Perhaps the single most common reason for clients to seek out massage therapy, other than for relaxation, is for help with the aftermath of a musculoskeletal injury. Problems from poorly healed old injuries or new ones are common in people of all ages, and so it is vitally important that massage therapists have many tools at their disposal to help injured clients. This chapter explains how hydrotherapy can be one of the best tools for treating them.

Musculoskeletal injuries are common in everyday life. In the United States alone, traumatic injuries result in 26 million visits to hospital emergency departments and 55 million visits to doctors’ offices each year. (1) Repetitive strain injuries, although not as sudden or dramatic, are responsible for about 60% of all workers compensation claims. They are so common that 1 in 10 people will develop a repetitive stress injury in his or her lifetime. (2) Sports injuries are also common, especially in competitive sports and among long-time athletes.

Recent injuries can cause acute pain, reduced range of motion, stiffness, edema, and muscle guarding. Massage therapy can relieve symptoms and promote complete healing by increasing local circulation, reducing muscle tension, and relieving muscle spasm and pain. Old, improperly healed injuries may feature excess scar tissue, latent or active trigger points, restricted movement, and musculoskeletal pain. Dysfunctional patterns of compensation, such as favoring an injured area when walking, make it more likely that a person will injure the area again or develop other problems due to poor body mechanics. (Box 13-1 has specific examples of the long-term effects of poorly healed injuries.) Massage therapy can address all of these issues by reducing muscle tension and pain, releasing fascial restrictions and excess scar tissue, and helping clients avoid dysfunctional patterns of compensation. Hydrotherapy treatments can add to the effects of massage by improving circulation and reducing pain, inflammation, and muscle tension. It can even be used when the injured area cannot be touched, such as in acute bursitis or joint dislocation. This chapter offers numerous specific examples of how hydrotherapy treatments can work together with massage to make treatments more effective and enjoyable for injured clients.

As you read this chapter, you will notice times when different massage modalities are mentioned to demonstrate

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Chapter Objectives

After completing this chapter, the student will be able to:

■ Explain the most common types of musculoskeletal injuries and their causes.
■ Describe the inflammatory process.
■ Explain the rationale for using hydrotherapy to treat each injury in this chapter.
■ Explain the difference between hydrotherapy for acute injuries and hydrotherapy for long-term effects of injuries.
■ List five common injuries and the appropriate hydrotherapy treatments for each.
 Leg length inequality—the condition in which one leg is shorter than the other—can cause an uneven gait, a limp, hip and knee pain, and chronic low back problems. It can also lead to osteoarthritis both in the spine and in the hip of the longer leg. Poorly healed injuries can cause this condition in more than one way. For example, a femur fracture that heals poorly can cause one leg to be structurally shorter than the other one. However, leg length inequality can also be functional, that is, not caused by a structural problem. Instead, injuries can lead to soft tissue tightness that causes one leg to be held in such a way that is functionally shorter. For example, trigger points in the quadratus lumborum are often activated by trauma from motor vehicle accidents. When there are active, untreated trigger points in one quadratus lumborum muscle, that hip can be pulled up, secondary trigger points can occur in nearby muscles, lumbar scoliosis ensues, and the normal lumbar curve is flattened. Over time, the changes which begin in the injured muscle cause long-term problems in alignment, accompanied by uneven wear and tear on joints and musculoskeletal pain.

 At 8 years of age, massage therapist Genie Martin fell 20 feet out of a tree, striking branches on the way down and hitting her head hard enough to be knocked unconscious. Although Martin suffered only soft-tissue damage, she stopped breathing and lost consciousness, and she had to be given artificial respiration. Once she was breathing again, she was taken home. As she tells it, “My life was given back to me except for little hurts, was now my constant companion. A more nagging, convulsive, ruthless and demanding companion I had never known about in all my small life. Pain kept me awake at night—made my head ache with every move—burned my chest with fire, so much that I squeezed my arms tightly around to smother the flames.” From that time on, Martin carried a great deal of tension in her chest and experienced chest pain when she was anxious. Many negative emotions were carried in her chest, including a fear of falling, a fear of trying new things, and a fear of recurring pain. As an adult, Martin slept with her arms so tightly gripped over her chest that sometimes when she awoke they were numb. While receiving massages, she had to make a tremendous effort to stop her arms from springing over her chest to protect it. It was not until she was attending massage school as a middle-aged woman and receiving massage therapy that she began to heal from the emotional and physical effects of the injury.

 Football great Joe Namath was injured numerous times in his career—bruises, torn muscles, dislocations, sprains, torn cartilage and ligaments, fractures, and concussions. Namath frequently played even when he had new, unhealed injuries. This not only increased the chances of making the original injuries worse but also made it more likely that another area close by would be injured as well, because favoring an injured area causes other anatomical structures around it to be under increased stress. Namath began to have severe, ongoing knee pain as early as age 20, developed bursitis and severe swelling in both knees by age 24, and underwent many surgeries on his knees in an attempt to repair damage to tendons, cartilage, ligaments, and bursae. Although his physical problems forced him to retire at age 34, he continued to pay the price for playing with poorly healed injuries. At age 37 he had severe osteoarthritis in his fingers and spine, and at age 47 had joint replacement surgery on both knees. Unfortunately, knee replacement surgery was not able to eliminate his pain and even standing is painful for him now.

 References:
HYDROTHERAPY AND MASSAGE USED IN INTENSIVE TREATMENT OF AN ATHLETIC INJURY

The following excerpt from the Columbia (Missouri) Daily Tribune, while it does not involve a massage therapist, illustrates the effectiveness of hydrotherapy for treating sports injuries.

