The movement towards wellness in the workplace

Like bad posture, the traditional model of ergonomics has remained static. Today, we’re seeing a shift from traditional ergonomics to a more proactive solution that encourages healthy living… one that focuses on the physical, cognitive and social needs of today’s workforce and understands how they’re related. It’s a movement toward wellness in the workplace.
Frequently Asked Questions

What are the health benefits of height-adjustable worksurfaces?
In a 2004 study of the “effects of an electronic height-adjustable worksurface on self-assessed musculoskeletal disorders discomfort and productivity among computer workers,” Intel Corporation, Santa Clara, CA determined the following key findings:

Workers using electric height-adjustable workstations gave higher comfort ratings for keyboard, mouse, chair and workstation than those using fixed height workstations.

58% of the electric height-adjustable users reported that the table somewhat or definitely helped, versus 20% of the fixed height users.

82% of the respondents preferred the electric height-adjustable to a fixed-height worksurface.

Results indicated that electric height-adjustable users have improved comfort at the workstation, reduced severity of musculoskeletal discomfort and self-rated productivity improvements.”

Does a thicker seat cushion mean a chair is more comfortable?
Not necessarily, some chairs have thicker foam that may feel softer initially, but will lead to user discomfort after an hour or two of sustained sitting since thicker foam typically provides little ergonomic support. This is not good for the life of the chair or the long-term comfort of the user. In essence, foam that feels great initially does not always translate into long-term seated comfort.

What factors contribute to long-term seated comfort?
Two primary factors that contribute to long-term seated comfort are design and materials.

Design:
It’s important for each area of the chair, the seat, lumbar support region and upper back, to adapt to specific parts of the body. The contours of both the seat and back must support the user while at the same time encourage proper movement. Adjustments should be intuitive and allow the chair to fit a broad range of user sizes and preferences.

Materials:
Materials selection ought to provide comfort throughout the life of the chair. Consequently, the highest quality foam must be used to ensure that the foam does not degrade and break down over time. In addition to foam quality, foam density should be considered as a critical factor in determining user comfort. Manufacturers ought to determine the appropriate foam density using an IFD (initial force deflection) measurement. Proper IFD varies by product, based on the type of foam used, foam thickness and contouring.

A combination of materials may also be used. Initial, short-term comfort may be optimized by applying a “topper pad” to the foam while long-term comfort is met through the quality, density and contour of the primary cushion.

Why doesn’t Steelcase use memory foam in seat cushions?
When pressure is applied to memory foam, cells collapse at a slow rate and the foam appears to ‘remember’ the imprinted shape. Over time, with a sustained amount of pressure, memory foam will take on a compressive set and will not recover its original shape like most urethane foams. This means that when seated, an individual will “bottom out” on the seat pan.

As a person moves around in a chair, it’s important to have the seat “follow” them as they move. With memory foam, sitting creates an impression of the body that makes it difficult to change postures frequently. If the person decides to shift his or her weight, they’ll feel the impression of where they had been sitting. As a result, most people then end up staying in a static position.
What are appropriate uses of gel foam in seating products?
Although appropriate for some applications, as a seating material gel has some drawbacks. It takes on the temperature of the ambient environment and can often feel ‘wet’ or cold. Additionally, its high-density composition can feel hard and/or uncomfortable when sitting on it. High-density compositions, typical of most gels, also tend not to allow much breathability.

Gel foam is different from gel and is really just memory or visco elastic foam. In localized areas like wrist rests or arms caps on chairs, gel material does offer some support. This usage may depend on the type of gel foam used and the overall composition of the arm cap.

What functionality does mesh have as a seating material?
The two main areas of concern with regard to mesh materials are thermal comfort and the use of mesh as the suspension system of the chair.

Thermal Comfort issues:
Mesh allows moisture to evaporate from the skin. For this reason, “breathability” and the resulting thermal comfort is often touted as one of the major user benefits for mesh seating.

Research from Kansas State University:
Research indicates that thermal comfort is very subjective especially when temperatures range between 68 and 78 degrees, common indoor office temperatures. In support of this KSU conducted a study assessing the thermal comfort of 108 people as they performed office-related tasks. Two of the three chairs in the study had upholstered cushions and the third offered a mesh support fabric. Results indicate each chair contributed equally to the thermal comfort of the seated person. According to the study, mesh was not superior in terms of dissipating moisture. Additionally, they found that for people who sought the warmth that foams and fabric insulation typically provides, a mesh surface felt cold.

