Work Chair Selection – Quick Tips

Introduction

When designing a seated work station, the chair is arguably the most important consideration. A properly selected work chair is so important because it provides the necessary support of the back, legs, buttocks and arms, while reducing exposures to awkward postures, contact stress and forceful exertions. To aid in the selection of a work chair, the Occupational Safety and Health Administration (OSHA) created a Computer Workstations eTool. This eTool offers guidance on proper sitting posture as well as a breakdown of the key components of a work chair and a checklist to ease the selection process.

Proper Sitting Posture

The key to maintaining a healthy sitting posture is to make a conscious effort to keep a neutral body position while seated. In a neutral position, the body's joints are naturally aligned. This reduces the stress on the soft-tissues (tendons, ligaments, muscles etc.) that over time can lead to musculoskeletal disorders (MSDs).

In its Computer Workstations eTool, OSHA offers up the following areas of focus to maintain a neutral body posture:

- Hands, wrists and forearms are straight, in-line and roughly parallel to the floor.
- Head is level or bent slightly forward, forward facing and balanced. Generally it is in-line with the torso.
- Shoulders are relaxed and upper arms hang normally at the side of the body.
- Elbows stay in close to the body and are bent between 90 and 120 degrees.
- Feet are fully supported by the floor, or a footrest may be used if the desk height is not adjustable.
- Back is fully supported with appropriate lumbar support when sitting vertical or leaning back slightly.
- Thighs and hips are supported by a well-padded seat and generally parallel to the floor.
- Knees are about the same height as the hips with the feet slightly forward.

And regardless of how good the posture is, or the chair may be, staying in any one position for too long is detrimental. It's important to keep moving and repositioning the body throughout the workday. Making subtle adjustments to the chair, stretching, standing up and taking regular walks can all be used to help stave off MSDs caused by prolonged sitting.

Key Components of a Work Chair

With the importance of neutral positioning established, the next step is to review the components of a work chair. OSHA's eTool focuses on the following parts of the work chair and offers direction on why each is important and what to look for during the selection process:

- Backrest
- Seat
- Armrest
- Base

A quality **backrest** is crucial to providing lumbar support and maintaining the natural S-shape curvature of the spine. OSHA advises choosing a chair with an adjustable backrest. The adjustable backrest will both accommodate multiple users and allow for subtle adjustments throughout the day. In addition, OSHA advises that the backrest have the following:

- A lumbar support that is height adjustable so it can be appropriately placed to fit the lower back. The outward curve of the backrest should fit into the small of the back.
- An adjustment that allows the user to recline at least 15 degrees from the vertical. The backrest should lock in place or be tension adjustable to provide adequate resistance to lower back movement.
- A device enabling it to move forward and backward. This will allow shorter users to sit with their backs against the backrest without the front edge of the seat pan contacting their knees. Taller users will be able to sit with their backs against the backrest while still having their buttocks and thighs fully supported. *NOTE*: some chair designs provide this adjustability by adjusting the position of the seat.

The **seat** of a chair is important for a couple reasons. A seat that's too high could prevent the feet from maintaining solid contact with the floor. Insufficiently supported feet can make it difficult to maintain the S-shape of the spine which leads to awkward postures. Also, if the seat area is not of the proper size it can create pressure points for users who find it too large, and offer insufficient support for those who find it too small. To address these concerns, OSHA recommends selecting a chair that has both a height and depth adjustment for the seat. In some circumstances, a footrest may be a needed accessory to help maintain a neutral position if the seat height cannot be adjusted to a low enough position.

Armrests that interfere with, or don't allow for, maintaining a neutral posture can lead to MSDs. Whether too wide, narrow, high or low, improperly positioned armrests can foster awkward positions and create neck, shoulder and back discomfort. Also, even when armrests are positioned correctly, if they are too hard or have sharp edges they can create pressure points that impact circulation and irritate the nerve endings.

