

Movement for the Seated Worker

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Movement for the seated worker may seem like an oxymoron, which Webster defines as a combination of contradictory words such as jumbo shrimp, thunderous silence, or sweet sorrow. Is it odd to think of a worker who sits most of the day in the context of movement? Not if you consider the potential gains from movement, or physical activity. How, and why should office workers and others who sit for a living be active?

There are many good reasons to be physically active. The 1996 US Surgeon General Report documents very real benefits of a physically active lifestyle. These include increased longevity, reduced risks of cardiovascular disease and lower rates of several types of cancer. But are these benefits available to seated workers? The answer is yes! In fact a workplace can actually encourage physical activity. And certainly physical activity during leisure time is beneficial as well. But aside from the importance of an active lifestyle, there are special problems for people who sit much of the day at work. Therefore specific movements or activities need to be targeted to keep these problems from becoming significant

Special concerns for the seated worker. There are three areas of concern associated with prolonged sitting, generally considered to be more than four hours per day. These areas are the spine, the circulation, and the muscle and joints.

The spine. Two problems of the spine are associated with prolonged sitting. First, sitting places a high load on the intervertebral disc, the moveable structure in between each of the bony vertebrae. It may seem curious that sitting creates a high load on the spine, since sitting is often viewed as a position of rest. But the pressure on the disc is actually highest in sitting, lower in standing, and lower still lying down. Staying seated for long periods keeps the disc in a 'high pressure' situation and over time sets the stage for degenerative, or 'wear and tear' changes. The second problem is that with the disc in a highly loaded state the flow of nutrients is inhibited. Most of the tissues in the body such as muscles and the brain have blood flowing to and from them to provide nutrients, and to remove the byproducts of their work. The disc, however, does not have blood flowing to and from it, so it must get its nourishment from the process of loading and unloading. This cycle is similar to the way a dirty sponge might get rinsed out, by repeatedly placing it in clear water, and then squeezing it out. Staying for long periods of time in a highly loaded posture (like sitting) is not good for the disc, but neither is staying in an unloaded posture (like lying down). The real health of the spine occurs with moderate repetition of the cycle of loading and unloading, provided that the loading is within reasonable limits.

Circulation. Prolonged sitting reduces the circulation of blood in the legs and feet. This reduction is the result of the combined effects of gravity, furniture, and a muscle pump that is usually turned off in sitting. These cumulative effects can cause pooling of the blood and a 4-5% increase in the volume of the legs and feet during a typical workday. This swelling of the legs and feet can be uncomfortable, and reduced blood

flow can affect tissue health. It's hard to do anything about gravity, but there are other solutions!

Muscles and joints. With sitting, several parts of the body may become tight, either through muscle shortening (a loss of muscle strength) or joining tightness and contracture. Common areas of tightness for those who sit include the front of the hip, the front of the chest, and the back of the neck. The low back often loses its natural curve (or lordosis) when sitting, and as a consequence the back can become tight in a flattened-back posture. Wherever tightness occurs, it can limit movements needed for tasks and activities both in and outside of the workplace.

Targeted solutions. Movement is one of the answers for these problems! A key component to a successful ergonomic program is movement. For the spine, sitting during the workday already provides the loading part of a health cycle, so interventions for seated workers emphasize unloading. The unloading movement can be simple...regularly getting up out of the chair and standing or walking. Unloading the spine can also occur with leaning back into a well placed backrest, or by resting the arms on the chair armrest during down (non-work) periods.

For the areas of the body such as the front to the hips, specific movements can work to regain normal motion. Other stretches might work on the low back lordosis. In workers who do not have tightness, these stretches can prevent it from becoming a problem. Details of these and other 'exercises' can be found in a variety of books and videos available in the market today.

Improving circulation of the legs and feet of seated workers and preventing swelling requires active movement of the legs, ankles and feet. The contraction and relaxation of the muscles that occurs with even a simple exercise like foot circles provides a pumping action that assists with the return of blood to the heart. This activation of the muscle pump can occur either from a seated position or with moving in and out of the chair. The movements from a seated position are facilitated with a chair that is unlocked and that is designed to encourage movement.

Summary. Movement in the work place for the seated worker should attempt to minimize the adverse outcomes of sitting. But these movements alone cannot and should not be the single focus of a healthy work experience. Ideally there is a systematic ergonomic approach to the task at hand. This is often accomplished through a cooperative effort of workers, management and experts in industrial health and ergonomics. For a seated worker an ergonomic review might result in using a footrest, task seating (a chair) that is easily adjustable and moveable, appropriate placement of a keyboard, monitor or other tools of the trade, job rotation, a work/rest schedule that pays attention to overuse, and management and peer encouragement of movement including getting workers out of the seated position regularly. A height adjustable work surface can also allow easy movement to standing, creating productive time out of the seated position. In summary, the benefits of movement are enormous in an environment that

attends to health, safety and productivity.

Two final thoughts. Even in the ideal work setting, if it exists, the individual worker needs to be responsible for actually performing the movements or stretch breaks. This requires education, motivation and active participation on the part of the seated worker. Secondly, a program of movement or physical activity should be reviewed with an appropriate health care provider before beginning if there is some medical risk.