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Application and Limitations of Functional Capacity Evaluations in Managing Work-Related Musculoskeletal Disorder Risks/Hazards

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Abstract

Work-related musculoskeletal injuries are a serious occupational health and safety problem for U.S. workers and businesses. They represent about one-third of all injuries, accounting for more than 307,000 injuries per year (BLS) and billions of dollars in compensation costs (Bhattacharya, 2014). There are effective solutions to prevent these injuries and extensive literature on making ergonomic improvements in the workplace. These solutions primarily focus on changing the design and features of the work area, as well as assessing how the work itself is performed to reduce the risk of injury.

In the past few years, however, the use of functional capacity evaluations (FCEs) as a tool for assigning physically demanding tasks has been increasingly promoted as a primary means to reduce work-related musculoskeletal disorders (MSDs). In this process, workers undergo a physical evaluation to determine their capabilities to perform a variety of job tasks that have been identified in their workplace. Workers are then assigned where the individual capabilities and job demands coincide.

Although this process may identify workers who cannot perform key job functions (e.g., lift a certain amount of weight or climb a ladder), there is little evidence such testing can predict which workers are likely to incur musculoskeletal injuries in a job. Such advertising may influence some employers to shift their primary focus away from the recognized practice of designing the environment and tasks in order to accommodate a broad range of worker characteristics and capabilities.

Physical exams or functional capacity evaluations (FCEs) have been used successfully to help place injured workers in jobs they are capable of performing and to help them get back to work sooner. These tests have also been used for certain occupations that have very demanding tasks with little opportunity for engineering or work station improvements (e.g., firefighters). Currently, though, there is little evidence that such tests can successfully prevent injuries in otherwise healthy workers. In addition, many of these programs rely on cursory examinations with little relation to the actual job tasks, raising additional questions around their validity in matching the worker to the job. This process could potentially "qualify" people to perform tasks that exceed Occupational Exposure Limits (OELs). In comparison, tools such as the NIOSH lifting equation and ACGIH Hand Activity Level assessment provide a means to establish occupational exposure limits designed to protect a much broader worker population.

This position paper is not intended to describe in detail the various uses of FCEs for placement of injured workers or for other traditional purposes, nor is it intended to be a comprehensive review of the literature. It does, however, focus on the problematic use of FCEs as a primary means to prevent injury of otherwise healthy workers and concludes that resources devoted to the use of the FCE as a preventive measure could be more effectively channeled into a comprehensive ergonomics program focused on changing the nature of the work. Its observations are based on the expertise and training of the authors, supported by the wealth of professional expertise of the AIHA Ergonomics Committee. This intent of this paper is to provide a best practice perspective on the use, and misuse, of FCEs in the prevention of work-related musculoskeletal disorders.

Introduction

Ergonomics is the science of studying work as it relates to human capacities so that tasks, tools, equipment, and facilities can be designed to match the broad range of physical and psychological capabilities of the working population. The overall objective of applying ergonomic principles and practices in the occupational setting is to prevent or reduce the risk of musculoskeletal injuries, improve worker effectiveness, and ensure operator comfort, and design tasks for the worker rather than forcing the worker to conform to the task. This process is preferred and recommended by NIOSH/ANSI Standard Z590.3 – Prevention through Design and a consensus practice.

Musculoskeletal disorders are among the leading incident types in the workplace and account for 30 percent to 40 percent of workers' compensation costs in the United States (2013 Liberty Mutual Workplace Safety Index). Common musculoskeletal disorder risk factors associated with developing musculoskeletal disorders (MSDs) include awkward postures, static postures, pressure points, forceful exertions, duration of exposure, and repetitive motions. Traditionally, a combination of engineering controls and administrative controls has been used throughout industry to reduce musculoskeletal disorder risk factors.

Physically changing the work environment through engineering controls is generally recognized as the best method of accomplishing this reduction of risk where elimination/substitution is not feasible. In some cases, making significant proactive and reactive changes to operations may require additional capital and modifications to processes, although they often result in improved productivity and lower costs. In other instances, the costs may be minimal and any disruptions to process or operation may be insignificant. Implementation of administrative controls and employee work practices (e.g., training in "correct" lifting) are also recognized as reasonable means to reduce musculoskeletal disorder risks.

Some types of administrative controls that organizations have adopted include training, job rotation, breaks, and post-offer employment testing. The last is being utilized to identify the otherwise qualified individual who is not able to safely perform the physical or cognitive demands of the specific job for which he/she has been conditionally hired. Title I of the Americans with Disabilities Act Amendments Act (ADAAA) allows this form of testing under Section 12112(d)(3), Employment entrance examination. A related but quite different form of testing, the functional capacity evaluation (FCE), is allowed under ADAAA Section 12112(d)(4), Examination and inquiry.

