THE FUNCTIONAL CAPACITY EVALUATION

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This podcast will review some of the most recent research regarding the utility of Functional Capacity Evaluations and predicting future functionality and return to work options, a brief history of the Functional Capacity Evaluation reliability and validity issues, as well as a brief investigation into the use of FCE’s in determining employability and wage earning capacity as presented and discussed.

It is not feasibly possible to review and present evidence on all of the empirical research that has been conducted regarding Functional Capacity Evaluations and their predictive value. Again, for purposes of this discussion, it is our attempt to review the most recent and applicable studies that have addressed the prognostic value of Functional Capacity Evaluations with patients having various medical complaints or occupational injuries, as well as how these tests predict future ability to perform work. These studies have been compiled to address various types of disorders including upper extremity, chronic low back, and musculoskeletal dysfunction, some of the most common occupational injuries and assessed disabilities in workers compensation and related fields. We also take time to review a variety of expert opinions and their approach to addressing the Functional Capacity Evaluation.

So let’s start by reviewing Gibson and Strong’s 2002 publication in the IOS Press. The researchers address the Functional Capacity Evaluation as a widely used tool in work rehabilitation despite limited examination of the soundness of its measurement properties while this particular study outlines new approaches to FCE’s and their attempt to improve its content validity and accuracy based on expert review. These authors attempted to develop a new approach to the Functional Capacity Evaluation by reviewing the five expert occupational therapists that completed questionnaires related to content validity, technical adequacy, safety reliability of validity, practicality, and the utility of the justed method, in this particular study termed the Gibson Approach to FCE. While the new approach to the Functional Capacity Evaluation was found to be positive, some of the most pertinent issues identified during the expert review were related to interpretation and extrapolation of the FCE results to a return to work environment.

More specifically, interpretation of the Functional Capacity Evaluation is one of the foundations of its use, in that it is purported to provide an objective guideline as to how an individual would be capable of functioning within the workplace in a safe and secure manner. Interpretation about whether and how well the results of the Functional Capacity Evaluation can be extrapolated to performance in the workplace is fundamentally an issue of validity and more specifically predictive validity as outlined by these authors (Gibson and Strong, 2002). The authors also note that there has been little or no follow up studies on the relationship between the Functional Capacity Evaluation and return to work, one of the limitations in utilizing Functional Capacity Evaluations is that they rely upon antiquated definitions of work under the Dictionary of Occupational Titles which has not been updated since 1991. In fact, the authors note that performance measures that were only predictive of return to work under the Dictionary of Occupational Titles methodology was stooping, climbing, feeling shapes and handling/holding. Interestingly, the results also found that pain level at discharge of physical therapy/occupational
therapy and workers compensation status were the strongest predictors of employment status and DOT physical work levels (Gibson and Strong, 2002).

When addressing the predictive validity of Functional Capacity Evaluations, this requires that the occupational therapist or test administrator be able to provide valid and reliable recommendations based on the individuals performance during the evaluation process. These authors note that the predictive validity of such interpretations need to be established and given the lack of follow up studies regarding participants after they have completed the evaluations or after they’ve entered the workforce has not been conducted.

These authors also reiterate concerns regarding the interpretation issue based on the fact that methods have not been developed on how occupational therapists who review the outcomes of Functional Capacity Evaluations reach interpretive recommendations. In fact, Gibson and Strong identified that methods advocated by existing approaches without evidence of their validity provide little guidance for therapists, and various other researchers as noted in this study identified similar interpretation problems that can arise with work related assignments and had noted deficiencies in extrapolating performance to the workplace as identified in the Functional Capacity Evaluation (Innes and Straker, 1999; King et al, 1998). Some of these authors questioned the accuracy of using generic formulas or protocols used to make extrapolations to the workplace particularly those from manual handling demands as identified in the Functional Capacity Evaluation. Even authors who have found some support for the use of these formulas have recommended caution in using formulas and recommended taking conservative approaches in making such estimations. It appears that some of the most significant concerns come or arise from the fact that Functional Capacity Evaluations are only performed in brief periods just two or four hours rather than throughout the workweek.

