RISK MANAGEMENT POSITION ON SIT/STAND ADJUSTABLE WORKSTATION

TO: COLORADO STATE UNIVERSITY EMPLOYEES

FROM: OFFICE OF RISK MANAGEMENT AND INSURANCE – ERGONOMICS PROGRAM

SUBJECT: SIT/STAND ADJUSTABLE WORKSTATIONS

DATE: 1/14/2016

Due to the growing popularity and request for sit/stand workstations, the Office of Risk Management and Insurance has decided to take an official position on these work space solutions. A sit/stand workstation can be defined as a workstation, table, desk, etc. which allows for adjustment of the work surface height to allow for both sitting and standing. When designed properly, this workstation should allow for the user to easily change from one posture to another with a simple adjustment. Adjustable sit/stand workstations may be adjustable in a variety of ways whether powered by electricity or adjustable via counterbalance or pneumatic option, etc.

Properly designed sit/stand workstations not only allow for quick adjustment from sitting to standing and vice versa but also allow for work to be placed at an ideal hand working height for a given user. The commonly seen and implemented fixed height or non-adjustable workstations do not properly fit a majority of users and require additional equipment and tools to be added and used correctly in order to ensure proper fit. Ideally, the workstation should fit a majority of users (upwards of 90% or more) from the smallest female (5^{th} percentile) to the tallest male (95^{th} percentile) whether they are sitting or standing. Workstations that do not meet this criteria are not recommended as they will not work for a large majority of the working population. If properly designed height adjustable workstations are implemented, these will allow for proper fit for a majority of users in the workforce and allow for both sitting and standing without increasing the risk for injury.

Although adjustable workstations are commonly thought of as a solution to allow for alternating from sitting to standing, another large advantage is that the adjustability allows for the 'proper fit' for a majority of the population when both sitting and standing. When adjusted correctly, the risk for injury due to awkward postures is minimized and research has largely indicated a positive outcome when having adjustable workstations that allow for sitting to standing.

Risk Management's position is in favor of adjustable workstations. When designed correctly these will fit a majority of users in addition to the fact that these allow for alternating between sitting and standing. Much like ensuring we get the proper shoe to fit the foot, we need to ensure the workstation can adjust to fit the body. Without proper adjustment and 'fit' the risk for awkward posture and injury increases. Below is addition information from the literature which further discusses benefits:

Detriments of Prolonged Sitting

1. A large study of 222,497 participants showed that prolonged sitting is a risk factor for all-cause mortality, independent of physical activity (van der Ploeg, Chey, Korda, Banks, & Bauman, 2012).

2. Sedentary work has been linked to disabilities, such as obesity, diabetes, and cardiovascular disease (MacEwen, MacDonald, & Burr, 2015; Wilmot et al., 2012).

3. Musculoskeletal disorders (MSD's) of the hand, wrist, neck, upper and lower back have been linked to sedentary work in several studies (Ekman, Andersson, Hagberg, & Heljm, 2000; Gerr et al., 2002; Korhenon et al., 2003; Rocha et al., 2005; Wahlström, 2005; Wahlström, Hagberg, Toomingas, & Tornqvist, 2004).

4. Pain and discomfort related from (MSD's) has resulted into a 10% - 20% productivity decrease (Hagberg, Tornqvist, & Toomingas, 2002).
    a. Remaining in a seated position for long duration's results in high frequencies of pain and discomfort.

5. Studies have suggested that sedentary behavior is a major risk factor for obesity, cardiovascular disease, diabetes, etc. (Proper, Singh, van Mechelen, & Chinapaw, 2011; Thorp, Owen, Neuhaus, & Dunstan, 2011; van Uffelen et al., 2010; Wilmot et al., 2012).

Although prolonged sitting can have detrimental effects, simply standing up often can be a powerful antidote to sitting. Dr. Joan Vernikos, former Director or Life Sciences at N.A.S.A. said at the 2015 Ergonomics Conference and Expo that standing up often, at least 30 times per day, can counteract the effects of prolong sitting.

Benefits of Sit-Stand Workstations

1. Even with no change to sedentary time, breaking up the sitting with more frequent movements (such as standing) instead of long durations of sitting with breaks has beneficial biological impact (Owen, Healy, Matthews, & Dunstan, 2010).

