



# Interface

a common boundary between systems,  
equipment, concepts, and human beings

June 2009  
Vol. 2, No. 3



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## INTRODUCTION Jeremy Chingo Harris, Chair, Ergonomics Branch

Welcome to the first issue of our newly named newsletter! The advisory committee voted on *Interface* from a list of names submitted by Branch members during our Name the Newsletter Contest. The name *Interface* was chosen to represent the broad spectrum of issues encompassed in ergonomics all dealing with the interfaces between humans and various aspects of their work environments. Thank you to all who submitted a name to the contest and congratulations to Lawrence Schultz for submitting the winning name!

Safety 2009 is here! The Ergonomics Branch will meet on Tuesday at 6:00 p.m. at the Grand Hyatt (Room Bonham E). Please stop in and meet your leadership. The Ergonomics Branch is also pleased to sponsor six concurrent sessions this year. Here are some of the Ergonomics presentations you will not want to miss.

### Monday, June 29

**10:45 a.m.-11:45 a.m.**

(504) [Aging, Obesity & Diversity: The Office of the Future](#)

**3:15 p.m.-4:15 p.m.**

(527) [Applied Ergonomics: Tools and Methods for Improving Fit of the Workplace](#)  
[Sponsored by the Ergonomics Branch of the Industrial Hygiene Practice Specialty](#)

**4:30 p.m.-5:30 p.m.**

(553) [Is Your Stretch & Flex Program Cutting-Edge?](#)  
[Sponsored by the Ergonomics Branch of the Industrial Hygiene Practice Specialty](#)

### Tuesday, June 30

**10:45 a.m.-12:00 p.m.**

(604) [Preventing Sprains & Strains: Best Practices at Work](#)



**1:00 p.m.-2:00 p.m.**

(629) [The Aging Workforce: Secondary Ergonomics Risk Factors & Solutions](#)  
[Sponsored by the Ergonomics Branch of the Industrial Hygiene Practice Specialty](#)

**3:00 p.m.-4:15 p.m.**

(655) [Developing a Safe Patient Handling Program for Long-Term Care: A Case Study](#)

**4:30 p.m.-5:30 p.m.**

(679) [Driving Effective Ergonomic Improvements through Kaizen Events](#)

**Wednesday, July 1**

**9:15 a.m.-10:30 a.m.**

(717) [Cognitive Ergonomics and the Older Worker: Training that Works!](#)

**11:00 a.m.-12:00 p.m.**

(729) [ROI of Ergonomic Improvements: Demonstrating Value to the Business](#)  
[Sponsored by the Ergonomics Branch of the Industrial Hygiene Practice Specialty](#)

**1:45 p.m.-3:00 p.m.**

(753) [Gaining Respect for Ergonomics and Safety in Lean Companies](#)  
[Sponsored by the Ergonomics Branch of the Industrial Hygiene Practice Specialty](#)

**3:15 p.m.-4:15 p.m.**

(787) [Ergonomics, Workers' Compensation and Return to Work](#)  
[Sponsored by the Ergonomics Branch of the Industrial Hygiene Practice Specialty](#)

Want to be a presenter next year or know somebody who might be interested? It is not too late to submit speaker applications for Safety 2010 in Baltimore. The submission deadline is **July 31, 2009**. If you or someone you know is interested in Ergonomics Branch sponsorship, please [send the required information directly to me](#) prior to that time. Submissions will be reviewed with the PDC Chair for consideration. Click [here](#) for the 2010 Call for Speakers Application Form (PDF).

Lastly, Eric Stager, Industrial Hygiene Practice Specialty Administrator, would like to see the Ergonomics Branch become a practice specialty at Safety 2010 in Baltimore. That means we have just over six months to reach 500 total members. We are currently just over 300. Know somebody who should be a member of the Ergonomics Branch? Now is the time to recruit them! If we each recruit one new member, we will meet our goal!

Enjoy your time in San Antonio—I look forward to seeing you at the Ergonomics Branch Advisory Committee meeting!



## **Checklist for Selecting Best Ergonomics Risk Assessment Tool**

A proactive occupational safety program depends on using the right assessment methods to identify, measure and control risks (hazard X exposure) before an injury or loss occurs. Just as accepted sampling methods and tools are available for noise, chemical, radiation and other exposures, many sampling methods are available for the risk factors that contribute to work-related musculoskeletal disorders (WMSDs). The main issue facing safety professionals is the number of assessment methods available, from various sources, who all claim to provide the “magic bullet” for identifying risk and preventing WMSDs.

