Work capacity evaluation

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Work capacity evaluation (WCE) is a systematic method of measuring a worker's ability to perform occupationally-meaningful tasks safely and dependably, for the purpose of evaluating their fitness and risk when starting to work or when returning to work after an injury or illness. WCE is also used to determine the presence (and, if present, the level) of disability so that the patient's case with a workers' compensation carrier can be bureaucratically or judicially concluded. General practitioners (GPs) in New Zealand encounter WCEs as part of the Work Capacity Assessment Procedure (WCAP) inaugurated by the Accident Rehabilitation Compensation and Insurance Corporation (ACC) in late 1997.[1] In the WCAP, an Occupational Assessor (OA) will have worked face-to-face with an injured worker when they have reached their maximal medical improvement and completed rehabilitation.

The nature of a WCE is to observe the evaluee as he or she performs certain specified physical tasks, and rate performance on a scale of named categories of physical activity factors that address strength and dexterity. The evaluator also records illness behaviour (clutching the lower back, pain vocalisation etc) and explicitly solicits the evaluee's perception of difficulty experienced while performing the task. Nominally, physical factors are not to be considered in isolation from non-physical factors. In practice, they tend to dominate discussion since they are the least disputable aspect of the evaluation.

A stereotyped procedure should be followed, and includes attention to the preparation (psychological and physiological) of the evaluee, to the precise instruction given, and to making a specific inquiry afterwards about 'how it felt' to perform the evaluation activity. In light of the trend in human rights legislation, it is usual to record explicitly that the evaluee participates voluntarily in each task. Computerised systems facilitate such systematic practice. They also tend to incorporate both the features of good clinical measurement practice[2] and the rules of legal evidence.[3] As in all clinical situations, the interpersonal interaction between the patient/evaluee and the evaluator can influence the performance. It is a challenge to maintain inter-observer reliability.

We have found that similar ratings are produced by gymnasium-based assessments, observation of simulated shop tasks, and an elaborate computerised work simulator.[4] The final 'strength' rating tended to be different with the different methods, because of the design of the method. For example the work simulator was programmed to award a particular 'strength' rating only if all subtasks were performed successfully at that level, while the physical therapist usually would look at the evaluee's general pattern of performance in arriving at a rating. Overall, we found that the work simulator's computer program rated a person slightly lower than the clinical observer, and the shop evaluator rated them slightly higher, on the basis of evaluations that were performed at the same time, but that all methods correlated highly in their detailed results.[4]

The favourable technical and practical aspects of WCEs reflect their development through a long and pragmatic interaction of controlled (scientific) and real-world necessities. It is instructive to review this process. The current approach to WCE developed from three main sources: (i) Frederick W Taylor's 'laws of scientific management'; (ii) the United States Dictionary of Occupational Titles (DOT) listing of the factors that were required in order to match workers to jobs, and in particular the physical ones; and (iii) an ergonomic analysis of the most common physical tasks of occupations.

FW Taylor pioneered the systematic analysis of the physical demands of realistic work tasks. From the outset, Taylor found he had to give considerable attention to motivation: how to instruct the worker so he would be a "first class man".[5] Two of his four principles of scientific management dealt with this. The basic idea of matching the measured demands of the job with the measured capacities of the worker has endured. Thereafter, time and motion studies were done of everything, and the term entered the popular culture. Even the division of tasks in the surgical suite that is so familiar to clinicians today resulted from such an analysis of the (inefficient) previous system. Taylor's method of 'work engineering' evolved into one by which the job could be formulated in such a way that the particular worker could be first class at it.

Each job has unique features, but most job types can be classified according to their usual demands, including their physical demands, as in the DOT in the USA. The Australian Classification of Occupations and the New Zealand Standard Classification of Occupations are oriented mainly to the skill level demanded of each job.

Hanman[6] reports that in practice, the main effect of efforts to identify the demands of a given job was to educate employers to consider what was required to perform that job, and not to reject out of hand any applicant with a physical impairment:

> "The idea behind the study was one of education, to have foremen, in particular, realize that it didn't take supermen to perform each job in this plant, that most of the jobs could be done by workers with all kinds of disabilities."

During the development of the third edition of the DOT, employment experts selected the following components as being the variables with the greatest potential relative to a functional capacity scheme: aptitudes, interests, temperaments, work performed, physical capacities, working conditions, training time and industry. These experts developed a series of rating scales and defined factors for the purpose of compiling the attributes of each listed job. The Physical Capacities component consisted of six categories that were combinations of various factors in use at that time. This is the origin of the 'physical factors' component of the usual WCE.

Although ergonomists claim that in application, ergonomics requires an eclectic philosophy and knowledge from different disciplines rooted in the life, behavioural, and engineering sciences, they also admit that occupational applications have emphasized biomechanics as its primary

science.[7] That is, although biomechanics is only one aspect of a complex problem, it is a fundamental one. WCE similarly focuses on physical activity factors related to work. Nevertheless it has become the tradition to summarise evidence about manual materials handling (MMH) under four approaches: epidemiological, biomechanical, physiological, and psychophysical.[8-10] Ergonomics quite clearly straddles medicine and occupation, and some basic patterns of the modern health services approach can be seen to have influenced its development.

