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TEN INCONVENIENT TRUTHS ABOUT CONVENTIONAL FCES

by Gregory B. Cairns, Esq.

Every workers' compensation and personal injury case revolves largely around the issue of lost function, *i.e.* can the claimant return to full duty, modified duty or any occupation at all. The claimant's diagnosis, objective medical findings, and even permanent impairment rating are not in any way predictive of functional status. Therefore, functional capacity evaluations (FCEs) have become commonly used for the supposed purpose of answering questions related to functional abilities. But the objective determination of function is utterly dependent upon the ability to determine objectively if the claimant gave a valid effort during the FCE. Sadly, because of the prospect of financial reward and other secondary gains, many claimants/plaintiffs do not give valid effort during their FCEs.

A number of commercially-available FCE protocols have been successfully promoted for the past 25 years. All purport to accurately and objectively determine if the claimant has cooperated during the test. While it is common to take legal testimony from physicians regarding clinical findings and findings pertaining to diagnostic test results, it is less common to depose the administrator of an FCE. This represents a significant oversight in legal strategy because many physician recommendations pertaining to the need for diagnostic testing, therapy, return-to-work recommendations and even surgery are based, at least in part, on the findings of an FCE. Compounding the seriousness of this oversight is this singular fact: **The most widely-administered FCE protocols used to classify validity of effort are NOT legally-defensible—regardless of their conclusions—if opposing counsel knows what questions to ask when taking legal testimony. Those questions will reveal that most conventional FCEs are based on the subjective self-limitations of the test subject, subjective impressions of the tester based on visual estimation, and/or methods of testing based on little or no science at all. Stated differently, these FCEs often do not yield accurate, objective data, and their methodologies are not evidence-based.**

The following statements are based on a comprehensive review of scientific studies, federal statutes and case law relevant to FCEs. These statements will be seen by those invested in conventional methodologies to be heretical and disruptive. The authors, however, welcome a robust debate regarding FCE methodologies so that this area of medical practice, for the first time, is subjected to same level of scrutiny as any other evidence-based medical discipline.

1. There is no legally defensible empirical support for the assumption that visual estimation of effort yields valid conclusions.

For over 30 years, the visual estimation concept has been used to “determine” level of exertion and to “classify” validity of effort during a lifting assessment. Research that will be published in the last quarter of 2011 will be the first study to be published on the accuracy of this testing method. This study will demonstrate that trained physical therapists are no better than other medical personnel, or even laypersons, in identifying invalid effort by visual estimation (only slightly better than chance for all categories of subjects).^[1] Attorneys who are well-versed in the research in the field and who understand the study that is now about to be published can successfully challenge the interpretation of the test. **The implications of this study are important because they render legally indefensible testing methods using this method to classify exertion and cooperation during a lifting assessment.**

2. There is no legally defensible empirical support for the assumption that isometric testing accurately predicts performance in the workplace or even validity of effort during testing.

Isometric (also “static”) testing involves the measurement of force produced against an unmovable strain gauge. Companies using isometric testing include), ARCON/ISTU, Baltimore Therapeutic Equipment (BTE), Occupational Performance Corporation, Techs Medical, Ability Works, and Physical Capacity Profile Testing System. For more than 40 years, it has been assumed that the “statistically significant” relationships between isometric strength means that static measurements can be used to predict dynamic lifting capacity in the workplace. A study published in November 2010 examined the results of more than 130,000 job applicants.^[2] This study was noteworthy because it was the first published study to actually report a complete statistical analysis to determine the accuracy of such predictions. It was determined that such predictions will result in the following errors the vast majority of the time:

- There will be a disparate impact against female job applicants because static measurements are measures of raw strength—and males are stronger than females.
- Since there is no direct relationship between static and dynamic strengths, the range that such predictions must use if the predictions are to be made with 95% certainty is so large as to make the predictions completely meaningless.

