

Assessment of Fibromyalgia & Chronic Fatigue Syndrome: A New Protocol Designed to Determine Work Capability – Chronic Pain Abilities Determination (CPAD)

M Kelly, R Gagne, JD Newman, C Olney, C Gualtieri, D Trail

Abstract

The objective was to design a protocol to assess work ability in people suffering ill-defined painful and disabling disorders, the outstanding prototype of which is fibromyalgia/chronic fatigue syndrome (FM/CSF). Following an extensive literature search, the most appropriate components of current methods of assessment of physical and cognitive abilities were incorporated into the protocol, occasionally with appropriate modification to suit the specific requirements of the individual. The initial part of the assessment consists of a standard history taking, principally focusing on the patient's self-reported physical and cognitive abilities and disabilities, as well as the completion of established pain and fatigue scales, and relevant disability questionnaires. Following this, physical and cognitive abilities are objectively assessed on two separate occasions, utilizing computerized hand-held dynamometers, inclinometers, algometers, and force dynamometers. Specific work simulation tests using the industrial standards Methods-Time-Measurement testing are available, as is aerobic testing using the Canadian Aerobic Fitness Test (CAFT).

Objective computerised neuro-cognitive testing are also utilised as an integral component of the assessment. All results are then subject to specific computerized analysis and compared to normative and standardised work-based databases. The designed system produces reliable, consistent and reproducible results. It also proves capable of detecting any inconsistencies in patient input and results, in addition to being independent of any possible assessor bias. A new protocol has been designed to determine the working capability of individuals who suffer from various chronic disabling conditions, and represents a significant step forward in a difficult but rapidly expanding area of medical practice.

Introduction

Chronic painful or debilitating disorders such as Fibromyalgia (FM) and Chronic Fatigue Syndrome (CFS) are a common cause of work disability^{1,2}. There are no pathological, radiological, or laboratory findings that establish diagnosis or degree of disability. This study is not structured to confirm or refute diagnosis but rather to assess ability to work as the individual variation in degree of disability between FM/CFS sufferers is so great. Traditional and even newer physical and psychological assessments used to detect degree of disability in other disease states, have severe limitations when applied to FM/CFS. Therefore improvement in quality and reliability of work assessments is a matter of great importance. Also necessary are more objective testings, in so far as can be achieved. These tests need to be reliable and reproducible. Furthermore they must be independent of patient variability of effort that is often not taken into account in such settings. At the very least, inconsistency of patient reliability must be readily detectable. Assessments should further be free of examiner subjectivity, a factor again which is not taken into account, and could explain the reason for very large discrepancies noted between the most eminent of doctors. Whilst there might be little difference in medical opinion with regard to diagnosis, there is often a substantial disparity in opinion on work capacity.

To overcome these issues, many doctors use traditional Functional Capacity Evaluations (FCE) to assist them in their assessment of work capacity. The traditional FCE is however more suited to assess ability/disability in the better recognized diseases such as arthritis or discogenic spinal disease. There are however a number of important concerns with using the FCE in more ill defined disorders such as FM and CFS, or indeed other chronic pain states. The traditional FCE does not consider the 'good day/bad day' phenomenon, which this group of patients frequently complain of. Conclusions are drawn on the basis of a single assessment which may be on a good or bad day. The traditional FCE does not address sustained work capacity over an eight-hour day in spite of the fact that easy fatigability is a common symptom. Pain levels are not monitored pre- and post-exercise to document the effects of exertion on the patient. Evaluations often do not include exercise capacity testing which is often a problem for FM/CFS patients and has an important role in determining cardiovascular endurance and abnormal fatigue. Testing of reproducible physical activities to the limit of endurance and comfort are not performed. Cognitive tests are not part of the current FCE protocols.

