

As a precursor to this chapter, it is important to reiterate the collaborative relationship that exists between the registered occupational therapist and the certified occupational therapy assistant. As health care becomes increasingly driven by the efficient utilization of resources, many rehabilitative establishments are trending toward the use of registered occupational therapists as evaluative administrators and occupational therapy assistants as both collaborators in developing the client-centered intervention plan and actual facilitators of that plan, given appropriate supervision. This chapter is written using *occupational therapist* as a general term and with full reference to both occupational therapists and occupational therapy assistants as vital components of the rehabilitative team.

How do restorative approaches differ from those with an adaptive or compensatory focus? Restoration, per the Framework document, is “an intervention approach designed to change client variables to establish a skill or ability which has not yet developed or to restore a skill or ability which has been impaired” (AOTA, 2014, p. S33). This definition is further simplified in *Taber’s Cyclopedic Medical Dictionary* (2009) as those techniques implemented with the “intention of remedy” or to “cure and relieve disease (or illness).” In general, approaches considered restorative are those that occupational therapists implement to enhance or improve an underlying impairment, while those approaches considered compensatory in nature are implemented by occupational therapists with the intent to adapt for an underlying condition or deficit that has been deemed long-standing.

According to Zoltan (2007), intervention takes one of two forms: a top-down or bottom-up approach. With a top-down approach (refer to Chapter 1), the occupational therapist adjusts the activity or occupational performance with the goal of promoting independence by using adaptive and compensatory techniques. Conversely, a bottom-up approach addresses underlying dysfunction in the foundation skill areas and assumes that the client will improve in functional ability as a result. An example of the concept of restoration is as follows: The occupational therapist may conduct an ADL session with a client who demonstrates deficits in the areas of coordination, strength, ROM, and cognition. Here, the occupational therapist is fostering improvement in the foundational skills through repetition in a familiar task, not adapting the task as one would in a compensatory or top-down approach. It is important to note that this concept has been simplified here for clarity and that in most circumstances occupational therapists will combine top-down and bottom-up approaches in order to maximize individualized outcomes (Zoltan, 2007).

Occupational therapists emphasize the importance of the client-centered or client-driven approach and formulate intervention with clients, not for clients. To do so, the occupational therapist recognizes and respects all clients as individuals with a unique set of factors, performance skills, patterns, contexts, and priorities that guide their engagement in meaningful occupation. This principle is outlined more specifically in Chapter 1 and is re-emphasized here to underscore the significance of maintaining a client-centered approach even when focusing on foundational skill areas. Furthermore, the occupational therapist must consider clients’ safety, their psychosocial adaptation to the given illness or injury, and their individual perception of pain. A clear respect for these individual attributes not only supports the overall well-being of a client but also directly contributes to the degree of therapeutic rapport needed during the ever-critical, initial stages of intervention and healing.

All clients are individuals with their own personal means of coping and adaptation to a life-altering event such as illness or injury. This process occurs at differing levels and time frames for each client. As outlined by Falvo in *Medical and Psychosocial Aspects of Chronic Illness and Disability* (2009): “Some actively confront their condition, learning new skills or actively engaging in intervention to control or manage the condition. Others defend themselves from stress and the realities of the diagnosis by denying its seriousness, ignoring intervention recommendations, or refusing to learn new skills . . . Still others cope by engaging in self-destructive behavior . . . (that

has detrimental effects on their physical condition” (p. 12). In all, occupational therapists must respect that this process of acceptance is occurring throughout the intervention process, must be sensitive to it, and whenever possible provide education and advocacy in support of clients and their families or caregivers.

