OCCUPATIONAL HEALTH

President's Message
Rick Wickstrom, PT, DPT, CPE, CME

The quote below prompted me to reflect on inspirational examples from family, friends, and physical therapy colleagues who coped positively with psychological distress in the face of negative impacts from COVID-19, political unrest and other personal challenges:

You get to decide where your time goes. You can either spend it moving forward, or you can spend it putting out fires. You decide. And if you don't decide, others will decide for you."

—*Tony Morgan*

We are blessed to have incredible passion and talent among Occupational Health SIG volunteers. These contributions fuel our initiatives with a common vision to optimize movement, musculoskeletal health, and work participation from hire to retire:

- Our Practice Committee led by Lorena Payne (Chair) has completed OHSIG's first evidence-based Clinical Practice Guideline to improve how physical therapists manage work participation restrictions after injury or illness! Check out this publication in *JOSPT*.
- Our Research Committee led by Marc Campo (Chair) is forging ahead with our initiative to create an advanced practice educational credential to qualify and promote occupational health professionals with advanced competencies. Author teams are moving forward to developing monographs for 2 independent study courses: (1) Workplace Programs to Promote Worker Health and (2) Clinical Care of Workers with Participation Restrictions. Our Steering Committee is developing the credentialing component that includes an interactive webinar for current concepts and an Occupational Health Capstone project with a focus on one or more practice areas.
- Our Membership Committee led by Caroline Furtak (Chair) is progressing our initiative to establish OHSIG members to serve as state resource liaisons for payment policy inquiries and presentations to implement our CPG and other issues related to occupational health.
- Our Communications Committee led by Cory Blickenstaff (Chair) is working with AOPT staff on a new initiave to implement a comprehensive member profile to support networking among members. We invite OHSIG members to participate in discussions on our Occupational Health SIG Facebook Page. Let us know your needs, or simply share your story about how your practice is moving forward in the wake of COVID-19 challenges.
- Our Nominating Committee members Michelle Despres (Chair), Jeff Paddock, and David Hoyle are doing a great job of encouraging new leaders as well as assisting with some of our initiatives.

In the article that follows, OHSIG leaders partnered with Trevor A. Lentz, PT, PhD, MPH, to encourage occupational health applications for the OSPRO-YF 10-item Assessment Tool that was developed with research grant funding by the Academy of Orthopaedic Physical Therapy. Enjoy!

OSPRO-YF 10-Item Assessment Tool: A Measure of Psychosocial Risks that Influence Chronic Pain and Work Disability

Rick Wickstrom, PT, DPT, CPE, CME; Trevor Lentz, PT, PhD, MPH; Steve Allison, PT, DPT, OCS, CME

The OSPRO-YF 10-Item Assessment Tool is a concise, patient-report questionnaire that was designed to estimate multiple dimensions of psychological distress that adversely influence how people respond to musculoskeletal pain.[1] The intent behind the OSPRO Yellow Flag (OSPRO-YF) assessment tool was not to create an entirely different questionnaire, but rather to develop a more innovative and efficient method to capture information provided by a variety of existing 'legacy' psychological questionnaires such as the Pain Catastrophizing Scale (PCS) and Fear-Avoidance Beliefs Questionnaire (FABQ). OSPRO is an acronym that refers to the Optimal Screening for Prediction of Referral and Outcome cohort study that focused on creating concise and standardized tools to improve assessments by orthopaedic physical therapists. Researchers at the University of Florida developed 17-item, 10-item, and 7-item versions of this yellow flag assessment tool with grant funding from the Academy of Orthopaedic Physical Therapy.[1,2] The development process consisted of separate sequential studies conducted in 2 different cohorts: a Development cohort and Validation cohort.

The Development cohort was a cross-sectional study[2] that included 431 patients recruited from outpatient physical therapy clinics in Gainesville, FL and Jacksonville, FL. At initial evaluation, patients completed 10 full length 'legacy' questionnaires that are commonly used to assess a variety of psychological constructs. These questionnaires are grouped under the most relevant domain for pain-associated psychological distress:

- **Negative Mood Domain** measures: PHQ-9, Patient Health Questionnaire-9; STAI, State-Trait Anxiety Inventory; and STAXI, State-Trait Anger Expression Inventory.
- **Fear-Avoidance Domain** measures: TSK-11, Tampa Scale of Kinesiophobia; PCS, Pain Catastrophizing Scale; FABQ-PA, Fear-Avoidance Beliefs Questionnaire - Physical Activity subscale; FABQ-W, Fear-Avoidance Beliefs Questionnaire - Work subscale; and PASS-20, Pain Anxiety Symptoms Scale.
- **Positive Coping Domain** measures: CPAQ, Chronic Pain Acceptance Questionnaire; PSEQ, Pain Self-Efficacy Questionnaire; and SER, Self-Efficacy for Rehabilitation.

