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# CHAPTER 15

## Fitness Safety Practices

**I**n this chapter, you will learn about the following:

- 1 Guidelines for the safe use of fitness facilities and equipment
- 2 The structure of the body's musculoskeletal system and how it dictates safe movement patterns
- 3 Evaluating the safety and effectiveness of exercises
- 4 Prescribing exercise programs for different client populations







**"The door to safety swings on the hinges of common sense."**  
Anonymous



*Since the fitness environment has many potential hazards, fitness leaders must be aware of the precautions and guidelines for the facilities, equipment, and exercises they use and recommend.*

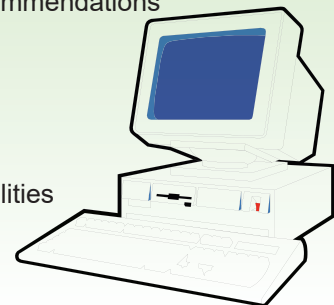
**F**itness leaders need to be aware of many cautions and guidelines for the facilities, equipment, and exercises they use and recommend. This information goes well beyond the essential knowledge of risk management and response to injuries that has been described in detail in the previous chapters. The fitness environment has potential hazards that are specific to it alone; the vast variety of equipment, large and small, that is used in the fitness field comes with numerous precautions for use; the exercises themselves can be hazardous if not instructed and performed properly. Knowledge of human anatomy and correct body mechanics is essential in order to select and design safe and effective exercise programs. Adapting programs for clients with chronic medical conditions adds an additional challenge. Some basic information is provided here, but you are advised to seek information from your teacher or a qualified medical or fitness professional regarding necessary program adaptations.

Reliable and complete information can be accessed from professional organizations such as the American College of Sports Medicine, which publishes ACSM's Health/Fitness Facility Standards and Guidelines. The manufacturers and distributors of fitness equipment are more than willing to provide information in the interest of increasing customer satisfaction. Numerous books and Internet sites are also available. Selected sites are presented in the box *Web Resources*.



### Web Resources

- |  |   |
|--|---|
|  <a href="http://www.acefitness.org">www.acefitness.org</a>   | American Council on Exercise                    |
|  <a href="http://www.cultureofsafety.com/fitness">www.cultureofsafety.com/fitness</a>   | Fitness Center and Exercise Safety Tips         |
|  <a href="http://www.ehs.psu.edu/commonwealth/fitness.cfm">www.ehs.psu.edu/commonwealth/fitness.cfm</a>   | Fitness Center Requirements and Recommendations |
|  <a href="http://www.livestrong.com/article/338026-fitness-center-safety-rules">www.livestrong.com/article/338026-fitness-center-safety-rules</a> | Fitness Center Safety Rules                     |
|  <a href="http://www.health.ny.gov/publications/0954">www.health.ny.gov/publications/0954</a>   | Physical Activity and People with Disabilities  |





## Fitness Facility and Equipment Safety Guidelines

It is easy to find guidelines for fitness facilities and equipment. ACSM has developed standards and guidelines specifying what health and fitness facilities must do in order to maintain a safe environment for their users. All people involved in the fitness industry, from personal trainers to club owners to managers, have a duty to be informed and apply these safety standards. Some of the standards that fitness facilities must meet are presented in Table 15.1. Some general safety guidelines for the gym environment can be found in Table 15.2.



*Exercise classes must allow each participant unrestricted and safe movement.*

### The Fitness Environment

Table 15.1 below lists some of the safety standards and guidelines that fitness facilities must meet, as outlined by the American College of Sports Medicine. All facility personnel have a duty to be informed and to apply these standards.