Method

It is important to bear in mind that this protocol is designed for assessment of work capacity. The physical and cognitive components of the assessment are performed on two separate days, with an intervening rest day. An integral part of the system is the inclusion of a new software programme that assesses the acquired functional data. In addition to assessing physical capacity it can detect any inconsistency or failure of effort on the part of the patient (whether it be conscious or subconscious). The results of the tests are then compared to well established and peer reviewed normative^{3,4,5} and work referenced databases.^{6,7,8} The new protocol has four sections. Firstly, a clinical history is taken with specific regard to describing symptoms, aggravating and alleviating factors that might affect work capacity, and activities of daily living. Note is made of past and current treatments as well as their efficacy and side-effects. At review after a 24-hour rest period, any alteration in symptoms is documented. Secondly, as the assessment is one of work ability, specific, validated scales and questionnaires play an important role in the qualification and quantification of pain, discomfort, and fatigue, which are common in such patients.

Well established scales and questionnaires are therefore used, which include the Fibromyalgia Impact Questionnaire (FIQ); the Chalder Fatigue Scale, to measure the affects of CFS on a patient over the multi day period in an effort to qualify fatigue patterns; the Visual Analogue Scale (VAS) to measure pain prior to, during, and post-assessment; and the Beck Depression Inventory. All responses are collated and scored by the protocol software. The FIQ and VAS are repeated on day two of the assessment. Thirdly, a number of physical tests are carried out, which include, grip and pinch strength testing, using a computerized hand-held dynamometer; a range of spinal movements are tested, using computerized inclinometers; tender point assessment is measured using a computerized algometer⁹⁻¹² (three control sites are tested to ensure reliability); static strength testing¹³⁻¹⁵ is undertaken using a computerized force dynamometer for strength determination; specific work simulation tests are performed using the industrial standards Methods-Time-Measurement (MTM) tests, which allow for the extrapolation of test data to work ability over an average 8-hour work day; and aerobic testing using the six minute walk test¹⁶, and/or the Canadian Aerobic Fitness Test (CAFT).

These physical tests are performed on both day one and two of

the assessment. Finally, as cognitive impairment can be a symptom of FM/CSF and often includes poor concentration, poor memory, learning difficulties, "brain fog", and poor problem solving capabilities¹⁷, the CNS Vital Signs assessment (CNSVS)¹⁸ which comprise a number of well researched and reliable computerized tests of neuro-cognitive function is undertaken. The CNSVS battery of tests is designed to take less than 30 minutes on each test day, and contains five specific elements which are, visual memory testing (VMT) for immediate and delayed memory recall; symbol digit coding (SDC) for visual perception and complex attention ability; the stroop test (ST) for reaction time and information processing; shifting attention test (SAT) for ability to shift from one instruction to another; and the continuous performance test (CPT) for sustained attention and reaction time. These cognitive tests are repeated on day two of the assessment.

Discussion

The protocol is designed such that strength and range of movement are measured and compared to abilities estimated over an average eight hour work day. It can identify those who have cognitive and physical impairment and assess its degree, and further identify those who consciously or subconsciously exaggerate their disability. This protocol utilises an extensive combination of valid and reliable physical and cognitive testing. It is performed over a two day period, with a rest day in between. This is just one of the features that will prove more acceptable to both patients and their doctors. Furthermore, it both incorporates testing over a period of time and takes into account the effect work may have on the patient's symptoms. The fact that the results of testing are compared to both normative and work referenced databases should further clarify matters and be a major help to doctors who assess work capacity in such patients. Following testing and analysis of the computerized results for range of movement, strength, specific work activity simulation, aerobic endurance, cognitive capacity, fatigue measures, and pain levels, it is possible to extrapolate and compare the patient's performed abilities against their required job demands, providing an informed objective conclusion as to their return to work capabilities.

Both the physical and cognitive computerized tests will also provide information on the reliability of effort demonstrated by the individual throughout the two days of testing.

