LEARNING OBJECTIVES

The goal of this module is to recognize the basic principles behind seated, standing, and leaning workstations. Common workstation solutions and how to apply workspace envelopes are presented. At the end of this module, the students will have the skills to evaluate workstations at the United States.

INTRODUCTION

A workstation is a location where a person performs one or more tasks that are required as part of his or her job. This can have a profound impact on the person’s ability to perform the required tasks. Reach and strength, endurance and visual capabilities are just a few of the factors that should be considered in workstation design. The design guidelines to be discussed in this section include the following:

- Accommodate people with a range of body sizes or anthropometric dimensions.
- Permit several working positions/postures to promote better blood flow and muscle movement.
- Design workstations from the working point of the hands. People work with their hands so we want their working height to be relative to their hand height.

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• Place tools, controls, and materials between the shoulder and waist height, where they have the greatest mechanical advantage.
• Provide higher work surfaces for precision work, and lower work surfaces for heavy work.
• Reduce compressive forces by rounding or padding work surface edges.
• Provide well-designed chairs in order to support the worker.

As each of the design guidelines are discussed, keep in mind that some of these principles may not be applicable to designs for individuals with special needs. Different tasks may also require different design guidelines; such as providing a brake pedal extension for a bus driver with shorter height.

CASE STUDY
See Figures 1.1 and 1.2.

Manual Materials Handling

Case studies are used in the chapters to relate the content to the student. Case studies can be used to prime in class discussion or exercises.

KEY POINTS
• The design of the workstation can have a profound impact on the person’s ability to safely and effectively perform the required tasks.
• Reach capabilities, body size, muscle strength and visual capabilities are just a few of the factors that should be considered in workstation design.

REVIEW QUESTIONS
1. What anthropometric principle is used to select the placement of the pull cord on a safety shower?
2. If a person is 20th percentile in height, will they be 20th percentile in weight? Why?
3. What anthropometric design principle is used as a last resort? Why?

EXERCISE
In class exercises can be performed during the lectures.
In the exercise, the student groups will simulate developing a light assembly task using ergonomic principles.
Figure 1.1  Worker moves 125-lb tire manually before the intervention (Photo courtesy of www.mohawklifts.com)

Figure 1.2  After the intervention, a tire dolly does much of the manual labor (Photo courtesy of www.mohawklifts.com)