



American Industrial Hygiene Association Position Statement on Ergonomics

The American Industrial Hygiene Association (AIHA) believes that ergonomics is a multidisciplinary science whose primary focus is the anticipation, recognition, evaluation, and control of musculoskeletal disorders (MSD) and their risk factors in the workplace. This is accomplished through the application of principles based on the physical and psychological capabilities of people to the design or modification of jobs, equipment, products, and workplaces.

The goals of ergonomics are to:

- Decrease risk of musculoskeletal injuries and illnesses
- Decrease worker discomfort and to improve the quality of work life
- Improve worker performance

Proper application of ergonomic principles can achieve benefits that are significant and immediate. The benefits of well-designed jobs, equipment, products, work methods and workplaces include:

- Enhanced safety and health program performance
- Improved quality and productivity
- Reductions in errors
- Heightened employee morale
- Reduced compensation and operating costs
- Accommodation of diverse populations, including those with restrictions or disabilities

This position statement will serve as the basis for AIHA's action on behalf of industrial hygienists and those whom we serve. A summary of AIHA's major positions is as follows:

1. A wide range of scientific data clearly demonstrates:
 - Work-related MSD are a significant and costly health issue nationwide
 - There are plausible biological mechanisms for the association between MSD and workplace physical exposures
 - Working conditions can and do contribute to the occurrence of MSD
 - Validated analysis tools exist to effectively assess the risk of injury in the workplace.

- Modifying physical task conditions can reduce the prevalence and severity of MSD.
 - Modifying psychosocial modifiers may help to reduce the prevalence and severity of MSD.
2. AIHA considers that guidelines provide useful and effective guidance to those who adopt them. However, AIHA supports the development of ergonomics-related reporting, regulations and standards as a more effective long-term strategy. Regulations and standards should be developed through an open process and focus on the development of effective health and safety programs that reduce the risk of musculoskeletal injuries and illnesses.
 3. AIHA supports the continued private and governmental funding for research related to ergonomics. The research agenda should focus on:
 - The refinement and validation of models for the patho-physiology of specific MSD
 - The refinement of dose-response relationships between workplace exposures and the risk of musculoskeletal disorders
 - Continuing the improvement and validation of exposure assessment tools that identify and measure exposures to physical, organizational, psychosocial, and personal risk factors;
 - Identification of best practices for the control of ergonomic risk in general and in specific industries
 - The clarification of case management practices for the treatment of MSD

Comments

1. Scientific Data on Musculoskeletal Disorders (MSD)-

There is a large base of epidemiologic and scientific literature concerning work-related MSD. Based on a review of this literature, AIHA concludes the following:

- Work-related MSD, particularly of the low back and upper extremities, are an important national health problem, resulting in approximately 1 million people losing time from work each year. These disorders impose a substantial economic burden in compensation costs, lost wages, and productivity. Cost estimates vary, but a reasonable figure is about \$50 billion annually in work-related costs.

There is a clear relationship between workplace conditions and musculoskeletal disorders. For the low back, this includes: physical loads as in manual material handling, tasks that impose high load moments on the back, or involve frequent bending and twisting, heavy physical work, and whole-body vibration.

For disorders of the upper extremities, this includes: high physical loads from combinations of repetition, force, non-neutral (awkward) postures and hand-arm vibration.

- The basic biology and biomechanics literatures show that there are plausible mechanisms for the association between MSD and workplace physical exposures.
- There are a number of analysis tools available for determining the extent the risk for an MSD in the workplace. There are numerous highly credible methods for conducting exposure assessment. These tools have been developed, published in the peer-reviewed literature and validated for determination of risk. Sources include those from North America, Europe, Asia and Australia.
- These tools can also contribute significantly to the identification of risk reduction interventions. Modification of the various physical factors can substantially reduce the risk of symptoms for low back and upper extremity disorders. Many of these interventions are inexpensive, help improve productivity and can significantly reduce the likelihood of further MSD. Additionally, modifying the psychosocial factors may help to reduce the risk of these same symptoms.

2. Regulatory approach-

AIHA supports the development of ergonomics-related regulations and standards. Guidelines are considered to be a good way of communicating good practices. Those organizations that have adopted them have generally had good results in reducing the number of MSD and their associated costs.

