

Exercise that Includes Muscle Strengthening and Stretching

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Abstract

To reduce the incidence of strain injuries, many organizations try to match a current or prospective employee's capabilities to the physical demands of the workplace in other words, fit the person to the task. This approach relies on measuring a person's functional capacities, then matching the person to requirements of the work as determined by the findings of a physical demands analysis. This is a preventive approach. Employers must invest additional time and services to conduct functional capacity analyses and pre-work screening exams to match the physical demands of each job description.

Keywords: Ability; Therapists; Protocol; Medical conditions; Progress

Introduction

The approach typically requires hiring physical or occupational therapists to conduct a functional capacity exam provide an objective measure of a patient's safe functional abilities compared to the physical demands of work. A job matching program should involve both human resources personnel and a qualified healthcare provider use reliable and valid methods for conducting FCEs and physical demands analyses; and require basic knowledge of federal and state employment law because a fine line exists between job placement and discrimination. The Americans with Disabilities Act does not prevent employers from conducting physical agility and physical fitness tests on employees or job applicants [1]. However, employers cannot require medical examinations unless they are shown to be job related and consistent with business necessity. Some organizations rely on stretching, exercise and conditioning programs to change an individual worker's physical condition with the aim of preventing MSDs. This approach relies on changing each employee's physical condition and capabilities, and depends on many variables that are outside an employer's control, including employee willingness, interest and participation; an individual's physical condition and already existing conditions, and the design of the exercises to match workplace demands. In the U.S., employers that use exercise and stretching to manage MSDs must ensure that they are promoting preventive exercise, not therapeutic exercise.

Discussion

If a physician or licensed healthcare professional recommends therapeutic exercise in response to a work-related injury or illness, the case is considered to involve medical treatment and the case is recordable. Many studies have examined the effects of stretching on the performance of athletes, and most results have been generally positive. However, the workplace and physical condition of employees are different [2]. In a review of three studies, the results suggest that worker health was enhanced and injury severity and costs decreased. However, the studies failed to definitively prove the case for or against stretching. Similar studies and literature reviews have drawn the same conclusions that results were not very compelling, were mixed and suggested future studies with improved validity. While research does support that stretching improves flexibility, range of motion and self-worth, stretching alone might not prevent work-related musculoskeletal disorders and injuries. Exercise programs alone will not reduce MSDs. Proponents of stretching and conditioning identify

that these fitness-based approaches are effective only when combined with other interventions. Many results published in trade magazines and on the Internet share anecdotal cases of organizations reporting reduction in injuries over the course of a long-term stretching program [3]. Finally, the activities of any stretching or conditioning protocol should be tailored to tasks performed and physical demands presented. Companies must also be mindful of existing conditions and tailor exercise and stretching protocols accordingly. Generic programs can exacerbate issues if the stretches are counter to the physical demands of the work. This preventive approach is typically supported by athletic trainers, physical therapists and occupational therapists. Athletic trainers are healthcare professionals who collaborate with physicians to optimize activity and participation of patients and clients. Athletic training encompasses the prevention, diagnosis and intervention of emergency, acute and chronic medical conditions involving impairment, functional limitations and disabilities [4]. This approach works well for organizations that cannot or choose not to change the workplace, have time available to teach and engage employees, and have an existing behavioural safety observation program. It is also frequently used in organizations with nonstandard work environments [5]. Several strong programs exist in the hotel/ motel and entertainment services industry; distribution, packaging and cartage tasks; trucking and delivery operations; and construction. Simply put, by practicing good ergonomic design, employers will provide a workplace that reduces exposures to factors. The approach to managing ergonomics in the workplace has changed significantly from the early days when OSHA released its Ergonomics Program Management Guidelines for Meatpacking Plants. This guide was a common resource for safety professionals beginning to address MSD [6]. A common current practice is to manage workplace ergonomics by focusing proactively on identifying and reducing the risk factors that cause MSD. This approach follows the continuous improvement process of plan-do-check-act: assess the risk, implement controls, validate their effectiveness and