OSHA recommends that if the armrest cannot be adjusted correctly, to remove them or stop using them. They also offer the following guidance:

- Position adjustable armrests so they support your lower arm and allow your upper arm to remain close to the torso. Properly adjusted armrests will be:
    - Wide enough to allow easy entrance and exit from the chair,
    - Close enough to provide support for your lower arms while keeping your upper arms close to the body,
    - Low enough so your shoulders are relaxed during use (Adjust your armrests so they just make contact with your lower arms when positioned comfortably at your sides.), and
    - High enough to provide support for your lower arms when positioned comfortably at your sides. You may be able to add padding to the top of

your armrests if they are too low and not adjustable.

A quality **base** on a work chair is important for both stability and maneuverability. An unstable chair is prone to tipping. Also, if a chair has the wrong casters or no casters at all it can cause the user to assume an awkward posture while trying to stretch to reach his or her work rather than repositioning the chair. OSHA recommends that chairs should have sturdy, five-legged bases and that the casters are designed for the flooring on which the chair is used.

OSHA's Chair Selection Checklist

To help simplify the work chair selection process, OSHA created a 21 step Purchasing Guide for their eTool. The checklist quantifies much of the direction OSHA offers under the chair components section. For example, under "Armrests" in the checklist, OSHA states armrests should be adjustable, at least 16 inches apart and their height should be able to adjust between seven to 10.5 inches from the seat surface. OSHA also offers purchasing checklists for many other common office tools (monitors, desks, keyboard trays etc.) within this section.

Sitting vs. Standing

An emerging concern related to work chairs is how prolonged sitting on the job can negatively impact long-term health. Studies conducted by Dr. James Levine, an endocrinologist with the Mayo Clinic, have linked extended sitting to obesity, diabetes, high blood pressure, as well as cancers and mental illness. And standing too long has health consequences as well, such as low back pain, feet issues and cardiovascular problems.

This dilemma has given rise to the interest in, and popularity of, sit/stand work stations. Presently, there are no studies that prove sit/stand work stations improve employee health. In fact, studies have shown that users of sit/stand work stations tend to migrate back to extended sitting after they've had their flexible stations for a period of time. The other drawback to mass conversion to sit/stand stations is the cost. It's not an inexpensive endeavor to implement when the jury's still out on the effectiveness of sit/stand work stations.

Currently, the best advice for those whose work keeps them seated for a majority of the day is to stand, stretch and move around as much as possible throughout the workday. Cornell University's ergonomics resource center, CUErgo, offers the following guidance on the topic:

- **Sit to do computer work.**Sit using a height-adjustable, downward titling keyboard tray for the best work posture, then every 20 minutes stand for eight minutes and move for two minutes. The exact time spent isn't critical but about every 20-30 minutes, take a posture break to stand up and move for a couple of minutes. Simply standing is insufficient.
- **Movement is important to get blood circulation through the muscles.**And movement is free! Research shows that you don't need to do vigorous exercise (e.g. jumping jacks) to get the benefits, just walking around is sufficient. So build in a pattern of creating greater movement variety in the workplace (e.g. walk to a printer, water fountain, stand for a meeting, take the stairs, walk around the floor, or park a bit further away from the building each day).

Sometimes the biggest challenge is just remembering to add movement to the workday. There are many computer-based "reminder" programs available as well as wearable technology that can be used to help keep standing, stretching and moving top-of-mind throughout the day.

Commonly Asked Questions

Q: What type of chair covering is best?

A: Cornell University's Ergonomics Web addresses this question. It states, "Vinyl and vinyl-like coverings are easy to clean and spill resistant, but they don't breath and if the chair begins to heat up under the thighs uncomfortable amounts of moisture can accumulate. Cloth upholstery is the most common covering, but this is less resistant to spills and more difficult to clean. A cloth covered seat pan can also become warm and moisture laden, and cloth covered foam seat pans can be a significant source of dust mite allergen. When selecting your chair covering, think about cleaning and maintenance issues and plan appropriately."

Q: What is the weight limit on a work chair?

A: Within its work chair selection checklist, OSHA states, "most chairs are designed for weights under 275 pounds. If the user weighs more than 275 pounds, the chair must be designed to support the extra weight."

Sources

OSHA's Computer Workstations eTool

Cornell University's Ergonomic Web

Source: Grainger Know How – https://www.grainger.com/know-how