The occupational therapist will then work to develop the intervention plan both in collaboration with the client and with careful attention paid to the specific aspects of any given activity that enables success in the execution of occupation. The Framework (AOTA, 2014) identifies this as activity demands. Of significance to the discussion on foundational skills for functional activity is the manner in which aspects of activity demands are categorized. This includes such items as required actions and performance skills, body functions, and body structures. Required actions and performance skills are further defined by the Framework as “actions required by the client that are an inherent part of the activity” (2014, p. S32). These include motor, process, and social interaction skills. Required body functions are defined as “the physiological functions of body systems . . . required to support the actions used to perform the activity” (2014, p. S32). And required body structures are “anatomical parts of the body such as organs, limbs, and their components (which support body function)” (2014, p. S32). In essence, these three aforementioned aspects of activity demands per the Framework (AOTA, 2014) specifically identify those underlying foundational skills necessary for the engagement in all meaningful activity and will serve as the focus of this chapter.

Each foundation skills subsection within this chapter specifically presents any applicable and related definitions, potential modes of injury or illness that may lead to a deficit in that foundation skill area, and typical occupational therapy restoration techniques for improving that skill. Diagrams, figures, and tables are provided as a means of summarizing data within each subsection. In addition, special considerations and possible maintenance program components have been included.

RESTORATIVE TECHNIQUES FOR PAIN AND EDEMA

The consideration of individually perceived pain for each of our clients is critical to the success an occupational therapist will have during the restorative or healing stage of recovery. In most cases, the degree of perceived pain will present as either one of the greatest enablers or barriers to the degree of success a client will experience during the rehabilitative process. Restorative intervention generally begins just after an injury or onset of illness, and as a result, much of our intervention choices may further aggravate the degree of discomfort our clients experience. Therefore, the occupational therapist must prioritize pain management within the development of the intervention plan, making it a foundational skill for functional activity within the context of this textbook.

Pain is notoriously difficult to measure accurately. This is due to the subjective nature in which our clients report it: a symptom experienced internally that may not necessarily be observed externally. Although clients may be asked to report their pain using the traditional rating scale method, it is the therapist’s ethical duty to establish priority of that identified pain and infuse strategies that address it in daily, weekly, or even monthly intervention sessions. These strategies should not only allow clients an avenue to openly express perceived pain, but also to include techniques within the realm of occupational therapy that allow for the effective management and relief of the pain.

Definitional Analysis

Pain is defined by the Framework (AOTA, 2014) as a body function specific to sensation. For further analysis, pain is described in *Taber’s Cyclopedic Medical Dictionary* (2009) as “an

unpleasant sensory and emotional experience arising from actual or potential tissue damage or described in terms of such damage. Pain includes not only the perception of an uncomfortable stimulus but also the response to that perception” (p. 1680). Through these definitions, one is better able to appreciate pain, not only as a basic body function, but also as a foundational skill required for the successful engagement in all meaningful occupation. For example, the perception or fear of exacerbating pain may inhibit a client’s ability to sleep sufficiently (area of occupation), to attend to others (specific mental function), or to produce efficient movement (neuromusculoskeletal and movement-related functions). A client’s pain may then affect his or her performance skills including motor skills, process, and social interaction skills (such as gesturing, posturing, engaging, or expressing oneself). It is through analyzing the specifics of this definition that we are able to recognize the true, potentially devastating effects of our clients’ experiences with pain.

Modes of Injury or Illness

A review of the typical modes of injury or illness is not and should not be emphasized when discussing pain specifically. Again, pain is a subjectively perceived sensation with potentially profound effects on a client’s ability to succeed with occupational therapy intervention. What is of importance is not necessarily the mode from which the pain occurs, but rather, the existence of it.

Pain may exist secondary to a very wide array of health conditions. In many cases, pain perceived by a client is not in isolation, but secondary to another cause such as an injury to the body. Therefore, when considering effective restorative techniques to address pain, the occupational therapist will also employ methods that address any potential underlying causes for the pain. This includes attention to the physiological response of the body to injury or insult (e.g., inflammation or edema).

