

ADA and EEOC – Compliant Functional Testing of Employees: A Defensive Hiring Method to Reduce Injuries and Increase Productivity

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Introduction

The widespread occurrences of musculoskeletal disorders (MSDs) in the United States is costing industries billions of dollars annually in loss time direct and indirect costs. Numerous medical studies have implicated poor work design, unsafe work behaviors, and poor physical fitness as contributory to the development of the vast majority of MSDs. Poor lifestyle habits such as poor nutrition, over-eating and avoidance of exercise has led to a virtual epidemic of obesity in this country. The Surgeon General reported that more than 60% of adults are overweight and physically unfit. At the same time, the Bureau of Labor Statistics (BLS) reports that approximately one half of all workers compensation costs are attributable to MSDs (i.e., back and neck injuries, carpal tunnel syndrome, tendonitis, bursitis and other disorders of the musculoskeletal system). The most common MSDs experienced by the work force today affect the neck, back, shoulders, arms, wrists, hands, and knees. The increase incidences and severity rates of MSDs today have been the primary drivers of increased awareness of applied ergonomics by management and particularly, SH& E professionals.

The purpose of this paper is to describe a functional testing process that can be legally and effectively used to identify whether or not an individual is able to perform the essential physical functions of a particular job prior to job placement. This process involves assessing a person's functional capabilities and identifying any existing physical deficits in order to determine whether or not a person can safely perform the essential functions of a job. The functional testing program described in this paper is designed to meet the standards of the Americans with Disabilities Act (ADA) and avoid disparate discrimination as required by the Equal Employment Opportunity Commission (EEOC). This type of testing can identify persons who have cardiovascular and/or musculoskeletal disorders and who may be exposed to imminent risk of injury. It can also be used to establish a baseline profile of employees to aid in the rehabilitation should they become injured and to provide accurate accommodations required for people who may have disabilities protected by the ADA. It is opined by the author, based on over 15 years experience of using this testing process with numerous industrial clients, that job-specific functional testing is highly effective at properly matching employees to job demands, reducing injuries, and improving work productivity when designed and applied correctly.

The Evolution of Functional Capacity Testing for Hiring

With particular concern about an increasingly aging work population and job applicants who may have significant medical conditions already in existence at the time of hire, approaches to reduce the risk of injuring a new hire have become a nation-wide priority among industries. The cost of loss time and related medical expenses associated with MSDs to American employers is astounding. In 2002, American industries spent a whopping trillion dollars on healthcare and workers compensation mostly on illnesses and injuries. According to the Bureau of Labor Statistics, MSDs comprise over one-third of occupational injuries and illnesses and constitute the largest job-related injury and illness problem in the United States. Ergonomic injuries are estimated to cost American employers over 20 billion dollars annually.

Consequently, the application of ergonomics, the science of modifying work processes and environment to reduce mental and physical stressors on employees and improve job efficiency and productivity, has received much attention nationally over the past few years. The primary concept in ergonomics is to make the job fit the worker or, in other words, modify work in order to allow optimum efficiency without harm to the worker. However, if an employer has incorporated all reasonable ergonomic interventions in the work place, has minimized the essential physical demands of the job, and has effectively eliminated ergonomic stressors to make the job as safe as possible, what can an employer do if a person seeking placement in a job has a disability or simply lacks the physical capacities to perform the job safely and/or effectively? The obvious answer is to properly match the functional capacities of an applicant to job-specific demands prior to job placement.

The use of post-offer, pre-placement functional testing for specific job demands, when designed correctly, is fully compliant with the Equal Employment Opportunity Commission (EEOC) and the Americans with Disabilities Act (ADA) and has proven to be an effective component in loss control efforts used by industries today. In fact, the Occupational Safety and Health Administration (OSHA) considers proper matching of employees to the job as being instrumental to injury prevention.

