Development of innovative training solutions in the field of functional evaluation aimed at updating of the curricula of health sciences schools

MODULE BIOMECHANICS OF SPINE

Didactic Unit C: HOW DO I ASSESS SPINE?

C.2. Which clinical scales exist to assess spine?

Index

1. Objectives

- To learn what is a clinical scale and what is its utility, advantages and disadvantages for functional evaluation.

- To know the main and most widespread scales used for the evaluation of disability caused by neck and low back pain.

- To be able to use scales in order to quantify disability in cases of neck pain and low back pain.

2. What is functional evaluation? Definition

The term functionality refers to what people do or how they do it; activities, tasks, skills or abilities that individuals need to adapt to the environment: activities of daily living (ADLs), personal care, mobility or communication, among others. These capacities are included in the assessment of the function or structure of the body, activities and participation, as components of the function and disability based on the International Classification of Functioning, Disability and Health (ICF)[1].

Thus, functional assessment aimed to measure functionality, and is closely related to the evaluation of impairment and disability, including the impact derived from any source of pain or any kind of disorder. Also, functional assessment is key when monitoring the progress of a patient and the effect of any management strategy, specially within the Rehabilitation Field.

The most common instruments to measure function are the clinical scales and instrumental techniques used in biomechanical assessment.

3. What is a clinical scale? Definition, advantages and disadvantages

Clinical scales are a source of clinical information obtained through standardized questionnaires. There are different clinical scales according to:

- Object of measurement. Some scales address different domains of a person in a given medical condition. Some of them assess specific body functions such as muscle strength or activities like gait, and finally, some evaluate participation, considering how a disorder affects personal development.

- Aspects assessed. Some scales deal with a single aspect, whereas others group different tasks or functions.

- Results provided. Some classify the function or activity in different levels, while others provide a percentage associated with a degree of functionality or even risk.

- Administration time. Some take only a few minutes while others require much longer.

- Technical training required. The application of some scales requires previous training or specific knowledge; others are self-explanatory and self-administered and can be applied by unqualified personnel.

The information obtained from these questionnaires is useful to monitor the evolution and progress of a patient, establish population references, assess the effectiveness of a specific treatment, etc.

The use of clinical scales offers many advantages, like the fact that does not need any equipment or infrastructure, that they are usually easy to apply and they do not have a floor effect (they can normally be used to evaluate any kind of impairment, no matter the severity of it). However, there are some disadvantages as well. For example, such instruments may imply certain subjectivity, both from the point of view of the patient and the evaluator who observes and qualifies the items. In some cases, they are limited in terms of resolution and sensitivity[2] and some of them might be too long.

4. Clinical scales for the evaluation of cervical spine

NECK DISABILITY INDEX (NDI)

The neck disability index is a self-report questionnaire used to determine how neck-pain affects a patient's daily life and to assess the self-rated disability of patients with neck pain. It addresses areas concerning activities of daily living, attention&working memory, functional mobility, life participation, occupational performance, pain, quality of life and sleep. This test was originally designed in 1991 and is nowadays the most widely used instrument for assessing disability in neck pain.

The test contains 10 questions in total in the following domains: pain intensity, personal care, lifting, reading, headaches, concentration, work, driving, sleeping and recreation (see full test below). There are 6 possible answers per questions, from 0 (no disability) to 5 (complete disability). The final score is represented in a 0 to 50 scale (being 50 the worst punctuation) or, sometimes, it can be represented in a scale 0-100 or in percentage. The overall minimum detectable change (with interval of 90% of confidence) is stablished from 5 or 10% points.

Neck Disability Index

This questionnaire has been designed to give us information as to how your neck pain has

affected your ability to manage in everyday life. Please answer every section and ***mark in each section only the one box that applies to you****. We realize you may consider that two or more statements in any one section relate to you, but please just mark the box that most closely describes your problem****.***

Section 1: Pain Intensity

- ☐ *I have no pain at the moment*
- ☐ *The pain is very mild at the moment*
- ☐ *The pain is moderate at the moment*
- ☐ *The pain is fairly severe at the moment*
- ☐ *The pain is very severe at the moment*
- ☐ *The pain is the worst imaginable at the moment*

Section 2: Personal Care (Washing, Dressing, etc.)

