

# Exercise Programs and Prevention of CTDs



Most recent workers compensation claims statistics from Liberty Mutual indicate about 4% of the total frequency and 5% of the total cost are associated with upper-extremity cumulative trauma disorders (CTDs). Establishing a plan to control the occurrence of CTDs requires a multidisciplinary approach.

The key objective of a CTD prevention program is to eliminate or minimize the physical risk factors associated with CTDs. The most effective approach is a comprehensive intervention program that combines engineering controls (e.g., workstation adjustments, tool redesign) with administrative controls (e.g., training, job enlargement, modified work scheduling). A responsible program of exercise or stretch breaks for workers who are at risk of developing CTDs may be one worthwhile element of such a program. These programs are not to be confused with corporate fitness or wellness programs performed after business hours.

## Do Exercise Programs Work?

A number of formal research studies have examined carefully designed and supervised worksite exercise programs. None of the studies found these exercise programs to be injurious, and some studies did report benefits such as improved grip strength and positive psychological responses (people enjoyed doing the exercises). There is no evidence in the literature that proactive or reactive exercise programs for upper extremities significantly affect the incidence of musculoskeletal disorders. But people seem to like exercise programs, and workers' attitudes about their jobs are related to the reporting of musculoskeletal pain.

However, exercise programs *alone* will not reduce CTDs. Whenever reductions in CTD

complaints were reported, worksite modifications were also a component of the program.

Furthermore, the wrong type of exercise, or too much exercise, can be detrimental. Overstressing tissue can lead to strains, and putting further stress on already-injured tissue can worsen the injury. In a study of 14 exercise programs designed for computer users, the National Institute for Occupational Safety and Health (NIOSH) found that 90% of the exercises would be inappropriate for individuals with chronic or acute musculoskeletal disorders. Furthermore, NIOSH found that nearly 40% of the exercises replicated the demands of the work. Only a qualified health practitioner should administer an exercise program.

## How Exercise Affects the Body

The human body resists change, so an exercise program must continue for an extended period of time to have any lasting benefit. A few minutes of light movement once a day will not produce significant improvement.

Active exercise increases blood flow to muscles, tendons, and ligaments, which helps improve cellular nutrition. Warm-up exercises prior to activity raise body temperature, increase metabolic rate, and improve oxygen uptake. Over time, resistive exercise training can increase muscular strength and endurance, making the muscles less prone to fatigue. It may also provide a more stable joint architecture that is less prone to injury.

Passive stretching exercises can help combat the shortening effects of static postures on connective tissues. The assumption is that passive stretching will return the contractile elements of the ligaments, tendons, and muscles to a more optimal range, reducing the risk of injury.

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## Establishing an Exercise Program

Off-the-shelf exercise programs are not a good idea. A workplace exercise program should always take into consideration the type of work, and the motions and postures involved. A company planning to introduce an exercise program for CTDs should take the following steps:

1. Appoint a medical practitioner (i.e., a physician, physical therapist, or registered nurse specializing in occupational medicine) to supervise the overall program.
2. Analyze each job to determine the physical stresses it imposes on workers.
3. Select exercises appropriate for relieving or mitigating those particular stresses.
4. Have the medical practitioner examine the participants to determine whether they have medical conditions that warrant exclusion from the program or modification of the exercises.
5. Design a training program to educate supervisors and workers about the purpose of an exercise program and how to perform the specific exercises properly.

### The Exercises *Should*...

- Be safe to perform,
- Effectively combat the stresses of work,
- Be tailored to particular work stresses (e.g., passive stretching exercises for muscle groups involved in static work; moderately paced, active, range-of-motion exercises for muscle groups involved in dynamic work),
- Help strengthen muscles that are continuously stretched or weakened, and
- Help stretch muscles that are continuously shortened or tense.

### The Exercises *Should Not*...

- Aggravate existing health conditions such as musculoskeletal disorders,
- Replicate the physical stresses of the job,
- Involve rapid or jerking stretching motions,
- Be embarrassing to perform, or

- Be disruptive to the workplace in terms of time or space requirements.

Worksite exercise programs generally consist of a brief warm-up at the beginning of the work shift, followed by a series of short exercises in between breaks. Exercises should be performed in addition to – not during or instead of – regularly scheduled breaks.

If it is properly administered and tailored to meet specific worker needs, a worksite exercise program can make a positive contribution to the success of your overall CTD prevention program.

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