2. Sit/stand workstations have resulted in reduced musculoskeletal discomfort (Husemann, Von Mach, Borsotto, Zepf, & Scharnbacher, 2009)

3. Sit/stand workstations have resulted in reduced back, shoulder, wrist and elbow pain (Pronk, Katz, Lowry, & Payfer, 2012).

4. Using a sit/stand desk has not affected task performance compared to traditional seated workstation postures. (Karakolis & Callaghan, 2014; MacEwen et al., 2014; Neuhaus et al., 2014; Tudor-Locke, Schuna, Frensham, & Proenca, 2014).

5. Sit-stand workstations appear to be effective in breaking up prolonged sitting time, improving work performance, improving mood states, and positively influencing selected health outcomes. (Pronk, 2015)

6. Sit-to-stand workstations do not seem to affect weight status or other factors but reduce musculoskeletal discomfort (Gorman et al., 2013; Pronk, Katz, Lowry, & Payfer, 2012)

7. Sit-to-stand workstations can reduce perceived discomfort and do not change worker productivity. (Karakolis & Callaghan, 2014)

8. Davis and Kotowski (2015) suggest that alternating between sitting and standing every 30 minutes is sufficient in reducing discomfort without negatively affecting productivity.

9. Hedge (2004), found that there were substantial decreases in the severity of musculoskeletal disorder symptoms after working at the electric height adjustable workstations. In addition, users reported significant improvements in comfort ratings.

Detriments of Prolonged Standing

Although alternating postures can be beneficial, standing for too long can have negative effects on the body. Often people with adjustable workstations stand for far too long and this should be avoided. Blood pooling in the feet, varicose veins, along with other issues not mentioned below are potential detriments of prolonged standing.

1. Prolonged standing can cause malfunction of venous valves, venous insufficiency, etc. (Krijnen, de Boer, Ader, & Bruynzeel, 1997)

2. Prolonged standing may affect arterial blood flow. (Reinhardt et al., 2000)

The goal of sit/stand workstations is to allow the users freedom of movement and avoidance of static postures and lack of movement.

Recommended sit/stand durations

Considering all factors such as musculoskeletal discomfort, health implications, total seated time, etc., a suggested recommendation of sitting and standing is 1:1 (4-hours sitting, 4-hours standing in a regular 8-hour work day). Ideally it is recommended to alternate postures regularly every 30-60 minutes. In contrast, Dr. Alan Hedge of Cornell University recommends 20 minutes sitting, 8 minutes standing, and 2 minutes stretching.

The ultimate goal is to avoid prolonged static postures whether sitting or standing. Additional recommendations for all employees working in a computer workstation are as follows:

1. Take frequent breaks. Regardless of whether you're sitting or standing, our bodies are designed to be dynamic and not just performing the same motions or static motions all day. In all cases, moderation is the key. Taking frequent breaks from ANY task is a good idea. We recommend one 5 minute break every hour. A break does not necessarily mean a break from work, but rather, should be a break from what you are doing. For example, if you're typing on the computer, a break would be to walk to and from the copier.

2. As mentioned above, don't sit or stand for too long. Movement is key.

3. Try using an anti-fatigue mat and foot stool when standing. An anti-fatigue mat creates a slightly unstable surface forcing the user to move slightly which is beneficial in shifting weight of the body from one foot to the other. Propping one foot up on a foot stool, rail, etc. can reduce back pressure on the side of the elevated foot.

4. Get an ergonomic evaluation. There may be tips and tricks that our experts can provide to help keep your workstation more comfortable. Contact the Risk Management office for more details or to set up an appointment.

Although research on the use of adjustable workstations and alternating from sitting to standing is ongoing, the current studies indicate a benefit when using these workstations, a reduction of musculoskeletal discomfort and no significant detrimental effect on productivity and the CSU Office of Risk Management and Insurance recommends the use of adjustable workstations. This is however stated with a caveat. Adjustable workstations should meet ergonomic design specifications and fit a majority of users. Equipment and other platforms added to an existing desk are often inferior, do not fit the user or set of users and can increase the risk for injury given the improper fit. If an adjustable workstation is desired, contact the Ergonomics office for further assistance with the desired option. Refer also to the ergonomic design criteria on the ergonomics website.

Sincerely,

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