Restorative techniques for addressing pain and edema are appropriately selected given careful attention to the natural healing process of the human body. As described by Starkey (2013), injuries to tissues require the body system to initiate a repair response. This response calls upon both the vascular and immune systems to reduce loss of blood, accumulate leukocytes and lymphocytes as protective mechanisms, and begin the process of tissue regeneration. This repair response occurs over the period of days to months and directly dictates the type of methods that are appropriate and effective for the occupational therapist to implement. The initial phase, or inflammatory phase of healing, begins immediately following the injury and is characterized by erythematosis (condition of redness) or cyanosis (blueness of skin), warmth, swelling, and pain at the site of injury. “Inflammation has a bad reputation as an unwanted and unneeded part of the body’s response to injury. Nothing could be further from the truth. Inflammation is a necessary part of the healing process. However, if the duration or intensity of the inflammation is excessive, the process becomes detrimental” (Starkey, 2013, p. 14). This quotation clearly demonstrates the purpose of edema, however when this edema persists, appropriate intervention method selection when addressing pain and edema in conjunction with the biological healing process must be addressed (Starkey, 2013).

Conditions typically related to the sudden, or acute, onset of pain and localized edema include fractures, sprains, strains, tears, lacerations, arthritides, and musculoskeletal disorders such as exacerbated lateral epicondylitis or carpal tunnel syndrome. In addition, neurological damage resulting in a lack of motor function may also contribute to edema and pain. Refer to Table 2-1 for a summary of restorative techniques in both the acute and subacute phases of healing as they relate to addressing pain and Table 2-2 for those related specifically to edema.

When symptoms of pain and edema last for greater lengths of time following the onset of injury, they are often considered chronic in nature. Pain or edema that has not been properly addressed in the acute phase, or that is minor enough to avoid detection for a prolonged period of time, or is further exacerbated by such factors as prolonged immobility and general deconditioning, is often

| TABLE 2-1 REMEDIAL PAIN TECHNIQUES OF THE BIOMECHANICAL THEORY ACCORDING TO PHASE OF HEALING | |
|---|--|
| Health Condition | Remedial Techniques per Phase of Healing |
| Pain, including soft-tissue injuries, fractures, lacerations, sprains, strains, tears, arthritides, musculoskeletal disorders | <p>Acute phase: Cold thermal modalities, nonthermal ultrasound, splinting for protection, passive range of motion (PROM), active assistive range of motion (AAROM), active range of motion (AROM), iontophoresis</p> <p>Subacute phase: Hot and/or cold thermal modalities, ultrasound, PROM, AAROM, AROM, manual therapies, phonophoresis, aquatic rehabilitation</p> |

| TABLE 2-2 REMEDIAL EDEMA TECHNIQUES OF THE BIOMECHANICAL THEORY ACCORDING TO PHASE OF HEALING | |
|--|---|
| Health Condition | Remedial Techniques per Phase of Healing |
| Edema, including soft-tissue injuries, fractures, lacerations, sprains, strains, tears, arthritides, musculoskeletal disorders | <p>Acute phase: Cold thermal modalities, nonthermal ultrasound, compression garments, compression pumps, compression wrapping, elevation, PROM, AAROM, AROM</p> <p>Subacute phase: Hot and/or cold thermal modalities, thermal ultrasound, compression garments, compression pumps, compression wrapping, retrograde massage, elevation, PROM, AAROM, AROM, aquatic rehabilitation, manual lymph drainage</p> |

associated with the development of chronic conditions (Starkey, 2013). Conditions that may result in chronic pain or edema include cancers, amputations, fibromyalgia, complex regional pain syndrome, and nerve injuries or entrapments. Longer-term symptoms associated with multiple exacerbations of arthritis and musculoskeletal disorders, such as lateral epicondylitis or carpal tunnel syndrome, may also be considered chronic in certain circumstances. Therefore, a discussion as to techniques used by occupation therapy for addressing chronic pain and edema (see Table 2-5) can be found later in the “Maintenance” subheading of this section.

Intervention choices for edema are based not only on whether it is acute or chronic in nature but also on other contributing factors. As described by Artzberger and White (2011), these factors include the cause of the edema. It can be from a single injury such as trauma or from a systemic diagnosis such as stroke. Other contributing factors, such as blood clots, lymphatic function, and cardiac function must also be considered. The cause of the edema itself will dictate whether the intervention approach is localized or generalized and is executed with careful attention paid to potential contributing factors. For a complete list of precautions, see Table 2-22.