Many people can get jobs by passing standard medical physicals which fail to test the body's response to physical exertion. The issue as to how many people are hired and become injured when performing their job duties due to inadequate job matching is becoming an increasing concern. Compensating for physical problems or poor physical fitness by using improper or unsafe body mechanics, will lead to an injury, or even a long-term disability. Toward preventing this problem, medical screening of prospective new-hire applicants has been conducted in the past. However, medical tests were often not job-specific. They represented medical examinations that attempted to identify a medical problem that would make the applicant a high risk for injury on the job. Some included additional testing such as radiographic studies, manual muscle testing, joint range of motion, and medical signs and symptoms. These early tests were often subjective and while these assessments were useful in identifying certain applicants with conditions posing medical risk, there is no research demonstrating predictive value.

In order to improve the predictability of injury, it was deemed reasonable to test a person's functional abilities (i.e., perform a functional capacities test) by testing a person's abilities to perform job-specific simulated tasks such as lifting, carrying, pushing, pulling, climbing stairs, ladders, squatting etc. Functional capacity testing is a form of a medical test, and as such, cannot

be conducted on a person until a conditional offer of hire had been made to the applicant. Therefore, it is improper to call such a test a “pre-employment test”. The correct terminology is “post-offer, pre-placement functional capacity test”, referred to from hereon as simply “PPFT”.

The PPFT is a functional-based examination that is designed to help identify persons with and without medical conditions, impairments or disabilities in order to determine if they will be placed at imminent risk of injury or pose a risk to co-workers when required to perform essential functions of a job. By performing functional testing, an employer can also determine if a person without a medical problem or disability has sufficient strength, flexibility, and cardiovascular fitness to perform the minimum essential functions of a job. If such a test accurately represents true essential job functions, it can be considered valid and nondiscriminatory. Since functional tests are considered forms of physical stress tests, it is prudent to conduct a detailed physical examination on the conditional new hire before allowing that person to become engaged in physical demanding tests. This is necessary to reduce the risk of injuries during functional testing.

There are various forms of functional abilities testing currently being used today. To be legally performed, employers should ensure that the testing protocol is fully compliant with the EEOC and ADA by ensuring the absence of disparate discrimination in the functional test design. This is accomplished by testing the ability of individuals to perform only the essential functions of a particular job prior to placement in that job. Early testing was flawed with inconsistency in testing methodology and the inability to correlate certain tests to the specific physical requirements of the job. Many functional abilities testing programs were designed and implemented with a wide variety of testing procedures and philosophies being developed. In many settings, early functional abilities testing were successful in reducing the incidence of injury. However, many potential workers were discriminated against due to various testing protocols being subjective and not necessarily related to the actual physical demands of the job.

The impact of the Americans with Disabilities Act (ADA)

In 1990, the United States Congress enacted the Americans with Disabilities Act (ADA). With its passage into law, sweeping changes were mandated in the area of medical and functional abilities testing as it related to employment hiring practices. Employers were no longer able to make medical inquiries, or conduct a medical examination, until after a job offer was made. Medical examinations were required to be job-related and had to be essential to the function(s) of the job. This meant that a functional abilities test had to correlate specific test components to specific essential tasks required for the performance of the job. This, in turn, caused medical providers to reassess their testing protocols to insure that the tests were true and valid measurements of the essential functions of that particular job. Since the passage of the ADA, medical professionals have had to take a narrower and more focused approach to functional testing when used in a pre-placement, post-hiring context.

With the advent of the Americans with Disabilities Act in 1991, an emphasis was made on testing the abilities of a person to conduct a job safely regardless of real or perceived disability. This foundation established by ADA regulation led to an evolution in medical testing that shifted from speculation based on standard medical exams to job-specific functional testing to assess risk of injury. In order to properly “match” the worker’s physical capabilities to the physical demands of the job, medical testing became dependent on content validity derived from job analyses.

The underlying premise of this type of testing lies in the question of predictability. Can functional

abilities testing be used to predict which individuals are at the highest risk of becoming injured? Testing methodology can vary in type, as well as in value.

Results of research

Some studies using isometric, isokinetic, and dynamic strength testing have shown that workers who demonstrated insufficient strength to meet the physical demands of the job, were at an increased risk of injury. Other research studies have shown that computerized isokinetic and isometric strength testing have no value in employee selection, nor the prediction of back injury. Dynamic (isotonic) lifting capacities have been used to attempt to correlate certain postural lifts to a level of functional ability in workers. Matheson, Isernhagen and Hart demonstrated that the use of lifting tests had a positive relationship to the return to work levels of injured workers. Furthermore, decreased trunk flexibility and weak trunk strength have been found to contribute to lower back injury.