When Corby Jones suffered a significant toe sprain in University of Missouri’s football game against Northwestern on October 3, 1998, the clock began ticking for the Missouri sports medicine staff. The staff had seven days to improve Jones’s condition and keep him in football-playing shape so that he could take the field next Saturday at Iowa State. As Jones’ toe became the favorite topic of sports pages around the state, Rex Sharp, MU’s head athletic trainer, knew the pressure was on his staff to heal the ailing digit. “It was probably the most well-publicized toe injury I’d ever seen,” Sharp says. Monday, Tuesday and Wednesday, Jones spent the majority of his time in the Dr. Glenn L. McElroy Medicine and Rehabilitation Center, the new MU sports medicine facility that had opened late in the summer. Sharp treated Jones for 10 hours a day—heating the injury in the whirlpool, running him in the Swim Ex pool [rehabilitation pool with a current that the athlete can swim against], having him ride the stationary bikes and exercise on the stair stepper. Sharp coated Jones’ toe in a paraffin bath and treated the toe with ultrasound and massages. However, when Friday came, and the team made the trip to Iowa State, Sharp was still unsure of success. “We did everything we could, but on Friday I still did not know whether he’d be able to play,” Sharp said. The line for Jones on Saturday in an MU win—9 for 15 passing for 176 yards and two touchdowns, along with one rushing touchdown. “When people come to a football game, all they see are the players running out on the field,” Sharp said. “Then they go home. They have no idea of what goes on all week long.”


REPETITIVE STRESS INJURY

Repetitive stress injuries are caused by the physical strain of performing the same movements for many hours, particularly if the person is in an awkward position or having to use great force to perform the task. Any repetitive activity—from typing to heavy lifting—can initiate an injury in a particular part of the body. Common injuries include tendonitis, bursitis, carpal tunnel syndrome, and disc herniation.

HYDROTHERAPY AND INJURIES

Massage therapists do not treat or evaluate injuries when they occur. When clients are injured, it is important that they consult with their doctor, go to the hospital, or even call 911 to ensure that their injuries are properly diagnosed and treated. Then, as long as the doctor has approved massage, clients may be treated whether their injury is acute (sudden onset and not prolonged), subacute (less than completely acute, between acute and chronic), or chronic (lasting 3 months or more and showing virtually no change).

HYDROTHERAPY AND PAIN FROM INJURIES

When a musculoskeletal structure is injured, nociceptors, receptors on the skin or in deeper structures that carry pain signals to the brain, are stimulated. This pain helps alert us to threats against our body and also promotes healing by forcing us to rest. Pain gets our attention! When it is properly used, hydrotherapy can promote healing and alleviate much of the short-term discomfort and pain of recent musculoskeletal injuries. According to Agatha Thrash, MD, who has 40 years of experience in this area, “The application of heat or cold to relieve the pain of acute or chronic inflammatory disorders has been used for centuries, and is still a method without peer in the area of pain control. No other method is so effective, so safe and easy, and so free from side effects and expense.”(3) Muscle spasm and pain are common after both acute and subacute injuries, and for those who cannot take medications such as pain relievers or antispasmodics, hot and cold treatments can offer great relief. Heat relaxes muscles and slows conduction of pain messages to the brain. In one study, researchers found that local heat applied over the palm could even relieve the pain of a mild electric shock.(4) Recent research with heat wraps worn continuously for hours has found that they can relieve both neck and low back pain better than ibuprofen or acetaminophen.(5) Cold applications, on the other hand, numb muscles and also relieve pain by overriding or bypassing pain messages to the brain. Contrast treatments, however, appear to relieve pain by greatly increasing local circulation.

Hydrotherapy can also help prevent long-term tissue dysfunction by promoting proper healing. Treating the long-term consequences of various musculoskeletal traumas often requires myofascial work or breaking up of old adhesions, and heat can relax and warm soft tissues, making deep work much easier. Heating treatments such as paraffin or moist hot packs can help soften old scar tissue so that massage techniques are less painful and more effective.
HYDROTHERAPY AND INFLAMMATION

As shown in Figure 13-1, injuries are almost always accompanied by inflammation. Because massage therapists perform massage with many clients with both recent and old injuries, it is important for them to understand this process. (Box 13-3 has more about the stages of inflammation.) To reduce inflammation, musculoskeletal trauma is generally treated with cold applications for the first 48 hours after an injury. Cold causes local blood vessels to constrict, which reduces bleeding from any blood vessels that are still not sealed off. It also reduces inflammation. However, after 48 hours, the application of cold packs and ice packs will continue to inhibit the circulation, thereby decreasing arterial blood flow, soft tissue blood flow, and local metabolism. After that point, contrast treatments that stimulate blood flow and bring extra oxygen and other nutrients to the injured tissues are generally preferred.(6) After the first 48 hours, a contrast treatment followed by lymphatic drainage techniques can be used in the earlier stages of an injury, while contrast treatments may be combined with circulatory massage and other techniques in the later stages of an injury.

A very important benefit of early treatment with hydrotherapy and massage is the healing an injury with appropriate scar tissue. In the subacute phase of an injury, cells which produce collagen fibers form scar tissue around the injury to knit the damaged area back together. Initially, the injury to knit the damaged area back together. Initially, the injury to knit the damaged area back together. Initially, the injury to knit the damaged area back together. Initially, the injury to knit the damaged area back together. Initially, the injury to knit the damaged area back together.

