



## Ergonomics

### Reference Document

The American Industrial Hygiene Association® (AIHA®) adopted its first position statement on the issue of ergonomics in 1997. Since then, AIHA has amended this position statement on several occasions, most recently in October 2009. AIHA is aware of the controversy regarding the following questions:

- Is ergonomics a science?
- Will ergonomics regulations or controls increase the cost of doing business?
- Can ergonomic injuries be adequately diagnosed?

AIHA believes information should be made available to help answer some of these questions. To assist employers and employees in developing guidelines or otherwise addressing ergonomics concerns, the AIHA Ergonomics Committee provides the following information about ergonomics.

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Musculoskeletal injuries sideline thousands of workers every year and cost organizations billions of dollars in lost time and workers' compensation costs. As evidence, go to the following links:

- Liberty Mutual Insurance Safety Index  
<http://www.libertymutualgroup.com/omapps/ContentServer?pagename=LMDGroup/Views/LMG&ft=2&fid=1138356633468&ln=en>
- OSHA Ergonomics Standard Preamble  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=FEDERAL\\_REGIS TER&p\\_id=16305](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGIS TER&p_id=16305)
- NIOSH Epidemiology Study –DHHS (NIOSH 97-141)  
<http://www.cdc.gov/niosh/topics/ergonomics/>

At the same time, many organizations have recognized the impact of these injuries and implemented programs and workplace changes that have reduced injuries and costs. The following discussion points are intended to provide more information for those who may not be familiar with the benefits of a good ergonomics program.

#### **Misperception #1: Ergonomics is not a science.**

**Fact:** *There is a large body of scientific research that has been published in the area of ergonomics. NIOSH, the National Academy of Sciences and other prestigious scientific bodies have reviewed the research results and concluded that ergonomics has a sound basis in the scientific peer-reviewed literature.*

Ergonomics is a mixture of many branches of science. To perform detailed ergonomics risk assessments, you need to know anatomy and physiology, biomechanics, physics, statistics, epidemiology, and much more. To learn more about the scientific content of university programs offering degrees in ergonomics, go to the following link: <http://www.ergoweb.com/resources/faq/questions.cfm#program>

The National Academy of Sciences and the National Research Council/Institute of Medicine conducted a two-year study that examined the contributions of workplace physical and psychosocial factors to the occurrence of musculoskeletal disorders (MSDs) and the effectiveness of various prevention strategies. The study reached the following conclusions:

- 1.) These disorders are a national health problem that imposes a significant economic burden on our economy.
- 2.) There is a clear relationship between workplace physical and psychosocial factors and MSD development.
- 3.) The implementation of effective ergonomics programs can help reduce these risks.

For more detail, go to the following link:

[http://www7.nationalacademies.org/ocga/testimony/Musculoskeletal\\_Disorders\\_and\\_the\\_Workplace.asp](http://www7.nationalacademies.org/ocga/testimony/Musculoskeletal_Disorders_and_the_Workplace.asp)

### **Misperception #2: Ergonomics is costly.**

**Fact:** Many organizations have found that a good ergonomics program can not only reduce injuries, but also reduce costs and increase productivity. For example, in 1997 the United States General Accounting Office (GAO) published a report to Congressional Requestors entitled *Private Sector Ergonomics Programs Yield Positive Results* (<http://www.gao.gov/archive/1997/he97163.pdf>). GAO studied a number of companies in widely different sectors and found that each was able to reduce injuries, improve morale and reduce overall costs. Also, a wide range of organizations—including companies, universities and the Department of Defense—has provided access to successful changes that others can use. In addition, the OSHA website includes success stories from many business sectors that show how effective ergonomics programs helped companies' bottom lines ([http://www.osha.gov/SLTC/ergonomics/success\\_stories.html](http://www.osha.gov/SLTC/ergonomics/success_stories.html)).

According to the NIOSH Prevention through Design (PTD) initiative, the best way to reduce overall cost is to address all occupational safety and health risk, including ergonomic risk, in the design stage. For more detail, go to the following link: <http://www.cdc.gov/niosh/topics/ptd/>.