Collectively, this set of questionnaires included 132 items, and took 30-90 minutes for each participant to complete. This dataset was subjected to complex statistical processes (further detailed in the article by Lentz et al[11]) to identify smaller subsets of items that could be used to accurately estimate patient scores on the full-length questionnaires listed above. Estimating the total score for each legacy measure required the item responses in each version of the OSPRO-YF to be weighted differently. The OSPRO-YF

was not designed to work like many other questionnaires where you simply add up the items to get a total score. The OSPRO-YF provides 11 total score estimates for the 10 legacy questionnaires (FABQ work and physical activity subscales are estimated separately) to evaluate aspects of negative mood, fear avoidance, and positive coping. The OSPRO-YF 10-Item form is presented in **Figure 1**.

In addition to estimating full-length questionnaire scores, the OSPRO-YF can also identify yellow flags. Yellow flags are defined (for the purposes of this tool) as questionnaire score estimates in the top quartile (for negative mood and negative pain coping characteristics) or bottom quartile (for positive coping characteristics) of all scores across participants in the OSPRO Development cohort. Just as OSPRO-YF can estimate 11 total score estimates, it can also alert providers when those score estimates are high enough (or low enough in the case of positive factors) to correspond with a yellow flag. Because score estimates are sometimes difficult to interpret clinically (ie, what score is high enough that I need to act on it?), yellow flag indicators were added to help identify which patients may be particularly at risk, and need further work-up. The 7-item version of the OSPRO-YF is a subset of the 10-item version which is itself a subset of the 17-item version. Although response burden is lower with shorter versions, there is a trade-off in accuracy for identifying yellow flags, with accuracy values of 85%, 81%, and 75% for the 17-item, 10-item, and 7-item versions, respectively. Because of complexity required for scoring, developers of the tool worked with AOPT to develop an online scoring portal for the 3 versions at: https://www.orthopt.org/yf/.

The second stage of the development process consisted of the OSPRO Validation cohort, designed to understand how the OSPRO-YF would predict important outcomes such as persistent pain, disability, quality of life, and health care use following physical therapy.[2] Recruitment for this cohort was conducted within a nationwide clinical research network of 9 sites. Participants (n=440) completed the OSPRO-YF at baseline in addition to other demographic and health–related information. The resulting studies showed the OSPRO-YF was able to predict 12-month pain intensity, region-specific disability, quality of life, and subsequent use of surgery. Studies are ongoing to better understand how performance on specific domains, like negative mood, negative coping, and positive affect can better inform prognosis and treatment selection.

IMPLICATIONS FOR MUSCULOSKELETAL PHYSICAL THERAPY

Clinicians can use OSPRO-YF score estimates to identify which domains of pain-associated psychological distress may need to be addressed to optimize physical therapy outcomes. The OSPRO-YF may also be used to identify when psychological distress is not likely a major factor. One approach by clinicians has been to determine the total number of yellow flags (range 0-11) to get an overall sense of psychological distress, or to compare the subtotals for flags within each domain (ie, Negative Mood, Fear Avoidance, and Positive Coping) to determine which domain may need more attention. Another approach illustrated on the **Table 1** scoring example would be to calculate the percent of yellow flags for each domain, or the overall percentage of flags out of the 11 possible flags.

Importantly, authors suggest that because the OSPRO-YF is designed as a screening tool, scores should be used to inform the need for psychologically-informed interventions through interactive discussions with the patient. Information provided by this tool should not be used in isolation to determine course of treatment. A major benefit of this tool over other existing screening tools (eg, Örebro Musculoskeletal Pain Questionnaire) is that it can quickly assess a wide range of psychological factors known to influence pain and disability. A major advantage of the 1-page OSPRO-YF 10-item version (**Figure 1**) is that its items are appropriate for patients that have a broad range of musculoskeletal conditions (ie, knee, shoulder, neck, and back pain). Scoring is fairly complicated; however, the tool may be scored by programming within electronic medical records systems or by entering patient responses at https://www.orthopt.org/yf/. A data collection form for the OSPRO-YF 10-item version is presented in **Figure 1**. Numbering of items in this form identifies the subset of items from the 17-item version. This makes it more intuitive for users when entering responses for scoring at the AOPT website.

One area for future research would be to establish predictive validity cut-scores for total summary score (adding up the scores for all items) and domain sub-scores for the OSPRO-YF 10-item tool. Although total summary scores have been used in research applications,[2,3,4] summary score interpretations for clinical decision-making are not yet available. This may be worthwhile to investigate in future research, given findings by Margison and French[5] that total score for the 24-item version of the OMPQ yellow flag assessment was able to correctly predict clinical discharge status of "fit" versus "not fit" for return to work after 6 weeks of participation in work conditioning for 85% of patients, based on a cut-off total score of 147. Authors concluded that the OMPQ may be suitable for early identification of injured workers who are more likely to not improve with physical therapy and would benefit from psychosocial interventions to improve return to work success.