Restorative Techniques: Biomechanical Frame of Reference

Restorative strategies for pain (see Table 2-1) and edema (see Table 2-2) are guided by the tenets found in the biomechanical frame of reference that applies principles of physics to voluntary human movement (Cole & Tufano, 2008). Methods typically identified with this frame include both range of motion and the use of PAMs.

PHYSICAL AGENT MODALITIES

It is important to note that the use of PAMs by occupation therapists is often regulated by state-specific legislation and licensure laws. This legislation is enacted as a means of protected clients from the array of potential contraindications that may arise secondary to the implementation of a PAM. Refer to Tables 2-21 through 2-24 for a summary of the potential indications and contraindications of PAMs most readily employed by the occupation therapist. These regulations vary from state to state; some require continuing education or certification beyond the competency level required for registration, while others require the prescription of the medical doctor. It is the occupation therapist's responsibility to be readily aware of their own governing state's legislature regarding the use of modalities as well as the AOTA's position paper on the use of PAMs in general. The AOTA position paper regarding the use of PAMs is available for purchase from the AOTA (refer to Appendix A for additional contact information). PAMs, as discussed in the content of this chapter, will be outlined in general to accurately illustrate this point.

Superficial thermal modalities include the use of heat and/or cold for their counteractive effects on injury. Cold modalities, including ice packs, ice massage, and vapocoolant sprays, are implemented for the purpose of desensitizing pain receptors and minimizing edema in the acute stages of healing. In general, prefabricated gel-based ice packs are cooled to approximately 0°C to 18°C (32°F to 65°F) and applied for 20 to 30 minutes. Starkey recommends application directly to the skin for the most benefit and to wrap the pack in order to compress skin tissue, again increasing the depth of the modality (2014). In practice, however, most clients tolerate the modality better with a light pillowcase wrapped around the cold pack to buffer the skin slightly. This is also beneficial for infection control reasons. Ice massage is a technique in which frozen water in the form of a popsicle is applied in a rubbing fashion directed to the inflamed and/or painful area for 5 to 10 minutes (Starkey, 2013). Vapocoolant sprays are also utilized for short-term relief pain caused by muscle spasms and trigger points. When utilizing vapocoolant sprays, a client is typically positioned with the identified muscle on passive stretch or lengthened state. The spray is applied two to three times in a rhythmic, sweeping, unidirectional manner along the length of the muscle while producing a passively progressive stretch (Houglum, 2010). The stretch is then released in a smooth and gradual manner. It should be noted that if either the client or therapist is pregnant, this modality is contraindicated.

Heat modalities tend to be strictly contraindicated in the acute phase, but are implemented widely in the subacute and chronic phases of the healing process. The occupational therapist may use commercial hot packs, paraffin wax baths that provide circumferential heating to all surfaces (very common in subacute arthritis), fluidotherapy (Chattanooga Group) units in which the extremity is placed while warmed air (also has a nonheated setting) circulates grated corn husks within the enclosure, or ultrasound at a continuous setting to produce the desired effects of heat on subacute or chronic pain and edema. Each of these identified PAMs is applied for approximately 15 to 20 minutes, with the use of a protective barrier for the skin, to promote tissue healing (Cameron, 2009; Starkey, 2013).