- ☐ *I can look after myself normally without causing extra pain*
- ☐ *I can look after myself normally but it causes extra pain*
- ☐ *It is painful to look after myself and I am slow and careful*
- ☐ *I need some help but can manage most of my personal care*
- ☐ *I need help every day in most aspects of self-care*
- ☐ *I do not get dressed, I wash with difficulty and stay in bed*

Section 3: Lifting

- ☐ *I can lift heavy weights without extra pain*
- ☐ *I can lift heavy weights but it gives extra pain*
- ☐ *Pain prevents me lifting heavy weights off the floor, but I can manage if they are*
- ☐ *conveniently placed, for example on a table*
- ☐ *Pain prevents me from lifting heavy weights but I can manage light to medium*
- ☐ *weights if they are conveniently positioned*

- ☐ *I can only lift very light weights*
- ☐ *I cannot lift or carry anything*

Section 4: Reading

- ☐ *I can read as much as I want to with no pain in my neck*
- ☐ *I can read as much as I want to with slight pain in my neck*
- ☐ *I can read as much as I want with moderate pain in my neck*
- ☐ *I can't read as much as I want because of moderate pain in my neck*
- ☐ *I can hardly read at all because of severe pain in my neck*
- ☐ *I cannot read at all*

Section 5: Headaches

- ☐ *I have no headaches at all*
- ☐ *I have slight headaches, which come infrequently*
- ☐ *I have moderate headaches, which come infrequently*
- ☐ *I have moderate headaches, which come frequently*
- ☐ *I have severe headaches, which come frequently*
- ☐ *I have headaches almost all the time*

Section 6: Concentration

- ☐ *I can concentrate fully when I want to with no difficulty*
- ☐ *I can concentrate fully when I want to with slight difficulty*
- ☐ *I have a fair degree of difficulty in concentrating when I want to*
- ☐ *I have a lot of difficulty in concentrating when I want to*
- ☐ *I have a great deal of difficulty in concentrating when I want to*
- ☐ *I cannot concentrate at all*

Section 7: Work

- ☐ *I can do as much work as I want to*
- ☐ *I can only do my usual work, but no more*
- ☐ *I can do most of my usual work, but no more*
- ☐ *I cannot do my usual work*
- ☐ *I can hardly do any work at all*
- ☐ *I can't do any work at all*

Section 8: Driving

- ☐ *I can drive my car without any neck pain*
- ☐ *I can drive my car as long as I want with slight pain in my neck*
- ☐ *I can drive my car as long as I want with moderate pain in my neck*
- ☐ *I can't drive my car as long as I want because of moderate pain in my neck*
- ☐ *I can hardly drive at all because of severe pain in my neck*
- ☐ *I can't drive my car at all*

Section 9: Sleeping

- ☐ *I have no trouble sleeping*
- ☐ *My sleep is slightly disturbed (less than 1 hr sleepless)*
- ☐ *My sleep is mildly disturbed (1-2 hrs sleepless)*
- ☐ *My sleep is moderately disturbed (2-3 hrs sleepless)*
- ☐ *My sleep is greatly disturbed (3-5 hrs sleepless)*
- ☐ *My sleep is completely disturbed (5-7 hrs sleepless)*

Section 10: Recreation

- ☐ *I am able to engage in all my recreation activities with no neck pain at all*

- ☐ *I am able to engage in all my recreation activities, with some pain in my neck*
- ☐ *I am able to engage in most, but not all of my usual recreation activities because of pain in my neck*
- ☐ *I am able to engage in a few of my usual recreation activities because of pain in*
- ☐ *my neck*
- ☐ *I can hardly do any recreation activities because of pain in my neck*
- ☐ *I can't do any recreation activities at all*

