Clinical Practice Guideline: **Physical Performance Testing or Measurement**

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Product: **Specialty**

Related Policies:
CPG 135: Physical Therapy Medical Policy
CPG 155: Occupational Therapy Medical Policy
CPG 278: Chiropractic Medical Policy

Under many benefit plans, coverage for Functional Capacity Evaluation (FCE) is subject to the terms, conditions and limitations of the applicable benefit plan's Short Term Rehabilitative Therapy benefit and schedule of copayments. Coverage for return-to-work (RTW) services varies across plans. Refer to the customer's benefit plan document for coverage details. The Functional Capacity Evaluation section of this guideline is for those benefit plans that include coverage for RTW services.

If coverage for RTW services is available, the following conditions of coverage apply.

GUIDELINES

Criteria for specific physical performance testing or measurement are detailed here:

Medically Necessary

Functional Capacity Evaluation (FCE) is considered medically necessary when **ALL of the following criteria are met**:

- A written referral (from physician, carrier, or employer) is forwarded to the evaluator with the purpose of the FCE explicitly stated (i.e., clearly defined goals to guide test selection in the referral document and reflects one or more of the applications of an FCE).
- The evaluation is designed to determine return to work capabilities following a defined injury or following a medically necessary rehabilitation.
- The evaluation is structured to answer a specific question or questions about the worker's performance abilities and is addressed in the evaluation report.
- Reported results must be compared to meaningful standardized norms.
- The FCE must be performed by a qualified provider/evaluator (see requirements below).
    - Prior to the FCE, the qualified evaluator:
        - Obtains a subjective pain assessment with self-reported effect on functional abilities and activities of daily living;
        - Performs a screening examination; and

- Obtains informed consent.

The FCE is typically not indicated prior to three months post-injury, unless there is a significant documented change in the individual's status which justifies earlier performance. FCEs are limited to 2-4 hours per date of service and one evaluation every 12 months if necessary. If a FCE is necessary within 12 months, cases will be reviewed individually based on individual client/patient objective data compared to standardized norms. A FCE may extend beyond 4 hours or two days to further quantify the ability of the client to sustain the work tasks over a regular work schedule. The length of the FCE is dependent upon:

- The complexity of the illness or injury and the resulting impairments;
- The availability of clearly defined work-related physical demands.

Not Medically Necessary

Return to work/reintegration or vocational programs including work hardening programs are considered vocational training, rather than treatment of illness or injury, and are considered not medically necessary.

Unproven

Quantitative (e.g., isokinetic) muscle testing devices (e.g., MedX, Isostation B-200, Cybex II, Kin-Com, and Biodex) for the assessment of muscle strength are considered unproven.

CPT® Codes and Descriptions

CPT® Code	CPT® Code Description
97750	Physical performance test or measurement (e.g., musculoskeletal, functional capacity), with written report, each 15 minutes
97545*	Work hardening/conditioning; initial 2 hours
97546*	Work hardening/conditioning; each additional hour (List separately in addition to code for primary procedure)

*Considered educational or training in nature/not medically necessary

DESCRIPTION

Physical testing or measurement describes tests and measurements performed by a physician or other qualified health care professional. A physical performance test or measurement may be reasonable and necessary for patients with neurological or musculoskeletal conditions when there is a need to evaluate the ability to perform specific tasks. It may include a number of multi-varied tests and measurements of physical performance of a select area or number of areas. These services are not to be used in lieu of evaluation or re-evaluation services. Testing may be manual and/or performed using

equipment. Some examples of testing that are typically reported with CPT® code 97750 include: isokinetic testing for assessing the combination of strength, endurance and power while performing certain movements with the trunk or extremities, functional capacity testing, and specific test and measures related to balance such as the timed up-and-go test, and 6-minute walk test, with a computerized report of the patient's oxygen saturation levels with increasing stress levels, performed under a PT or OT plan of care on pulmonary rehabilitation patients. Standardized testing batteries may be incorporated into a physical performance test. It would not be appropriate to report a code from the 95851-95852 series in addition to 97750. It is not medically reasonable and necessary to bill this service as part of a routine assessment/evaluation of rehabilitation services. Direct one-on-one patient contact is required.