RELEVANCE TO OCCUPATIONAL HEALTH CLINICAL PRACTICE GUIDELINES

To date, the OSPRO-YF has been formally evaluated in general orthopedic populations with knee, shoulder, low back, and neck pain. It has not yet been rigorously evaluated in an occupational health setting, but does have great potential for helping to better inform care decisions and patient-provider interactions in this setting. Since pain-associated psychological distress negatively impacts work performance in workers with a broad range of health problems, it is helpful that OSPRO-YF items are worded in a manner that does not restrict use to patients with a specific health conditions or affected body regions. In fact, the OSPRO-YF 10-item tool may be consistently administered to patients with work performance difficulties in combination with one or more self-report measures of disability that are body-area specific.

The Occupational Health Special Interest Group in the Academy of Orthopaedic Physical Therapy has recently introduced Clinical Practice Guidelines for assisting clinicians with optimizing work participation after injury or illness.[6] There was strong evidence to support a recommendation that "Physical therapists should screen for risk factors associated with delayed return to work or work absence throughout the episode of care using patient interview and validated tools."[6]

Examples referenced in the CPG of valid/reliable self-report measures that address return to work (RTW) include the Work Ability Index (WAI), Örebro Musculoskeletal Pain Questionnaire (OMPQ), and Disabilities of the Arm, Shoulder, and Hand-Work subscale (DASH-W). The CPG identifies OSPRO-YF as an exam-

TABLE 1. Scoring Example for an Injured Worker on the OSPRO-YF 10 Item Assessment Tool				
Item #	**Response**	**Other Psychosocial Yellow Flag Assessment Tools**	**Score**	**Flags?****
		Negative Mood Domain Measures		100%
1	2 /3	PHQ-9 Patient Health Questionnaire-9	13.6 /27	Yes
3	2 /4	STAI State-Trait Anxiety Inventory	49.4 /80	Yes
4	2 /4	STAXI State-Trait Anger Expression Inventory	19.9 /40	Yes
		Fear Avoidance Domain Measures		80%
7	1 /4	TSK-11 Tampa Scale of Kinesiophobia	23.0 /44	Yes
8	2 /4	PCS Pain Catastrophizing Scale	23.3 /52	Yes
10	4 /6	FABQ-PA Fear-Avoidance Beliefs Questionnaire-Physical Activity	16.3 /24	
11	3 /6	FABQ-W Fear-Avoidance Beliefs Questionnaire-Work	20.0 /42	Yes
		PASS-20 Pain Anxiety Symptoms Scale	38.4 /100	Yes
		Positive Coping Domain Measures		100%
14	3 /6	CPAQ Chronic Pain Acceptance Questionnaire	53.8 /120	Yes
15	3 /6	PSEQ Pain Self-Efficacy Questionnaire	26.2 /60	Yes
17	4 /10	SER Self-Efficacy for Rehabilitation	63.1 /120	Yes
Score*	28 /53	**Overall Yellow Flags**	10 /11	91%

* OSPRO-YF Score is total of item response (x) scores, **except** that items 14, 15, and 17 must be reverse-scored before summing with other responses, **where** item #14 and #15 score = 6-x, and item #17 score = 10-x.

** Percent scores under Flags? next to each domain is the percent of possible "Yes" measures for each domain.

ple of another tool to identify psychosocial risk factors, with a disclaimer that the OSPRO-YF that has not been subject to research to link it with RTW.[6] The predictive ability of OMPQ has been studied by Bergström[7] and Gabel et al[8]; however, an additional benefit of the OSPRO-YF over the OMPQ is that it can quickly assess a wide range of psychological factors known to influence pain and disability. Dale et al[9] demonstrated moderate correlations between DASH-W scores with work ability, work productivity, and work severity. Armijo-Olivo et al[10] found that Item 23 on the DASH that asks about the level of work limitations for arm, shoulder, or hand problems was found to be equally predictive of the entire DASH 30-item survey for work status at 90 days. Item 11 on the OSPRO offers a similar question about work difficulty as Item 23 of the DASH and Item 2 of the DASH-W that have a more limited focus on upper extremity disorders. Since use of the DASH and DASH-W is limited to upper extremity conditions, the OSPRO-YF 10-Item tool is more applicable to a broader range of health conditions (ie, knee, shoulder, neck, and back pain) that may limit return to work. The Clinical Practice Guideline also identifies the FABQ-W (score > 27.5)[11], and TSK-11[12-13] as tools that identify RTW risk factors. The OSPRO-YF 10-Item may be used to provide accurate estimates of FABQ-W and TSK-11 scores.[1] The value of the OSPRO-YF in this context is the increased efficiency and reduced response burden with estimating TSK-11 and FABQ-W scores (and others) using a tool comprised of only 10 items.