BOX 13-3  Point of Interest

THE BODY HEALS THROUGH INFLAMMATION

Inflammation is the body’s defensive response to injury. The four main signs are redness, swelling, heat, and pain. Let’s consider what happens when the body sustains an injury in which a lot of force is applied to an area, such as a shoulder dislocation. At the moment of injury, not only are blood vessels and nerves torn, but muscle and connective tissue cells may be ripped open. As seen in Figure 13-1A, the body responds to the injury with many protective responses, including the following:

Initially, local blood vessels constrict to prevent blood loss. Soon afterward, many more local capillaries than usual dilate, and as they open wide the area is flooded with fresh blood. Fibrin and blood platelets collect in the blood vessels at the site of the injury and gradually close off the damaged vessels. (Heat applied to the area in the very early stages after an injury, before the small capillaries are closed off, increases the chance that they will leak blood and plasma into the soft tissues around the injury. Heat should not be applied until the capillaries have been sealed and have stopped leaking, which usually requires a maximum of 24 hours except in the case of very severe injuries.)

Because there is a sharp increase in the number of active capillaries, a significant increase in their diameter, and blood leaking out of broken vessels and pooling, blood flow to the area increases. However, with many vessels wide open, the blood actually flows more slowly, and this allows more macrophages to get into the area. Their job is to remove damaged tissue. More heat-carrying blood that is flowing more slowly creates some of the cardinal signs of inflammation—redness and heat, swelling because there is more fluid in the area, and pain because extra fluid puts pressure on nerve endings. If there is enough inflammation to limit movement, loss of function, the fifth sign of inflammation, can result.

Leukocytes concentrate where the tissue damage is the greatest, engulfing and destroying the tissue debris that was created by the rupture of individual cells, along with any pathogens that are present. At the same time, if there is any bleeding, this debris and a mass of red blood cells form a hematoma, a local mass of blood. Pressure on pain nerves causes additional pain.

In the subacute phase, as seen in Figure 13-1B, tissues are beginning to heal; ruptured small blood vessels have closed, white blood cells are cleaning up debris, blood flow has returned to its normal state, and cells which produce collagen fibers are forming scar tissue around the injury to knit the damaged area back together.
new collagen fibers form without having any direction or grain (Fig. 13-2A), and without proper treatment, they may either form in the wrong direction or attach to the structures that they should be gliding over. If not aligned with the other tissues, they can adhere to structures such as fascia or muscle, and then they have a restricting, not reinforcing, effect. These scar tissue fibers are not as elastic as muscle fibers, and they have a tendency to restrict free movement and to tear when they are exposed to stress. Many chronic musculoskeletal problems can result from excessive or poorly aligned scar tissue. Massage treatment of many subacute injuries focuses on helping the area heal without this type of scar tissue. Exercise is important at this stage, for the injured part will heal best when the person moves it actively but gently, allowing it to remain pliable and healthy, and ensuring that scar tissue fibers are properly aligned (Fig. 13-2B). Once pain relief is achieved with contrast treatments and massage, gentle exercise promotes this optimum healing. Exercising while the part is in a contrast bath increases local circulation even more.

A traditional adjunct to hydrotherapy for injuries is the use of herbal preparations: as explained in Box 13-4, herbs have been used for centuries to treat muscle soreness and aching, inflammation, muscle spasm, poor local circulation, and poorly healing wounds.

**AMPUTATION**

An amputation is the cutting off of a limb or a part of a limb. It is performed when it would be dangerous to leave that part of the body because of life-threatening infection, irreversible damage to local blood vessels, tissue damage beyond the hope of repair, or advanced loss of function. As a result of increasing rates of diabetes in the United States, amputations are an injury you are likely to encounter among your clients. As of 2007, 20 million Americans had diabetes, and of the 82,000 amputations performed in the United States each year, 70% are due to diabetes. Most of the rest are the result of musculoskeletal trauma or cancer.(7,8) Accidents such as injuries from lawnmowers or gunshot wounds cause most amputations in children, whereas diseases cause most of them in adults. Individuals with advanced diabetes have to have amputations when sores on their feet will not heal. Gangrene in the foot that spreads to the rest of the person’s body can be fatal, so instead the foot is sacrificed.

Hydrotherapy can be a helpful treatment for clients with amputated limbs, in particular when the amputation stump is sensitive to touch or local circulation is poor. Hydrotherapy is an excellent way to improve the client’s tolerance for tactile stimulation, improve circulation to the stump, soften adhesions, and begin the massage experience in a soothing fashion. Warm-water whirlpools, for example, are sometimes used by physical therapists to desensitize amputation stumps, increase local circulation, and possibly relieve phantom pain. Besides helping the amputation stump itself, using hydrotherapy treatments such as moist hot pack applications can help relieve discomfort and tension in muscles in other parts of the body, such as the back or extremity, which are compensating for the missing part. For example, with one leg amputated above the knee, compensations may cause muscle tightening and discomfort at the hip directly above the stump, in the entire other leg, and/or in the back.

**Figure 13-2** Ligament fiber organization. A. Incompletely healed ligament with disorganized fibers. B. Fully healed ligament with well organized fibers. (Reprinted with permission from Archer M. *Therapeutic Massage in Athletics.* Baltimore: Lippincott Williams & Wilkins, 2004: 104, Fig. 6-4.)

**TREATMENT**

Below are two hydrotherapy treatments that are useful for treating clients with amputations.

**CONTRAST TREATMENT OF THE STUMP**

The contrast treatment may be extended to the entire extremity by using more than one hot pack or heating pad. A moist hot pack can be applied by itself but will not stimulate the circulation as much as a contrast treatment.
Herbal preparations have been used for centuries along with hydrotherapy treatments for many injury-related problems. These include soreness; aching and inflammation; muscle spasms; poor local circulation; and wounds caused by physical trauma. Massage therapists who use herbal preparations in their clients’ hot and cold compresses, local baths, fomentations, ice massage plasters, and other water treatments feel that it deepens the effectiveness of hands-on techniques.