Score: /50 Transform to percentage score x 100 = %points

Scoring: *For each section the total possible score is 5: if the first statement is marked the section score = 0, if the last statement is marked it = 5.*

If all ten sections are completed the score is calculated as follows:

Example:16 (total scored)/ 50 (total possible score) x 100 = 32%

If one section is missed or not applicable the score is calculated:

16 (total scored)/45 (total possible score) x 100 = 35.5%

The use of this scale to assess patients with neck pain is recommended by different authors, like Childs&colleages[3], and has proved its utility for addressing impairment caused by pain in the context of different pathologies, like cervical radiculopathy[4], degenerative and traumatic disorders[5] or post-surgery patients (cervical fusion)[6].

Though some authors have tried to stablish categories depending on the punctuations obtained, the methodology used is sometimes not described and their validity and reliability are questionable. This said, Vernon and Moir[7] presented the following interpretation:

Table 1. Disability classification according to NDI

0-4 points (0-8%)	**no disability**
5-14 points (10 – 28%)	**mild disability**
15-24 points (30-48%)	**moderate disability**
25-34 points (50- 64%)	**severe disability**
35-50 points (70-100%)	**complete disability**

NECK PAIN AND DISABILITY SCALE (NPDA)

The NPDA is a test developed by Wheeler et al.[8] that was designed using the Million Visual Analogue Scale as a template. It is a self-administered test and quick to complete (it is estimated that in less than 5 minutes). It consists of 20 items that measure the intensity of pain and the associated emotional factors when performing various activities of daily living. The patient marks the intensity of the symptomatology on an analog-visual scale. Each item is scored from 0 to 5, thus totaling 100 points. The final score can be categorized into 6 groups as will be shown below.

Neck Pain and Disability Scale

Name_____ Date ____/____/____

Last First Middle Initial Month Day Year

ID Number_____ Chart Number_____ Examiner's Initials_____

PLEASE MAKE AN "X" ALONG THE LINE TO SHOW HOW FAR FROM NORMAL TOWARD THE WORST POSSIBLE SITUATION YOUR PAIN PROBLEM HAS TAKEN YOU

