



# In Perspective

**W**hat are therapeutic modalities? Why are they used? How do

they relate to therapeutic exercise? How do you know what therapeutic modality to use and when to use it? What is evidence-based practice? The objective of Part I is to answer these questions and thus establish an overall perspective for therapeutic modality use. We define therapeutic modalities and help you understand their place in orthopedic injury management and explain how they relate to total rehabilitation. We discuss the concept of medical practice, why it must be based on the best scientific evidence available, and how to acquire such evidence. We then present a rationale for using a standardized systems approach to therapeutic modality application. Finally, we present a case for proper record keeping, indicating how doing so can strengthen both the efficacy of your treatments and the quality of your health care. Thus Part I is a foundation for the rest of the book.

The material in Chapter 2, Evidence-Based Practice, is much more in-depth than will be covered in a typical therapeutic modalities class. However, the concepts covered in this chapter should impact how you, as a clinician, choose which therapeutic modality to use and what clinical outcomes you can expect. We feel this comprehensive handling of the topic as it relates to treatment will help you be a better clinician throughout your career.

Evidence-based medicine should be part of most, if not every, every health care provider's education. We recommend that the history and basic concepts be introduced early in the curriculum and additional aspects be taught in subsequent classes.

## **PART I CONSISTS OF FOUR CHAPTERS:**

- 1 Therapeutic Modalities: What They Are and Why They Are Used
- 2 Evidence-Based Practice
- 3 General Application Procedures
- 4 Injury Record Keeping

# Therapeutic Modalities: What They Are and Why They Are Used

## CHAPTER OUTLINE

### Defining and Classifying Therapeutic Modalities

#### Maximizing the Effectiveness of Therapeutic Modalities

Art and Science

Knobology

Application: Evidence vs Opinion, Rumor vs Reality, Fact vs Fiction

Clinical Decision Making

#### Selecting a Therapeutic Modality

Whose Decision?

Selection Criteria

### Rehabilitation and Therapeutic Modalities

Rehabilitation Defined

Four Erroneous Concepts About Rehabilitation

#### A Systems Approach to Rehabilitation

Twelve Principles of Orthopedic Injury Rehabilitation

The 10 Core Goals of Orthopedic Injury Rehabilitation

#### The Psychology of Rehabilitation

#### Preparation for Using Therapeutic Modalities

## Opening Scene



**FIGURE 1.1.** You can get the job done with the wrong tool, but it takes longer and the result might not be as successful.

A father enlisted his young son to help remove a small dead tree from their yard. The eager boy got a small hatchet from the garage and began feverishly chopping away at tree limbs (Fig. 1.1). Although he worked very hard, his progress was slow. The father appeared with a power saw and quickly cut off the limbs and trunk. He said, “Son, it’s important to work hard—but it’s even more important to work smart. We could use that little hatchet and work hard all day chopping up these limbs, or we can work smart and use the right tool to finish the job in just minutes.”

Many clinicians believe that their hands and exercise are the best tools for treating orthopedic injuries. These aren't the only tools, however, and integrating therapeutic modalities as part of a treatment regime often facilitates the hands-on treatment. For example, cryokinetics involves numbing a joint with cold, followed by active exercise. If the patient did not ice the ankle prior to exercise, pain and inhibition would compromise the exercise, thereby making it less effective. In this case, ice is the tool that causes numbing, so the patient can perform a higher level of exercise. The exercise alone is good, but numbing and exercise together are smart.

In physical medicine, a therapeutic modality is a tool for bringing about a desired therapeutic response. In this book, you learn why, how, and when to use several tools in your treatment regimens.

## DEFINING AND CLASSIFYING THERAPEUTIC MODALITIES

A therapeutic modality is a device or application that delivers a physical agent to the body for therapeutic purposes. The most common physical agents used in treating orthopedic injuries are

- Heat
- Cold
- Light
- Electricity
- Exercise

The therapeutic purposes of these agents are to promote or improve

1. Wound healing
2. Pain relief
3. Flexibility and range of motion
4. Muscular strength
5. Muscular endurance
6. Muscular speed
7. Muscular coordination or skill
8. Muscular power
9. Agility
10. Cardiorespiratory endurance

There are several systems of classifying therapeutic modalities. They can be classified according to the physical agent used, such as hydrotherapy, thermotherapy, and electrotherapy. They can be classified according to tissue responses, such as deep heating, superficial heating, and cooling. However, these categories are not exclusive, and many therapeutic modalities fit into different categories. For example, ultrasound can be classified as thermotherapy, mechanical, or deep heating. Contrast therapy is both cryotherapy and thermotherapy. General classifications are shown in Table 1.1. Modalities in italics are classified in more than one category.

Which of the classification systems is preferred? None of them. Because so many modalities fit into multiple categories, trying to force one particular classification system is an exercise in futility.

**TABLE 1.1** GENERAL CLASSIFICATIONS OF THERAPEUTIC MODALITIES

CLASSIFICATION	DESCRIPTION	EXAMPLES
Cryotherapy	Use of cold (usually between 32°F and 70°F; 0°C and 21°C).	Ice massage, ice packs, <i>ice slush/ice immersion</i> , part of contrast therapy, cold <i>whirlpool</i> , and vapo-coolant sprays.
Thermotherapy	Use of superficial and deep heat (usually between 98.6°F and 109.4°F; 37°C and 43°C)	Moist heat packs, warm whirlpool, paraffin wax baths, ultrasound, <i>pulsed shortwave diathermy</i> , and ultraviolet
Hydrotherapy	Application of water	<i>Whirlpool</i> and aquatic therapy pools, and <i>ice slush/ice immersion</i>
Electrotherapy	Use of electricity	EMS, iontophoresis, TENS, and <i>diathermy</i>
Light therapy	Use of electromagnetic radiation	Laser, <i>infrared</i> , Photobiomodulation
Mechanotherapy	Use of motion, force, or pressure	Massage, mobilization, intermittent compression, continuous passive motion, traction, <i>whirlpool</i> , and <i>ultrasound</i>
Exercise	Activities the patient performs to bring about a desired response	Various

*Modalities in italics are classified in more than one category.*