**HERBS TRADITIONALLY USED WITH HYDROTHERAPY TO TREAT INJURIES**

### HERBS FOR MUSCLE SORENESS, ACHING, AND INFLAMMATION

<table>
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<tr>
<th>Herb</th>
<th>Bruise</th>
<th>Edema</th>
<th>Eye Injury</th>
<th>Ligament Tear</th>
<th>Muscle Aching</th>
<th>Muscle Soreness</th>
<th>Plantar Fasciitis</th>
<th>Sinus Inflammation</th>
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<th>Strain</th>
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### HERBS FOR MUSCLE SPASMS AND MUSCLE TIGHTNESS

<table>
<thead>
<tr>
<th>Herb</th>
<th>Muscle Cramps</th>
<th>Flu Aches and Pains</th>
<th>Rheumatic Pain</th>
<th>Sleep Aid and Relaxant</th>
<th>Spasmodic Asthma</th>
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### HERBS WHICH TREAT INJURIES BY IMPROVING LOCAL CIRCULATION

<table>
<thead>
<tr>
<th>Herb</th>
<th>Fibrositis</th>
<th>Fracture (delayed union)</th>
<th>Frozen Shoulder</th>
<th>Low Back Pain</th>
<th>Migraine</th>
<th>Muscle Strain</th>
<th>Poor Circulation</th>
<th>Rotator Cuff Tear</th>
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### HERBS FOR WOUNDS

<table>
<thead>
<tr>
<th>Herb</th>
<th>Delayed Union of Fractures</th>
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<th>Pulled Tendons</th>
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<td>Comfrey</td>
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<tr>
<td>St. John’s wort</td>
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**References**

The subacromial bursa of the shoulder is the most common bursa to become painfully inflamed in this fashion. Sedentary workers and workers at jobs requiring heavy lifting are prone to bursitis of the shoulder, and women are more prone to it than men. However, bursitis can occur at many other joints, including the elbow, hip, knee, and ankle. Bursitis is extremely painful, and that pain is aggravated by almost any movement of the joint. However, should someone stop using the affected joint because it hurts, adhesive capsulitis (extreme stiffness caused by adhesions between the joint capsule and the bone) can develop. Below we discuss the hydrotherapy treatment of both acute and subacute bursitis.

**Acute Bursitis**

In recently developed or acute bursitis, hydrotherapy and massage can be used to reduce the client’s pain and to prevent the joint stiffness that can occur when pain causes a person to stop moving. Hydrotherapy applications can relieve pain, enabling clients to perform their regular activities and even gentle range-of-motion exercises that cause very limited discomfort, so that they do not lose range of motion and flexibility in the muscles around the painful joint. In some cases, contrast treatments can also relieve inflammation. Massage is contraindicated on or near the inflamed bursa in the acute stage, but it can be helpful in other parts of the body during that time.

A good way to combine treatments is to apply a hydrotherapy treatment on the area with the bursitis, while performing actual massage techniques on other parts of the body. Cold applications may relieve pain for some clients better than heat, but for some people, cold may cause the muscles to seize up. Clients may need to experiment at home to find out whether hot or cold relieves their symptoms better. Since it is the joint most commonly affected with bursitis, the shoulder is used here for an example, but the following treatment can be performed over any joint with inflamed bursa.

**Contrast Partial Shower**

**Duration and Frequency**
10 to 12 minutes. May be performed as many as three times a day.

**Cautions**
Diabetics should have water no hotter than 102°F.

**Procedure**
1. Spray the amputation stump with hot water for 2 minutes.
2. Spray the stump with cold water for 30 seconds.
3. Repeat steps 1 and 2 two more times for a total of three rounds.

**Treatment**

**Upper Half-Body Pack**

**Cross-Reference**
See Chapter 5.

**Duration and Frequency**
30 to 45 minutes, depending upon how many fomentations are used over the shoulder.

**Caution**
All fomentations should be well covered with towels so there is no risk of burning the client.

**Special Instructions**
This treatment can fit into a massage session if you perform massage on the other parts of the body while the client is in the half-body pack, and then remove the.
pack and perform massage on or around the painful area at the end of the session.

Procedure
1. Place two fomentations on the massage table so that they will cover the area from neck to waistline. Have the client lie on them, and then place one more hot fomentation over the front of the shoulder. Proceed with massage of other areas of the body.
2. Replace the fomentation of the front of the shoulder with a fresh one every 15 minutes. At the end of the treatment, remove all fomentations, then briefly rub the shoulder and the back with a washcloth dipped in cold water. Cover the shoulder. The client may perform gentle range-of-motion exercises at this time.

LOCAL SALT GLOW FOLLOWED BY APPLICATION OF CASTOR OIL AND HEAT-TRAPPING COMPRESS

Cross-Reference
See Chapters 5 and 11.

Duration and Frequency
20 minutes, ending with wrapping the joint after heat application and salt glow have been performed. Then the compress may be left on 1 to 8 hours. May be performed daily.

Caution
Remember that massage is contraindicated in acute bursitis, so do not perform massage techniques. Wrap the compress snugly but not tightly enough to cut off the local circulation.

Special Instructions
This treatment may be performed at the very beginning of a massage session but will be more effective if the heat-trapping compress is left on overnight. After you have demonstrated it to a client during a session, it can be performed at home.