SCORE

1. How bad is your pain today?

0|_____|_____|_____|_____|_____|*5* _____

NO PAIN *MOST SEVERE PAIN*

2. How bad is your pain on average?

0|_____|_____|_____|_____|_____|*5* _____

NO PAIN *MOST SEVERE PAIN*

3. How bad is your pain at its worst?

0|_____|_____|_____|_____|_____|*5* _____

NO PAIN *CANNOT TOLERATE*

4. Does your pain interfere with your sleep?

0|_____|_____|_____|_____|_____|*5* _____

NOT AT ALL *CAN'T SLEEP*

5. How bad is your pain with standing?

0|_____|_____|_____|_____|_____|*5* _____

NO PAIN *MOST SEVERE PAIN*

6. How bad is your pain with walking?

0|_____|_____|_____|_____|_____|*5* _____

NO PAIN *MOST SEVERE PAIN*

7. Does your pain interfere with driving or riding in a car?

0|_____|_____|_____|_____|_____|*5* _____

NOT AT ALL *CAN'T DRIVE OR RIDE*

8. Does your pain interfere with social activities?

0|_____|_____|_____|_____|_____|*5* _____

NOT AT ALL *ALWAYS*

9. Does your pain interfere with recreational activities?

0|_____|_____|_____|_____|_____|*5* _____

NOT AT ALL *ALWAYS*

10. Does your pain interfere with work activities?

0|_____|_____|_____|_____|_____|*5* _____

NOT AT ALL *CAN'T WORK*

11. Does your pain interfere with personal care (eating, dressing, bathing, etc.)?

0|_____|_____|_____|_____|_____|*5* _____

NOT AT ALL *ALWAYS*

12. Does your pain interfere with personal relationships (family, friends, sex, etc.)?

0|_____|_____|_____|_____|_____|*5* _____

NOT AT ALL *ALWAYS*

13. How has your pain changed your outlook on life and the future (depression, hopelessness)?

0|_____|_____|_____|_____|_____|*5* _____

NO CHANGE *COMPLETELY CHANGED*

14. Does pain affect your emotions?

0|_____|_____|_____|_____|_____|5 _____

NOT AT ALL COMPLETELY

15. Does your pain affect your ability to think or concentrate?

0|_____|_____|_____|_____|_____|5 _____

NOT AT ALL COMPLETELY

16. How stiff is your neck?

0|_____|_____|_____|_____|_____|5 _____

NOT STIFF CAN'T MOVE NECK

17. How much trouble so you have turning your neck?

0|_____|_____|_____|_____|_____|5 _____

NO TROUBLE CAN'T MOVE NECK

18. How much trouble do you have looking up and down?

0|_____|_____|_____|_____|_____|5 _____

NO TROUBLE CAN'T LOOK UP OR DOWN

19. How much trouble do you have working overhead?

0|_____|_____|_____|_____|_____|5 _____

NO TROUBLE CAN'T WORK OVERHEAD

20. How much do pain pills help?

0|_____|_____|_____|_____|_____|5 _____

COMPLETE RELIEF NO RELIEF

TOTAL SCORE_____

AGE_____ OCCUPATION_____

Table 2. Clinical relevance according to NPDA

PUNCTUATION	CLINICAL RELEVANCE
0-22	NONE OR MINIMUM
23-40	MEDIUM
41-57	MODERATE
58-74	MODERATE TO SEVERE
75-92	SEVERE
92-100	EXTREME SUFFERING AND IMPAIRMENT

This scale is, along with the NDI, one of the most spread among clinicians, and has proved to be useful in cervical pain syndromes[9], including chronic neck pain and C1-2 fusion patients[10].

NORTHWICK PARK NECK PAIN QUESTIONNAIRE (NPQ)

The NPQ is a questionnaire designed for the assessment of neck pain, and its impact on a series of daily life activities. Its use is widespread among clinicians as it has proven a good sensitivity to change. It addresses nine items related to pain intensity, duration of symptoms, numbness at night, sleep, social life, carrying, reading and watching television (TV), working/housework, and driving. A total of five possible responses from 0 to 4 can be chosen for each item, according to the level of difficulty related to the activity evaluated (from 0 = no difficulty to 4 = severe difficulty).

The overall NPQ score percentage is calculated by adding together the score for each item (0–36): total score/36·100%. If an item is not applicable, the score is calculated as (total score/ 32) ·100 %. Questionnaires are invalid if one or more sections are incorrectly completed or more than one item is omitted.

Northwick Park Neck Pain Questionnaire

Please Read: This questionnaire has been designed to give us information as to how Neck Pain has affected your ability to manage in everyday life. Please answer every section and mark in each section ONLY The ONE BOX which applies to you. We realize you may consider that two of the statements in any one section relate to you, BUT PLEASE MARK THE ONE BOX THAT MOST CLOSELY DESCRIBES YOUR PROBLEM.

Section 1 - Pain Intensity:

- ☐ *I have no pain at the moment.*
- ☐ *My pain is very mild at the moment.*
- ☐ *My pain is moderate at the moment.*
- ☐ *My pain is fairly severe at the moment.*

- ☐ *My pain is very severe at the moment.*

Section 2 - Pain and Sleeping

- ☐ *My sleep is never disturbed by pain.*
- ☐ *My sleep is occasionally disturbed by pain.*
- ☐ *My sleep is regularly disturbed by pain.*
- ☐ *Because of pain I have less than 5 hours sleep in total.*
- ☐ *Because of pain I have less than 2 hours sleep in total.*

Section 3 - Pins, Needles or Numbness in Arms at Night

- ☐ *I have no pins and needles or numbness at night.*
- ☐ *I have occasional pins and needles or numbness at night.*
- ☐ *My sleep is regularly disturbed by pins and needles or numbness.*
- ☐ *Because of pins and needles or numbness I have less than 5 hours sleep in total.*
- ☐ *Because of pins and needles or numbness I have less than 2 hours sleep in total.*

