

FUNCTIONAL AND WORK CAPACITY EVALUATION ISSUES

WARREN T. JAHN, DC, MPS, DABFP^a, LEANNE N. CUPON, DC, DABFP^a, AND
JOHN H. STEINBAUGH, DC, DABFP^a

^aPrivate Practice of Chiropractic, Roswell, GA. Submit requests for reprints to: Dr. Warren T. Jahn, 1305 Hembree Rd, Suite 203, Roswell, GA 30076. Paper submitted December 4, 2003.

ABSTRACT

Functional capacity evaluation (FCE) may be defined as a systematic, comprehensive, and objective measurement of an individual's maximum abilities (ADL or work). The effect of the examinee's impairment on his or her ability to perform purposeful tasks is the focus of functional and/or work capacity evaluation (FCE/WCE). The common thread that connects all FCEs is the need for an evaluation of an individual with an unresolved residual. The forensic examiner must be able to determine the most suitable process from the 5 different types of evaluation processes involving functional capacity evaluations. The College on Forensic Sciences (CFS) has identified that most FCE administrators are not sufficiently grounded in science, case law and forensic issues. Examples may include misquoting standard journal articles and texts, making false statements, providing "junk science" opinions and interpretation, and deliberately omitting important facts and knowledge. In this day and age of managed care, cost containment of workers' compensation (fee schedules) claims, and economic incentives can change the position of the test administrators, therapists or providers. Through specialized training to better understand the requirements and needs of the courts, the forensic examiner can become a valuable tool in providing an "evidenced-based" opinion regarding FCE/WCE questions. This training should prepare the provider in FCE/WCE methods, forensic analysis and principles that have a reliable evidence-based reasoning and methodology that is scientifically valid. (J Chiropr Med 2004;3:1-5)

Key Words: Functional Capacity; Work Capacity; Impairment; Disability Evaluation; Activities of Daily Living; Americans with Disability Act; Forensics; Reliability

INTRODUCTION

Defining terms within the medicolegal reporting process is essential and the hallmark of a board-certified forensic examiner (DABFP). *Functional* denotes the performance of a deliberate, meaningful, or useful task that

has a beginning and an end with a result that can be measured. The maximum ability or potential of an examinee refers to *capacity*. *Evaluation* describes a methodical approach to monitoring and reporting performance that requires the forensic examiner to observe, measure, and interpret the examinee's performance in a structured task or essential job function. Thus *functional capacity evaluation* (FCE) may be defined as a systematic, comprehensive, and objective measurement of an individual's maximum abilities (ADL or work). The medicolegal and financial ramifications of impairment and disability ratings have forced forensic examiners to become increasingly responsible under managed healthcare and workers' compensation systems and Title I of the Americans with Disabilities Act (ADA) for generating objectively-based functional and work capacity determinations regarding the examinee's activities of daily living (ADL) and return-to-work potential. The effect of the examinee's impairment on his or her ability to perform purposeful tasks is the focus of functional and/or work capacity evaluation (FCE/WCE).

DISCUSSION

Historical Background

FCEs originated in the post-World War II era in conjunction with United States industrial developments. The American Medical Association (AMA) in 1944 introduced the concept of systematic evaluations to promote and maintain health among workers. The U.S. Civil Service Commission, around the same time period, was preparing a classification of physically disabling conditions to be matched with compatible positions of employment available within the federal government. This was the first attempt to define work activities of the job, and ultimately the formulation of the U.S. Department of Labor's *Dictionary of Occupational Titles*. (1) In a series of papers, Dr. B. Hanman introduced concepts of physical-demands analysis (PDA) and functional-capacity assessment (FCA). The PDA provided details of the physical requirements of job-related tasks such as lifting, carrying, standing, walking, and stooping. The FCA developed in a series of assessment procedures designed to examine an individual's capacity to perform the physical tasks listed in a PDA and involved 2

components: evaluation of medical fitness and evaluation of work capacity.

The process of FCEs draws upon the principles of biomechanics, ergonomics, kinesiology, physics, and physiology. FCEs evolved partly out of the needs of third party payers and the legal professionals to pursue more objective information on which to base ADL and/or return-to-work decisions. FCEs have emerged as the objective measurement system to matching physical abilities with essential and critical job demands (with recent ADA), targeting short and long-term treatment goals to justify work-hardening therapy, identifying job modifications to enhance worker safety, and delineating functional capacities in cases of litigation, impairment and disability determination. (2) Applications toward behavior management and the detection of submaximal effort have been incorporated.