Procedure
1. Apply moist heat over the joint for 10 minutes.
2. Perform a salt glow with Epsom salt over the joint.
3. Gently rub a generous amount of castor oil into the skin over the joint.
4. Apply a heat-trapping compress over the joint and leave it in place for 1 to 8 hours.
5. Gentle range-of-motion exercises may be safely performed after the compress is removed.

APPLICATIONS OF COLD

Cross-Reference
See Chapter 6.

Duration and Frequency
15 minutes. Can be performed every 1 to 3 hours.

Special Instructions
Instead of ice massage, apply an ice-water compress or ice pack over the shoulder joint for 20 minutes.

Procedure
1. Perform ice massage over the shoulder joint for about 5 minutes, then take the ice off for 1 minute. Massage around the painful area during the rest period.
2. Repeat step 1 twice more.
3. Have the client perform gentle range-of-motion exercises at this time.

CONTRAST TREATMENT FOR THE SHOULDER JOINT

Cross-Reference
See Chapters 5 and 7.

Duration and Frequency
10 minutes. This contrast treatment can be performed as many as three times a day.

Procedure
1. Place moist heat over the joint, as hot as can be tolerated. Leave it on for 3 minutes.
2. Place an ice pack, ice cold compress, or cold gel pack over the joint for 30 seconds.
3. Repeat steps 1 and 2 twice for a total of three rounds of hot followed by cold. The client may perform gentle range-of-motion exercises at this time.

Subacute Bursitis
For subacute bursitis, which normally occurs after a few days or weeks of acute bursitis, heating treatments such as mustard plasters, hydrocollator packs, or paraffin baths may be used prior to massage. Then circulatory, myofascial, and deep friction massage can be used to release chronic tension and possible muscle compensation patterns.

TREATMENT

PARAFFIN BATH

Cross-Reference
See Chapter 7.

Duration and Frequency
15 minutes. Use before or during a massage session.

Special Instructions
Joints that cannot be immersed in paraffin may be treated with a hot moist application for at least 1 minute and then painted with paraffin. Cover the joint well and leave the paraffin on for at least 10 minutes before massage and exercise.

Procedure
1. Dip the joint in warm water for at least 1 minute.
2. Dry briskly.
3. Dip at least six times in hot paraffin.
4. Wrap the area well to keep it warm, and leave the paraffin on for at least 10 minutes before massage and exercise.

**HOT, MOIST APPLICATIONS**

*Cross-Reference*
See Chapter 5.

*Duration and Frequency*
30 minutes. Use before or during a massage session.

*Special Instructions*
Vasodilating herbs such as mustard, ginger, or cayenne may be added to the compress water.

*Procedure*
1. Apply a hot fomentation, moist heating pad, or hot compresses over the joint for 30 minutes.
2. Replace with another one after 15 minutes if it cools off.
3. Finish with a 1-minute ice application (ice pack or ice massage) over the joint.

**CARPAL TUNNEL SYNDROME**

Carpal tunnel syndrome is a common and painful condition caused by the entrapment of the median nerve as it passes through the carpal tunnel. It causes wrist pain and symptoms of nerve compression such as tingling, pain, or numbness in the forearms, wrists, or hands. Like so many repetitive stress injuries, this overuse syndrome can be caused by a poor work environment (the user’s computer or chair not ergonomically correct) and too many hours of doing the same activity, such as typing, massaging, or playing a musical instrument. The first reported cases of carpal tunnel syndrome were in workers who rolled cigars by hand all day.

Treatment for carpal tunnel syndrome most often involves physical therapy, a change in work environment, and decreasing or stopping the activity that caused the injury.

As part of the client’s health care team—including the client’s doctor and physical therapist—the massage therapist can use hydrotherapy techniques to ease pain and facilitate exercise. Robert Simon, MD, a specialist in repetitive strain injuries, believes that local contrast baths are the most effective home treatment for reducing pain. Massage may or may not be indicated, depending on the individual and the type of carpal tunnel syndrome, and the therapist should consult with the client’s doctor or physical therapist to find out whether it is indicated. Massage in related muscle groups may be indicated, and massage in other parts of the body can be helpful with stress. Below are several hydrotherapy treatments you can use with clients who have carpal tunnel syndrome.

**TREATMENT**

**HOT HAND AND FOREARM SOAK**

*Cross-Reference*
See Chapter 7.

*Duration and Frequency*
12 to 15 minutes before a massage session, and as many as three or four times daily in between sessions

*Procedure*
1. This hot soak can be performed three to four times a day.
2. Soak the hands and forearms in water as hot as can be tolerated (approximately 110°F) for 12 to 15 minutes.
3. Have the client exercise the hand or stretch the hand and forearm muscles during this time.
4. Immerse the hands and forearms in water as cold as can be tolerated (approximately 55°F) for 5 seconds.
5. Dry the hands well so they do not become chilled.

**CONTRAST HAND AND FOREARM BATH**

*Cross-Reference*
See Chapter 7.

*Duration and Frequency*
10 minutes

*Special Instructions*
Gentle, painless movements performed while the hands are in the water will further increase local circulation.

Clients may also use a handheld shower attachment and spray hot water followed by cold water to perform a contrast treatment. The spray should cover the entire arm and hand, and the client should do one side at a time.

*Procedure*
1. Immerse the hands and forearms in hot water (approximately 110°F) for 2 minutes.
2. Immerse the hands and forearms in cold water (approximately 55°F) for 1 minute.
3. Repeat steps 1 and 2 twice for a total of three rounds.

**ICE MASSAGE FOLLOWED BY EXERCISE**

*Cross-Reference*
See Chapter 6.