These forms of testing are similar in that each is based on determining the qualified individual's ability to safely execute the physical and cognitive demands of the essential functions of the job to which he/she is assigned. Two critical differences between these types of testing are the phase of employment in which they occur and the assumption of an existing qualifying disability in the case of an FCE. Employers must assess all implications of any testing performed to ensure compliance with ADAAA and similar regulations.

Functional capacity evaluations (FCE) have been utilized by some organizations as a means to identify and select individuals who are sufficiently physically fit to perform a job and ultimately to reduce ergonomic-related injuries, in essence trying to choose the worker for the job rather than designing the work for the worker. A considerable amount of recent evidence supports the conceptual model that MSDs are likely the result of a process of fatigue failure in affected musculoskeletal tissue. That evidence includes data from

epidemiology studies, data from animal models, and studies of inflammatory responses to musculoskeletal tissue injury in humans.

Given that FCEs provide only a point-in-time assessment of physical capabilities and in light of the increasingly credible concept relating fatigue failure and MSDs, it seems reasonably clear that the FCE should not be used as the sole basis for assigning workers to demanding tasks or activities, particularly from a longer-term perspective. This paper will further examine this approach and review current literature that evaluates the effectiveness of implementing a FCE program as a primary measure in reducing the potential for MSDs.

Functional Capacity Evaluation Objectives

Generally, the functional capacity evaluation (FCE) is intended to provide some measure of the physical capabilities of a worker relative to the physical and psychological demands of a specific setting or environment. In the occupational setting, the FCE provides information that may be helpful in determining whether a n employee can return to work in a full or restricted capacity. The FCE may also aid in resolving workers' compensation claims by providing some quantification of an individual's physical capability for compensation purposes. Equally important, a properly administered FCE can help to identify additional rehabilitation needs, such as strengthening of certain muscle groups or increasing overall flexibility and endurance, that may be necessary to complete assignments. FCEs are also used in claim litigation, supporting either side in arguments concerning a worker's ability to return to work.

The FCE can comprise a multitude of testing parameters such as strength, flexibility, lifting, pushing and pulling, and manipulatory capabilities. These parameters can be selected individually to customize the FCE to the physical demands associated with a worker's job assignments or home environment. More sophisticated forms of FCE testing include: measures of physical effort and assessment of the reliability of client reports of pain and disability. Physical effort testing is critical to the determination of the level to which the individual participated in the testing process. The reliability of reports of pain and disability examines the extent to which the individual perception of his/her condition matches his/her demonstrated ability on the day of the examination.

The evaluation process typically includes the following elements:

- Initial interview, to obtain medical history, general health status, recent and past injuries, review of job assignments and related demands, and so on.
- Musculoskeletal evaluation, to first determine if it is safe for the patient to undergo an FCE and, if so, to assess range of motion, sensory status, and strength, among other aspects.
- Physical demand testing, to observe how the worker manages whole or partial body tasks. This may be useful in assessing capability to perform currently assigned tasks or temporary assignments that may facilitate the recovery process.
- Material handling, such as lifting, carrying, pulling, and pushing loads of various weights and forces from different heights or distances. This element is helpful in characterizing exertion capabilities by task such as sedentary, light, medium, heavy, or very heavy.

- Non-material handling, which typically assesses the worker's ability to bend, crawl, kneel, squat, or climb.
- General conditioning assessments, which provide some measure of the worker's endurance level and recovery times. Examples of activities within this element include walking or climbing stairs.
- Other testing areas may include job simulations and psychological evaluation.

Upon completion of the FCE and evaluation of the results, the provider will prepare a report that outlines relevant observations, measurements, and outcomes along with recommendations and guidelines for return to work, further rehabilitation or recovery plans, and even claim resolution, where warranted. The use of the FCE as a post-injury assessment tool for determining worker ability to return to work is well established. However, its use in evaluating long-term physical capacity of healthy individuals has not been comprehensively researched or validated at this time.

Practical Application in the Work Setting

Utilizing the FCE to identify opportunities to bring affected employees back to the work setting may offer several business-related benefits such as reducing productivity impacts and workers' compensation claim costs. When the FCE is used in conjunction with a correlating physical demands assessment, it becomes clear as to which tasks and assignments are appropriate for an employee who has been injured on the job. Compiling hazard analyses, ergonomic evaluations, and the like as a best practice will enable a direct comparison of physical requirements against individual capabilities, whether for restricted duty cases or in assessment for a return to full duty or for purposes of "reasonable accommodation" under the Equal Opportunity Employment Commission (EEOC).

On the claim resolution side, the FCE can prove to be extremely helpful in determining rehabilitation status and options for additional or alternative treatment to achieve full recovery or at least maximum medical improvement. From a litigation perspective, the FCE may point out behavioral or psychological issues that are unnecessarily prolonging the duration of the claim. Within the litigation process, the FCE will likely be viewed as one of several credible means to establish a settlement or resolution strategy.