### **Misperception #3: The injuries are not real because there is no way to diagnose them.**

**Fact:** A number of resources are available to physicians and others to help diagnose the existence and extent of a condition or disability. One such tool is the 6<sup>th</sup> edition of the American Medical Association's *Guides to the Evaluation of Permanent Impairment*. To learn more, go to the following link: [http://www.impairment.com/p\\_AMA\\_Eval\\_Guides\\_6th.htm](http://www.impairment.com/p_AMA_Eval_Guides_6th.htm). According to the AMA, this tool provides "expanded use of diagnostic approaches to help physicians consider relevant clinical tests and patient outcomes in performing ratings." It also stresses "contemporary, evidence-based concepts."

The American Academy of Orthopedic Surgeons provides diagnosis methodologies for specific conditions found at the links below:

- Carpal Tunnel Syndrome - <http://orthoinfo.aaos.org/topic.cfm?topic=A00005>
- De Quervain's Tendinitis - <http://orthoinfo.aaos.org/topic.cfm?topic=A00007>
- Cubital Tunnel Syndrome - <http://orthoinfo.aaos.org/topic.cfm?topic=A00069>

**Misperception #4: There is no way to show what is causing ergonomic injuries because they have no dose-response relationship.**

**Fact:** There is a substantial and growing body of knowledge regarding the work-relatedness of musculoskeletal disorders. One example is a two-year study published by the National Academy of Sciences, *Musculoskeletal Disorders and Workplace Factors: A Critical Review of Epidemiological Evidence for Work-Related Musculoskeletal Disorders of the Neck, Upper Extremities, and Lower Back* (NIOSH Doc. 97-141, <http://www.cdc.gov/niosh/docs/97-141/>). The study demonstrates a relationship between workplace exposures and injuries: the risk of injury increases as the exposure to risk factors increases. At the same time, the study emphasizes that a reduction in exposure often results in a reduced severity of injuries. The American Society for Surgery of the Hand provides causation information regarding specific conditions at the links below:

- Carpal Tunnel Syndrome  
<http://www.assh.org/Public/HandConditions/Pages/CarpalTunnelSyndrome.aspx>
- De Quervain's Tendinitis  
<http://www.assh.org/Public/HandConditions/Pages/deQuervainsTendonitis.aspx>
- Cubital Tunnel Syndrome  
<http://www.assh.org/Public/HandConditions/Pages/CubitalTunnelSyndrome.aspx>

**Misperception #5: Fixing ergonomic problems will slow production. It will require employers to slow down the work process or hire more workers to do the same work (e.g., two people to lift or carry something).**

**Fact:** There are many examples of simple, inexpensive, quick fixes to eliminate ergonomics problems. There are also many examples of changes that result in increased efficiency and productivity, assuring that American companies remain able to compete and serve as places of employment. The NIOSH website contains examples of cost-effective ergonomics programs and interventions at the following link: <http://www.cdc.gov/niosh/topics/ergonomics/>.

**Misperception #6: Many of these problems are due to outside activities like bowling, knitting, gardening, home repair or sports.**

**Fact:** It is true that your body will respond the same way whether the excessively physically demanding activity you are doing is on or off the job. A good way of determining the work-relatedness of ergonomic problems is needed. When the condition is due to personal activities, it does not have to be recorded or addressed by employers. Similar issues have been raised about noise and exposure to chemicals. For instance, if someone without the proper hearing protection is exposed to loud noise outside of work, the effects of this exposure may appear in an audiogram at work. Similarly, someone using chemicals without proper ventilation at home may experience health effects first noticed by medical staff at work. There is a method for making that determination with regard to required OSHA record keeping

For detail regarding this process, go to the following link:

[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9636](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9636)

**Misperception #7: Ergonomic assessments are complicated. Employers, particularly small employers, do not have the knowledge or expertise to do ergonomic assessments, and hiring an ergonomist to do them is cost prohibitive.**

**Fact:** Some ergonomics risks (such as force, frequency, and posture) are very easy to spot and fix, while some may require more detailed review by trained eyes. There are a number of good resources available from OSHA or state consultation programs, insurance companies, trade organizations and other local companies who may have similar issues. In addition, participatory ergonomics programs, where employees can get involved in identifying hazards and recommending solutions, have proven very successful. There are free resources on the OSHA website, including ergonomics eTools, which can be helpful. For more information, visit <http://www.osha.gov/SLTC/ergonomics/outreach.html#etools>. Ergonomics consultants can also often provide a very good economic return on investment. For more detail, go to the following link: <http://www.bcpe.org/search?consultants=yes>.

Developed by the AIHA Ergonomics Committee

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