Research has also demonstrated that reductions in the incidence of musculoskeletal injuries can occur when standardized strength tests are used in the employment process. Workers who could demonstrate strength capabilities, exceeding the strength required in the performance of their jobs, had a lower incidence and severity of musculoskeletal injury. The results are dependent upon the quality of the systematic evaluation of the worker and the performance standards of the task. The quality of the systematic evaluation is dependent upon the inter-rater reliability of the tasks as determined by the experience and the quality of the skills of the examiner. In addition, Gross and Battie found that the assessment of manual material handling is enhanced when the assessment occurs over more than one occasion in order to capture the variability in function.

As physical abilities testing progressed, it became apparent that the assessments and tests must reflect the real workplace. As job demands and characteristics vary, so must the means and methods of abilities testing. The measurements chosen must fit the circumstances and the demands of the specific job a worker has to perform. Evaluating the worker's capacity to perform the physical demands of a specific job is the key issue. The clinician must have the skills to measure the relevant physical demands of the job and the relevant capacities of the work.

Validity of testing:

In order to avoid hiring discrimination, any determination of whether or not an employee can perform a job task safely must be based on a validated PPFT. Validation is most commonly based on data derived from on-site job analysis called a physical demand validation (PDV). A PDV is conducted using force, weight, distance and angle measurement tools, employee interviews and employee verification of data. This type of validation that directly measures the physical demands of essential job tasks is referred to as "content validation". This is an acceptable method that can be used to design a PPFT that is not discriminatory. The U.S. Department of Labor has defined discrimination, as it relates to post-offer, pre-placement testing, as "the use of any selection procedure which has an adverse impact on the hiring, promotion, or other employment" of individuals (41 CFR 60-3.3). Consideration of suitable selection procedures may be determined to be discriminatory if not validated. The U.S. Department of Labor view three acceptable forms of validity studies: criterion-related, content, and construct validity. Evidence of the validity of a test or other selection procedure by a content validity study should consist of data showing that the content of the selection procedure is representative of important aspects of performance on the job for which the candidates are to be evaluated.

Physical demands validation – the legal foundation for PPFT design

Physical demands validations (PDVs) involve detailed interviews of employee in each job

title and a systematic job analysis which may be conducted by properly trained safety and ergonomic specialists. The PDV is essential to assess and measure the essential functional (or physical) demands of a job. Essential functional demands of the job can be defined as the minimum physical demands required of the worker in order to perform job functions that are considered to be of business necessity. For example, a task of transferring packages in a warehouse weighing 10 - 35 lbs from a delivery truck to a conveyor belt on a daily basis may be considered essential if other reasonable ergonomic solutions are not available or feasible. However, requiring an employee to lift a crate that weighs 100 pounds by himself or herself that is delivered once a month and can be handled by more than one employee or by a mechanical lift device, would not be considered an essential job function. In other words, requiring a conditional new hire to perform a lift test involving 100 pounds as the pass criterion for job placement, in this example, would fail to meet the legal requirement of content validity and would therefore not be an appropriate or valid test for hiring determination.

It is apparent then that the PDV process must be performed skillfully. A PDV should assess material handling demands (i.e., lifting, carrying, pushing and pulling) with an accurate quantification of variables such as weights, dimensions of the material handled, frequency of handling, vertical distance at the origin and termination of the lift, distance the object is moved, horizontal distance of the material handled from the body, coupling characteristics, distance carried, etc.).

The PDV process should involve sampling heart rate responses during identified work cycles to estimate energy expenditure requirements. Once the PDV is completed, the results of this analysis is then translated into comprehensive functional job description (FJD) for each job analyzed. The initial draft of a FJD should then be submitted to review by employees and management personnel who are most knowledgeable about the job that was analyzed. Once the FJD is approved after the review process, data from the validated FJD can be used by the functional capacity testing clinician to customize the PPFT for proper content valid testing of job demands in the clinic.