Section 4 - Duration of Symptoms

- ☐ *My neck and arms feel normal all day.*
- ☐ *I have symptoms in my neck or arms on walking which last less than one hour.*
- ☐ *Symptoms are present on & off for a total period of 1-4 hrs.*
- ☐ *Symptoms are present on & off for a total of more than 4 hrs.*
- ☐ *Symptoms are present continuously all day.*

Section 5 -Carrying

- ☐ *I can carry heavy objects without extra pain.*
- ☐ *I can carry heavy objects, but they give me extra pain.*
- ☐ *Pain prevents me from carrying heavy objects, but I can manage medium weight objects.*
- ☐ *I can only lift light weight objects.*
- ☐ *I cannot lift anything at all*

Section 6 - Reading and Watching TV

- ☐ *I can do this as long as I wish with no problems.*
- ☐ *I can do this as long as I wish, if I'm in a suitable position.*
- ☐ *I can do this as long as I wish, but it causes extra pain.*
- ☐ *Pain causes me to stop doing this sooner than I would like.*
- ☐ *Pain prevents me from doing this at all.*

Section 7 - Working/Housework, Etc.

- ☐ *I can do my usual work without extra pain.*
- ☐ *I can do my usual work, but it gives me extra pain.*
- ☐ *Pain prevents me from doing my usual work for more than half the usual time.*
- ☐ *Pain prevents me from doing my usual work for more than a quarter of the usual time.*
- ☐ *Pain prevents me from working at all.*

Section 8 - Social Activities

- ☐ *My social life is normal and causes me no extra pain.*
- ☐ *My social life is normal but increases the degree of pain.*
- ☐ *Pain has restricted my social life, but I am still able to go out.*
- ☐ *Pain has restricted my social life to the home.*

☐ *I have no social life because of pain.*

Section 9 - Driving (if applicable)

☐ *I can drive whenever necessary without discomfort.*
☐ *I can drive whenever necessary, but with discomfort.*
☐ *Neck pain or stiffness limits my driving occasionally.*
☐ *Neck pain or stiffness limits my driving frequently.*
☐ *I can not drive at all due to neck symptoms.*

Section 10 - Compared with the last time you answered this question, is your neck pain:

☐ *Much better.*
☐ *Slightly better.*
☐ *The same.*
☐ *Slightly worse.*
☐ *Much worse*

Leak et al.[11] demonstrated that mean scores of each of the nine sections raised with that of the pain section showing internal consistency. Questions on duration and intensity of pain were good indicators of a patient's global assessment. Additionally, these authors highlight the ease of fulfillment for the patients, pointing out that this test is simple to score and provides an objective measure to evaluate outcome in patients with acute or chronic neck pain.

QUEBEC TASK FORCE FOR WHIPLASH-ASSOCIATED DISORDER (WAD)

The Quebec classification is specifically designed to classify patients who suffer from a whiplash-associated disorder (WAD)[12].

Whiplash-associated disorder (WAD) is the term given for the collection of symptoms affecting the neck that are triggered by an accident with an acceleration–deceleration mechanism such as a motor vehicle accident The Quebec Task Force classifies patients with whiplash, based on the severity of signs and symptoms, as follows:

Table 3. Quebec Task Force classification

GRADE I	**No complaints about the neck. No physical sign(s).**
GRADE II	**Neck complaint of pain, stiffness or tenderness only. No physical sign(s).**
GRADE III	**Neck complaint AND musculoskeletal sign(s). Musculoskeletal signs include decreased range of motion and point tenderness.**
GRADE IV	**Neck complaint AND neurological sign(s). Neurological signs include decreased or absence of tendon reflexes, weakness and sensory deficits.**
GRADE V	**Neck complaint AND fracture or dislocation**

Though this is not a self-rated questionnaire like the above shown, it is interesting to know the existence of methodologies aimed at enabling the classification of the degree of affectation caused by certain pathologies. In this case, the clinician would be responsible for establishing the degree assigned for each patient, based on both the clinic referred by them and the physical examination performed.