Iontophoresis (Figure 2-1) is indicated to promote healing, decrease pain, and minimize edema. Under the direction of a physician, this PAM uses low-amplitude electric currents to deliver prescription medications such as corticosteroids (anti-inflammatory) or analgesics transdermally to

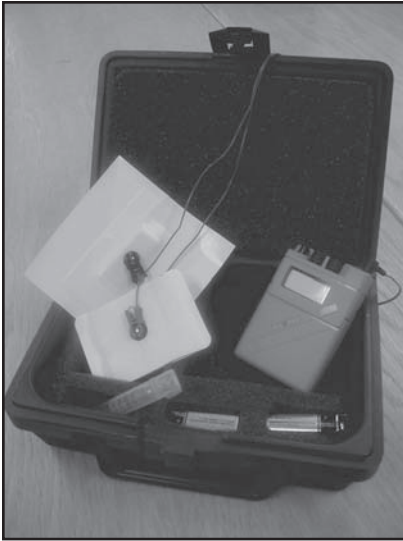


Figure 2-1. Iontophoresis unit.



Figure 2-2. Demonstration of ultrasound application with prescribed medication, formally termed *phonophoresis*, as an intervention for pain and edema associated with sub-acute lateral epicondylitis.

the direct site of injury. This restorative pain and edema technique is found to be very effective for many clients (Cameron, 2009; Starkey, 2013). However, careful attention must be paid by the occupational therapist to the precautions and contraindications (see Table 2-21) inherent to the use of this PAM and to the client-specific tolerance of an electrical modality.

Ultrasound, briefly mentioned previously, can also be implemented with the use of medication to produce a similar response to that of iontophoresis. When ultrasound is used in this manner, it is called *phonophoresis* (Figure 2-2). This process uses transcutaneous prescription medications, such as corticosteroids, which permeate through the skin and directly to the site of injury via sound waves. The sound waves provided by the ultrasonic transducer are set to a nonthermal or



Figure 2-3. Demonstration of massage technique for subacute edema within the hand. Massage is performed in a distal to proximal direction using a lanolin-based lotion. Also pictured is a compression glove that provides circumferential compression to the hand during continuous wear outside of the occupational therapy session as is tolerated.

pulsed level of delivery in this application. “The nonthermal effects are used primarily for altering membrane permeability in order to accelerate tissue healing” (Cameron, 2009, p. 181). This process includes the removal of excess fluids seen in edema and is most commonly implemented in the subacute phases of healing.

Transcutaneous electrical nerve stimulation (TENS) is another type of therapeutic electrical modality implemented with the goal of interrupting the physiological pain cycle (Cameron, 2009; Starkey, 2013). In contrast to those previously described, the TENS modality is frequently reserved for use in conditions characterized by long-term pain or chronic pain, as seen for example in nerve entrapments, rotator cuff tears, and complex regional pain syndromes (Vance, Dailey, Rakel, & Sluka, 2014).

Compression techniques may also be implemented by the occupational therapist to promote a mechanical decrease in acute, subacute, or chronic cases of edema. The underlying theory for compression-related techniques is to facilitate the return of edematous fluids to the heart for efficient removal by the circulatory system (Cameron, 2009). Techniques as simple as elevating an affected area above the heart allow for gravitational forces to facilitate removal of excess fluids in acute and subacute stages. In addition, aquatic rehabilitation techniques recruit the principles of hydrostatic pressure to circumferentially compress affected areas to achieve the same outcome in mostly subacute or chronic situations (Aquatic Exercise Association, 2010). Bandage wrappings, garments such as fitted gloves (Figure 2-3), or electric pumps that provide timed, intermittent, and circumferential compression via filling a plastic sleeve that encloses the affected area with air are all flexible enough in nature to be implemented in either acute, subacute, or chronic stages of recovery. These types of strategies generally require high intensity and frequency, often considered a laborious process due to the natural accumulation of fluids from upright posture rather than from gravity alone. Careful attention must be paid to ensure adequate circulation is maintained within the extremity during any mechanical compression techniques.

Splinting is also a restorative technique used as a means to protect from further injury and to foster rest during the acute healing process. It is critically important in this application that the occupational therapist provides education to the clients and caregivers as to the appropriate wear schedule for the splint. This wear schedule must be designed to balance rest and use in accordance with the recommendations of the physician and based on the type of injury in order to avoid fostering disuse of affected muscles and joints. Prolonged disuse will promote the shortening of muscle tissue and potentially cause further disability. Therefore, the use of the splint should be implemented by the occupational therapist in conjunction with a program promoting joint ROM within the limits presented by the acute injury.