PPFT design

Since all PPFTs are conducted only after a conditional offer of hire is presented to the applicant, medical questionnaires and baseline medical testing can be legally conducted in conjunction with job-specific functional tests. Baseline medical testing is beneficial for establishing pre-injury baseline data and recording of any pre-existing impairments. It also allows the testing clinician to assess any signs of a pre-existing medical condition that could warrant caution and a referral for a medical release prior to allowing the applicant to undergo the more physically strenuous components of job –specific functional testing.

The testing format of a PPFT is divided into two major components involving the following:

1. Baseline Physical Data Collection:

- Musculoskeletal (e.g., posture, muscle strength, joint range of motion, etc)
- Neurological exam including assessment of reflexes, balance, and coordination
- Cardiovascular examination (e.g., recording of blood pressure and heart rate)
- Aerobic capacity testing (e.g. YMCA Step Test)
- Special tests as dictated by medical history (e.g. knees laxity test)

2. Validated Job-Specific Functional Tests

- Lifting and carrying
- Pushing and pulling
- Stair and ladder climbing
- Stooping, kneeling, squatting, reaching, etc.

Baseline measurements for resting heart rate and blood pressure, sit and reach flexibility, grip strength, joint range of motion, and aerobic fitness level are useful data to determine pre-injury status of the new hire. Impairments such as loss of range of motion, focalized muscle weakness, and sensory loss may not actually interfere with job specific functions. The FCT allows objective recordings of these even though the impairments may not interfere with job placement.

The importance of recording pre-existing impairments exists in situations in which an on-the-job injury occurs. For example, when an employee injures his neck at work, without a pre-injury baseline recording, how does one know that the loss of range of motion in the neck recorded after the injury was a direct consequence of the injury? For instance, what if the impaired cervical range of motion was actually the result of a pre-existing football injury? Documented proof of loss of range of motion due to an old football injury, as used in this example, at the time of hire can potentially save the employer significant costs associated with a legal settlement for a physical impairment that was not caused by an injury at work.

Job-specific functional testing should include non-material tasks such as stair and/or ladder climbing. Dynamic lift tests are conducted to determine maximum safe lift capabilities. Prior to and during the PPFT, the applicants being tested should be instructed on proper body mechanics and safe lifting techniques. As a safety measure during lift testing, weights should gradually be added to a lift box on a progressive basis while assessing body mechanics, heart rate, and the person's perception of how stressful the lift becomes (using a lift stress or psychophysical chart). The determination of a person's maximum safe lift capacity is based by four criteria of assessments:

1. Kinesiological Assessment – Testing is terminated when changes in body mechanics during lifting begin to occur that involve compensatory body motions that signal inability to exhibit proper neuromuscular control.
2. Psychophysical Assessment – testing is terminated when the applicant reports on a psychophysical response chart a self-perceived rating of the weight being very heavy or too heavy to handle safely.
3. Heart Rate: Testing is terminated when the heart rate is equal to or greater than the age adjusted test termination heart rate $[0.85 \times (220 - \text{age})]$.
4. Symptomology: Testing is terminated if the applicant reports any symptoms such as pain, dizziness, numbness, pins and needles, nausea etc. that are deemed indicative of an adverse response to testing.

Additional job specific tests may include lift/carry and push/pull assessments. Heart rate and blood pressure are monitored carefully during tasks that are expected to create significant cardiovascular demands. Irregular and/or excessive heart rate and abnormal blood pressure responses resulted in termination of testing and referral to a medical physician.

Withdrawal of conditional offer of hire

A conditional offer of employment may be withdrawn if the applicant is determined from testing to be unable to perform the functional abilities to perform the essential functions of the job without being at immediate risk of injury to self or co-workers. In some cases, medical concerns may be apparent prior to the actual job-specific functional testing component of the PPFT. The physical examination conducted prior to functional testing may reveal symptoms or a medical condition that renders the conditional new hire unsafe to undergo the physical demands of the job-specific work simulation tests. In such cases, the testing is terminated prior to any stressful functional tests. The individual is then informed of the finding and is instructed to consult a healthcare provider to assess and/or correct the problem and acquire a medical release in order to resume the functional testing process at a later date. The manner in which this is handled administratively by the testing clinic and employer is critical. The administrative handling of all cases that require test termination and a medical release must be conducted consistently and equally at all times. This is essential to avoiding claims of disparate discrimination in the hiring process.