Functional Capacity Evaluation

A Functional Capacity Evaluation (FCE) is a method commonly used in work rehabilitation for assessing the residual capacity of the injured worker for return to work. The conceptual basis of the FCE is an evaluation of the person's potential to perform the physical demands of work in a safe environment. The FCE is based on the observation of the performance of the physical demands of work. FCEs are used as an adjunct method of making judgments of performance potential and readiness for work following a musculoskeletal injury. The FCE portion of this guideline is to be used when care management is rendered for individuals with musculoskeletal conditions that are medically stable yet demonstrate limitation of function and disability that impairs their ability to work at full capacity.

FCEs provide an objective measurement system to evaluate activity and activity limitations with the specific purpose of matching physical abilities with essential and critical job demands. FCEs also assist with identifying job modifications to enhance worker safety and delineating functional capacities in case of litigation, impairment, and disability. The focus of the FCE is on the job demands and the performance of the job demands. Historically, return-to-work decisions were based upon diagnoses and prognoses of physicians but did not include objective work function information. Practitioners whose core competencies include functional evaluation began to develop relative functional tests. These tests examined and evaluated the ability to perform physical work functions as described in the Selected Characteristics of Occupations as Defined in the Revised Dictionary of Occupational Titles. Functional examination/evaluation, combined with diagnoses and prognoses by trained clinicians has become an accepted tool for safely returning individuals to employment.

Quantitative Muscle Testing Devices

Quantitative muscle testing devices have been used to quantify muscle strength and an individual's response to rehabilitation and therapy. Manual muscle testing is most performed and is used to identify differences in strength between muscles, using qualitative

grading to describe the strength of muscles. Computerized technologies have been proposed to quantify muscle strength. The MedX extension machine (MEDX Corp, Ocala, FL) and Isostation B200 (Isotechnologies, Inc., Hillsborough, NC) are two devices that have been designed for spinal muscle testing, and to improve spinal muscle strength through pelvic stabilization and isolation of specific groups of lumbar muscles. However, evidence in the peer-reviewed scientific literature does not show that use of these devices for muscle testing demonstrates better diagnostic utility than the established method of manual muscle testing. Examples of these devices are described below:

MedX

The MedX lumbar/cervical extension machine is a device that can provide both functional muscle testing of the spine and spinal therapy. It provides resistance over a full range of isolated lumbar motion (72 degrees) or over a pre-selected limited range. The machine is capable of setting isometric test points every three degrees within an individual's range of motion. During the test, a computer software system plots the individual's actual range of motion and strength in comparison to that of age and gender-matched norms. In exercise mode, the compound weight stack can provide resistance from 10–400-foot pounds in increments of one foot pound. It is proposed that use of this device can specifically test the strength of the lumbar spine, and, through rehabilitation, the device can strengthen muscles. The rehabilitation program typically lasts 12 weeks, with computerized strength and motion testing performed every four weeks.

Isostation B-200

The Isostation B-200 lumbar dynamometer is a device that can measure position, torque, and velocity. It allows measurement of increasing fatigue by measuring the reduction speed in performance and noting increasing motion as muscle substitution becomes necessary. The device has been recommended for use in the treatment of persons with low back pain.

Isokinetic Testing Devices

Other types of quantitative muscle testing and strengthening devices, referred to as isokinetic testing devices, measure muscle strength by applying a constant resistance over a range of motion and speed. It is a rehabilitative exercise device intended for medical purposes to measure, evaluate, and increase the strength of muscles and the range of motion of joints. Based on testing results, strengthening exercises may be recommended. Isokinetic exercise is exercise performed using a specialized apparatus that controls the speed of movement within the range of motion. The exercise device provides variable resistance to movement but allows movement at a constant speed. The device registers the force applied to it by the user and offers the same amount of force as resistance. Cybex, Kin-Com, and Biodex are machines that provide isokinetic testing and muscle strengthening exercise. Evidence in the published scientific literature demonstrating the utility of these specific devices for muscle testing or strengthening therapy or standard procedures and exercise was not found. However, in the context of return to play testing post ACL reconstruction,

isokinetic testing is highly recommended as part of a battery of tests. Per Wilk et al. (2023), the current re-injury rates and less than optimal return to sport percentages seen following anterior cruciate ligament surgery highlights the need for greater focus on what tests and methods are used to make these critical decisions. Isokinetic testing remains the best single method to objectively determine dynamic muscle strength, power, rate of force development and endurance. These factors make it well-suited to play a crucial role in influencing the appropriate patient progression through a rehabilitation program and assisting in determining return to play readiness following injury or surgery.