A wide range of ergonomic assessment tools and methods are available in the public domain or can be purchased from organizations. Whichever source you choose, consider the following features when evaluating and selecting a quantitative whole-body assessment method for identifying ergonomic risk factors. A preferred method should meet the following criteria:

1. Does the method include all of the following ergonomic risk factors?
  - Extreme Postures
  - Excessive Force
  - Extreme Frequencies (i.e., duration and repetition)
  - Additional Factors (e.g., low temperatures, vibration, mechanical stress)
2. Is it valid? Are exposure limit values for each ergonomic risk factor supported by epidemiological studies?
3. Are risk factors clearly defined?
4. Does the method differentiate risk factors between jobs?
5. Does the method differentiate risk factors within a job?
6. Does the method differentiate risk factors between body parts?
7. As a result of the risk assessment, is a numerical value (quantitative score) generated representing the level of risk associated with the task?
8. Does the method rank tasks by the number of risk factors present and by the number of body parts affected?
9. Is it repeatable? Does the method obtain similar results at different times, all other factors being equal?
10. Is it reliable? Does the method obtain similar results from different users?
11. Can the results of subsequent assessments be tracked to show change in a task’s risk level (i.e., verify reduction of risk)?
12. Are adequate materials and/or educational resources available to ensure competency and correct use of the method by all users?
13. Can the risk assessment method be used to investigate causes of WMSDs?
14. Can the risk assessment method be used to proactively identify and control the root causes of ergonomic risk factors before a WMSD occurs?



## **Working & Playing in the Outdoors**

Summer will be here soon, and in one half of the U.S., it is summer most of the year, including Hawaii and Puerto Rico. Some people work in climates where heat is evident for 12 months per year, and they also have the disadvantage of humidity in the heat versus desert heat, which is arid and low in humidity. Whether or not it is part of our job requirement, outdoor activities can play havoc on our bodies. This also includes children who play outside during school vacations or who may participate in organized team play.

The term “heat illness” means a serious medical condition resulting from the body’s inability to cope with a particular heat load and includes heat cramps, heat exhaustion, heat syncope and heat stroke.

Heat buildup inside the body from physical work activities or play is the major source of heat illness or heat stress. Work intensity and duration as well as very dry conditions may add to heat buildup within an employee.

Heat-related illnesses often strike the following workers:

- Agriculture workers
- Landscapers
- Masonry workers
- Lumber harvesting
- Law enforcement officers
- Construction workers
- Road maintenance and repair workers
- Public utility employees
- Dock workers
- Baggage handlers
- Maintenance workers
- Petrochemical and gas workers
- Employees who wear personal protective equipment (PPE), such as firefighters

Wearing PPE might also be a source of extreme temperatures to the body’s core leading to physical problems.

Children on ball fields who play organized games and stand for hours in the heat and sun must also be considered part of the “at risk” population for heat illnesses. Wearing caps, batting helmets or other protective gear can cause heat retention in children.

Excessive heat exposure can come in many different forms and have different symptoms. The most important element to remember is to hydrate. This does not mean alcoholic beverages but plenty of fresh, cool water. Stay away from drinks with caffeine and other chemicals—just drink plain old-fashioned water. It might not be vogue, but it is healthy.



## Working & Playing in the Outdoors (con't)

In outdoor working environments, particular risk factors must be identified and addressed, including:

- Air temperature
- Relative humidity
- Radiant heat from the sun and other sources
- Conductive heat sources, such as the ground
- Air movement
- Workload severity and duration
- Protective clothing and PPE

Personal risk factors, such as caffeine consumption and use of prescription or over-the-counter medications, might affect a person's water retention, age and general health.

Humans must acclimate to heat-related working conditions. This means a "temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to 14 days of regular work for at least two hours per day in the heat" (Cal OSHA).

In warm or hot conditions, drinking enough water (one quart per hour during the entire work shift) is vital for maintaining a normal body temperature (98.6°F). When working in these conditions, the body loses water through sweating. Sweating helps lower the internal core body heat, but as the body continues to lose water, it must be replaced to prevent dehydration and heat illness. Dehydration results in less perspiration so the body cannot get rid of heat fast enough, causing increased heat load. Without sufficient water, the body overheats.