5. Clinical scales for the evaluation of lumbar spine

OSWESTRY DISABILITY INDEX (ODI)

The Oswestry Disability Index (ODI) is the most commonly used outcome-measure questionnaire for low back pain. Its development was initiated by John O'Brien in 1976 in a specialist clinic where lots of patients with chronic low back pain were seen and the first version of the questionnaire was published in 1980. Soon after, its use began to spread among clinicians. The ODI was validated and improved in a study by a Medical Research Council (MRC) group, which resulted in a new 2.0 version +recommended for general use. Data obtained with the ODI have been pooled for various categories of patients, including pathologies like pelvis fractures, idiopathic scoliosis, spondylolisthesis, sciatica or fibromyalgia, which might curse with low back pain[13].

The ODI is a self-administered questionnaire divided into ten sections designed to assess limitations of various activities of daily living. Each section is scored on a 0–5 scale (5 representing the greatest disability), being the maximum final score 50. The final index is calculated by dividing the summed score by the total possible score (50), which is then multiplied by 100 and expressed as a percentage. Thus, for every question not answered, the denominator (representing the total possible score) is reduced by 5. If a patient marks more than one statement in a question, the highest scoring statement is recorded as a true indication of disability[14].Finally, according to this percentage, the results can be grouped into 5 categories that are presented at the end of this section. The questionnaire can be completed in less than 5 minutes and scored in less than 1 minute

Oswestry Low Back Pain Disability Questionnaire

Fairbank JCT & Pynsent, PB (2000)[15]

Section 1 – Pain intensity

- ☐ I have no pain at the moment
- ☐ The pain is very mild at the moment
- ☐ The pain is moderate at the moment
- ☐ The pain is fairly severe at the moment
- ☐ The pain is very severe at the moment
- ☐ The pain is the worst imaginable at the moment

Section 2 – Personal care (washing, dressing etc.)

- ☐ I can look after myself normally without causing extra pain
- ☐ I can look after myself normally but it causes extra pain
- ☐ It is painful to look after myself and I am slow and careful
- ☐ I need some help but manage most of my personal care
- ☐ I need help every day in most aspects of self-care
- ☐ I do not get dressed, I wash with difficulty and stay in bed

Section 3 – Lifting

- ☐ I can lift heavy weights without extra pain
- ☐ I can lift heavy weights but it gives extra pain

- ☐ Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently placed eg. on a table
- ☐ Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned
- ☐ I can lift very light weights
- ☐ I cannot lift or carry anything at all

Section 4 – Walking*

- ☐ Pain does not prevent me walking any distance
- ☐ Pain prevents me from walking more than 1 mile
- ☐ Pain prevents me from walking more than 1/2 mile
- ☐ Pain prevents me from walking more than 100 yards
- ☐ I can only walk using a stick or crutches
- ☐ I am in bed most of the time

Section 5 – Sitting

- ☐ I can sit in any chair as long as I like
- ☐ I can only sit in my favorite chair as long as I like
- ☐ Pain prevents me sitting more than one hour
- ☐ Pain prevents me from sitting more than 30 minutes
- ☐ Pain prevents me from sitting more than 10 minutes
- ☐ Pain prevents me from sitting at all

Section 6 – Standing

- ☐ I can stand as long as I want without extra pain
- ☐ I can stand as long as I want but it gives me extra pain
- ☐ Pain prevents me from standing for more than 1 hour
- ☐ Pain prevents me from standing for more than 30 minutes
- ☐ Pain prevents me from standing for more than 10 minutes
- ☐ Pain prevents me from standing at all

Section 7 – Sleeping

- ☐ My sleep is never disturbed by pain
- ☐ My sleep is occasionally disturbed by pain
- ☐ Because of pain I have less than 6 hours sleep
- ☐ Because of pain I have less than 4 hours sleep
- ☐ Because of pain I have less than 2 hours sleep
- ☐ Pain prevents me from sleeping at all