However, the number of organizations expected to use the guidelines is limited. Well-structured regulations and standards would have a greater impact and chance to reduce the impact of work-related MSD. The development process should be conducted in an open manner where all affected parties can provide input. The debate should focus on the development of effective health and safety programs to reduce the risk of musculoskeletal disorders. Toward that end, AIHA recommends the following approach:

- Those industries and organizations that have addressed MSD in their workplaces should continue their efforts. Additional efforts should be focused in needed areas to further minimize the risk of MSD injury or illness for employees.
- Those industries and organizations that have not addressed MSD in their workplaces should expeditiously evaluate the extent of the musculoskeletal disorder problems and implement a program or process to deal with the problems found such that the risk of MSD injury or illness for employees is minimized.

- The Occupational Safety and Health Administration should develop a strong and clear minimum standard for the recognition and abatement of hazards that result in MSD or “ergonomics injuries or illnesses” based on the best available scientific and medical knowledge. In the absence of a Federal standard, state OSHA programs should be encouraged to adopt standards to address these hazards.
- The Occupational Safety and Health Administration in conjunction with the Bureau of Labor Statistics should continue to require employers to record MSD or “ergonomics injuries or illnesses” on OSHA’s Form 300, Log of Work-Related Injuries, and to tabulate the appropriate statistics. AIHA supports the inclusion of a separate column for MSD on the OSHA 300 log as required in the originally published record keeping standard that went into effect in January 2002.
- Voluntary consensus standards and guidelines should continue to be developed in addition to federal or state standards. They would play an important role in preventing work-related MSD and provide wider recognition of the issue including workplaces not covered by federal and state OSHA.

3. Need for continuing research-

Although precise dose-response relationships are not available for all exposure situations, there is a significant and growing body of knowledge related to the relationship between the physical work environment and MSD. Knowledge related to the roles of personal, organizational, and psychosocial factors is limited. They may be moderating or predisposing factors that interact with the physical risk factors.

Increased risk may be reliably predicted under selected conditions, such as 'extreme' levels of physical exertion and posture. The tools used to assess exposure and predict risk need additional development and validation. Research supporting the development and validation of reliable, accurate, and predictive exposure assessment tools needs to continue.

The National Institute for Occupational Safety and Health should take the lead in developing uniform definitions of MSD for use in clinical diagnosis, epidemiologic research, and data collection for surveillance systems. These definitions should (1) include clear and consistent endpoint measures, (2) agree with consensus codification of clinically relevant classification systems, and (3) have a biological and clinical basis.

A research agenda is needed that includes (1) improving tools for exposure assessment, (2) improving measures of outcomes and case definitions for use in epidemiologic and intervention studies, and (3) further quantification of the relationship between exposures and outcomes. Also included are suggestions for studies in each topic area: tissue mechanobiology, biomechanics, psychosocial stressors, epidemiology, and the effectiveness of workplace interventions.

References

1. Research Council and the Institute of Medicine (1998), *Work-Related Musculoskeletal Disorders: A Review of the Evidence*, Steering Committee for the Workshop on Work-Related Musculoskeletal Injuries: The Research Base, Committee on Human Factors, Commission on Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.
2. National Research Council and the Institute of Medicine (2001), *Musculoskeletal Disorders and the Workplace: Low Back and Upper Extremities*. Panel on Musculoskeletal Disorders and the Workplace. Commission on Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.
3. National Institute for Occupational Safety and Health, *Musculoskeletal Disorders and Workplace Factors: A Critical Review of Epidemiology Evidence for Work-Related Musculoskeletal Disorders of the Neck, Upper Extremities, and Low Back*, DHHS (NIOSH) Pub. No. 97B-41, Cincinnati, OH, 1997.
4. U.S. General Accounting Office, Report to Congressional Requestors, *Worker Protection: Private Sector Ergonomics Programs Yield Positive Results*, Report No. GAO/HEHS-97-163, August 1997.

Original Position Statement Adopted by AIHA Board of Directors in 1997

AIHA Comments and Position on OSHA Proposed Ergonomics Standard – 03-02-00

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