The forensic examiner understands that when injuries or conditions do not resolve completely, there may be a residual dysfunction in one or more body organ systems. Diagnoses and test results from other specialists can be used in formulating impairment ratings within the FCE process. Several states have established Rating Guidelines (state, Industrial Commission, (3) designated (law, rule, regulation, statute, etc.), a specific edition of the *AMA Guides*, etc.). The chiropractic profession has been teaching impairment rating as part of their post-doctoral studies, restricting themselves only to neuromusculoskeletal conditions, for many years. More recently, the College on Forensic Sciences (CFS) has been instructing forensic examiners in disability systems and organ ratings (*AMA Guides* 5th edition) with international certification offered by the American Board of Forensic Professionals (ABFP). These forensic examiners have been trained to navigate through the complexities and subtleties of the major disability systems in the United States and how to provide the proper documentation utilizing the appropriate rating guideline(s).

Types of Evaluation Processes

The common thread that connects all FCEs is the need for an evaluation of an individual with an unresolved residual. The most important functions of the forensic examiner (administrator, evaluator) is to select the specific tasks and elements of the examinee's job (essential job functions), be in compliance with Title I of the ADA and to provide exacting answers to the questions posed by the referring entity. Knowledge of all aspects of the ADA needs to be implemented by the forensic examiner because Return-To-Work (RTW) examinations must be job specific. (4) Therefore the forensic examiner must be

able to determine the most suitable process from the 5 different types of evaluation processes involving functional capacity evaluations. The 5 types of processes are described below, arranged by an increasing complexity, time, and expense hierarchy. Manufacturers of equipment designed for each type of process are listed.

Functional Goal Setting

Measurement of functional status that is pertinent to the impairment (usual functional consequences) which requires treatment is warranted in order to set recovery goals. (5) In the case of a musculoskeletal impairment, this type of evaluation measures range of motion, strength, and ADL and/or work capacity. Equipment from manufacturers (6) as ARCON, Baltimore Therapeutic Equipment (BTE), Chattanooga Group, Cybex, Isotechnologies, Lafayette Instruments, Loredan Biomedical, and Smith & Nephew Rolyan is used for this type of evaluation. The data that is collected is analyzed and used to set functional goals and to provide objective performance indices to monitor treatment progress.

Impairment or Disability Rating

Measurement of the loss-of-performance ability (functional consequences of an impairment) in essential or critical functional areas of work can be used as an estimate of disability. Information about the examinee's impairment is obtained through an independent medical examination (IME). Information concerning performance in terms of the essential or critical job functional areas is obtained through an FCE. Equipment from manufacturers such as Blankenship, WEST-EPIC, and Key is used in this type of evaluation. Additionally, there are other models measuring loss-of-performance. The California Disability Rating System (7) uses the percent of lost-lift capacity as the basis of a standard disability rating for injuries that result in work-capacity limitations. A disability rating falls into 1 of 8 categories according to a series of functional issues. Each category has been assigned a standard disability rating that is used as 1 of 4 variables in a formula that translates the occupational consequences of impairment in terms of an occupational category, taking into account the examinee's age.

Job Task Matching

Matching the worker's abilities adequacy in performing essential or critical job functions may be requested. Information concerning the physical demands of a particular job is obtained through a job analysis and information concerning the worker's impairment is obtained through an independent medical examination. A com-

parison of information leads to the identification of the physical abilities that require an evaluation of functional adequacy. (8) This FCE type differs from the Impairment or Disability Rating FCE because the evaluation content is uniquely determined for each examinee and job in combination. Equipment from manufacturers such as BTE, Isernhagen Work Systems, Loredan, Smith & Nephew Rolyan, and WEST-EPIC is used in this type of evaluation.

Occupation Matching

Matching of the examinee's functional capacity to the demands of an occupational classification may be requested. The physical demands of an occupation can be obtained from sources such as the *Dictionary of Occupational Titles* (9) from the U.S. Department of Labor or the O*NET (10) system for jobs that are typical for an occupational group. The physical demand level is often described in general terms: sedentary, light, medium, heavy and very heavy and cross referenced with occasional, frequent, and constant. (11) The FCE tests and level of demand are based on this information.

Information concerning the worker's impairment is obtained through an independent medical examination that includes an assessment of perceived functional capacity. This type of FCE is more complex than job task matching because the occupational classification contains all job tasks that might be required in the variety of jobs that are found within the classification and is also more physically demanding because the full range of job demands within the occupational classification must be considered, the performance target is the maximum level for the tasks. Equipment from manufacturers as Valpar and Work Recovery Systems is used in this type of evaluation.