Retrograde massage techniques facilitated manually by the occupational therapist provide temporary compression to the tissues affected by edema. With firm-pressure massage specifically, the therapist provides manual compression (using a lanolin-based lotion to decrease friction) along the affected extremity and in the direction of the heart, where excess fluids are then removed. Refer to Table 2-22 for a general outline of this procedure. This technique is provided in conjunction with appropriate positioning against gravity, as was discussed previously. This form of massage is specifically reserved for the subacute stage in order to avoid any possibility of further injury to susceptible tissues during acute healing. Another form of massage, manual lymph drainage, is used in cases of chronic edema specifically. Here, the therapist manually performs techniques designed to elicit a release of “trapped” lymph within the system. Lymph is produced when excess fluids, as seen with edema, permeate into the interstitial space at the cellular level (Cameron, 2009). The lymphatic system attempts to remove these fluids through its circulation and expel them via the kidneys. In lymphedema, there tends to be a blockage or overload in this system, which in turn causes an abnormal accumulation of the lymph fluid. The etiology may be congenital factors, trauma, pregnancy, and cancers or cancer-related treatment (Beers, Porter, Jones, Kaplan, & Berkwitz, 2006). Lymphedema is a specialty area within occupational therapy and requires additional training for proficiency. Appendix A offers more information and resources on lymphedema training.

RANGE OF MOTION

In accordance with the individualized injury and precautions set by the physician, the occupational therapist may utilize passive range of motion (PROM), active-assisted range of motion (AAROM), and active range of motion (AROM) regimes as additional restorative techniques to address acute pain and edema. As a natural reaction to discomfort, clients tend to avoid use of the affected joints, thereby fostering the accumulation of added fluids that can impede the healing process. The “healing” fluids are composed of proteins and cells necessary for preventing infection and, when left in a static state, create damage surrounding tissues and can prohibit available range of motion (Starkey, 2013). This illustrates the significance of edema as a potential complication in healing and, therefore, the importance of implementing restorative techniques for effective management. Gentle muscle contraction, as seen with ROM, acts as a vasopneumatic pump to encourage return of the excess fluids to the heart, prevent the adhesion of surrounding tissues, and minimize resulting discomfort in the acute stage of healing. Occupational therapists progressively encourage this process by means of teaching ROM programs, such as tendon gliding exercises for edema accumulating in the hand (Figure 2-4). Tendon gliding exercises specifically are completed at the intensity of five repetitions twice daily at regular intervals, until the edema has diminished (Prosser & Conolly, 2003).

MANUAL TECHNIQUES

Manual therapies is a collective term describing restorative techniques implemented by the occupational therapist that require the use of therapeutic touch. Lymphedema techniques, described previously, are also categorized here in addition to craniosacral, myofascial release, and

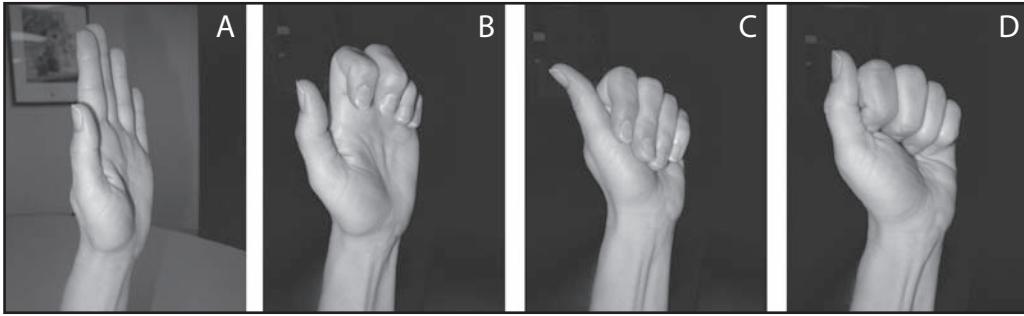


Figure 2-4. Flexor tendon gliding exercises implemented to maintain smooth motion among tendons of the hand in the presence of edema. (A) All joints of digits 2 to 5 are in extension. (B) Distal interphalangeal (DIP) and proximal interphalangeal (PIP) joints are flexed while metacarpophalangeal (MCP) joints remain extended. (C) MCPs move into flexion while DIPs become extended and PIPs remain flexed. (D) All DIPs, PIPs, and MCP joints are flexed.