CASE ILLUSTRATION

The injured worker is a 52-year-old truck driver who operates a 24-foot box truck or a side loader truck to deliver beer and wine products on a delivery route. The heaviest case of wine weighs 50 lb and is lifted from floor level to overhead. He must also lift up to 160 lb half barrels with another worker. After injuring his shoulder at work, he continued to work for 6 months with assistance from a helper until electing to have surgery for repair of posterior labral tear, subacromial decompression, acromioclavicular joint resection/ Mumford, and extensive glenohumeral joint debridement. His surgical recovery and outpatient rehabilitation was complicated by

hospitalization for COVID-19. He was referred for a functional capacity evaluation (FCE) after 7 months of disability following surgery. During the FCE, he was completely cooperative and provided a consistent performance. The end range active movements of his affected shoulder were restricted and painful, with nearly normal passive range-of-movement and end feel. He demonstrated the functional ability to lift 40 lb overhead and 60 lb from a lower level at a somewhat hard level of perceived exertion. His baseline complaints of shoulder pain during sitting increased from 0/10 to 6/10 in response to performance-based functional capacity tests. His comorbidities of total knee replacement and Class III obesity (BMI 43.1, weight 305 lb) contributed to functional performance difficulties on the lower lift test and Two Square Agility Test.

The injured worker was released to RTW on modified duty with assistance from a helper in accordance with recommendations from the FCE examiner. He continued to participate in physical therapy; however, he continued to call-off work and miss physical therapy appointments with a variety of excuses. He was regularly monitored for weight checks, but was not having any success with dietary management to promote weight loss. He also reported suffering from emotional difficulties related to recent deaths in his family. His physical therapist became concerned that psychosocial factors were delaying his return to usual duties. The OSPRO-YF 10-Item Assessment Tool was administered to assess psychosocial risk factors. His scoring results in **Table 1** identified that 10 of 11 domain measures were positive for yellow flags (91%). This initial information was helpful to engage the worker in an interactive discussion that prompted his participation in cognitive behavioral therapy to reduce his psychosocial risks and motivate better compliance with home exercise and dietary management to lose weight. As this worker proceeded with interventions, the OSPRO-YF 10-Item Assessment was readministered at period intervals to monitor him for improvements with respect to yellow flags present and total scores.

CONCLUSIONS

Disability evaluation is complex and necessitates the interpretation of patient self-report measures within the context of physical performance and other risk factors, such as psychological distress, comorbidities, and heavy job demands. The Work Participation Restrictions Clinical Practice Guideline5 recommends that physical therapists use validated self-report measures in combination with physical performance tests during the initial evaluation and throughout the episode of care to measure work ability and inform treatment and prognosis for return to work. This necessitates the development of therapeutic alliances by including the worker in planning and collaborating with other health professionals to address potential barriers to work participation such as psychosocial risk factors.

Figure 1. OSPRO-YF 10-Item Assessment Tool

OSPRO-YF 10-ITEM ASSESSMENT TOOL

Instructions: Read each statement below and circle the number to the right of the statement to indicate your response.

How often are you bothered by:	Not at all	Several days	More than half the days	Nearly every day
1. Poor appetite or overeating?	0	1	2	3

How often do you do you feel that:	Almost never	Sometimes	Often	Almost always
3. Some unimportant thoughts run through my mind and bother me	1	2	3	4
4. I am a hotheaded person	1	2	3	4

To what extent do you agree that:	Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree
7. I wouldn't have as much pain as I do if there weren't something potentially dangerous going on in my body	1	2	3	4

When you are experiencing pain, to what degree do you think or feel that:	Not at all	To a slight degree	To a moderate degree	To a great degree	All the time
8. I can't seem to keep the pain out of my mind.	0	1	2	3	4

To what extent do you agree that:	Completely Disagree						Completely Agree
10. I cannot do physical activities that (might) make my pain worse	0	1	2	3	4	5	6
11. My work is too heavy for me.	0	1	2	3	4	5	6

Rate the truth of each statement for you:	Never true						Always true
14. It's OK to experience pain	0	1	2	3	4	5	6
15. I lead a full life even though I have chronic pain.	0	1	2	3	4	5	6

Please rate your degree of certainty with regard to the statement below:	I Cannot Do It										Certain I Can Do It
17. I can perform my therapy no matter how I feel emotionally.	0	1	2	3	4	5	6	7	8	9	10

For more information and scoring: https://www.orthopt.org/yf/

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