Section 8 – Sex life (if applicable)

- ☐ My sex life is normal and causes no extra pain
- ☐ My sex life is normal but causes some extra pain
- ☐ My sex life is nearly normal but is very painful
- ☐ My sex life is severely restricted by pain
- ☐ My sex life is nearly absent because of pain
- ☐ Pain prevents any sex life at all

Section 9 – Social life

- ☐ My social life is normal and gives me no extra pain
- ☐ My social life is normal but increases the degree of pain

- ☐ Pain has no significant effect on my social life apart from limiting my more energetic interests e.g., sport
- ☐ Pain has restricted my social life and I do not go out as often
- ☐ Pain has restricted my social life to my home
- ☐ I have no social life because of pain

Section 10 – Travelling

- ☐ I can travel anywhere without pain
- ☐ I can travel anywhere but it gives me extra pain
- ☐ Pain is bad but I manage journeys over two hours
- ☐ Pain restricts me to journeys of less than one hour
- ☐ Pain restricts me to short necessary journeys under 30 minutes
- ☐ Pain prevents me from travelling except to receive treatment

Scoring instructions

For each section the total possible score is 5: if the first statement is marked the section score = 0; if the last statement is marked, it = 5. If all 10 sections are completed the score is calculated as follows:

Example: 16 (total scored)/ 50 (total possible score) x 100 = 32%

If one section is missed or not applicable the score is calculated over the maximum possible score: 16 (total scored)/45 (total possible score) x 100 = 35.5%

Minimum detectable change (90% confidence): 10% points (change of less than this may be attributable to error in the measurement)

Table 4. Scoring interpretation for ODI

0% to 20%: minimal disability:	The patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting sitting and exercise.
21%-40%: moderate disability:	The patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means.
41%-60%: severe disability:	Pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation.
61%-80%: crippled:	Back pain impinges on all aspects of the patient's life. Positive intervention is required.
81%-100%:	These patients are either bed-bound or exaggerating their symptoms.

ROLAND MORRIS LOW BACK PAIN AND DISABILITY QUESTIONNAIRE (RMQ)

The Roland-Morris Questionnaire (RMQ) is a self-administered disability measure derived from the Sickness Impact Profile (SIP), a 136-item health status measure covering all aspects of physical and mental function. For the RMQ, 24 of those questions were selected. The patient is instructed to put a mark next to each appropriate statement. The patient`s final score will be calculated by adding up the number of marked statements. Thus, the questionnaire is based on a 24-point scale (each answer equals to 1 point), and the greater the punctuation obtained, the greater levels of disability reflected. Though initially It was designed for use in research, it has also been found useful for monitoring patients in clinical practice. Actually, the RMQ has been shown to yield reliable measurements, which are valid for inferring the level of disability, and to be sensitive to change over time for groups of patients with low back pain.

The items from the RMQ concern physical functions that are likely to be affected by low back pain, like walking, bending over, sitting, lying down, dressing, sleeping, self-care, and daily activities. Each item starts with the phrase “because of my back pain….”, in order to make a distinction among back pain and other causes of the disability evaluated.

RDQ scores correlate well with other measures of physical function, including the physical subscales of SF-36, the SIP, the Quebec Back Scale, and the Oswestry questionnaire. Relatively high correlations are also found between RDQ scores and pain ratings. Since Roland and Morris did not a classification of the degrees of disability, clinical improvement over time can be graded based on the analysis of serial questionnaire scores.[13]

Roland-Morris Low Back Pain and Disability Questionnaire (RMQ)

Stratford PW et al. 1996[16]

Instructions

Please read instructions: When your back hurts, you may find it difficult to do some of the things you normally do. Mark only the sentences that describe you today.