BACKGROUND

Functional Capacity Evaluation

FCE is a comprehensive, objective testing of a person's abilities in work related functional tasks. At times, it is used as a preliminary test to determine functional status and capabilities prior to beginning a Work Hardening Program.

Work Hardening is a highly specialized rehabilitation program. It commonly begins following traditional rehabilitation therapies. Its goal is to simulate workplace activities and surroundings in a monitored environment to enable the patient to return to work. These programs may be developed and carried out by an occupational therapist and/or a physical therapist. The goal is to create an environment in which returning workers can rebuild psychological self-confidence and physical reconditioning by imitating their customary work routine. Work hardening programs refer to physical conditioning programs for injured workers who are out of work, or who are working at less than full capacity. Work hardening is a highly specialized rehabilitation program that transitions the patient from standard rehabilitation to return to work by simulating workplace activities and surroundings in a monitored environment. A wide range of programs conducted by a number of different health disciplines have been reported in the professional and scientific literature. In general, work hardening programs include a systematic program of gradually progressive, work-related activities performed with proper body mechanics, with the goal of physically and psychologically reconditioning the patient in order to facilitate return to full employment.

An FCE may be indicated for the assessment of the worker's capacity to meet the physical demands of specific duties when other sources do not provide this information. It is noted that a work trial is often the most valid test of a worker's capacity.

An FCE may be used as a source of information for the development of a RTW program/plan at the point of maximal medical improvement when:

- Treatment progress has reached a plateau/medically stationary;
- Discrepancy between subjective complaints and objective findings;
- Difficulty returning to gainful employment;

- Physical limitations and/or functional impairments hinder performance of regular work demands;
- Vocational planning, job placement and/or medico legal case settlement.

The FCE should be approached on a case-by-case basis. Comprehensive functional activities related to work duties should be observed and measured during the evaluation, keeping in mind that isometric or isokinetic tests of extremity or trunk torque are not sufficient, as these values mostly correlate poorly with performance of functional activities. Safety and prevention of further injury should be a main consideration and based on the following principles:

- Communicate risks and contraindications
- Professional judgment is used to determine a safe maximal level for each test component and FCE should only focus on critical job demands
- Cardiovascular system monitoring with modification FCE accordingly if changes in heart rate, blood pressure or respiratory rate change excessively
- Standardized criteria for ceasing a test must be established in advance, including but not limited to:
    - Pain
    - Nausea
    - Dizziness
    - Blurred vision
    - Radicular symptoms
    - Continued use of unsafe body mechanics

Expected outcomes of an FCE include:

- Making recommendations about body mechanics, movements, techniques, and modifications, such as safe manual handling and other actions which facilitate return to work; and
- Specifying proposed return to work duties or different duties.

The FCE should be performed in settings that **meet all of the following**:

- The equipment represents an appropriate reflection of work duties i.e., relevant tests, normative standards, acceptable reliability and validity.
- The environment and space for the equipment meet work and equipment specifications.
- The evaluator understands the equipment used during the FCE (i.e., training completed if necessary).
- Appropriate maintenance and calibration of the equipment is documented and available for review.
- There are appropriate planning, facilities and equipment to respond to emergencies.

Evaluator Qualifications

The FCE shall be performed in its entirety by a physical or occupational therapist currently holding a valid license, or other licensed provider qualified by scope of practice. The FCE should be performed by evaluators who have education, training, and competencies. Competencies must be evident by certification, where required specific to the FCE system that is being used, and by experience (having satisfactorily performed a minimum of five (5) FCEs. Proof of competencies may include a review by the Credentialing and Risk Management Committee of a sampling of previously completed FCE reports.