Remind employees not to wait until they are thirsty to drink water. Being thirsty is not a good signal of the body's need for water. By the time a person is thirsty, s/he may have already lost too much water and work performance may have already declined. Employees should be encouraged to drink water frequently before and after work. Common symptoms of moderate to severe dehydration include:

- Reduced sweat output
- Rapid heart rate, muscle fatigue
- Loss of strength and dexterity
- Lightheadedness, dizziness
- Headache, blurred vision
- Dark urine

Employees should inform their healthcare provider that they will be working in warm or hot conditions before taking any prescription or over-the-counter medications or other drugs.



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## Working & Playing in the Outdoors (con't)

### General Tips for Hot Environments

- Keep plenty of fresh drinking water available.
- Provide employees access to a shaded open-air or ventilated rest area.
- Where possible, work in the shade or wear wide-brimmed hats and loose-fitting, light-colored clothing.
- Schedule outdoor work during cooler parts of the day.
- Plan the workday by checking weather forecasts and heat indexes to assess the potential for heat-related illnesses. OSHA recommends that as temperatures approach 80°F, measures should be taken to reduce heat exposures.
- The body needs a certain period of time to adjust to working in heat and humidity. Remind employees and children to take frequent water/rest breaks.
- For strenuous work tasks, plan an employee rotation to reduce exposures.
- Establish a buddy system so that workers and supervisors can monitor each other.

Have an ergo question? Contact me at:

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## **Cornell Ergonomics Checklist for Healthcare Mobile Workstations**

The use of mobile computer carts is becoming increasingly commonplace in healthcare settings. Many hospitals strive to bring point-of-care access to patient information through the use of mobile information technology and healthcare software systems for electronic medical records and other applications. Many designs are available for hospitals, and today most of the carts have their own battery power supply to support mobile computer use over the course of an eight-hour shift. Last year, some 50,000 powered carts were sold in the U.S., and the number is expected to grow as demand for mobile computer access in hospitals increases.

Hospitals can choose from a wide selection of cart products. Often, decisions are made on the basis of feature comparisons or price. However, for the user, who is either a nurse or a physician, many product design considerations affect the usability of a powered cart and its role in providing a safer and more comfortable way of using a computer. These carts are used 24/7 by many people, so it is vitally important that hospitals make wise choices in selecting the very best ergonomic designs for their users.

For this reason, researchers at Cornell University, led by Professor Alan Hedge, have crafted a simple checklist tool that systematically questions the ergonomic design considerations that are important in choosing a modern, powered computer cart. The Cornell ergonomic checklist does not list features but rather lists those factors that will affect the ease of use, safety and effectiveness of a cart. The checklist comprises 35 questions organized into five key usability sections: Cart Maneuvering; Work Surfaces/Data Input; Screen/Document Reading; Storage/Accessories/Power; and Hygiene.

Each section has specific items with a binary response (Yes/No) about whether the cart satisfies the item or not. If an item is not relevant, it can be omitted, and the scoring can be adjusted accordingly. If all items are relevant, then the total number of "Yes" values can be tallied at the end of each of the five sections and an overall total score summed at the end of the whole checklist. The maximum score possible is 35 and the higher the score, the better the ergonomic design of the cart.

The goal of using the checklist is to highlight any specific ergonomic issues with potential product choices. The checklist can be used to evaluate a single cart or to compare alternative cart designs. Many considerations will influence a hospital's purchasing decision, but by using the checklist, an ergonomist can help a hospital make a wiser choice.

The Cornell Healthcare Computer Cart Ergonomic Checklist can be downloaded for free from:

<http://ergo.human.cornell.edu/Pub/AHquest/CUCompCartEval.pdf>

Questions, comments or suggestions may be e-mailed to Alan Hedge at [ah29@cornell.edu](mailto:ah29@cornell.edu).

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## **Ergonomics Branch Seeks New Members**

The Ergonomics Branch is excited to present its Interface newsletter to you at Safety 2009 in San Antonio.

We are a hard-working, fun-loving group who enjoys exchanging ideas, solutions and new innovations. The Ergo Branch is always looking for new members to join our ever-growing group, and we hope to be a standalone practice specialty soon.

To learn more about the Ergonomics Branch, contact [any one of us](#) or [Scott Valorose](#), our Membership Chair.