Employers must develop a policy for re-testing of conditional new hires who are determined to be unable to undergo functional testing due to a medical finding (e.g., high blood pressure) that is fair and equitable. This process should be a win-win relationship between parties, the prospective employee and employer. By making a prospective employee aware of a medical condition that requires treatment, the employer helps to ensure his/her safety at work. Once the identified condition is remedied, the employer can then complete the PPFT and place the individual in the job with reduced risk of injury. The author had conducted statistical analyses on the impact of this testing process on injury rates after a minimum of two years of functional testing. The average injury reduction for 18 industries analyzed was 68.2%.

There are some testing protocols that also include baseline strength and musculoskeletal assessments. The baseline data helps to provide a “snapshot” of the individual’s strength capacity and document any musculoskeletal deficits or abnormalities, at the time of hiring. This data is valuable in post-injury rehabilitation, should the employee sustain an injury. If there are significant musculoskeletal findings, the clinician may determine that the applicant is not capable of performing the job due to imminent medical risk of injury. This will trigger a requirement of the applicant to seek medical help and return with a medical release to undergo the PPFT. It is always best to provide a prospective employee in such cases with a customized medical release form that describes the job demands (i.e., a validated functional job description) and the actual job-simulated functional tests required in the PPFT for job placement.

The PPFT failure rate will vary depending on the physical demands level of the job. Based on a data base of over 64,000 PPFTs, a failure rate of around 5 - 8% can be expected for jobs classified in the medium physical demand level (PDL) classification. The failure rate is in the range of 9-12% for jobs that fall within the “heavy” PDL classification, and as high as 18- 23% in the “very heavy” PDL classification. PDL classifications in the United States are defined by the U.S. Department of Labor.

Summary

PPFTs provide a highly effective functional testing system developed for new hires and also return-to-work cases that determines the physical abilities of an individual to safely perform the essential functions of a job. The evaluation includes a physical assessment followed by validated

job-specific functional testing conducted in a safe and reliable manner. When designed correctly, the PPFT can be the most comprehensive and effective type of evaluation for employee testing that follows EEOC and ADA guidelines.

Although a PPFT can prevent an injury of a new hire, there are other significant advantages of a PPFT that need to be pointed out. PPFTs measure pre-existing impairments that can be used for second injury fund coverage and/or avoidance of claims after an injury for an impairment that was pre-existing at the time of hire. In addition, the evaluation system can be used to teach the new hire proper body mechanics and can provide personal wellness feedback based on the physical assessment and functional performance results.

The net result of this evaluation system is that the employer is much less likely to hire a person who will become injured while performing the essential duties of the job. This will translate into a better qualified work force and improved productivity. In addition, the employer will be protected against inappropriate claims of injuries that related to pre-existing injuries. PPFTs are proving to be the most effective system for matching employees to the job, and reducing injuries and claims. Safety professionals should seriously consider recommending such an employee testing program to their human resources department and integrate PPFTs as an integral component of a corporate wide ergonomics and safety program.

Bibliography

- Yelin EH, Henke CJ, Epstein WV. *Work disability among persons with musculoskeletal conditions*. Arthritis Rheum. 1986; Vol. 29:1322-1333
- Althouse H. *Revealing a true profile of musculoskeletal abilities*. Occupational Health and Safety. 1980; Vol 1:25-30
- Himmelstein J, Andersson GBJ. *Low back pain: risk evaluation and pre-placement screening*. Occupational Medicine: State of the Art Reviews. 1988; Vol. 3: 255-269
- Keyserling W, Herrin G, and Chaffin D. *Isometric Strength Testing as a Means of Controlling Medical incidents on Strenuous Jobs*. Journal of Occupational Medicine, May 1980, Volume 22, No.5: 332-336.
- Chaffin D, Herrin G, Keyserling W, and Foulke M. *Pre-employment Strength Testing in Selecting Workers for Material Handling Jobs*. Cincinnati, Ohio: NIOSH Physiology and ergonomics Branch, Contract No. CDC-99-74-62, 1977
- Harber P, Soo Hoo, K. *Static ergonomic strength testing in evaluating occupational back pain*. Journal of Occupational Medicine, December 1984, Volume 26, No. 12: 877-884

