

Using the Neck and Back Outcome Tools

The Neck Disability Index and Oswestry Back Index are self-administered questionnaires that have been designed for us to assess the impact of specific conditions (i.e. neck pain, low-back pain) on our patients' ability to perform typical daily functions (personal care, walking, sitting). These offer a valid and reliable way for us to measure and accurately assess changes in our patients' function (disability).

Why Use Outcome Assessment?

Outcome tools provide "quantifiable" information and can assist us in setting obtainable treatment goals. When we hope to improve a patient's quality of life, it's best to think in terms of activities the patient would like to do, but can't because of the presenting complaint. It's important to remember that one primary goal of both the patient and clinician is to resume those activities of daily living.

As an example, how many of us ask our patients "What would you like to do, but can't, because of how you feel?" Often they say "play golf, lift my kids, walk more". Using outcome tools during the course of care can help evaluate the patient's ability to return to various activities of daily living.

"Correlating information gained from outcome tools to the patient's specific clinical data and then making a clinical decision based on the results represents an important step in making the "paradigm shift" into developing an "outcome-based" practice".¹

Setting Treatment Goals

It cannot be overstated that patients gauge the severity of their conditions by the limitations they have on everyday activities. Thus, they evaluate the effectiveness of our treatment plans on the improvement of their activity level. Patient satisfaction with our care is found to increase when we focus on how symptoms are affecting their lives and understand the specific concerns that they have.

It may be helpful to understand not only what activities are painful or limited, but understand how difficult, how important, and how often the activity is required to be performed. For example, someone with low back pain who identifies sitting as limited and painful and works in a sedentary office environment will place greater importance on this function as compared to someone with a similar complaint but works at a job where they stand all day. Understanding these variables helps us focus on the patient, the functional difficulties they are having and set realistic and attractive/valuable goals for the patient.

Once the patient has identified specific activities that are limited, we can help:

- Formulate treatment goals that focus on function
- Identify patient expectations, taking care to discuss and revise unrealistic expectations accordingly.

We can use this chart to help us determine when to use outcome measures:

Attribute	Instrument	Acute Chronic
Function (Disability)	Neck or Back Index	Acute – Baseline + at least every 2 weeks Chronic – Baseline + at least every 4 weeks

Procedure for Administration of Neck and Back Indexes

As the names of the indexes imply, the Neck Index is recommended for all patients (new or established) with neck related conditions and the Back Index is given to patients with back related conditions. Depending upon the location of a patient's presenting symptoms one or both of the indexes may be administered.

Scoring the Neck and Back Indexes

Both indexes use the following scoring procedure:

The index consists of 10 sections. The heading of each section contains an ADL or pain descriptor. Beneath the heading of each section are 6 statements describing increasing levels of disability or severity of pain. A value ranging from 0 (no disability or pain) to 5 (total disability or severe pain) is assigned to each statement.

For each section, the patient selects the one statement which most closely describes his or her pain intensity, or how his or her condition affects his or her ability to perform the ADL (Activity of Daily Living) described.

To facilitate scoring, the value of each statement corresponds to the number preceding the statement.

The raw score out of 50 is obtained by adding the values of the statements selected in all of the sections. If the patient has answered all 10 sections the raw score can be multiplied by 2 to obtain the % Disability.

For those cases where the patient does not respond to every section, the index score is calculated by adding the values of the statements selected in all of the sections, dividing this total by the maximum possible value of the sections and multiplying the result by 100:

$$\text{Index Score} = \frac{\text{Total value of all statements selected}}{\text{Maximum possible value (\# of sections with a statement selected x 5)}} \times 100$$

Example 1A: A patient selects a statement in each of the 10 sections of the index and these add up to 16. Since the patient chose a statement in each section you can just multiply this score by 2 to get the % Disability:

$$\text{Index Score} = 16 \text{ (total scored)} \times 2 = 32\% \text{ disability}$$

Example 1B: Given the same situation in example 1A you can also use the formula to calculate the % Disability as follows: the patient selects a statement in each of the 10 sections of the index and these add up to 16. Since the patient chose a statement in each section the maximum possible value of the sections is 50 (10 sections x 5). Therefore:

$$\text{Index Score} = \frac{16 \text{ (total scored)}}{50 \text{ (total possible)}} \times 100 = 32\% \text{ disability}$$

Example 2: A patient selects a statement in only 9 of the 10 sections and these add up to 16. Since the patient chose a statement in only 9 sections the maximum possible value of the sections is 45 (9 sections x 5). Therefore:

$$\text{Index Score} = \frac{16 \text{ (total scored)}}{45 \text{ (total possible)}} \times 100 = 36\% \text{ disability}$$

If a patient selects two or more statements in one section, use the statement with the highest value when calculating the index score. The **score(s) from the index(es) should then be transferred to the appropriate box on the Patient Summary Form.** The index score from the initial evaluation is the baseline for subsequent re-assessments of the patient's

condition. The re-assessment or final evaluation index score is compared with the initial score and previous re-assessment scores to document change in the patient's functional status.