**Table 15.1** ACSM safety standards for fitness facilities.

<b>Standard #1</b>
<ul style="list-style-type: none"><li>Facility operators must offer preactivity screening to all new and prospective members to identify those who may be at increased risk of adverse medical events.</li></ul>
<b>Standard #2</b>
<ul style="list-style-type: none"><li>Fitness facilities must offer instruction and guidance for users participating in physical activity programs and should ensure an appropriate level of supervision.</li></ul>
<b>Standard #3</b>
<ul style="list-style-type: none"><li>Operators must develop emergency response policies and procedures and conduct routine safety inspections of all areas of the facility to reduce or eliminate safety hazards.</li></ul>
<b>Standard #4</b>
<ul style="list-style-type: none"><li>At least one staff member with up-to-date CPR/AED certification must be on duty during all facility operating hours.</li></ul>
<b>Standard #5</b>
<ul style="list-style-type: none"><li>All staff who have instructional, counseling, and supervisory duties must have an appropriate level of professional education, work experience, and certification, where applicable.</li></ul>
<b>Standard #6</b>
<ul style="list-style-type: none"><li>Facilities with a pool, whirlpool, sauna, or steam room must maintain correct temperature and humidity levels and comply with mandated safety requirements for water chemistry.</li></ul>
<b>Standard #7</b>
<ul style="list-style-type: none"><li>Facilities that offer youth programs and child care must take measures to ensure responsible and satisfactory supervision of children in their care.</li></ul>
<b>Standard #8</b>
<ul style="list-style-type: none"><li>Facilities must comply with all federal, state, and local building codes and adhere to guidelines for fitness facility design in terms of exercise and nonexercise space, flooring, air circulation, lighting, and background noise.</li></ul>



Following is a list of safety guidelines for the weight room compiled from several sources:

- ▶ Work on your own program. Do not compete with others.
- ▶ A T-shirt, shorts or track pants, and running shoes must be worn.
- ▶ Ask the staff if you are unsure of how to do something.
- ▶ Maintain correct posture. Use controlled movements avoiding the use of momentum.
- ▶ Wherever possible, use the full range of movement of the joints.
- ▶ Select an appropriate resistance. Do not overload the bar or machine.
- ▶ Adjust weight stacks carefully. Avoid placing fingers between weights.
- ▶ Always use safety bar collars on the barbell.
- ▶ Have a spotter when lifting free weights above the body.
- ▶ Breathe during efforts: Exhale during the work phase and inhale during the return phase.
- ▶ Remain properly hydrated.
- ▶ Stop if you feel faint or feel any sort of pain or stiffness whatsoever.
- ▶ Return all weights to their proper locations. Do not leave weight on machines, and do not leave loose weights or dumbbells on the floor.
- ▶ Use antiseptic spray and towels to clean equipment after use.
- ▶ Remember to warm up, cool down, and stretch.



*Keeping the weight room and other fitness facilities in order and adhering to basic safety guidelines will enhance the experience for all fitness leaders and participants.*



In summary, follow the risk management procedures for every facility and piece of equipment, large or small, that is used in the fitness program. Be **proactive**: Imagine what could go wrong. Take the necessary steps to eliminate or reduce the risk. At the very least, warn the participants about any potential risks.

## Exercise Prescription

The human body is capable of any movement that it has been trained to execute. We have all seen people perform athletic stunts that





**Table 15.2** General safety guidelines for the gym.

Equipment
<ul style="list-style-type: none"><li>• Treadmills, stationary bicycles, elliptical machines, strength training machines, benches, free weights, and other fitness facility equipment must be in good working order.</li><li>• Steps must be in good condition and have nonslip surfaces.</li><li>• Elastic tubing must be the proper length and tension for the participant and in good condition.</li></ul>
Clothing/Footwear
<ul style="list-style-type: none"><li>• Participants must wear clothing and footwear suitable for the activity.</li><li>• Jewelry should not be worn.</li></ul>
Facilities
<ul style="list-style-type: none"><li>• The floor must be free of all obstacles.</li><li>• Ensure adequate space between participants and equipment in order to prevent collisions and allow free flow of movement.</li></ul>
Supervision
<ul style="list-style-type: none"><li>• On-site supervision is required for initial instruction, followed by in-the-area supervision.</li></ul>
Special Rules
<ul style="list-style-type: none"><li>• Modify fitness activities according to the participants' age and ability, the facility, and available equipment.</li><li>• Instruct participants in the proper use of equipment before they use it.</li><li>• Conduct a proper warm-up and cool-down when the fitness activities make up the main part of the lesson.</li><li>• Follow the proper progression of activities:<ol style="list-style-type: none"><li>1. Warm-up</li><li>2. Strength exercises</li><li>3. Endurance activities</li><li>4. Peak work activities</li><li>5. Cool-down activities (including stretching)</li></ol></li><li>• Allow participants to work at their chosen level of intensity (e.g., low impact vs. high impact; low intensity vs. high intensity).</li><li>• Stress correct body alignment in order to prevent injuries.</li></ul>

seem impossible, from the contortionist to the slalom ski racer to the weightlifter. Each elite performance is the result of an extensive, well-designed training program to make these moves seem effortless.