Work Capacity Evaluation

Matching the examinee's functional capacity to the demands of competitive employment is the most comprehensive type of functional capacity evaluation. The focus of the Work Capacity Evaluation is expansive, encompassing all of the frequently encountered task demands and worker behaviors, since there is no occupational target. Behaviors, through observation of performance in a simulated work environment, are assessed. This type of evaluation uses structured work simulations and is constructed on descriptions found in published resources. (12–14) Selecting the FCE that is appropriate is driven by the performance-demand targets that are contemplated, given the availability of a job for the examinee and the specificity of information

concerning the job or occupational demands. These can be purchased from a manufacturer such as Work Recovery Systems or can be constructed based on descriptions found in published resources.

FCE Data Analysis Issues

1. Most providers or therapists do not have specific education, experience, or training, access to proper testing equipment ("low or high tech"), or adequate time to sufficiently address and verify the degree of functional loss relating to impairment in each case.
2. The process of FCEs draws upon the principles of biomechanics, ergonomics, kinesiology, physics, and physiology yet most test administrators, therapists, or providers have little or no education or background in these areas. They rely on computerized interpretation and not their own analysis of data to draw conclusions and opinions.
3. Most "high tech" equipment is based on isokinetic principles that do not translate into real world job demands. Current literature (15) has shown how "low tech" procedures are more valid and can be correlated with the examinee's job demands.
4. Most FCEs are conducted through the use of standardized global test batteries but the administration of complete batteries is not an efficient or specific approach. Domain testing (Focused Test Approach) is preferred over the battery approach, but requires an evaluator who is more experienced and is usually beyond the ability of most test battery administrators, therapists or providers. Research (16–19) has been conducted that may make this domain testing approach more available.
5. Many test administrators, therapists or providers do not meet the criteria for performance tests that are found in professional (20–23) and federal (24) guidelines, state and federal legislation and case law.
6. Many test administrators, therapists or providers do not meet or understand the relevance of the Rules of Evidence for scientific opinions based on tests in *Daubert*. (25)
7. Many test administrators, therapists or providers do not comprehend that the Americans with Disabilities Act of 1990 (26) is pertinent when testing involves a qualified individual with a disability. This Act was signed into law and has changed the way administrators perform RTW evaluations. Prior to this law, administrators were using unrestricted and random test batteries to evaluate injured individuals. (27) Since 1990 ADA supercedes all state laws, it is imperative that administrators address issues of disability resulting from job injury. The first 3 Titles of the ADA affect the way the injured worker is to be tested

- for RTW or to determine residual disability from their impairment.
8. Most test administrators, therapists or providers do not understand the underpinnings (safety, reliability, validity and practicality) for FCEs and the most important characteristic of a measure (utility).
 9. Test administrators, therapists or providers fail to identify less than full effort performance (maximum voluntary effort (MVE)) which may result in exaggeration of disability findings and a false positive determination of disability.

CONCLUSION

The College on Forensic Sciences (CFS) has identified that most FCE administrators are not sufficiently grounded in science, case law and forensic issues. Examples may include misquoting standard journal articles and texts, making false statements, providing "junk science" opinions and interpretation, and deliberately omitting important facts and knowledge. Generally, there is an economic incentive to do so and areas of increase usage (e.g., Texas Workers' compensation). Income derived from FCEs can be substantial. In this day and age of managed care, cost containment of workers' compensation (fee schedules) claims, and economic incentives can change the position of the test administrators, therapists or providers.

The CFS is spearheading an effort for chiropractic to weed out unreliable chiropractic FCEs. It encourages the national trade and state associations to promote legislative action to sanction chiropractic physicians who testify falsely.

Return-to-work issues and impairment ratings are just 2 of the largest challenges for forensic examiners. There are opportunities for those properly trained to objectively quantify occupational disabilities based both on structural and functional limitations. The skill sets used to evaluate functional capacity of an individual are acquired over time. These skill sets are sharpened and honed by actually performing FCEs of different complexities and organ systems.

Given the wide variety of functional assessment measures that are available, it is unlikely that many new measures will be developed. The FCE process will be supported by expert administrative systems that are available online with built-in monitoring so that administrators, therapists, or providers with lower levels of skill who have received the appropriate training will be able to work as test administrators. Additionally, these systems will identify patterns of performance that indi-

cate less than maximum voluntary effort through dynamic monitoring of test performance. These behaviors will trigger follow-up testing to confirm or deny less than maximum voluntary effort. This will increase the reliability and subsequently, the validity and utility of FCE results.

Board certified forensic examiners learn to avoid the pitfalls of bias and perform an IME, thereby expressing their opinions in a form that is understandable and answers the questions posed by the requesting entity. Board certification is becoming widespread, supported by several universities, and demanded by underwriters. Certification for forensic examiners can be obtained through the American Board of Forensic Professionals (ABFP: <http://www.forensic-sciences.org>.)