Quantitative Muscle Testing Devices

These devices are utilized in rehabilitation settings as a therapeutic exercise and evaluation tool. MedX and Isostation B-200 are devices used for spinal conditions. There are specific protocols that are followed for the specific machines utilized. Testing is completed to determine improvements over time. Isokinetic devices, such as the Biodex or Kin-Com, are used as a form of therapeutic exercise. Typically, these devices are used for the knee joint for strengthening of the quadriceps and hamstrings. However, other attachments are available for the upper extremity joints, and hip and ankle joints. Use of these devices for therapeutic exercise would be considered a form of therapeutic exercise and use of the CPT® codes specified in this guideline would not be appropriate. Testing protocols are utilized to determine improvements and/or muscle strength ratios. Comprehensive reports are produced demonstrating torques of muscles tested at the various speeds of movement. Muscle strength ratios are also reported. CPT® codes stated in this guideline refer to use of these devices for testing and evaluation. Rehabilitation facility use of these devices have dwindled over the years given the cost and space required for use. However, use within the research environment continues with focus on the knee joint. Research published focuses on the relationship of quadriceps and hamstrings strength, quad strength, and rate of force development with functional improvement, return to sport, and re-injury, with a call to action to increase isokinetic testing clinically. Additionally, in the context of return to play testing post ACL reconstruction, isokinetic testing is highly recommended as part of a battery of tests. Per Wilk et al. (2024), the current re-injury rates and less than optimal return to sport percentages seen following anterior cruciate ligament surgery highlights the need for greater focus on what tests and methods are used to make these critical decisions. Isokinetic testing remains the best single method to objectively determine dynamic muscle strength, power, rate of force development and endurance. These factors make it well-suited to play a crucial role in influencing the appropriate patient progression through a rehabilitation program and assisting in determining return to play readiness following injury or surgery.

DOCUMENTATION GUIDELINES

As code 97750 is a time-based code, the test or measurement procedure as well as the time spent analyzing and interpreting the results in the presence of the patient are elements of the visit that must be documented. The time element determines the number of units to be

reported for this procedure. Three (3) time elements must be documented to correctly report code 97750:

- Total time spent with the patient in providing the test and measurement, including the time spent preparing the patient for the test and measurement procedure;
- The time spent performing the selected protocol; and
- The time spent with the patient in providing any post-testing instructions.

The elements of documentation that support the reporting of code 97750, include documentation of the testing elements and/or protocols, documentation of problem requiring the test and the specific test performed, separate measurement report, including any graphic reports and interpretation of the data collected, and impact on the patient's plan of care (i.e., discharge, return to sport or activities of daily living [ADL], or modification of treatment). Time spent in direct contact with the patient determines the number of units to be reported for this procedure.

Functional Capacity Evaluation

Prior to the FCE, a written referral (from physician, carrier, or employer) must be forwarded to the evaluator with the purpose of the FCE explicitly stated such as clearly defined goals to guide test selection in the referral document and reflects one or more of the applications of an FCE. The referral source and evaluator should access and review any relevant medical records, work related duties, prior attempts to return to work or FCEs (if occurred) and reason for failure, and identify the RTW goals and potential options in advance. Consideration of any comorbidities and their influence on the FCE and return to work is imperative.

Results should be relevant to and comparable with the physical demands of a job when identified. Written reports are required and must be submitted with the following information:

- Patient demographics including work history;
- Indication for evaluation;
- Type of evaluation performed;
- Raw and tabulated data;
- Normative data values;
    - Test results should be compared with normative data for the FCE employed;
- Narrative coversheet at the beginning of the document describing the results of the evaluation and recommendations.

Where relevant, the detailed report should include the following additional areas:

- Results of subjective interview;
- Results of self-reported measures of disability;
- Results of physical examination/screening;

- Behavioral aspects including pain behavior and effort;
- Pace of work;
- Clinical observations including body mechanics;
- Functional abilities for the assessed physical demands.

EVIDENCE REVIEW

There is limited evidence in the published peer-reviewed scientific literature evaluating the use of quantitative muscle testing devices. These devices have not been shown to be equally effective as other standard exercise equipment utilized in rehabilitation programs, nor is there sufficient evidence to suggest that use of quantitative muscle testing devices improves clinical health outcomes when compared to standard manual muscle testing.

PRACTITIONER SCOPE AND TRAINING

Practitioners should practice only in the areas in which they are competent based on their education, training, and experience. Levels of education, experience, and proficiency may vary among individual practitioners. It is ethically and legally incumbent on a practitioner to determine where they have the knowledge and skills necessary to perform such services and whether the services are within their scope of practice.