The steps in developing the programs to produce these results are the same as the steps in selecting exercises for fitness participants. The process begins with an understanding of the musculoskeletal structures involved in movement. Next is knowledge of the movements that the body can perform without harm. Working on this base of knowledge that respects the limitations of body structure and the need for correct body mechanics, consider the client's goals and individual body characteristics in order to select exercises that are safe, effective, and specific.







## Loud Noise: Another Environmental Hazard

We are exposed to loud noises all the time, many beyond our control (e.g., machinery, music concerts, school band practices). But are you aware of the damage to your hearing caused by overamplified music in a fitness class or listening to an iPod at full volume while jogging or running on a treadmill?

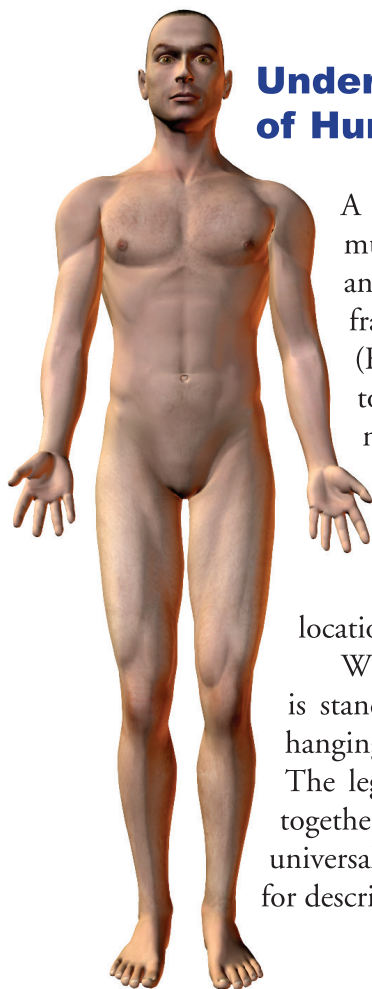
If your fitness instructor has jacked up the volume of the audio equipment, move as far away as possible from the source, wear earplugs, and ask the instructor to turn down the volume.

Setting headphone volumes to a safe level is key. Damage occurs when the ear is exposed to 85 dBA or more of sound for an extended period of time. Most portable music players produce this volume at setting 4 or 5, or half the maximum volume on the dial. If you are using music to drown out background noise, you have probably set the volume in the danger zone. Repeat exposure at these levels will cause permanent hearing loss over time.

Wearing headphones during aerobic exercise increases the danger since the blood flow is diverted from the ears to the limbs, leaving the inner ear more vulnerable to damage. In addition, if you are jogging in your community, you may miss the sound of hazards such as automobiles, aggressive dogs, or muggers.



## Understanding the Limitations of Human Anatomy



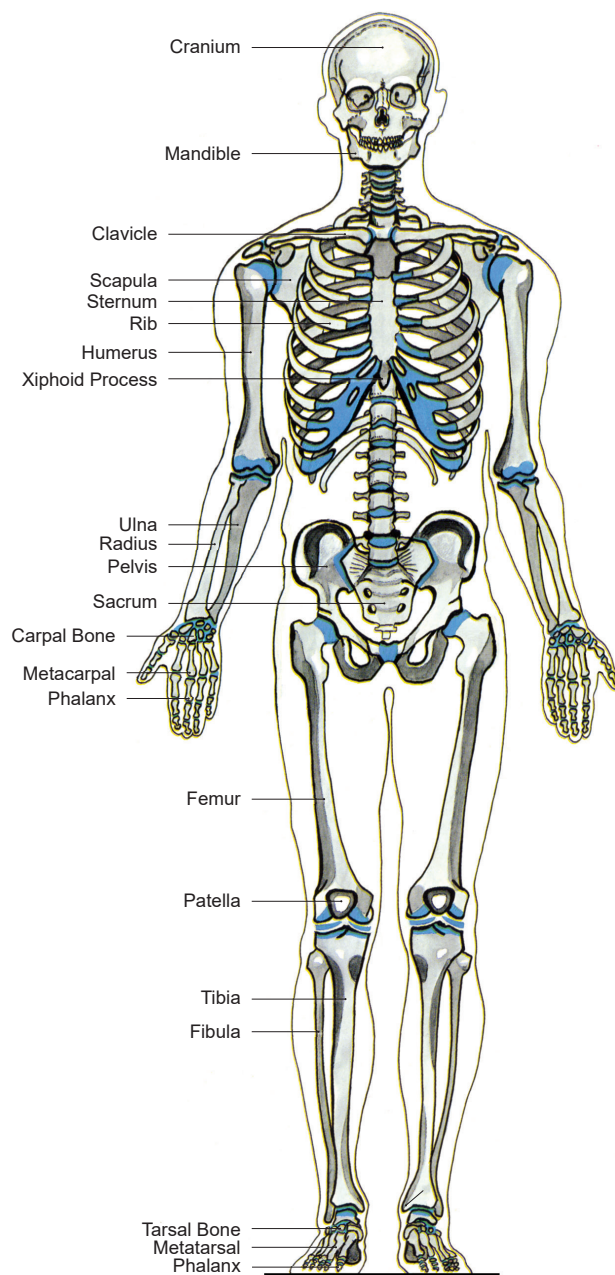
A rudimentary understanding of the body's musculoskeletal system is necessary before any step in exercise selection. In brief, the framework for movement is the **skeleton** (Figures 15.1 and 15.2). Muscles are attached to the skeleton at several points. When muscles contract, movement occurs at joints.