| TABLE 2-3 REMEDIAL TECHNIQUES FOR PAIN | |
|---|---|
| <ul style="list-style-type: none"> • Superficial thermal modalities • Iontophoresis • Joint ROM and positioning • Phonophoresis | <ul style="list-style-type: none"> • TENS • Manual therapies • Aquatic rehabilitation techniques |

techniques of strain counterstrain. Though each has its own unique approach, collectively these techniques are founded on the belief that dysfunction arises from tensions occurring within the fascia layer of the body and are implemented to restore uniformity throughout that system. They are all purely manual or hands-on techniques and are therefore typically contraindicated in the acute healing stages and more commonly used in the subacute and chronic phases. Due to the potential of hands-on techniques to further aggravate painful tissues, they are often used in conjunction with other pain-minimizing PAMs such as superficial heat vapocoolant sprays. Given the specialized nature of these techniques, continuing education is required to ensure safe and successful implementation. Refer to Appendix A for additional information and resources on these specialized technique options.

Techniques at a Glance

Refer to Table 2-3 for pain-specific techniques and Table 2-4 for edema-specific techniques, as well as the summary provided in Table 2-21 that outlines general procedures and precautions.

Special Considerations

As stated earlier in this section, when indicating the use of PAMs, it is the responsibility of the occupational therapist to be both knowledgeable about the specific modality and well aware of state licensure and legislation governing implementation. This procedure is recommended as a safeguard to clients and therapists alike as a result of the delicate contraindications and precautions their use presents in each individual application. “Although a number of conditions, including pregnancy, malignancy, the presence of a pacemaker, impaired sensation, and impaired cognitive status indicate the need for caution with the use of most physical agents, the specific contraindications and precautions for the specific agent being considered and the specific (client)

| TABLE 2-4 REMEDIAL TECHNIQUES FOR EDEMA | |
|---|--|
| <ul style="list-style-type: none"> • Massage • Compression garments • Compression wraps and pumps • Positioning/splinting | <ul style="list-style-type: none"> • Elevation • Joint ROM • Manual lymph drainage • Aquatic rehabilitation techniques |

situation must be evaluated before an intervention may be used or should be rejected” (Cameron, 2003, p. 423). For example, fractures or tendon lacerations are situations in which the use of heat modalities is traditionally contraindicated due to the potential effect they may have on the healing tissues. However, over the last 25 years, there is increasing evidence that low-dose ultrasound can actually accelerate the healing of bone (Cameron, 2009). Additionally, heat modalities are strictly contraindicated in arthritis when symptoms are of an acute exacerbation; however, the literature recommends their use in the subacute and chronic stages (Cameron, 2009). Overall, the occupational therapist must carefully consider all of these issues when evaluating the use of PAMs as restorative techniques to address pain and edema on a case-by-case basis.

An additional consideration lies in the effectiveness of a multidisciplinary approach to the restoration of pain specifically. For example, the physician is ideally prescribing pharmaceutical agents designed to diminish the perception of the client’s pain, psychology and social work departments are providing support systems to the client as avenues of coping with the pain, and rehabilitative services are implementing restorative approaches to address the underlying causes for the pain. It is only through this collaboration of professionals that pain can be effectively addressed.