It is best practice for the practitioner to appropriately render services to a member only if they are trained, equally skilled, and adequately competent to deliver a service compared to others trained to perform the same procedure. If the service would be most competently delivered by another health care practitioner who has more skill and training, it would be best practice to refer the member to the more expert practitioner.

Best practice can be defined as a clinical, scientific, or professional technique, method, or process that is typically evidence-based and consensus driven and is recognized by a majority of professionals in a particular field as more effective at delivering a particular outcome than any other practice (Joint Commission International Accreditation Standards for Hospitals, 2020).

Depending on the practitioner's scope of practice, training, and experience, a member's condition and/or symptoms during examination or the course of treatment may indicate the need for referral to another practitioner or even emergency care. In such cases it is prudent for the practitioner to refer the member for appropriate co-management (e.g., to their primary care physician) or if immediate emergency care is warranted, to contact 911 as appropriate. See the *Managing Medical Emergencies (CPG 159 – S)* policy for information.

References

American College of Occupational and Environmental Medicine. Chronic Pain. In: Occupational medicine practice guidelines: evaluation and management of common

health problems and functional recovery in workers, Elk Grove Village (IL): American College of Occupational and Environmental Medicine (ACOEM); 2008. P. 73-502. Guideline Summary NGC-7160

American Medical Association. Current Procedural Terminology (CPT): Current Year. Rev ed. Chicago, IL: American Medical Association

American Occupational Therapy Association. Work hardening guidelines (position paper). Am J Occup Ther. 1986;40(12):841-843

American Physical Therapy Association. http://www.apta.org

Anderson C and Briggs J. A study of the effectiveness of ergonomically-based functional screening tests and their relationship to reducing worker compensation injuries. Work 2008;31:27-37

Baker P, Goodman G, Ekelman B, Bonder B. The effectiveness of a comprehensive work hardening program as measured by lifting capacity, pain scales, and depression scores. Work. 2005;24(1):21-31

Bohl, Ahn, Collins, et al. Functional Capacity Evaluation following spinal fusion surgery. Spine. Volume 41, number 13, pp 1104-1110

Brewer CC, Storms BS. The final phase of rehabilitation: Work hardening. Orthop Nurs. 1993;12(6):9-15

Bühne D, Alles T, Hetzel C, Streibelt M, Froböse I, Bethge M. Predictive validity of a customized functional capacity evaluation in patients with musculoskeletal disorders. Int Arch Occup Environ Health. 2020;93(5):635-643. doi:10.1007/s00420-020-01518-5

Cancio JM, Oliver RA, Yancosek KE. Functional Capacity Evaluation-Military; Program Description and Case Series. Mil Med 2017 Jan; 182(1)

Centers for Medicare and Medicaid Services. Local Coverage Determination (LCD): Outpatient Physical and Occupational Therapy Services (L33631). Retrieved on February 23, 2026 from https://www.cms.gov/medicare-coverage-database/details/lcd-details.aspx?LCDId=33631&ver=51&NCAId=96&TAId=43&NCDId=320&ncdver=1&SearchType=Advanced&CoverageSelection=Both&NCSelection=NCA%7cCAL%7cNCD%7cMEDCAC%7cTA%7cMCD&ArticleType=Ed%7cKey%7cSAD%7cFAQ&PolicyType=Final&s=-%7c5%7c6%7c66%7c67%7c9%7c38%7c63%7c41%7c64%7c65%7c44&KeyWord=

Pulmonary+Rehabilitation&KeyWordLookUp=Doc&KeyWordSearchType=And&kq=true&bc=IAAAADAAAAAA&

Chen A, Cheng S. Use of Job-Specific Functional Capacity Evaluation to Predict Return to Work of Patients with Distal Radius Fracture. American Journal of Occupational Therapy 2011;65:445-452

Cole K, Kruger M, Bates D, et al. Physical demand levels in individuals completing a sports performance-based work conditioning/hardening program after lumbar fusion. Spine J. 2009;9(1):39-46

Cotton A, Schonstein E and Adams R. Use of Functional capacity Evaluations by rehabilitation providers in NSW. Work 2006;26:287-295

Denniston PL, Whelan P. Official Disability Guidelines. 18th Ed. 2013; Work Loss Data Institute: https://www.mcg.com/odg/