A good starting point is to look at the body in the neutral **anatomical position** and learn terms to describe the various planes of movement and the relative location of body parts (Figure 15.3).

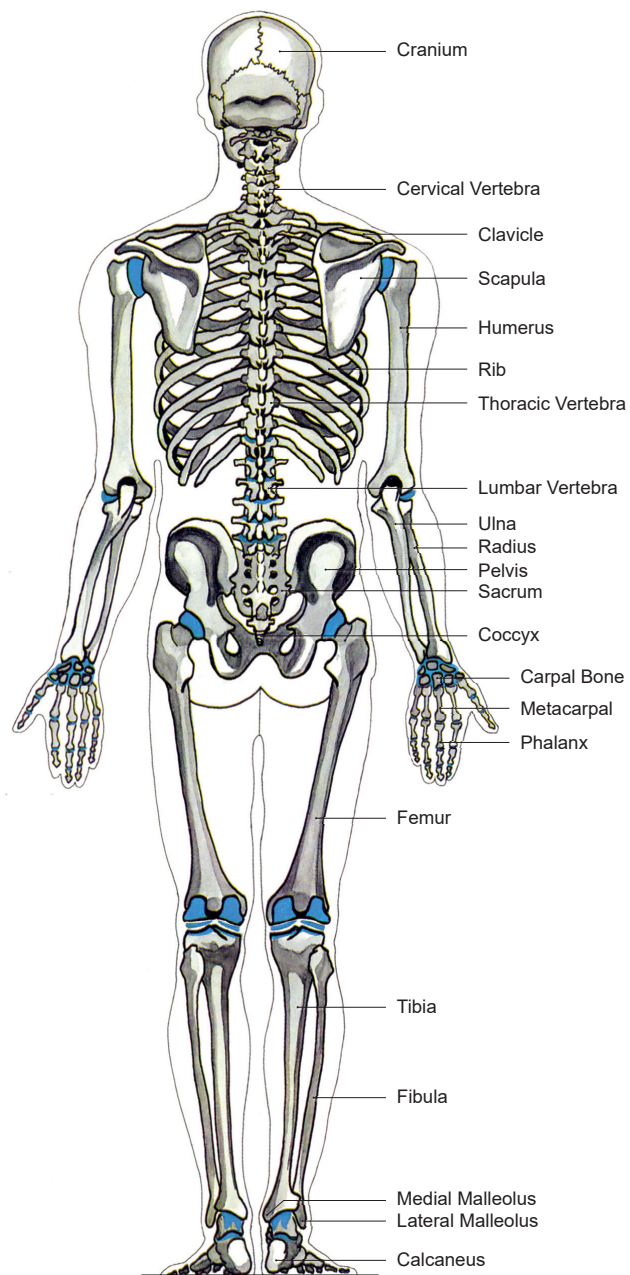
When in the anatomical position, the body is standing erect, facing forward, with the arms hanging at the sides, palms facing forward. The legs are straight, and the heels and feet are together and parallel to each other. This position is universally accepted as the starting reference point for describing the human body.

*The anatomical position is used as the starting reference point for describing the human body.*





**Figure 15.1** The human skeleton, anterior view.



**Figure 15.2** The human skeleton, posterior view.

### Did You Know?

Have you ever wondered why the thumbs are turned out in anatomical position?

Anatomical position originated with the early students of medicine in the 1500s. They relied on grave robbers to procure bodies for dissection since it was illegal to desecrate the human body at that time. When they laid a body on the slab, they felt it was more logical to have the lower arm bones (ulna and radius) lie side by side rather than crossed.