Thermal injuries (or burns) were intentionally omitted from this discussion of pain. Pain is a critical issue for any client who has sustained a thermal injury and is directly related to the degree and extent of the burn itself. In many cases, high-dose medications are the primary and most effective means of controlling pain associated with burns over the duration of the healing process, and the presence of edema from direct trauma to the tissue itself may be minimal compared to edema from the impact of the injury/disuse of the limb. Occupational therapists may implement the longer-term techniques described in the management subsection that follows. However, here the desired outcome becomes maintaining versus restoring. It is because of these and other unique situations presented by thermal injuries that it is discussed here generally and not in the context of other restorative strategies for addressing pain and edema.

Maintenance Programs

Discussion of conditions that cause chronic pain and edema was deferred to this portion of the subsection because techniques implemented by the occupational therapist in cases of chronic pain and edema are employed to maintain rather than restore an underlying health condition. The intended outcome of using maintenance strategies is to enable clients to effectively cope and manage chronic symptoms while engaging in meaningful daily activity. These techniques are summarized in Table 2-5.

Occupational therapy intervention for chronic pain heavily emphasizes education in a variety of alternative coping methods. Biofeedback techniques provide clients with a visual or auditory cue to effectively change various physiologic functions of stress or discomfort including muscle tension, perspiration, heart rate, and blood pressure (Schatman, 2009). Imagery is often facilitated by the therapist in a controlled environment, guiding client’s attention away from uncomfortable symptoms. Participation in complementary and alternative therapies may also be encouraged by

TABLE 2-5

MANAGEMENT TECHNIQUES FOR MANAGING CHRONIC PAIN AND EDEMA

| Health Condition | Management Techniques |
|--|--|
| Pain including cancers, amputations, fibromyalgia, complex regional pain syndrome, arthritides and musculoskeletal disorders, and nerve injuries | Biofeedback, TENS, imagery, reiki, yoga, tai chi, ai chi |
| Edema including cancers, arthritides, and congestive heart failure | Ai chi, compression garments, compression pumps |

the occupational therapist and includes reiki, yoga, and tai chi, again as methods of promoting wellness and healthy coping in the presence of chronic pain (Stoney, Wallerstedt, Stagl, & Mansky, 2009). Ai chi has also become a more common recommendation because it combines the therapeutic effects of tai chi and warmth as a means to manage pain. Ai chi is essentially tai chi performed in a warm water pool (Bottomley, 2009). While all of these techniques have an impact, it is best to review the occupationally-based interventions; however, there is limited evidence to support this for occupational therapy (Robinson, Kennedy, & Harmon, 2011).

As for management techniques in cases of chronic edema, the delineation from methods for restoration becomes less obvious. Management tools are the very same as those implemented in the subacute stages of recovery or healing. However, in this application, they are intended for long-term use. Predominantly, occupational therapists recommend the use of compression garments or intermittent pumps to clients experiencing long-term issues with fluid accumulation. Aquatic interventions are again mentioned here due to the mechanical principles that directly aid in the return of excess fluids to the heart—chiefly, hydrostatic pressure. The importance of traditional elevation must also be emphasized to clients and carried over whenever possible as an effective method for the management of chronic edema.

As discussed earlier, the efficacy of acute, subacute, or chronic pain and edema techniques require aggressive intensity to yield efficient results. This requires the occupational therapist to educate clients on the importance of carrying over strategies throughout the day outside of the occupational therapy session and within the context of everyday life. The effective implementation of PAMs in occupational therapy intervention requires the occupational therapist to also create an individualized program for clients to carry out independently in order to achieve the overall treatment goal. Also of consideration is that many of these clients are discharged from occupational therapy services early in the healing process, further emphasizing the importance of a well-developed and understood individualized maintenance program. For example, clients receiving cold modalities for pain and edema while in the occupational therapy session should also be educated and deemed safe to independently follow an individualized home program with that modality. Similarly, those receiving massage should be taught self-massaging techniques. In addition, to ensure successful execution of either technique used above as examples, the occupational therapist must consider the intensity or frequency expected of the client and the tools available to the client for effective execution (e.g., recommending the use of a bag of frozen vegetables rather than the purchase of commercially available and often costly cold packs before and after each meal daily). Overall success is best achieved when working within the context of the client.