

Evaluating UE Disability With the DASH

► Our previous column on testing focused on lower-extremity dysfunction. In this issue, we look to the Disabilities of the Arm, Shoulder and Hand Outcome Questionnaire (a.k.a., the DASH) as a potentially useful tool for the assessment of upper-extremity musculoskeletal conditions.

For clinicians who look to correlate information from traditional medical sources such as radiographs (X-rays) and magnetic resonance imaging (MRI) with function and monitor the effects of specific interventions over time, and for patients who seek sources for pain and physical limitations, use of the DASH may be the answer.

About the DASH

The DASH questionnaire is a self-administered, region-specific outcome instrument developed via a collaboration of researchers from the American Academy of Orthopedic Surgeons (AAOS) Outcomes Research Committee and the Institute for Work and Health (IWH) as a measure of self-rated upper extremity physical disability and symptoms.^{1,2} The DASH consists of a 30-item disability/symptom scale, scored 0 (no disability) to 100. The questionnaire was designed to help portray disability experienced by people with upper-extremity disorders and also to monitor changes in symptoms and function over time.

After performing a literature review and based upon expert opinion, specific concepts with underlying components and items were identified.² Concepts covered by the DASH questionnaire are symptoms and functional status. Components included under symptoms are pain, weakness, stiffness, tingling and numbness. Components under functional status include physical, social and psychological functioning. Components within physical functioning are daily activities, house/yard chores, shopping/errands, recreational activities, self-care, dressing, eating, sexual activities, sleep and sports/performing arts (optional). Social functioning includes components such as family care, occupation and socializing. Psychological functioning includes only self-image as a component.

The Outcome Measure of the DASH contains two optional, four-item elements for the purpose of measuring symptoms and function in athletes, performing artists and others that participate or are employed in positions that require a high degree of physical performance. As the 30-item DASH may only identify individuals who are having difficulties in everyday activities, the optional elements were included to help identify individuals who may be having difficulties at higher performance levels.

In an article that evaluated the longitudinal construct validity of the DASH in 109 patients who underwent surgical treatment for a variety of upper-extremity conditions preoperative to postoperative (6 to 21 months), the mean DASH score preoperatively was 35 (SD = 22) and postoperatively 24 (SD = 23), and the mean score change was 15 (SD=13). The effect size was 0.7 standardized response mean

= 1.2. The authors also reported the mean change in DASH score for the patients reporting the status of the arm as “much better” or “much worse” after surgery to be 19 (15–23), and for those reporting it as “somewhat better” or “somewhat worse” to be 10 (7–14) ($p = 0.01$).³ This study concluded that the DASH is able to differentiate small and large changes of disability over time after surgery in patients with upper-extremity musculoskeletal disorders. A 10-point difference mean DASH score may be considered as a minimal important change. The same study also concluded that the DASH can show treatment effectiveness after surgery for subacromial impingement

and carpal tunnel syndrome (effect size for arthroscopic acromioplasty = 0/9 and standardized response mean = 0.5; effect size for carpal tunnel surgery = 0.7 and standardized response mean = 1.0). The complete DASH and specifics about its use can be found on the Institute

for Work and Health Website at <http://www.dash.iwh.on.ca.htm>.¹

A shorter version of the DASH, called the QuickDASH, as well as references for translated versions of the DASH, are also available on the IWH Website.

Scoring the DASH

A revised scoring method was developed in 2002 by the creators of the DASH and advertized to be simpler, more efficient and less complicated to use in the event of missing data. The new formula is said to be algebraically equivalent to the original scoring calculations. The developers also state that whether the revised formula or the original formula is used, the same score will be obtained. The DASH Outcome Measure is scored in two components: the disability/symptom section (30 items, scored 1-5) and the optional high performance sport/music or work section (4 items, scored 1-5). The scoring of the DASH takes place in the following manner.¹

At least 27 of the 30 items must be completed for a score to be calculated. The assigned values for all completed responses are simply summed and averaged, producing a score out of five. This value is then transformed to a score out of 100 by subtracting one and multiplying by 25. This transformation is done to make the score easier to compare to other measures scaled on a 0-100 scale. A higher score indicates greater disability.

Each optional module consists of four items. The same procedure described above is followed to calculate the optional four-item module score. All four questions must be answered in order to calculate the score. Simply add up the assigned values for each response and divide by four (number of items); subtract one and multiply by 25 to get a score out of 100.

If more than 10 percent of the items (that is, more than three items) are left blank by the respondent, you will not be able to cal-

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culate a DASH disability/symptom score. By this same rule (that is, no more than 10 percent of the items can be left blank), no missing values can be tolerated in the high-performance sports/performing arts or work module because the module consists of only four items. This “rule” applies to both the original and revised scoring methods.

The DASH in its current form appears to meet its developers goal as a self-administered, region-specific outcome instrument developed to measure self-rated upper-extremity physical disability and symptoms that captures change over time. Clinicians should use the DASH as a choice for evaluation of patients with upper limb musculoskeletal dysfunction. ■

References

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