Gibson L, Strong J. A conceptual framework of functional capacity evaluation for occupational therapy in work rehabilitation. Australian Occupational Therapy Journal 2003;50:64-7

Gibson L and Strong J. A review of functional capacity evaluation practice. Work 1997;9:3-11

Gross D, Asante A, Miciak M, Battie M, et al. A cluster randomized clinical trial comparing FCE and functional interviewing as components of occupational rehabilitation programs. Journal of Occupational Rehabilitation 2014 Dec;24(4):617-630

Gross D, Battie M Cassidy JD. The prognostic value of functional capacity evaluation in patients with chronic low back pain: part 1. Spine 2004;29:914-919

Gross DP, Asante KA, Miciak M, et al. A Cluster Randomized Clinical Trial Comparing Functional Capacity Evaluation and Functional Interviewing as Components of Occupational Rehabilitation Programs. J Occup Rehabil. 2013 [Epub ahead of print] DOI 10.1007/s10926-013-9491-4

Gross, DP and Battie, M. Factors Influencing Results of FCE in Workers' Compensation Claimants with Low Back Pain. Physical Therapy 2005;85:315-322

Gross DP, Battie MC. The Prognostic Value of Functional Capacity Evaluation in Patients with Chronic Low Back Pain: Part 2. Spine 2004; 29:920-924

Gross DP, Battie MC. Reliability of Safe Maximum Lifting Determinations of a Functional Capacity Evaluation. Physical Therapy 2002; 82:364-371

Gross D, Beattie M. Does functional capacity evaluation predict recovery in workers' compensation claimants with upper extremity disorders. J Occup Environ Med 2006;63:404-410

Guidelines for Functional Capacity Evaluations (FCE) 2006; WorkCover Corp, South Australia Guidelines: Occupational Health Physical Therapy: Evaluating Functional Capacity; Parts 1-3

Hart DL, et al. Guidelines for Functional Capacity Evaluation of People With Medical Conditions. Journal of Orthopedic and Sports Physical Therapy 1993; 18:682-686

Innes E, Straker L. Reliability of work-related assessments. *Work*. 1999;13(2):107-124

Innes E, Straker L. Validity of work-related assessments. *Work*. 1999;13(2):125-152

Innes E and Straker L. Attributes of excellence in work-related assessments. Work 2003;20:63-76

Innes E and Straker L. A clinician's guide to work-related assessments: 2 –design problems. Work 1998;11:191-206

Isernhagen SJ. Functional capacity evaluation. In: Isernhagen SJ, ed. Work Injury; Management and Prevention. Rockville, MD: Aspen; 1988:139-194

Isernhagen SJ. Functional capacity evaluation: rationale, procedure, utility of the kinesiophysical approach. Journal of Occupational Rehabilitation 1992;2:157-168

Joint Commission International. Joint Commission International Accreditation Standards for Hospitals. 7th ed. Oak Brook, IL: Joint Commission Resources; 2020

King PM. Outcome analysis of work-hardening programs. Am J Occup Ther. 1993;47(7):595-603

King PM, Tuckwell N and Barrett TE. A critical review of functional capacity evaluations. PHYS THER. 1998; 78:852-866

Lakke SE, Soer R, et al. Construct validity of functional capacity tests in healthy workers. BMC Musculoskeletal Disord. 2013; 14:180

Lechner D, Page J, Sheffield G. Predictive validity of a functional capacity evaluation: the physical work performance evaluation. Work 2008;31:21-25

Lechner DE. Work hardening and work conditioning interventions: Do they affect disability? Phys Ther. 1994;74(5):471-493

Lemstra M, Olszynski WP. The effectiveness of standard care, early intervention, and occupational management in Workers' Compensation claims: Part 2. Spine. 2004;29(14):1573-1579

Mahmud N, Schonstein E, Schaafsma F, et al. Functional capacity evaluations for preventing re-injuries in injured workers. Cochrane Database of Systemic Reviews 2010, Issue 7. Art. No.: CD007290. DOI: 10.1002/14651858.CD007290.pub2

Matheson, L. The Functional Capacity Evaluation. In G. Andersson & S. Demeter & G. Smith (Eds.), Disability Evaluation, 2nd edition 2003; Chicago, IL: Mosby Yearbook

Matheson L, Mooney V, Grant J, et al. Standardized evaluation of work capacity. Journal of Back and Musculoskeletal Rehabilitation 1996;6:249-264