- ☐ I stay at home most of the time because of my back.
- ☐ I change position frequently to try to get my back comfortable.
- ☐ I walk more slowly than usual because of my back.
- ☐ Because of my back, I am not doing any jobs that I usually do around the house.
- ☐ Because of my back, I use a handrail to get upstairs.
- ☐ Because of my back, I lie down to rest more often.
- ☐ Because of my back, I have to hold on to something to get out of an easy chair.
- ☐ Because of my back, I try to get other people to do things for me.
- ☐ I get dressed more slowly than usual because of my back.
- ☐ I only stand up for short periods of time because of my back.
- ☐ Because of my back, I try not to bend or kneel down.
- ☐ I find it difficult to get out of a chair because of my back.
- ☐ My back is painful almost all of the time.
- ☐ I find it difficult to turn over in bed because of my back.
- ☐ My appetite is not very good because of my back.
- ☐ I have trouble putting on my socks (or stockings) because of the pain in my back.
- ☐ I can only walk short distances because of my back pain.
- ☐ I sleep less well because of my back.

- ☐ Because of my back pain, I get dressed with the help of someone else.
- ☐ I sit down for most of the day because of my back.
- ☐ I avoid heavy jobs around the house because of my back.
- ☐ Because of back pain, I am more irritable and bad tempered with people than usual.
- ☐ Because of my back, I go upstairs more slowly than usual.
- ☐ I stay in bed most of the time because of my back.

6. Other scales

In addition to measure the specific impact caused by both cervical and lumbar spine conditions, it is also important to know other types of tests or scales which measures pain or disability and quality of life from a more general point of view.

One of the most widespread strategies when measuring pain, is using a Likert-based scale "VAS" (Visual Analogue Scale). With this kind of scales, the subject is able to punctuate their own perception of any kind of pain in a scale from 1 to 10, or from 1 to 100 (the higher the punctuation the worse). It is sometimes supported by a visual scale based on faces with different expressions related to patient's mood.

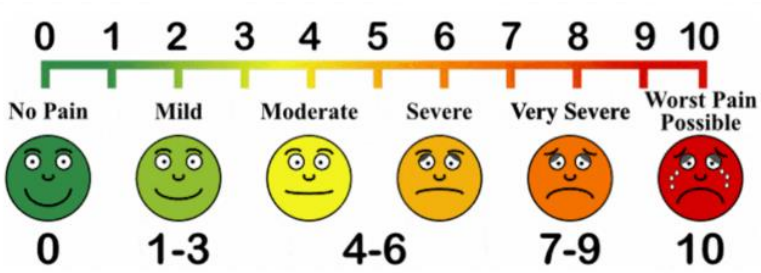

Fig. 1. Visual Analogic Scale. Image source: https://greatbrook.com/visual-analog-survey-scale/

Other strategy commonly used among clinicians is the using of tests specifically designed to measure overall quality of life, which allow the evaluator to obtain information about this, and so indirectly infer how a certain disorder is affecting patient's wellbeing. Some of the most used questionnaires in this sense are the SF-36 (self-administered questionnaire containing 36 items about health on eight multi-item dimensions, covering functional status, well-being, and overall evaluation of health)[17], or the EuroQuol-5D or EQ-5D (a standardized measure of health status developed by the EuroQol Group in order to provide a simple, generic measure of health)[18]. Both of them can be find in the complementary resources of this very didactic unit.

7. Key ideas

- An appropriate functional evaluation is key in order to study the ability of any given subject to perform an activity or function, as well as to measure the effects of an intervention in terms of functional improvement.

- Clinical scales are a valid and useful tool to evaluate the impact of pain or other type of disorders over the function of the subject.

- Some of the most widespread scales to evaluate disability in the context of neck pain or neck disorders in general are the Neck Disability Index (NDI), the Neck Pain and Disability Scale (NPDA) and the Northwick Park Neck Pain Questionnaire (NPQ).

- For the evaluation of disability in lumbar spine, the most commonly used scales are the Oswestry Disability Index (ODI) and the Roland Morris Low Back Pain and Disability Questionnaire (RMQ).

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