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standardize the controls. Regardless of the model on which a program is based, the main focus of a comprehensive ergonomics program is to make tasks, jobs, products, environments and systems compatible with the needs, abilities and limitations of people, as opposed to making the people compatible with the work characteristics and demands. Diagnosis is the first step to identify and measure workplace exposures to MSD risk factors. The primary risk factors are awkward posture, high force, and high frequency and long duration. The limits for each factor vary by each joint of the body due to its anatomical structure [7]. A combination of two or more risk factors increases the chance of developing an MSD. Valid and proven assessment tools are available for whole-body exposure, as well as segmental exposure and specific risk factors. Effective assessment tools use quantitative measures to identify and determine the exposure to risk factors that contribute to MSD development. For example, the NIOSH lifting equation is used to evaluate the back during lifting tasks while the rapid entire body assessment is used to evaluate exposures to all joints of the body [8]. The usability of qualitative and quantitative assessment tools has evolved to a point at which unsafe, ergonomics or medical professionals can conduct MSD risk assessments effectively. In one study, found that workers completed ergonomic risk assessments that were in agreement with those completed by an ergonomist. The bottom line is that MSD assessment and management can and should include people across an organization, not just ergonomics professional. Changing the workplace depends on people in engineering roles and engineering controls to ensure that reach, force and distance are within acceptable limits of the collective workforce [9]. This requires designing the workplace to fit the 5th percentile female to percentile male to prevent exposure to MSD risk factors for all workers. Many studies have proven this approach to be effective and efficient. Administrative controls include changes to work planning, such as job rotation, rest breaks and slowed pace. These controls depend on people and can create additional challenges for managers and supervisors as they try to rotate employees or change their work tasks. Furthermore, administrative controls do not reduce or eliminate the presence of MSD risk factors; they simply reduce the exposure time when managed correctly by exposing more people to the risk factors for shorter periods of time. Job rotation will not prevent MSD. In addition, since the objective of a job rotation scheme is to minimize the risk to all workers, not just one specific worker, it may fail if the exposures to all MSD risk factors across all body regions are not adequately balanced. Support and engagement in effective ergonomics processes depend on involvement by people across an organization [10]. Safety teams effectively conduct assessments. Employees bring expertise to cross-functional teams working on controls that reduce exposure to MSD risk factors. Engineering and administrative controls are best supported by engineers, maintenance personnel and professionals qualified in ergonomics. Many organizations are working toward or have achieved a proactive ergonomics process to identify and manage exposures to work-related MSD risk factors. Such organizations have utilized the other approaches discussed, but have not achieved desired results. They have control over their workplace to make changes, and the necessary attitude and support. In addition, these are organizations that can and do change the workplace to reduce MSD risks, are open to making and funding changes, realize that the investment in equipment and changes will pay off, and integrate the change process into their normal methods of business. The key is to find the right fit for some

or all of these approaches within an organization. Fit is based on many factors, including site culture, amount of workplace control, ability to change the workplace, available resources and resource commitment. Many approaches are available for managing MSDs in the workplace. A right fit exists for every organization, depending on current needs, work environment, company culture, teamwork and engagement, support resources, improvement goals and workplace exposures. A company may apply one, several or all of the reviewed approaches. Researchers continue to investigate the effectiveness of each strategy. Most researchers continue to recommend that any strategy include the systematic application of ergonomics.

Conclusion

The final strategy described, changing the workplace, continues to be the most effective, efficient and sustainable approach. When done well, an organization becomes less reliant on the other approaches. Another way to consider these approaches is to compare them with the maturity of the MSD management program. Research validates the hierarchy of controls as applied to improving ergonomic conditions in the workplace. Identified four general levels of program maturity through which company's progress as they improve the effectiveness and efficiency of managing MSDs.

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Conflict of Interest

None

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