*Duration and Frequency*
3 to 8 minutes before exercise and massage

*Procedure*
1. Gently massage over the painful area and above and below the wrist with an ice cup or ice cube.
DISLOCATIONS

When force applied to a joint wrenches the bones out of their normal relation to each other, it is said to be dislocated. For example, in an anterior dislocation of the shoulder (the most common dislocation in adults), the head of the humerus is forced completely out of the glenoid fossa and lies anterior to it. Figure 13-3 shows this type of dislocation and how the humerus and scapula have been wrenched apart. This occurs when the shoulder is in an abducted, externally rotated position and a blow is received somewhere along the arm. The next most common adult dislocation is at the elbow, which is most often dislocated from a fall onto an outstretched hand.

When an area has been struck with enough force to dislocate a bone, other soft tissues around the joints can also be injured. Tearing or bruising can occur in the joint capsule, ligaments, periosteum, muscles, tendons, blood vessels, nerves, and nearby bursae. Some of this damage may not be apparent until years later. (For example, large rotator cuff tears can begin as small tears that occur along with a shoulder joint dislocation, and they may not progress to a full-thickness tear until later.) Treatment by the client’s health care team includes manipulating the bone back into position as quickly as possible, followed by a period of immobilization and then by rehabilitation that includes range-of-motion and muscle-strengthening exercises. Immobilization of the injured joint, while necessary, carries its own hazards—activation of trigger points, joint contracture, and/or frozen shoulder.

NOTE: Massage therapists should never work with clients with dislocated joints until the client has been treated by a doctor who has approved massage.

Ice is generally applied to dislocations as a first-aid measure for a few hours, since swelling can interfere with reducing the dislocation. While massage is contraindicated until the dislocation has been reduced and massage has been approved by a doctor, contrast treatments well above (proximal) to the injury can be used anytime to improve local circulation, decrease swelling and muscle spasm, and ease discomfort. Hydrotherapy treatments to the corresponding joint on the uninjured side can be used to improve circulation in the injured joint, by causing a reflex vasodilation (known as the contralateral reflex effect). At the same time, gentle circulatory massage in the surrounding areas can be done to enhance the circulation, ease muscle spasm, and promote general relaxation, as long as the dislocated joint is not massaged or moved in any way. Once the sling or other immobilization is removed and the client’s physician has been consulted, massage therapists can use contrast treatments directly over the dislocated joint to improve local circulation and relieve pain. Hot applications relieve discomfort or pain and improve circulation, and gentle exercise of the extremity in a whirlpool will improve range of motion and muscle strength around the joint. Circulatory, myofascial, or trigger point massage can be used to prevent muscle guarding in the area, treat trigger points, release any fascial restriction or contractures caused by immobilization, prevent scar tissue buildup in the soft tissues around the joint, and improve the circulation of blood and lymph. Here we use the knee to demonstrate hydrotherapy treatments, but these treatments are effective with any dislocated joint.

TREATMENT

CONTRAST TREATMENT OVER A PREVIOUSLY DISLOCATED KNEE

Cross-Reference
See Chapters 5 and 6.

Duration and Frequency
15 minutes, to be performed before or during a massage session, and up to two or three times daily as a home treatment

Cautions
Do not put pressure on the joint when performing this treatment.

Special Instructions
- A handheld shower sprayer may also be used for this treatment, alternating between very hot and very cold water.
- Another way to perform this treatment is to use hot and cold applications at the same time for the same intervals. Heat and cold are applied both over and under the knee at the same time for 3 minutes and then switched so the heat is where the cold was and the cold is where the heat was. After 3 minutes, switch them again, and leave on for 3 more minutes.
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**Procedure**
1. Have the client lie supine on the table. Extra pillows may be needed to support painful areas and make the client position comfortable.
2. Apply a hot fomentation or other moist heat around the joint for 3 minutes.
3. Apply an ice pack or cold gel pack over the knee (Fig. 13-4) or perform ice massage over the joint for 1 minute.
4. Repeat steps 1 and 2 twice, for a total of three rounds of hot followed by cold.

**Contrast Treatment Over the Corresponding Joint on the Uninjured Side of the Body**

Alternating heat and ice is used to induce reflex vasodilation (the contralateral reflex effect) on the injured side.

**Cross-Reference**
See Chapters 5 and 6.

**Duration and Frequency**
12 minutes. Perform before or during a massage session. As a home treatment, it may be performed two or three times daily.

**Special Instructions**
A handheld shower sprayer may also be used for this treatment, alternating between very hot and very cold water. Joints that can be immersed in water, such as the wrist or ankle, can also be treated with contrast baths to produce this effect.

**Exhaustion from Overexertion**

Exercising too hard with too little rest may cause extreme fatigue. Assuming the client’s doctor has ruled out any other problems that could cause fatigue, hydrotherapy techniques can be used to help rejuvenate and invigorate the client.

Two hydrotherapy treatments are especially effective in reviving an exhausted person. The cold mitten friction is a classic treatment for fatigue, especially if followed by massage. The contrast shower is also effective because a short hot shower stimulates the circulation and the metabolism, as does a short cold shower. By alternating the two showers, the person who is exhausted can be reinvigorated, then circulatory massage can help stimulate the flow of blood and lymph and ease any musculoskeletal discomfort. Even a short massage, using tapotement and other stimulating techniques, can help stimulate the exhausted person.

**Treatment**

**Cold Mitten Friction**

**Cross-Reference**
See Chapter 11.

**Duration and Frequency**
15 to 20 minutes before or during a massage session

**Caution**
Do not perform this treatment with a client who is chilled. Warm the client first with a hot footbath; an application of moist heat, such as multiple fomentations or hydrocollator packs; or other heating treatments. Make sure the room is warm.