Niemeyer LO, Jacobs K, Reynolds-Lynch K, et al. Work hardening: Past, present, and future--the work programs special interest section national work-hardening outcome study. Am J Occup Ther. 1994;48(4):327-339

Oesch PR, Kool JP, Bachmann S and Devereaux. The influence of Functional capacity Evaluation on fitness for work certificates in patients with non-specific chronic low back pain. Work 2006;26:259-271

Orthopedic Section of APTA. Occupational Health Physical Therapy: Evaluation FCE Guidelines. July 11, 2011

Peppers D, Figoni SF, Carroll BW, et al. Influence of Functional Capacity Evaluation on Physician’s Assessment of Physical Capacity of Veterans with Chronic Pain: A Retrospective Analysis. PM R. 2016 Oct 22

Post M, Krol B, Groothoff JW. Work-related determinants of return to work of employees on long-term sickness absence. Disability and Rehabilitation 2005;27:481-488

Pransky GS, Dempsey, PG. Practical Aspects of Functional Capacity Evaluations. Journal of Occupational Rehabilitation 2004; 14:217-229

Rehabilitation Therapy Utilization Guidelines for the Care and Treatment of Injured Workers. Wyoming Workers' Safety and Compensation Division; R02/8/08

Reneman, Roelofs, Schiphorst-Preuper. Reliability and agreement of Neck Functional Capacity Evaluation tests with chronic multifactorial neck pain. Arch Phys Med Rehabil. 2016 Dec 31

Schindl M, Wassipaul S, Wagner T, Gstaltner K, Bethge M. Impact of Functional Capacity Evaluation on Patient-Reported Functional Ability: An Exploratory Diagnostic Before-After Study. J Occup Rehabil. 2019;29(4):711-717. doi:10.1007/s10926-019-09829-2

Schindl M, Zipko H, Bethge M. Reproducibility of improvements in patient-reported functional ability following functional capacity evaluation. BMC Musculoskelet Disord. 2022;23(1):258. Published 2022 Mar 16. doi:10.1186/s12891-022-05208-w

Schonstein E, Kenny DT, Keating J, Koes BW. Work conditioning, work hardening and functional restoration for workers with back and neck pain. Cochrane Database Syst Rev. 2003;(1):CD001822

Shu-Kei Cheng A, Wai-Chee Cheng S. The Predictive Validity of Job-Specific Functional capacity Evaluation on the Employment Status of patients with Nonspecific Low Back Pain. J Occup Environ Med 2010;52:719-724

Soer R, Cees P, et al. Towards Consensus in occupational definitions in functional capacity evaluation: a delphi survey. J Occup Rehabil 2008;18:389-400

Soer R, van der Schans, CP, Geertzen JH, et al. Normative values for a functional capacity evaluation. Arch Phys med Rehabilitation 2009;90:1785-94

Soo Hoo ER. Evaluating Return-to-work Ability Using Functional Capacity Evaluation. Phys Med Rehabil Clin N Am. 2019;30(3):541-559. doi:10.1016/j.pmr.2019.04.002

Trippolini MA, Dijkstra PU, et al. Reliability of clinician rated physical effort determination during functional capacity evaluation in patients with chronic musculoskeletal pain. J Occupa Rehabil. 2013

Van Abbema, et al. Factors associated with functional capacity test results in patients with non-specific chronic low back pain: a systematic review. J Occup Rehabil 2011;21:455-473

Weir R, Nielson WR. Interventions for disability management. Clin J Pain. 2001;17(4 Suppl):S128-S132

Wilk KE, Arrigo CA, Davies GJ. Isokinetic Testing: Why it is More Important Today than Ever. Int J Sports Phys Ther. 2024 Apr 1;19(4):374-380

Wind H, Gouttebarge V, Kuijer P, et al. Complimentary value of functional capacity evaluation for physicians in assessing the physical work ability of workers with musculoskeletal disorders. Int Arch Occup Environ Health 2009;82:435-443

Wunderlich GS (Editor). Measuring Functional Capacity and Work Requirements: Summary of a Workshop. The National Academy of Sciences 1999: www.nap.edu

Wyman DO. Evaluating patients for return to work. Am Fam Physician. 1999;59(4):844-848