- Matheson L, et al. Effects of instruction on isokinetic trunk strength testing variability, reliability, absolute value, and predictive value. *Spine* 1992, Volume 17, No. 8:915-921
- Wheeler D, Graves J, Miller G, et al. Functional assessment for prediction of lifting capacity. *Spine* 1994, Volume 9, No. 9:1021-1026
- Dueker J, Ritchie S, Know T, Rose S. Isokinetic trunk testing and employment. *Journal Of Medicine*, Jan. 1994, Volume 36, No. 1:42-48
- Battie M, et al. Isometric lifting strength as a predictor of industrial back pain reports. *Spine* 1989 Vol, 14, No. 8:651-56
- Matheson L, Isenhagen S, Hart D. Relationships among lifting ability, grip force and return to work. *Physical Therapy*, 2002, Volume 82, No. 3:249-256
- Biering-Sorensen F. Physical measurements as risk indicators of low-back trouble over a one-year period. *Spine*, 1984, volume 9, 106-119
- Chaffin D, Herrin G, Keyserling W. Pre-employment strength testing: an update. *Journal of Occupational Medicine*, June 1978, Volume 20, No. 6: 403-408
- Notroelt J, Celentano, E. Development of predictive selection and placement tests for personnel evaluations. *Applied Ergonomics*, Dec. 1987, Volume 18, No. 4:279-288
- Smith S, Cunningham S, Weinberg R. The predictive validity of the functional capacities evaluation. *American Journal of Occupational Therapy*, Aug. 1986, Volume 40:654-563
- Lechner D, Jackson, Roth D, Straaton K. Reliability and validity of a newly developed test of physical work performance. *Journal Occupational Medicine*, 1994, Volume 36:997-1004
- Gross D, Battie M.: Reliability of safe maximum lifting determinations of a functional capacity evaluation. *Physical Therapy*, April 2002, Volume 82, No. 4:364-371
- Menard M, Hoens A. Objective evaluation of functional capacity: medical, occupational and legal settings. *Journal of Occupational and Sports Physical Therapy*, May 1994, Volume 19, No. 5:249-260
- Siegel, S: *Nonparametric Statistics for the Behavioral Sciences*. New York: McGraw-Hill
- Anderson, Charles K. Impact of Physical Ability Testing on Worker Compensation Injuries and Job Performance.” *Advanced Ergonomics, Inc.* Dallas, TX 1990.
- Bigos S, et al. “A Prospective Evaluation of Pre-employment Screening Methods for Acute

Industrial Back Pain.” *Spine* 1992: 17(8):922-926.

Bureau of Labor Statistics, “Lost-Worktime Injuries and Illnesses: Characteristics and Resulting Time Away from Work.” April 10, 2002.

Dolney, P. “Pre-placement Strength and Endurance Testing.” *Risk Management*: 40:5 (May 1993): 65-70.

Harbin G, Olson J. “Post-Offer, Pre-Placement Testing in Industry.” *American Journal of Industrial Medicine*: 47:296-307.

Jackson, S. “Pre-employment Physical Examination.” *Exercise Sport Science Review*: 22 (1994): 53-90.

McClam, E. “One in Four Americans in Shape.” *Associated Press*. March 8, 2001. Atlanta, Georgia.

Philson, C. “Functional Capacity Testing.” *Occupational Health & Safety*: 69(1) (Jan 2000): 78-82.

Pohjonen, T. Age-Related Physical Fitness and the Predictive Values of Fitness Tests for Work Ability in Home Care Work.” *Journal of Occupational and Environmental Medicine*: 43(8) (August 2001): 723-729.

United States Department of Labor Occupational Health & Safety Administration. “OSHA Announces Comprehensive Plan to Reduce Ergonomic Injuries.” *National News Release USDL 02-201*: April 5, 2002