be possible.
While there may be limitations to the use of the PSFS, it was an easy and quick (2 minutes), validated, responsive, individualized scale that in this case provided the clinical decision for the patient to return to work.
References


Table 1: Results of the Patient Specific Functional Scale

<table>
<thead>
<tr>
<th>Patient Specific Functional Scale</th>
<th>Visit 2</th>
<th>Visit 3</th>
<th>Visit 4</th>
<th>Visit 5</th>
<th>Visit 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*Day 8</td>
<td>Day 11</td>
<td>Day 13</td>
<td>Day 15</td>
<td>Day 19</td>
</tr>
<tr>
<td>Working out</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>8</td>
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<tr>
<td>Work - Pushing Wheelchairs</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>10</td>
<td>10</td>
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<tr>
<td>Work - Transferring Residents</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Driving (arm up and checking blind spot)</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

0 = Unable to perform
10 = Able to perform activity at the same level as before injury or problem.
*Day indications number of days following date of injury