

CHAPTER 1

Book Organization

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 in the United States.

Introduction

A workstation is a location where a person performs one or more tasks that are required as part of his/her job. The design of the workstation can have a profound impact on the person's ability to safely and effectively perform the required tasks. Reach and strength capability, body size and shape, endurance, and visual capabilities are just a few of the factors that should be considered in work place 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 surface height to be relative to their hand height.
- 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 of less height (Figures 1.1 and 1.2).



FIGURE 1.1 Worker moves a 125-lb tire manually, resulting in a poor lifting posture.
Source: Mohawk Lifts, LLC



FIGURE 1.2 A tire dolly, does much of the manual work and results in a safer task.
Source: Courtesy of Mohawk Lifts, LLC

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 capability, 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 when selecting 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?

