RISK MANAGEMENT POSITION ON THE "EXERCISE BALLS"

TO: COLORADO STATE UNIVERSITY EMPLOYEES

FROM: OFFICE OF RISK MANAGEMENT AND INSURANCE

SUBJECT: "EXERCISE BALLS" USED AS CHAIRS IN THE OFFICE/COMPUTER WORKSTAION

DATE: 3/4/2013

In light of requests regarding the use of exercise balls as a chair option to be used in the office or computer workstation environment, the Office of Risk Management and Insurance has decided to take an official position. For purposes of this paper, the exercise ball will be labeled as such but can also be referred to as a fit ball, swiss ball, balance ball or gym ball.

The exercise ball which is commonly made of a rubber like material comes in a variety of types and sizes is filled with air and was originally intended to be used during exercise or other physical activities. Exercise balls are commonly seen in recreation and/or rehabilitation centers and have multiple purposes, one of these being to assist with muscle toning, strengthening and overall fitness during exercise. Because of the constant need to balance oneself on the round and unstable ball, it has been reported that the core muscles are constantly engaged which may ultimately lead to additional core toning and strengthening.

Exercise balls have over the past few years gained popularity as seating devices for the office/computer workstation environment, however, the CSU Office of Risk Management & Insurance has concluded that the use of an exercise ball in this capacity has more disadvantages than benefits and highly discourages the use of exercise balls in replacement of a traditional ergonomic chair for the office/computer workstation environment.

After conducting a brief review of the literature available on the exercise ball, the following are some of the identified concerns:

1. Gregory et al., found no significant difference between sitting on a ball versus a regular office chair and thus no obvious advantage of using a ball over a chair.[i]

2. Findings by Kingma and van Dieen suggest that when comparing an office chair to an exercise ball, there is increased muscle activation along with spinal shrinkage.[ii] Although muscle activation may seem beneficial, this low level muscular activity over time may lead to pain and discomfort. In exercise settings an exercise ball is used for short durations, not 8-hour work days. Conversely, as reported in a study by Ainscough-Potts et al., certain findings have suggested that sitting on an exercise ball may fail to work the abdominal muscles any more than sitting on a traditional office chair.[iii] Use of an exercise ball and the proposed muscle activation is one of the primary suggested benefits.

3. Exercise balls do not allow for a reclined seated position which Pheasant found halve the compressive forces on the spine.[iv] Studies by Leivseth and Drerup continue to support Pheasant in that when sitting on a traditional office chair and using the back rest, spinal compressive forces are reduced compared to sitting upright which is how an exercise ball forces a user to sit.[v]

4. Sanders and McCormick reported that when the backrest angle is reclined to 110 degrees the curve of lumbar spine mimics a more ideal standing spinal posture and decreases spinal pressure by nearly 50% in comparison.[vi] It was further reported in *Kodak's Ergonomic Design for People at Work* that when the backrest angle is reclined to 110 degrees, the compressive forces placed on the spine are 75 percent of the forces measured in comparison to sitting on a chair without lumbar support and a 90 degree back angle. [vii] The main point of emphasis is to change postures and avoid using only an upright sitting posture which is how an exercise ball forces a user to sit.

5. Exercise balls do not allow for adjustment between all three seated reference postures (reclined, declined and upright) recommended in the Human Factors Ergonomics Society, Ergonomics of Computer Workstations.[viii]

6. A webinar held by Humantech further support that the use of exercise balls as office chairs show inconclusive benefits.[ix]

7. McGill et al., found that the use of an exercise ball spreads out contact pressure leading to soft tissue compression and reports of subject discomfort by users.[x]

8. Exercise balls, over time, may deflate which will lower overall seated height in turn forcing seated elbow height higher than necessary. Although ball inflation with the provided pump is not physically difficult, it is far more time consuming that using the pneumatic seat height adjustments of a standard ergonomic chair. It is likely the pump will not be pulled out from storage and utilized each time the exercise ball needs additional air. This is further complicated if multiple users utilize one exercise ball.

9. Use of an exercise ball makes it more difficult to access workstation accessories such as the telephone, paperwork, filing cabinets, etc. Without wheels on the seating device, viewing and writing on documents while performing regular job tasks becomes challenging because the ball does not roll like a chair. A user will likely have to awkwardly reach rather than roll the chair closer to the desired the work.

10. Safety of exercise balls without a frame and wheels increases the risk of the exercise ball deflating or popping. The safety risk of falling and experiencing injury increases if an exercise ball is used. According to ABC news, 3 million exercise balls have been recalled in the past due to this safety risk. Although an exercise ball with a frame and wheels can be purchased which may decrease risk for injury from falling, back support is lacking which as indicated above can increase muscle activation. Therefore, the use of an exercise ball remains highly discouraged.

Risk Management has several suggestions that are alternatives to the exercise ball:

1. Obtain a sit/stand workstation. Sitting or having a static posture for prolonged periods can be very hard on the body. The sit/stand workstation offers adjustability and versatility, giving the user options and not forcing them to stay in one position throughout the day.
    a. Several options are now available to allow for a sitting OR standing computer workstation. Contact the CSU Ergonomics Team for information on the below products and/or visit the Ergonomics webpage - http://www.ehs.colostate.edu/WErgo/ErgoItems.aspx
        i. Electric height adjustable table/desk.
        ii. Workfit - sit to stand keyboard and monitor arm adjustment
        iii. Sit to stand keyboard trays and monitor arms
    b. Having a workstation that allows you to alternate between sitting OR standing is a great option and, in addition to many others, offers a few of the following benefits:
        i. Standing burns ~300-400 more calories per day than sitting.
        ii. Decreases upper back and neck pain as well as improve mood while standing.[xi]
    c. Excessive sitting in static postures has been shown to have numerous detrimental benefits including cardiovascular disease and cancer.[xii]

2. Take frequent breaks. Regardless of whether you're sitting in a chair all day standing up at the workstation, the human body was designed to be dynamic and not just performing the same motions all day. In all cases, moderation is the key. Taking frequent breaks from ANY task is a good idea[xiii]. 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. This can and should be incorporated as part of the sitting only workstation or sit to stand workstation.

3. Request an ergonomic evaluation. There may be tips and tricks that our experts can provide to help keep your workstation more comfortable. Contact the CSU Ergonomics Team for more details or to set up an appointment.

4. Obtain an ergonomic chair and be properly educated on its use. Many computer users with ergonomic chairs are unaware of how to adjust their office chair correctly. As reported in by Sanders, Kleeman and Prunier found that more than 50% of the subjects tested were unaware of the available chair adjustments.[xiv] Using the chair correctly to incorporate dynamic seated postures (movement) is crucial in decreasing fatigue and discomfort.

For the reasons listed above, Risk Management and Insurance does NOT recommend the use of an exercise ball, and would strongly discourage any department or employee from purchasing one. If a new chair and/or workstation is desired, contact the Ergonomics program for further details on acceptable alternatives and for further education on the proper use of an ergonomic chair.

Sincerely,

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