**Contrast Shower**

**Cross-Reference**
See Chapter 9.

**Duration and Frequency**
10 to 15 minutes. Perform before a massage session.

**Procedure**
1. Have the client take a short (2 minutes) hot shower followed by a short (1 minute) cold shower. The hot shower should be as hot as the client can tolerate, short of burning, and the cold one as cold as the client can tolerate.
2. Repeat the hot and cold shower two to five times.
A bone break, or fracture, can range from a small crack in the bone to a breaking of the bone into two parts to a complete shattering of the bone. Treatment varies according to how severely the bone is broken and what part of it is broken. Sometimes a standard cast is sufficient to repair a fracture, but in other cases, pins or plates may be required to stabilize the bone. Some types of fractures, such as a tibial fracture, can be treated by casting them, whereas others, such as a rib fracture, cannot be put in a cast at all. After a broken bone has healed and its cast (if any) has been removed, the muscles around the break are usually quite stiff and weak. There may be soreness and edema in the tissues around the fracture site and general stasis. At this time, hydrotherapy may be combined with massage to improve circulation of blood and lymph, ease soreness and pain, and reinvigorate an area that has deteriorated from a general lack of use during bone healing time.

A contrast treatment can be used to improve the circulation in an area that has been put in a cast and is not directly accessible, or blood flow to a casted left foot can be stimulated by a contrast treatment to the uninjured right foot through the contralateral reflex effect. Using this approach, blood flow in the right foot can be doubled, while that of the left foot can be increased by about 25%.

Warm whirlpools and pool therapy are also effective after a fracture has healed and the client's cast has been removed. Whirlpools are used to soften dead skin, reduce stiffness and edema, and improve local circulation. Pool therapy can be used to decrease muscle weakness (due to atrophy) and joint stiffness (due to immobilization or to damage at the time of the fracture) after the cast is removed. Fibrous adhesions in joint capsules can be stretched, range of motion increased, and apprehension about moving a limb reduced.

A massage therapist should delay treatment related to a fracture until after the client's cast is removed, unless massage is approved by the client's doctor. One of the most important benefits of massage is to reduce muscle tightness which began at the time of the injury or during the healing process. For example, a rib fracture can be very painful, as respiratory motions cause a constant grating of bone ends, which are very sensitive. Trigger points can be activated when the client tries to breathe shallowly.(10)

Contrast treatment of a fracture in a waterproof cast or kept completely dry using plastic bags

This treatment should be performed only with the physician’s approval.

Use a standard contrast bath as described in Chapter 7 and do three or more rounds of hot followed by cold. A waterproof cast or one that can be kept completely dry may be immersed in contrast water baths.

Cross-Reference
See Chapter 7.

Duration and Frequency
10 to 15 minutes. Perform before or during a massage session.

Caution
The cast must be kept entirely dry. It is possible to perform this treatment by putting the entire extremity into a large plastic bag and covering that with another plastic bag so that the cast stays perfectly dry when it is immersed.

Procedure
1. Immerse the casted area in hot water (approximately 110°F) for 3 minutes.
2. Immerse the casted area in cold water (approximately 55°F) for 1 minute.
3. Repeat steps 1 and 2 twice for a total of three rounds.

Contrast treatment over the same bone as the fractured bone on the uninjured side of the body

Alternating heat and cold, using baths, local showers, or compresses, can be used to produce reflex vasodilation (the contralateral reflex effect) on the injured side. For example, if the left ankle is in a cast, perform a contrast treatment on the right ankle.

Cross-Reference
See sections on contrast local baths, contrast local showers or contrast compresses in Chapters 5 to 7 and 9.

Duration and Frequency
10 to 15 minutes. Perform before or during a massage session. As a home treatment, it may be performed two or three times daily.

Special Instructions
A handheld shower sprayer may also be used for this treatment, alternating between very hot and very cold water. Contrasting hot and cold compresses may also be used.

Procedure
1. Immerse the area on the opposite side in hot water (approximately 110°F) for 3 minutes.
2. Immerse the area on the opposite side in cold water (approximately 55°F) for 1 minute.
3. Repeat steps 1 and 2 twice for a total of three rounds.

Contrast shower treatment over healed fracture site

After the cast is removed, contrast treatments using baths, showers, or compresses are all effective, but a
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Duration and Frequency
45 minutes. The client may take the bath, steam bath or sauna just before a massage session, then go directly to the massage table for the application of local heat to the knee.

Procedure
1. Have the client take a whole-body steam bath, sauna, or full hot bath for 15 minutes.
2. Have the client dry off quickly and dress warmly to avoid chilling.
3. Apply a hot fomentation to the knee, wrap it snugly around the entire knee, and leave it on for 30 minutes. Monitor carefully for burning. A moist heating pad set on low or medium may also be used.
4. Remove the fomentation or heating pad and quickly give an ice rub or cold mitten friction to the heated area.
5. Begin massage of the knee itself.

MUSCLE STRAINS

Muscle strains are tears in muscle fibers caused when they are not properly conditioned for a particular activity. Muscle strains in the lower extremities include groin pulls and torn hamstrings, while in the upper extremities, the deltoid and biceps muscles are some of the most frequently strained. The muscles of the chest and back can be strained by heavy lifting and in sports. Even a one-time illness can initiate a muscle strain, such as repeated vomiting from a digestive problem or violent coughing with a cold. Among athletes, common causes of muscle strains include failure to warm up adequately before exercise, overly intensive workouts with lack of rest for fatigued muscles, and continued use of an injured muscle. Another frequent cause of muscle strain is the stretching of a muscle or tendon beyond its normal length. Shortened, tight muscles cannot absorb normal amounts of stress and will strain and tear more readily than usual.

