

# Definition of Occupational Ergonomics



## Introduction

The field of ergonomics is broad, encompassing a range of human factors (cognitive, biomechanical, etc.) and a number of applications (design of consumer products, workplace tools and layout, and product assembly). Humantech, a Velocity EHS solution, focuses on helping employers in today's workplace improve performance through the application of ergonomics principles. For this focus, we use a more specific definition of occupational ergonomics to define and communicate with our clients.

We have adopted the NIOSH definition of occupational ergonomics as the basis of our approach. In 1997, NIOSH defined it as:

**"The science of fitting workplace conditions and job demands to the capabilities of the working population. Ergonomics is an approach or solution to deal with a number of problems—among them are work-related musculoskeletal disorders."**

In more simple terms, we also use the definition of "fitting the work to the person." These two versions provide our clients with an easy-to-understand, specific, and applicable (to their workplace) definition on which they can focus their respective ergonomics improvement processes.

## Occupational Application

A distinction between "occupational ergonomics" and "ergonomics" is necessary to distinguish application in the workplace. As noted above, the term *ergonomics* encompasses a wide range of disciplines and applications. The Board of Certification in Professional Ergonomics defines it this way: "Ergonomics is a multi-disciplinary field concerned with *human factors* in design. Its methods can be applied to any technology, simple or complex, that involves a human

interaction and user experience." (BCPE, 2014). This definition is consistent with others to describe the broad range of disciplines within the scope of BCPE's charter. However, a broad definition can create confusion and frustration when one is applying it only to the workplace and the responsibility of employers.

For occupational exposures, several good definitions are used by global and country agencies and associations. These definitions, specific to the workplace, are consistent with the NIOSH definition. Some of these include:

- **Health and Safety Executive, United Kingdom:** "Ergonomics is a science concerned with the 'fit' between people and their work. It puts people first, taking account of their capabilities and limitations. Ergonomics aims to make sure that tasks, equipment, information and the environment fit each worker." (HSE, 2013)
- **International Labor Office:** "Ergonomics is the systematic study of people at work with the objective of improving the work situation, the working conditions and the tasks performed." (ILO, 1998)
- **Occupational Safety and Health Administration:** "Ergonomics can be defined simply as the study of work. More specifically, ergonomics is the science of designing the job to fit the worker, rather than physically forcing the worker's body to fit the job." (OSHA, 2000)
- The **NIOSH** definition indicates that ergonomics is an engineering discipline ("fitting workplace conditions and job demands") and distinguishes it from accommodation to individual workers ("to the capabilities of the working population").



## Engineering Control

Engineering control of all safety hazards, including MSD risk factors, is proven to be the preferred method of control because it is the most effective and most efficient (NIOSH, 2015). Its cost effectiveness in controlling MSD risk factors was quantified by Goggins, et al. in 2008.

The definition reinforces the type of control (engineering) and its effectiveness (top of the hierarchy), and distinguishes ergonomics from other approaches. These other, non-engineering approaches include fitness (strengthening and stretching), matching (physical demands analysis), individual employee behaviors (lift teams, body mechanics, break software, behavioral safety observations), awareness (posters and slogans), and wearable devices (back belts, braces, posture alarms).

The definition of “fitting workplace conditions and job demands to the capabilities of the working population” aligns with U.S. employers’ legal responsibility under the OSH Act: “shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees” (CFR 29, 1970). Designing the workplace to reduce or eliminate exposure to MSD risk factors helps ensure a place of employment free of recognized hazards.

## Working Population

By specifying application “to the capabilities of the working population,” the definition distinguishes occupational ergonomics from job accommodation to individual people. Job accommodation is a necessary practice when returning injured employees to work (return-to-work program) and when accommodating a disability (Americans with Disabilities Act). The goal of occupational ergonomics is to design the workplace to best fit the capabilities of a wide range of employees in order to prevent exposure to MSD risk factors, barriers to quality, and barriers to good performance for a large portion of the workforce.

## Opposing Positions

There are many consultants and companies offering massage, stretching, wellness, martial arts, behavioral safety, and wearable devices as “ergonomic” solutions, which are commonly offered in lieu of changing the workplace design and fit to the employee. Typically, these services and approaches do not meet the definition of ergonomics, let alone *occupational* ergonomics.

Our alignment with the NIOSH definition of occupational ergonomics is consistent with global agencies and current practices, satisfies employers’ legal responsibilities for safety, is based on valid and effective methods, and is defensible through research.

## Conclusion

The NIOSH definition of occupational ergonomics provides an easily understood, valid, and defensible description for our target clients, managers in the workplace. It provides a foundation and anchor for the information, services, and tools we provide.

## Endorsement

This position statement was accepted by Senior Leadership on May 25, 2016.

## References

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