This protocol is designed only to assess work ability and does not in any way supplant the role of medical practitioners or replace medical assessment. FM and CSF are examples of disorders without standard medical tests to confirm or refute their presence or absence in any given individual. While there are diagnostic criteria laid down, they are neither sensitive nor specific, with many authorities questioning their usefulness in clinical practice. It is not surprising therefore, that assessment of disability in such patients is very difficult. This novel protocol should be of value to patients, their doctors and also to independent medical examiners. The protocol is the first to effectively incorporate systems which address all the main areas of concern expressed by specialists

about current disability assessments in people with FM/CSF in particular, and more generally concerning many ill-defined chronic pain syndromes. In addressing all concerns, great care was taken in the design of the protocol to eliminate as much subjectivity as possible on the part of the examiner and patient alike. The new methodology will provide the necessary factual evidence required to support the medical opinion. This protocol should represent a significant forward step in assessment of work ability in a very difficult area of medical practice.

References

1. Wolfe F. Fibromyalgia Syndrome: A Consensus Report on Fibromyalgia and Disability. *J Rheumatol* 1996; 23:534-9.
2. McCain GA, Cameron R, Kennedy JC. The problem of long term disability payments and litigation in primary FMS. *J Rheumatol* 1989; 16 (suppl 19): 174-176.
3. Mathiowetz, V et al. Grip and Pinch Strength: Normative Data for Adults. *Arch Phys Med Rehab* 1985; Vol. 66: 69-72.
4. Mayer TG et al. Progressive Iso-inertial Lifting Evaluation: A Standardized Protocol and Normative Database. *Spine* 1998; Vol 13: 993-997.
5. Guides to the Evaluation of Permanent Impairment American Medical Association; 4th ed: 112-135.
6. Prabhu, V. & Baker, M. (Eds). *Industrial Engineering: Techniques for Improving Operations* 1986.
7. Long. *Revised Handbook for Analyzing Jobs* 1991 Washington, D.C.; U.S. Government Printing Office, McGraw Hill. 1991.
8. Maynard, H.B., Stegemerten, G.J. & Schwab, J.L. (1948). *Methods-time Measurement*. New York: McGraw-Hill. 1948.
9. Okifuji A, Turk DC, Sinclair JD, Starz TW, Marcus DA. A Standardized Manual Tender Point Survey. Development and Determination of a Threshold Point for the Identification of Positive Tender Points in Fibromyalgia Syndrome. *J Rheumatol* 1997; 24:2.
10. Pekka, J. Reliability, Validity, Reproducibility of Algometry in Diagnosis of Active and Latent Tender Spots and Trigger Points DOI: 10.1300/J094v06n01_05 Copyright Year: 1998: 61 - 72.
11. Pekka J. Algometry in Evaluation of Trigger Points and Referred Pain. DOI: 10.1300/J094v06n01_04 Copyright Year: 1998: 47 - 60.
12. Russell IJ. The Reliability of Algometry in the Assessment of Patients with Fibromyalgia Syndrome. *Muscle Pain Syndromes and Fibromyalgia: Pressure Algometry for Quantification of Diagnosis and Treatment Outcome*. *Journal of Musculoskeletal Pain* 1998; Vol. 6.
13. Chaffin, DB. Pre-employment Strength Testing: An Updated Position. *Journal of Occupational Medicine* 1978; Vol. 20.
14. Badges D. *Work Practices Guide to Manual Lifting*, NIOSH.
15. Chaffin, D. *Ergonomics Guides: Ergonomics Guide for the Assessment of Human Static Strength*. American Industrial Hygiene Association Journal July 1975.
16. Pankoff BA et al. Reliability of the 6 Minute Walk Test in people with Fibromyalgia. *Arthritis Rheum* 2000; 13: 291-5.
17. Hudson JL, Pope HG. The Concept of Affective Spectrum Disorders. *Mallieres Clin Rheumatol* 1994; 8: 839-856.
18. Gualtieri, CT & Johnson, LG, Reliability and Validity of a Computerized Neurocognitive Test Battery, *CNS Vital Signs*. *Archives of Clinical Neuropsychology* 2006; 21: 623-643.