One of the other issues addressed in this Gibson and Strong study was the measurement of sincerity of effort. A variety of historical research between 1997 and 2002 were reviewed noting a variety of limitations and methods to assess disability exaggeration malingering, submaximal effort, and also identified that Lechner’s study in 1998 no evidence to support the use of approaches that are geared toward testing sincerity of effort. Some research actually urged practitioners to cease practices of attempting to detect malingering or submaximal effort due to the lack of research and empirical evidence to support current approaches. Listeners who are interested in reviewing this study and becoming more familiar with additional issues related to the Functional Capacity Evaluation and interpretation method proposed by Gibson will also find information regarding cognitive influences on performance, practicality and utility issues, and issues of flexibility versus reliability. The overall outcome was that the expert occupational therapists surveyed did agree with Gibson’s approach to improving on the interpretation and extrapolation of Functional Capacity results making return to work and rehabilitation recommendations and further research and development to these approaches were supported.

Some of the most useful publications and research regarding the practical aspects of Functional Capacity Evaluations are authored by Pransky and Dempsey. In the Journal of Occupational Rehabilitation in 2004, these authors provide substantial information regarding the current scope and use of Functional Capacity Evaluations as well as the theoretical basis of FCE’s in practice. The authors also review various validity concerns specifically related to the relationship between the FCE result and the return to work outcome. Many of the stakeholders in workers compensation including physicians, employers, insurers, and rehabilitation counselors rely upon
A Functional Capacity Evaluations to provide answers involving a variety of situations, one of which is most frequently related to the performance of physical work. It’s estimated that over half a million formal evaluations of impairment and ability to work are conducted each year within the United States. Many of these are Functional Capacity Evaluations carried out by occupational therapists (Pransky and Dempsey, 2004).

Interestingly, one of the earliest applications of FCE’s was in pre-placement activities attempting to identify individuals that increase risk of injury in highly physically demanding jobs according to Pransky and Dempsey this was carried out because such diagnostic procedures such as x-rays failed to provide useful information about future risk for injury. Now we see a migration to utilizing these evaluative tools to post injury populations where they are designed to determine work capacity in relation to a specific job or class of jobs, or used to predict future physical capability within the workplace. Possible implications for utilizing an evaluative tool for different purposes and with different populations could potentially impact the validity and reliability of perceived results. For example, the predictive nature of results regarding an individual who has no documented or perceived limitations and/or abilities are going to be drastically different than an individual who has sustained an injury and has pathological changes that warrant physical restrictions in order to perform work safely or reduce the ability of causing further harm to the body.

Pransky and Dempsey outline that the fundamental assumption underlined in the FCE is to match job/replace demands to the capabilities or limitations of the worker. The actual evaluation of Functional Capacity relative to specific job demands is straight forward however as pointed out, the actual evaluation of functional capacity is technically a challenging process. The authors basically can see that it is impossible to imply scientific certainty and interpretation because of the dynamics of the workplace and the varying types of job demands and changing demands that can take place from day to day, week to week. These types of demands cannot be replicated in any significant way within the clinical or evaluative context.

Dusik et al (1993) compared FCE results using the standardized testing protocol and then followed return to work outcomes of functional rehabilitation program participants. He found that the Functional Capacity Evaluation appeared to be less accurate than job simulation and consistently underestimated actual ability to do the job, unless the job only required mundane repetitive simple motions that were similar to those encountered in the functional capacity protocol. Pransky notes that validity problems are present because of poor characterization of job demands and inaccurate measurement of a workers actual performance capability in relation to those demands. Overall, Pransky and Dempsey concede that there are several scientific and practical limitations associated with FCE’s and that most FCE’s do not achieve predictive standards of performance. These authors additionally note that accurate measures of voluntary self-limitation are also not available and until further research develops a valid, reliable and efficient measures that correlate well with safe and sustained return to work, FCE’s will not be very helpful for practicing clinicians involved and return to work decisions (Pransky and Dempsey, 2004).

A study carried out by Lechner and colleagues in 2008 investigated the predictive validity of Functional Capacity Evaluations specifically the Physical Work Performance Evaluation (PWPE) and examined 30 workers compensation patients with musculoskeletal dysfunction that participated in an industrial rehabilitation program. Of interest, the authors noted that the first
study examining the validity of the FCE was published by Smith et al in 1983, and noted that although an 86 correct prediction rate was noted only 42% of those surveyed returned their questionnaires, along with a variety of limitations regarding generalized ability of results and unaccounted for variance.