The approach to the study of MMH during much of the twentieth century has been like that of exposure to potentially injurious agents in the course of work. This has caused little dispute for physicochemical exposures in general where damage to flesh is obvious. During the past few decades, the approach has been extended fruitfully to subtler exposures and to delayed manifestations of physicochemical exposure. It was also used to trace a putative causal chain back from an illness, disease, or injury, to an occurrence at work. Under the assumption that the same reasoning should apply, soft tissue injury came to be attributed to exposure to physical activity, as an over-exertion injury.[9] The problem was, there often was no bio-medical abnormality detectable in the sufferers, and a wide diversity in the extent of work disability claimed by those with similar initial 'exposure' and even by those with similar initial clinical course.[11] Consensus tends not to be broad unless the situation is as obvious as amputation of a limb, and even then there is room for dispute.[12] In the absence of consensus on causation, legitimate competing interests such as labour and employer would have nothing to mitigate their natural inclination to interpret a situation in a way favourable to their own interests. As it has happened, the history of this topic is characterised by dispute rather than consensus. An 'answer' is demanded from the clinician.

When a clinician encounters a practice situation that is novel and complicated, such as evaluating a person's fitness and risk relative to occupation, it is helpful if information of high scientific quality is available, ideally information based on evidence. The WCE process is important in itself, but it illustrates an approach the clinician can take in other such situations.

Most clinicians, as 'treating clinicians', evaluate a person for determining the medical diagnoses, in order to treat them. The role of 'evaluating clinician' differs in several aspects: the evaluee (not 'patient') usually is not acutely ill and is attending as a requirement for obtaining a specific benefit (medical aid, compensation, or award for permanent impairment); the nature of the evaluation is specified by the referral source, even though an essential requirement is that the clinician render a professional judgement about the evaluee's fitness and risk regarding some activity or occupation (an aspect not covered in most medical training); the clinicians primary responsibility is to report to the carrier, not to the evaluee; and the clinician is paid by the carrier. In a recent decision, the Court of Appeal in England held that a doctor retained by a company to advise on occupational health matters owed no duty of care to a job applicant (Kapfunde v Abbey National & Daniel [1998] IRLR 583 (CA)). Fortunately, the WCE provides the clinician with the sort of information they need to maintain focus in this complicated situation. The outcome of the overall process, of which the clinician's contribution is just one part, is successful participation by the worker in appropriate employment. Employment is a complex outcome, and the clinician must focus only on the portion of the process that is assigned to them by the terms of reference, such as by the WCAP.[3,13]

The relative quality of different types of scientific evidence has been discussed extensively.[14] The strength of a study is generally improved by increasing the specificity of the patient group, the intervention, and the measured outcome, but to do so makes the study less relevant to the usual circumstances of practice. The strength of the WCE approach is that it separates out from a complicated situation (employment), one aspect (physical demand) that is susceptible to scientific inquiry, and for which a broad expert consensus has been established. Although perhaps not the ideal, this still is good information on which to base clinical practice guidelines.[15] The approach taken to legislation in this complex area is to proclaim a contemporary provisional regulation (ie something to use now) but also to require ongoing research.

Clinicians are now expected to view health more broadly than has been their tradition, and especially to consider any limitation on the ability of the patient to function.[16,17] It could be argued that the healthiest people in society are those engaged successfully in competitive employment. However, employment is a social phenomenon, encompassing biological, psychological and social considerations. It is not amenable to the reductionist approach of traditional science. It will continue to be an area of controversy involving trade-offs between legitimate competing interests. Amidst such complexity, the clinician's traditional skills and expertise can provide clarity in at least one domain. Clinicians are familiar with pre-participation examinations, such as for sports or driving. It first is determined whether there is substantive active disease, and if so, whether it is being appropriately treated. If this question is thought of as "What is wrong?", in the usual biomedical sense, the next question is "So what?" - what are the consequences for the person's function? In the WCAP, the medical assessor is only asked the former question. If no important disease is apparent by a conventional medical investigation, it is only necessary for the clinician to say so.

'Function' is a concept with depth and breadth, spanning a spectrum from caring for oneself to performing manual tasks, walking, seeing, hearing, speaking, breathing, learning and working.[11] Clinicians in general are most familiar with acute and critical care where the concern is with maintaining the patient's vital processes, identifying biomedical diagnoses and establishing treatment. Post-acute care is concerned with supervising biomedical treatment, monitoring to detect recovery or relapse and starting rehabilitation. It is in rehabilitation that the patient's independence of function is the main concern ("the ability of the patients to perform the daily activities of their lives, how they feel, and their own personal assessment of their health in general).[18] The clinician needs to be clear about which domain of clinical practice they are working in, because the priorities are different in each, for treatment objectives and hence for treatment methods. In complex situations such as worker fitness and risk evaluation, the clinician need not and should not render a professional opinion that includes areas of the overall problem that are beyond their area of expertise.[19]

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