Through specialized training to better understand the requirements and needs of the courts, the forensic examiner can become a valuable tool in providing an "evidenced-based" opinion regarding FCE/WCE questions. This training, similar to the independent medical examiner program sponsored by the National University of Health Sciences (NUHS), and the CFS forensics program <http://www.forensic-sciences.org>, should prepare the provider in FCE/WCE methods, forensic analysis and principles that have a reliable evidence-based reasoning and methodology that is scientifically valid.

REFERENCES

1. Fraser TM. *Fitness for work*. London: Taylor and Francis; 1992
2. Isernhagen SJ. Functional capacity evaluation. In: Isernhagen SJ, ed. *Work injury: Management and prevention*. Rockville, MD: Aspen Publishers, Inc.; 1988. p. 139-94
3. North Carolina Industrial Commission Rating Guide, www.comp.stat.nc.us.
4. A Technical Assistant Manual on the Employment Provisions (Title 1) of the Americans with Disabilities Act. Equal Employment Opportunities Commission, Superintendent of Documents, Pittsburgh, PA: 1992. p. 15250-7954
5. Matheson LN. Functional goal setting, foundation of the therapeutic relationship. *Am Pain Soc J* 1994;3:111-14
6. Abdel-Moty E, et al. Functional capacity and their utility in measuring work capacity. *CL J Pain* 1993;9:168-73
7. Mooney V, Matheson L. *Soft tissue injury quantification, feasibility study examiner's manual*. Santa Ana, CA: Employment and rehabilitation Institute of California; 1994
8. Hart DL. Test and measurements in returning injured workers to work. In: Isernhagen SJ, (ed). *Work injury management: The comprehensive spectrum*. Rockville, MD: Aspen Publishers, Inc.; 1994
9. U.S. Department of Labor: *Dictionary of Occupational Titles*, 4th edition Washington, DC; 1991
10. Hanson M, Matheson L, Borman W. The O*NET Occupational Information System. In: Bolton B, (ed). *Handbook of measurement and evaluation in rehabilitation*, 3rd ed. Gaithersburg, MD: Aspen; 2001. p. 281-309
11. BNA's Americans with Disability Act Manual, The Bureau of National Affairs, Inc., N.W. Washington, DC; 1992. p. 20037-1197
12. Brown C, McDaniel R, Couch R, McClanahan M. *Vocational Evaluation Systems and Software: A consumer's guide*. Menomonie, WI: Materials Development Center, Stout Vocational Rehabilitation Institute, School of Education and Human Services University of Wisconsin-Stout; 1994

13. Matheson L. Work Capacity Evaluation for Occupational Therapists. Trabuco Canyon, CA: Rehabilitation Institute of Southern California; 1982
14. Ogden-Niemeyer L, Jacobs K. Work hardening: State of the art. Thorofare, NJ: Slack; 1989
15. Newton M, Waddell G. Trunk strength testing with Iso-machines, Part 1: Review of a decade of scientific evidence. *Spine* 1993;18:801-11
16. Gaudino E, Mael F, Matheson L. A literature review: Functional assessment and related construct taxonomies. Washington, DC: American Institute for Research; 1999
17. Gaudino E, Mael F, Matheson L. Synthesis of research and development of prototypes for a new disability determination methodology: A literature review of the functional assessment and related construct taxonomies. Washington, DC: American Institute for Research; 1999
18. Gaudino E, Matheson L, Mael F. Development of the functional assessment taxonomy. *J Occup Rehabil* 2001;11:155-75
19. Matheson L, Kaskutas V, McCowan S, et al. Development of a database of functional assessment measures related to work disability. *J Occup Rehabil* 2001;11:177-99
20. American Psychological Association, Association AER. Education NcoMi: Standards for Educational and Psychological Testing. Washington, DC; 1999
21. Rothstein J, Campbell S, Echternach J, et al. Appendix: Standards for tests and measurements in physical therapy practice. In: Rothstein J, Echternach J. (eds). *Primer on Measurement*. Alexandria, VA: American Physical Therapy Association; 1993. p. 3-47
22. Johnston M, Keith R, Hinderer S. Measurement standards for interdisciplinary medical rehabilitation. *Arch Phys Med Rehabil* 1992;73:S3-S23
23. American College of Sports Medicine: Guidelines for Exercise Testing and Prescription, 4th ed. Philadelphia, PA: Lea & Febiger; 1991
24. EEOC: Uniform guidelines on employee selection procedures (1978). *Federal Register* July 1993;1:212-39
25. Blackmun J. *Daubert v Merrill Dow Pharmaceuticals*. Washington, DC: United States Supreme Court; 1993
26. U.S. Department of Justice CRD, Office of the Americans With Disabilities Act: The Americans With Disabilities Act: Title II Technical Assistance Manual. Washington, DC; 1992
27. Ziporyn T. Disability Evaluation: A fledgling science? *JAMA* 1983;250: 873-80