Suspension Issues:
Chairs with mesh often use a hard perimeter chair frame. This frame is necessary to establish the form of the chair. From a comfort standpoint the perimeter frame is problematic in any of the areas where your body leaves the mesh and touches the hard edge. User discomfort tends to be especially pronounced on the back of the thighs where your legs rest on the hard perimeter edge.

Research from Steelcase:
Research has shown people using pieces of foam to ‘soften’ the hard perimeter edge. Or, they will place coats and sweaters on their chair seat to achieve the same softening effect.

When mesh supported by a hard perimeter frame functions as the suspension system of the chair, the user will experience a sort of “hammock” effect where there is more ‘give’ in the middle of the back and seat and less give closer to the perimeter. This restricts user movements. Moreover, the side forces that are felt when you push down on mesh will have a tendency to “squeeze” you into the chair, resulting in uneven pressure distribution.

What is the difference between standard mesh and Steelcase 3D Knit?
The 3D Knit material Steelcase uses on Think and Leap is a knit fabric, not a woven mesh. Unlike mesh applications it does not serve as the suspension system of the chair. It is an insulator between the flexors in the chair and your body. The 3D Knit provides transparency like other mesh materials, for those who prefer that look. However unlike mesh, the 3D Knit actually has a thickness that provides additional comfort.

Does Steelcase do user-testing for seating products?
Steelcase conducts pressure mapping tests and user sit evaluations throughout the entire product development process. Results of these tests and evaluations drive the design of the chair and materials used. The end result is seating products that provide the user with both comfort and ergonomic support.
My company is switching to laptop computers. How are the ergonomic principles different?
Notebook computer use involves the same biomechanical principles as desktop use. Things such as monitor height, keyboard location and angle and keyboard size are all important ergonomic considerations when using a notebook. Most ergonomists recommend tools such as external displays on movable arms combined with an external keyboard and mouse for optimal long term use.

My muscles feel fatigued by the end of the work day, what can I do to alleviate this?
Muscle fatigue can stem from a number of sources. One of the primary ergonomic considerations is the amount of blood flow to the muscle. This circulation not only provides the necessary oxygenation to the muscle but also removes waste byproducts. Research has shown that static postures maintained over a workday have a direct relationship to decreased blood flow to an area of the body. One way to increase circulation is through movement. This includes frequent posture shifts or stretches at your workstation, to broader movements such as standing while you work, or walking to a centrally located copy machine.

What are MSDs?
Musculoskeletal disorder (MSDs) is a generic term that describes a group of common conditions including cumulative trauma disorders (CTDs) and repetitive strain injuries (RSIs). MSDs account for more than one out of every three work-related injuries in the U.S. Generally recognized risk factors for MSDs include:
- Static and constrained postures
- Awkward positions
- Excessive force
- Repetition

How do acoustics relate to ergonomics?
According to the American Society of Interior Designers, conversational distractions and uncontrollable noise are the primary causes of productivity loss in the workplace. Moreover, noise is shown to contribute to absenteeism, illness and staff turnover. Therefore, reducing acoustical noise and distractions can result in a reduction in physical, psychological and environmental stressors on employees in the workplace. In fact, studies have shown that making specific adjustments to the acoustical conditions in open office environments with the goal of improving speech privacy by removing “conversational distractions” resulted in the following improvements:

**Focus:** the ability of office workers to focus on their tasks improved by 48%  
**Distractions:** “conversational distractions” decreased by 51%  
**Error-rates:** performance of standard “information-worker” tasks (measured in terms of accuracy [error-rates] and short-term memory) improved by 10%  
**Stress:** when measured in terms of the actual physical symptoms of stress, stress was reduced by 27%

How does air quality relate to ergonomics?
Poor air quality is shown to have physical impact on the health of individuals, as well as psychological ones – resulting in a measurable decrease in worker productivity. Air quality can be improved by the careful selection of building and furnishing materials or by providing outdoor air at an increased rate.

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