How to Interpret Outcome Scores

Remember that interpreting any of these scores also involves more than tallying the points and calculating a total. The indexes are excellent tools for creating realistic, short-term goals with our patients, but **a higher score does not always mean a greater injury. The score is interpreted from two perspectives; affects to the patient's reported activity limitations by a:**

- **Physical component and**
- **Biopsychosocial component**

The **physical component** identifies **activities that are painfully difficult**. With this assessment we measure:

- Functional disruption
- Degree of pain
- Functional limitations

The **biopsychosocial component** identifies **how the patient interprets and responds to pain along with coping strategies. This assessment is the most significant because:**

- There is no linear relationship between functional limitations and physical injury
- Everybody interprets and responds to pain differently
- The same injury for two different patients will produce two different pain report and functional levels

We should remember to correlate the index scores with current history, examination, and objective tests to develop a best practice treatment plan.

According to the original research on these questionnaires, general grading schemes were developed to categorize the severity of scores as follows:

For the Oswestry Low Back Index²:

% Disability Score	Level of Disability	Description
0-20%	Minimal Disability	<ul style="list-style-type: none">- Copes with most daily living activities- Usually no treatment is needed, apart from self-care advice on lifting, sitting, posture, physical fitness, and diet.
20-40%	Moderate Disability	<ul style="list-style-type: none">- Experiences more pain/problems with sitting, lifting, and standing.- Travel and social life more difficult- May be off work- Conservative management usually helps
40-60%	Severe Disability	<ul style="list-style-type: none">- Pain is the main problem, but travel, personal care, social life and sleep are also affected.
60-80%	Crippled	<ul style="list-style-type: none">- Pain impinges on all aspects of life at home and at work
80-100%	Bedbound	<ul style="list-style-type: none">- Careful observation should be made during the exam as these patients are typically:<ul style="list-style-type: none">• Bed-bound or• Exaggerating symptoms

For the Neck Disability Index^{5,6}:

Raw Score (Out of 50)	% Disability (Out of 100)	Level of Disability
0 – 4	0 – 8%	no disability
5 -14	10 – 28%	mild
15 – 24	30 -48%	moderate
15 – 34	50 – 68%	severe
Above 34	Above 68%	complete disability

Treatment Effectiveness

What is a meaningful increase in activity tolerance or the minimum amount of change in these tools that is clinically significant?

When interpreting the **Neck Index** what is statistically significant change?

- One method used to calculate clinical improvement has been defined as 15% improvement relative to baseline. For example, 40% to 34% = 15% relative reduction in disability.³
- An alternative method is changes equal to or greater than 5-points (raw score out of 50). This 5-point change correlates to 10% improvement in “% Disability”.⁶

When interpreting the **Back Index** what is statistically significant change?

- Minimum 10% improvement in total functional assessment can be considered a meaningful change in % Disability.⁷ For example, 50% to 40% = 10% change based on 100%.

Should You Treat to a Score of Zero?

Avoid the trap of treating to 0%. Treating to zero is not supportable based on current evidence.⁵ It is common to find that patients will continue to score between 5-15 (10%-28% Disability) despite having made excellent recovery (i.e. they are back to work).⁵ Most of these patients do not need in-office treatment beyond advice regarding daily activity performance. Erhard found that for acute, uncomplicated patient presentations, a score of 11% may be used as an appropriate cut-off score for health care practitioners to consider discharge.⁴

Limitations

We should take these general limitations of assessment tools into consideration when determining whether or not to utilize them for a specific patient:

- Some structured **outcome assessment instruments** (i.e. Neck and Back Index) employed in clinical practice **have not been proven valid for patients under 14 years old and over 75 years old**. Others like Peabody Developmental Motor Scales (PDMS) for pediatrics and Functional Independence Measure (FIM) for the senior population have been validated for these age groups.
- There are times when the interpretation of questionnaires will not coincide with our professional observation. It is then imperative that we clarify the reason for this lack of accord

References

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