Matheson and colleagues examined relationships between lifting ability as measured by the Functional Capacity Evaluation and return to work, among 650 patients. This study which was published in 2002 in the Physical Therapy Journal, Volume 82, utilized a method to predict outcomes (logistic regression) and indicated that gender, time off work, and maximum lifting ability could correctly classify 80% of patients who returned to work and 56.6% of those who did not return. The authors noted that time off work and gender were found to be stronger predictors of return to work than any of the Functional Capacity Evaluation test results, implying substantial confounding effects within the model. The logistic regression model also noted that a person who is off work longer were less likely to return to work, and men were less likely to return to work than women.

Lechner et al conducted their study to examine the predictability of the Physical Work Performance Evaluation specifically addressing the question, can the performance evaluation accurately predict return to work status at discharge at three and six months post discharge from an industrial rehabilitation program? Limitations of this particular study would be that individuals were involved in an actual occupational or physical therapy program aimed at improving functional ability, whereas many individuals who undergo Functional Capacity Evaluations or work performance evaluations have been off work for substantial amounts of time have not participated in any rehabilitation program since their date of injury. The authors noted that there was a substantial agreement between the outcomes of Physical Work Performance Evaluation recommendations and actual return to work and suggested that this measure is a valid predictor of return to work abilities in workers compensation patients with musculoskeletal dysfunctional for up to six months. The authors do note the limitation I previously addressed that an argument could be made that the predicative validity of the Physical Work Performance Evaluation might be different if the test were not provided as part of an industrial rehabilitation program, and even though the authors noted that clinicians administering the tests made return to work recommendations based solely on the test results at final discharge, it is clear that four or five weeks of involvement in an occupational therapy or rehabilitation program prior to the test being administered would yield much more representative results than an individual who had not participated in such a program and was administered the test to reach predictive conclusions.

Gross and Battie published an article in the Journal of Occupational Rehabilitation (2005) addressing the Functional Capacity Evaluation performance not predicting sustained return to work in claimants with chronic back pain. These authors extracted data from clinical and administrative databases within the Alberta Workers Compensation System and following a data analysis followed up by telephone with all subjects identified one year post undergoing a Functional Capacity Evaluation. The original cohort was 130 persons with a mean age of 42 years of age who had undergone a Functional Capacity Evaluation related to having chronic back pain, although only 54 of the 130 were able to be reached by telephone one year later. The authors noted that previous findings, higher weight on floor to waist lifting and lower number of failed FCE tasks were mildly associated with faster recovery, and non-significant associations were observed between both FCE indicators and future recurrence. The authors concluded that furthermore the hypothesis that individuals who demonstrate functional ability at or exceeding
job demand levels can return to sustainable work with low risk of future recurrence was not supported, and that the physical match between functional abilities and job requirements were the result of low risk of future problems appears to be somewhat artificial and overly simplistic.

As is true with any study in human behavior, predicting sustained return to work in claimants with chronic back pain is difficult and a variety of limitations are associated with such studies including low response rate and confounding variability.

Overall, the Functional Capacity Evaluation continues to be a largely popular and applied tool in assessing an individual’s current physical capabilities based on a variety of standardized and unstandardized medical tests. The research reviewed has identified a variety of applications in which Functional Capacity Evaluations or Physical Work Performance Evaluations have been administered, including pre and post formal rehabilitation programs, at the recommendation of examiners and treating physicians, and also arbitrarily to assess individuals physical capabilities following medical procedures, surgeries and the like. The studies reviewed have shown that Functional Capacity Evaluations administered outside of any specific rehabilitation program have much less predictive value in assessing return to work outcome. Many of the studies did not address the internal validity and reliability of these tests and focus more on the external validity and predictive value. Only the Functional Capacity Evaluation has internal validity indicators, many still do not and are based solely on practitioner experience and opinion.

Overall, it does not appear that Functional Capacity Evaluations to date yield any statistically significant findings that would lead us to believe that they are useful or practical for predicting return to work outcomes, even when a physical match has been identified between the functional abilities as demonstrated and the job requirements as elicited from a job analysis.

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