In addition to the inaccuracy of isometric-to-dynamic strength predictions, in the first controlled study on the accuracy of static testing in classifying validity of effort, it was found—with 95% certainty—that 40% - 80% of the people who are tested for validity of effort during the Static Leg Lift and Static Arm Lift can produce a coefficient of variation <15% (in other words, be “consistent”) even when they are feigning weakness.^[3] **The implications of these studies may be of interest to anyone paying for post-offer testing services or paying for FCEs that use isometric measurements: The answers provided by such tests are legally indefensible. It is possible that unsuccessful female job applicants can sue the employer for disparate impact. It is also quite likely that many compensation cases have been settled on the mistaken notion that a claimant has a “weakness” that did not actually exist.**

3. There is no legally defensible empirical support for the assumption that isokinetic testing accurately predicts performance in the workplace or even validity of effort during testing.

Isokinetic testing is machine testing in which the body part, typically a shoulder or knee, is moved through a range of motion at a selected speed, e.g. 120 degrees per second. Examples of isokinetic testing can be found in testing machines used by CRT, Cyber, and Bide systems. In such testing, the velocity is constant because the machine responds immediately to torque production of the person being tested. This kind of resistance is found only on isokinetic machines. Therefore, such testing is not "job specific" in a real world sense. Furthermore, any scores for peak torque, power or work are measures of raw strength. When used to make hiring decisions, these data are likely to have a disparate impact on females because it is a biological fact that males, as a group, are stronger than females. This is a potential EEOC concern. Furthermore, although more than 2,500 studies have been published on "isokinetic strength," multiple literature reviews have repeatedly found that this kind of machine testing does not predict functional abilities, does not predict the likelihood of injury, and does not classify validity of effort. **Implication: Is kinetic test results, whether used to make employment decisions or decisions related to return to work, can be effectively challenged every time by the knowledgeable attorney.**

4. There is no legally defensible support for the assumption that a test subject's self-limitation of effort is a valid measure of his/her SAFE capacity to perform work in the workplace.

This should be obvious on its face. Self-reported limitations may or may not be an accurate statement with regard to functional capacities. FCE systems need built-in measures to classify validity of effort. Lacking those measures, the FCE is nothing more than a series of subjective statements by the patient and subjective judgments by the test administrator---and neither are legally-defensible if attorneys knowledgeable in validity of effort testing ask the right questions during legal testimony.

5. Fakers can give consistently invalid effort in certain FCE tests; consistency between measures does not guarantee an accurate assessment of validity of effort.

This is clearly demonstrated in Shapiro et al. with regard to lifting assessments using the "visual estimation of effort" to classify validity of effort. [1] This is also clearly demonstrated with regard to static testing, as demonstrated in Townsend et al. [3] Multiple studies (cited later in this document) will address the issue of the use and accuracy of conventional hand strength testing protocols.

6. Reliance on coefficients of variation (COV) of less than 15% during hand strength assessment as a cutoff for "validity of effort" is arbitrary and without scientific or logical basis.

In fact, there is no source that specifically mentions the magical cutoff point of 15%. This is largely a legend, based around isolated statements in various studies, noting that people generally have COVs <15% when undergoing hand strength tests for employment purposes. There have also been successful marketing instruments sent out by commercially successful FCE vendors who have proposed this concept---but never proved the point.

Hand strength assessments use the COV, Rapid Exchange Grip (REG) testing and the “Bell Curve” analysis to classify validity of effort. Unlike the mythical 15% COV cutoff which has an absence of evidence to support its use, when it comes to hand strength assessment, the COV, REG testing and the Bell Curve assessment have been completely discredited in numerous studies. [4 – 28] Conclusion: Conventional hand strength assessments of validity of effort are not legally defensible if attorneys know what questions to ask when taking legal testimony.

7. Use of a single measurement of lifting ability to place someone in a Dictionary of Occupational Titles (DOT) classification (e.g., sedentary or light) is not legally defensible.

