ACPOHE GUIDANCE ON MEASUREMENT TOOLS AND OUTCOMES

ACPOHE will endeavour to keep this guidance as up to date as we have the free time to research this growing topic. If you are an ACPOHE member and wish to add to sources or content to this document, please email acpohe@work-safe.co.uk

Disclaimer
ACPOHE is not recommending these measures, nor is their inclusion on this database any validation of their value. Members should appraise any measure to ensure it is suitable for purposes.

The database and this listing of papers are illustrative and not exhaustive. Please try to use the CSP web site www.csp.org.uk and the CSP interactive site www.interactivecsp.org.uk as one way to keep abreast of new and validated measures and the associated discussion around them. Also; UK Clearing House information on outcome measures (1995): www.leeds.ac.uk/nuffield infoservices/UKCH

An edited article (reproduced from our newsletter) and written by one of our members, which may assist the orientation process for those unfamiliar with some of the tools, is in Appendix 1 for your assistance. Appendix 2 gives an indication of the range of musculoskeletal tools currently on the CSP database.

Occupational health related measurement tools

COST BENEFIT/ SERVICE EFFICACY MEASURES


COMPARISON and VIEWS ON OUTCOME MEASURES


GENERAL HEALTH MEASURES


PHYSICAL PERFORMANCE MEASURES


Patricia K. Foster, Kim E. Jacobson, and Nancy M. Windle


**PATIENT SPECIFIC MEASURES**


Rowland M Morris R 1983 A study of the Natural History of Back Pain Part 1: Development of a reliable and sensitive measure of disability in Low Back Pain Spine: (2) 141-144


Linton and Halledden 1997 Acute Low Back Pain Screening Questionnaire A Guide to assessing psychosocial yellow flags in acute low back pain Risk factors for long term disability and work loss Jan 1997 National Advisory Committee on Health and Disability New Zealand

**ERGONOMICS MEASURES**


McAtamney L and Corlett EN 1992 Reducing the risks of work related upper limb disorders - A guide and methods. Published by: Institute for Occupational Ergonomics, University of Nottingham, Nottingham NG7 2RD, UK.
McAtamney L, Hignett S REBA rapid entire body assessment


EXERCISE MEASURES


Appendix 1

Occupational Health Related Outcome Measurement Tools

Nicola Hunter Bury Physio 2005

In most companies, management requires that occupational health physiotherapy treatment for musculoskeletal disorders can be shown to make a return on its investment. The key measure is reduced time lost from work and cost of long term injuries in the form of ill health early retirement and claims against the company. Now, in addition, outcome measures for physiotherapy treatment are a requirement of the CSP Core Standards of Practice (3rd Edition). Core standard 6 states ‘Taking account of the patients problems, a published, standardised, valid, reliable and responsive outcome measure is used to evaluate change in the patients health status’.

Questionnaires
We use questionnaires to measure the patients perceived pain and disability before, during and after treatment.

A simple measure is the Visual Analogue Pain Rating Scale (McCormack et al 1988) where the patient is asked to mark their pain level on a 100mm vertical line with one end marked no pain and the other marked pain as bad as it could be. To score the VAS you simply measure along the line from no pain.

For low back pain the Oswestry Low Back Pain Questionnaire (Fairbank et al 1980) or the Rowland Morris Disability Questionnaire (Rowland & Morris 1983) are valid, reliable and sensitive to change. Both are self-administered questionnaires that take less than 5 minutes for the patient to complete and 1 minute to score. The Oswestry questionnaire includes 10 sections of 6 questions assessing limitations of daily living with regards to pain intensity, personal care, lifting, walking, standing sleeping, sex lift, social lift and travel. The Rowland Morris comprises 24 statements about how back pain affects activities of daily living. The patient is asked to tick the statements that
apply to them on the day of the test. The score for both starts high when the patient is in pain and having difficulty moving and decreases with recovery. A score of 0 indicates no disability and less than 20% mild disability due to low back pain.

The Neck Disability Index (Vernon & Mior 1991) is a revised form of the Oswestry low back pain questionnaire and can be used for adults with neck pain.

The New Zealand Acute Pain Screening Questionnaire (Linton and Halledden 1996) is a tool that can be used to assess back and neck pain patients who are not responding to treatment, as you would expect. It is recommended for use at 2 – 4 weeks for those not improving and gives an at risk score for chronicity. It is now called the Orebro musculoskeletal screening questionnaire. Those scoring less than 105 are unlikely to be at risk, those scoring more than 105 hold attitudes and beliefs about their pain that may lead them to chronicity if not handled correctly. Those scoring over 130 may well need psychological help to achieve a functional recovery from their problem. The questionnaire has been shown to be 78% correct in predicting those who will not recover quickly.

Objective Measurements

Strength
A key component of treatment for many back and neck pain patients is core stability exercises, but it is hard to measure muscle accurately unless you have an Isokinetic dynamometer. The Oxford 0 – 5 scale is seldom sensitive enough for our needs. McGill et al 1999 devised the following tests of endurance times for low back stabilisation exercises with clinical targets for testing and training. We have adopted these tests and find that we can demonstrate a measurable improvement in endurance time over a course of treatment or rehab.