Given its value in return-to-work situations, utilizing the FCE as a tool to filter candidates for a particular assignment or job function may seem to be a reasonable mechanism to initially match physical capabilities with physical demands. However, engaging the tool for this purpose is short sighted and fundamentally adverse to the preferred approach of designing tasks that present minimal risk. Selecting and screening an employee for a position that involves high-risk activities may prevent an injury in the short term but offers no assurance of injury prevention over the longer term, particularly in the absence of relevant and meaningful efforts to control the recognized hazard(s).

There are certain professions for which an FCE can and perhaps should be used as a job placement screening tool. Examples include emergency medical technicians, lifeguards, firefighters, and police officers, where the musculoskeletal disorder risks presented during routine activities cannot be reasonably controlled under all situations. Outside of these job types, there should be reasonable efforts made to assess risk and implement some level of control prior to assignment of tasks.

Application as a Determinant of Fitness for Duty

There is little evidence of the efficacy of the functional capacity evaluation (FCE) in preventing injuries, and there are many reasons why the use of FCEs may be counterproductive. Use of FCE testing could lead to weeding out job applicants, based on some arbitrary criteria, and only selecting the "superhuman" who has greater strength and capacity. This practice could exclude older workers who may have more experience and knowledge of the work process and who could contribute their skill to do the work "smarter, not harder." It also could lead to discrimination against women workers or workers who have had previous injuries. In many cases the tests do not accurately reflect the work to be performed by that person.

Many current workers who are performing the work successfully could fail the tests if they do not accurately reflect the job demands and tasks. Often the tests are generic screenings that may not be particularly relevant. This approach, using a point-in-time assessment of physical capabilities to match workers to demanding tasks or jobs, seems to be gaining popularity in industries like construction where the work is physically challenging. But it may not be the best or most effective method for injury prevention.

Ergonomics is the science of matching work to workers, not the other way around. Insofar as work can be modified to reduce the physical capacity requirements, it allows a greater percentage of the working population to perform those jobs safely. If workers are required to lift 90-pound bags of concrete mix all day, the risk of injury will be high no matter how fit the selected workers are. Even if workers are capable of doing such work now, because these tasks may exceed OELs, the chances are good that doing so will likely cause long-term damage to their musculoskeletal system, resulting in early retirement and disability.

The alternative is a comprehensive ergonomics program that follows the hierarchy of controls. The hierarchy of controls requires that attempts must first be made to eliminate the risk through job changes. Where job changes, such as engineering controls, have been made and the risk has not been eliminated or reduced sufficiently, supplementary measures may be necessary, such as administrative controls (e.g., job rotation, rest breaks, two-person tasks) and, as a last resort, personal protective equipment.

Functional capacity evaluation or physical assessment to match the worker's capabilities to a particularly difficult job is at the bottom of the hierarchy, a last resort after everything else has proven unsuccessful. FCE is not the place to start and will not likely be the most effective approach toward reducing risk. That requires a well-designed and implemented ergonomics program that includes management commitment, employee involvement, hazard assessment, control implementation, and medical case management and training. It starts with a comprehensive assessment of the risks posed by the various tasks and the identification of changes in the work process that would reduce or eliminate the risk.

Active involvement of workers in risk and intervention identification is essential. Implementation of these changes and evaluation of the effects follows. Then, as with any iterative process, the evaluation directs us to further modifications that will more effectively reduce the risk. After all feasible changes have been made and risk has been reduced as much as reasonably possible, FCE may be used as an administrative control to identify the best workers for those tasks where no further modifications are possible. It may supplement a comprehensive ergonomics program, but not replace it.

Conclusions and Policy Statement

- A comprehensive ergonomics program is the best approach to address and reduce the risks of musculoskeletal injuries in the workplace.
- Such a program starts with an ergonomic assessment of all job tasks and demands, especially in the case of new jobs and jobs with a history of employee injuries and complaints. This assessment is followed by instituting ergonomic changes to reduce the risk and exposure to risk factors such as force, awkward posture, and repetitive motion.
- Functional capacity evaluation is most useful as a return-to-work tool for injured workers with impaired capacities.
- FCE should otherwise only be considered for those tasks or jobs where the availability of effective interventions is extremely limited.
- To be valid, a FCE must include a thorough evaluation of the job demands and an evaluation of the worker: evaluations that are carefully matched to the demands of the job (with content and context validity established).
- FCE must also include an ongoing evaluation component to ensure that demands are not being exceeded and injuries are not occurring.
- FCE should never be a substitute for a comprehensive ergonomics program. If implemented as such, it will likely be ineffective at preventing injuries and discriminating against certain populations of workers.

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