With all due respect to the Federal Government, the DOT classifications are arbitrary, non-specific, and not appropriate to make legal employment or disability determinations. For example, the use of the DOT classifications requires a determination of the projected “frequency” of an individual’s lifting ability. A standard practice for projecting how much an individual can lift on a “frequent” basis is to reduce “maximum” lifting capacity by 30% to determine “occasional”, and then divide that figure in half. To project “continuous” capacity, a standard practice has been to divide the projected ability for “frequent” by half again. For example, a test subject whose maximum lift is 30 pounds will be assigned an “occasional” ability of 20 pounds, a “frequent” ability of 10 pounds, and “continuous” ability of 5 pounds. No studies have ever verified this concept. These projections are based purely on a commonly accepted but never scientifically proven “formula”. Such projections are subject to legal challenge because they are not based on actual measurements of ability in an individual case, a fundamental requirement of the Americans with Disability Act (ADA). Employment decisions based on this non-scientific formula may also violate Title VII, the Age Discrimination in Employment Act (ADEA), the Family and Medical Leave Act (FMLA) and other federal and state laws. There is no substitute for actual measurements of an individual’s ability to perform the essential functions of the job(s) in question (beyond one measure of lifting), by means of dynamic testing or job demonstration (use of actual tools, equipment or workplace conditions in the test protocols).

In addition, the terms “occasional” and “frequent” with regard to the duration an activity is performed are also lacking in specificity. “Occasional” refers to anything done 0 - 33% of the time. “Frequent” is 33 - 67% of a work shift. Such an arbitrary assignment of frequency cut-offs is problematical since it does not take into consideration the pace of the activity. Further the arbitrary cutoffs do not take into account when during the shift the activities done are done: The first third of the shift, last third, middle third, first third of every hour, last third of every hour, etc.

8. Reference to variations (or lack thereof) in heart rate as an accurate measure of validity of effort is not legally defensible.

Testing methods using maximum heart rate as an index of effort are based on the assumption that we can predict a maximum heart rate, based on a subject’s age. The most popular method of making this estimation is to use the formula “220 – Age = Maxim Heart Rate. An extensive review of literature on this subject reveals the inconvenient truth that such estimations must be expressed in a range of 40 beats per minute to be stated with 95% certainty. That means that the true maximum heart rate of a 40 year-old subject, using this standard method of estimating heart rate is really somewhere between 160 beats and 200 beats per minute. [29] The only way to determine maximum heart rate is to administer a maximum exercise test under the supervision of a cardiologist.

In addition to the problem of estimating maximum heart rate, too many factors other than "effort" affect heart rate. These include stress, physical conditioning (or de-conditioning), and medication. Failure to account for the effects of these factors makes the use of heart rate unusable as an index of effort. The quantitative effects of these factors, of course, is variable between individuals and, therefore, insurmountable confounding variables. Other questions: What is being evaluated, peak or sustained heart rate? If peak, what percentage of "max predicted" is sought, and on what basis? If sustained, for what period of time, at what rate and on what basis?

Related to the use of heart rate, it is also incorrectly assumed that heart rate is somehow related to "pain" experienced by a subject undergoing functional assessment. Then, it is assumed that if the subject is "in pain," they must be giving a good effort. In fact, the use of heart rate is not a reliable correlate of pain, as demonstrated in a study conducted by EMTs who were monitoring persons under emergency conditions to determine if heart rate could be used as a guide for the administration of pain-killing drugs.^[30]

9. Subjective pain questionnaires and other self-assessments of ability have limited usage in assessing validity of effort in testing.

The key word is "subjective." Related to this issue is the use of pain questionnaires as an absolute index of legitimacy of effort—or as a way to "prove" a physical impairment exists. High scores may indicate the presence of significant pain—or exaggeration of pain. Low scores may indicate the absence of pain or the inability to communicate effectively. High scores may or may not predict compliance during a test—and the same is true for low scores on pain questionnaires.^[31] At best, pain instruments might or might not correlate with objective findings and compliance during an FCE.

10. There is no industry self-regulation with respect to best practices in FCEs and, as a result, there is no standardized methodology, reporting format, or evaluation criteria, and little to no industry oversight of the plethora of unscientific methodologies foisted on unsuspecting and untrained therapists, physicians, employers, insurance adjusters, vocational experts, attorneys and judges.

Those who work in, or use the products of, the FCE industry deserve governing bodies at the national and state level who are able to set best practice standards for FCEs based on current scientific evidence, who can educate the public about such standards, and who can advance a uniform format for reporting results so that everyone can understand a tester's conclusions and the bases for those conclusions.

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