Trunk Flexors
The patient sits on a couch with the backrest raised to 60°. Knees and hips are flexed to 90° and the feet are flat on the couch with toes under a toe strap. The arms are
folded across the chest with hands on opposite shoulders. The patient is asked to maintain this position while the backrest is lowered by 10°. The test continues until the subject can no longer maintain the 60° angle.

Trunk side bridging (transverse abdominal muscles)
The patient lies on a mat on their side with legs extended and the top foot placed in front of the lower foot on the mat for support. The patient is instructed to lift the hips off the mat so their body is in a straight line supported only by elbows and feet. The uninvolved arm is help across the chest with hand on opposite shoulder. The test ends when the hips touch the mat.

Trunk extension
The subject lies prone with lower body fixed to the test couch at ankles, knees and hips and the upper body cantilevered over the edge of the couch. The arms are held across the chest with hands on opposite shoulders. The subject raises the body so the trunk is horizontal and holds this position for as long as possible/. The test ends when the position is lost.

Normal Data (75 young healthy subjects)

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<td>Side raise L</td>
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Ratios provide clinicians with guidance for normal endurance ratios for torso flexion, extension and lateral bending

Flexibility
Achieving full range of motion is often stated as a goal and desirable outcome of physiotherapy treatment for a patient with low back pain. In the spine it is not really
possible to know whether this has been achieved, as the range of motion from person to person is so variable. Spinal movement can be reasonably accurately measured with a digital inclinometer and improvement from session to session recorded. However, full spinal movement is actually not necessary for normal function. More critical are pelvic and hip mobility. If the hips are stiff and pelvic disassociation is not possible the patient will be unable to keep their spine in a neutral position when lifting as recommended in the MHOR Regulations 1993

Guidance Notes.
We measure hip flexion range of motion in lying with a goniometer (target is more than 125°) and standing sacral hip flexion with an inclinometer (target is more than 50°). Reduced sacral hip flexion is often associated with tight hamstrings so we measure hamstring length also so that we can prescribe stretching exercises if hamstrings are tight (target is 80° - 110°). We try to measure in standardised positions and have found Norkin and White a useful reference book for goniometry. A comprehensive instruction manual was provided with our digital inclinometers from the manufacturer (Saunders)

Function

Simple measures of function can be used as an effective measure of progress. For example the length of time the patient can sit before having to change activity. In some cases it is better if you measure this by observation and a stopwatch rather than take the patients word for it!

For most manual jobs it is necessary for the patient to have full joint mobility. An inability to bend, squat or reach may prevent safe manual handling of loads or activities such as climbing. Repetitive movement tests (Blankenship) of overhead reach, squat and forward bend put a patient’s ankle, knee hip shoulder and elbow joints through a full range of movement. We request that the patient performs 10 repetitions of the movement at a comfortable pace while the physio observes and notes any difficulty due to muscle fatigue or loss of flexibility. If the patient can not
reach overhead to full range the loss will be measured by goniometer, similarly if they can not fully squat due to knee or ankle joint stiffness.

If the patient is able to complete the first set of movements at comfortable pace and without increase in pain, we ask for a second set of movements as fast as possible and measure the time taken with a stopwatch. Normal for 10 overhead reaches is 7 seconds and for 10 forward bends 14 seconds. Following repetitive forward bending we re-measure lumbar extension to ensure that there has been no loss of range. This can be done with an inclinometer.

In our clinic we have found that these simple tests often reveal secondary problems that are in themselves a barrier to safe return to work and have to be addressed. Achieving 20 repetitions of each test at normal pace without any return of symptoms helps indicate whether the patient is ready to move on to higher level rehabilitation for repetitive or heavier work activities.

We are finding that the process of outcome measurement is helping us to agree outcome goals with both the patient and their employer and achieve a common understanding of what needs to happen to get the patient back to work. We have seen improved patient compliance and motivation. Most importantly measurement of change as a result of physiotherapy treatment and rehab combined with measurement of sickness absence is enabling us to demonstrate to employers that occupational health physiotherapy is an investment rather than a cost.

**References**

Blankenship K The FCE Procedure Manual 1994 Ch 8 Repetitive Movement Tests


Measurement Equipment: Saunders Digital Inclinometer available from Posturite Saunders
Code 72114 Tel: 01323 847777 Fax: 01323 847799
Appendix 2
Outcome measures from the CSP database, available from the CSP or on the CSP web site

Low back
Roland Morris disability questionnaire (see outcome measures database)
Oswestry Disability questionnaire (see outcome measures database)


Neck
Neck Disability Index (see outcome measures database)

Shoulder
Disabilities of Arm Shoulder and Hand outcome measure (DASH - see outcome measures database)

Elbow
Disabilities of Arm Shoulder and Hand outcome measure (DASH - see outcome measures database)

Hand
Disabilities of Arm Shoulder and Hand outcome measure (DASH - see outcome measures database)

Knee
Knee Osteoarthritis Outcome Scale (KOOS - see outcome measures database)
Lower Extremity Functional Scale (LEFS - see outcome measures database)

Foot
Lower Extremity Functional Scale (LEFS - see outcome measures database)