Furthermore, although muscle strains that occur as a one-time event—such as a strain of the back muscles from lifting a single heavy object—are usually obvious, a greater number appear from repeated overuse of muscles, and they often have no specific onset. Such a strain can result from habitual overuse such as operating a cash register or computer, giving massages, or walking with very poor alignment for many hours every day.
A person with an acute muscle strain will experience stiffness and mild to severe pain in the strained muscle. In the long term, scar tissue fibers that form within and around the injured muscle as a result of the healing process can lead to increased likelihood of future tears and can limit the mobility and flexibility of the muscle in the future. (Repeated muscle strains can affect more of the body than the individual muscles themselves: prior injury may cause muscles not normally used for routine activities to be substituted.)

Rehabilitation for muscle strains focuses on helping restore the muscle to its normal flexibility, endurance, and strength. This is done through treating inflammation, stopping the activity that strained the muscle originally, and performing cautiously applied therapeutic exercises. When pain begins to go away, exercise may be cautiously resumed. Lymphatic massage in the early stages of rehabilitation of an injury, followed by circulatory, cross-fiber, and deep friction techniques in the later stages, can help the muscle heal without adhesions and with full mobility.

As a massage therapist, you can use a variety of hydrotherapy treatments along with massage to increase circulation to the injured area.

### TREATMENT

#### ICE MASSAGE OF A STRAINED MUSCLE

Ice massage may be performed in the first 24 hours after a muscle strain.

**Cross-Reference**
See Chapter 6.

**Duration and Frequency**
5 to 10 minutes. Perform during a massage session, or as a home treatment, two or three times daily.

**Special Instructions**
Using the ice, massage gently on the entire length of the muscle and for a few inches all around it.

#### CASTOR OIL PACK APPLICATION

**Cross-Reference**
See Chapter 5.

**Duration and Frequency**
30 minutes or longer before or during a massage session. The client may use castor oil packs as a home treatment at least twice a day.

**Special Instructions**
Apply castor oil pack directly over the strained muscle for at least 30 minutes.

#### HOT MOIST APPLICATION

Apply moist heat in the form of hot local baths or showers, hot moist compresses or hot fomentations. Paraffin baths may be used for the muscles of the hands, forearms, lower legs or feet. Follow the hot application with a short (1 minute) cold pour, ice water bath, or ice massage over the muscle.

Historically, vasodilating and anti-inflammatory herbs and anti-inflammatory essential oils have been used in the water used in baths, compresses, and fomentations.

**Cross-Reference**
See Chapter 5.

**Duration and Frequency**
20 minutes before or during a massage session

**Special Instructions**
If the strained muscle is in a hot bath, you may perform ischemic compression or gentle stretching in the water.

#### CONTRAST TREATMENT USING ALTERNATE HOT AND COLD

Besides the specific hot and cold methods used in the following procedure, additional modes of hot and cold may also be used: alternating hot and cold compresses, hot and cold partial baths, hot fomentations alternated with ice massage, or a handheld shower attachment for alternating hot and cold sprays.

**Cross-Reference**
See Chapters 5 to 7 and 9.

**Duration and Frequency**
15 minutes. Perform during a massage session or as a home treatment three times daily.

**Special Instructions**
If the strained muscle is in a hot bath, you may perform ischemic compression or gentle stretching in the water.

**Procedure**
1. Apply a moist heating pad or hydrocollator pack to the strained muscle for 3 minutes.
2. Wring out a washcloth in ice water and briskly rub the area that was covered by the moist heat for 1 minute or perform ice massage over it for 1 minute.
3. Repeat hot and cold twice more for a total of three rounds.

#### MUSTARD PLASTER

**Cross-Reference**
See Chapter 5.

**Duration and Frequency**
20 minutes. Perform during a massage session.

**Procedure**
1. Prepare the mustard plaster and place it over the strained muscle.
2. Cover the plaster with the plastic, small towel, and heat source.
pain and muscle tension, the real cause of this injury must be addressed by the client and his or her doctor for permanent healing to occur.

**TREATMENT**

**SELF-MASSAGE USING AN ICE-FILLED SODA BOTTLE**

Cross-Reference
See Chapter 6.

Duration and Frequency
10 minutes. Perform before a massage session. As a home treatment, it can be performed two or three times daily.

Procedure
1. Fill a 20-oz plastic soft drink bottle with water and freeze it.
2. Have the client roll his or her foot back and forth over the bottle for 10 minutes. Rather than leaning the entire body weight onto the bottle, the pressure should be no more than will gently stretch the muscles, tendons, and fascia.

**CONTRAST FOOTBATH**

Cross-Reference
See Chapter 7.

Special Instructions
Gentle, painless movements performed while the feet and ankles are in the water will further increase local circulation.

Duration and Frequency
10 minutes. Perform before or during a massage session. As a home treatment, it can be performed two or three times daily.

Procedure
1. Fill two deep buckets or washtubs with water, one at 110°F and the other at 50°F.
2. Put both feet in the hot water for 3 minutes.
3. Put both feet in the cold water for 30 seconds.
4. Repeat steps 2 and 3 twice more, for a total of three rounds of hot followed by cold.

**PLANTAR FASCIITIS**

Plantar fasciitis, or inflammation of the plantar fascia, can cause significant pain on the underside of the foot, most often in the heel or arch areas. The immediate cause of plantar fasciitis is extreme fatigue in the muscles of the feet. When these muscles can no longer perform their job of supporting the arch of the foot due to fatigue, the plantar fascia has to support more weight, but it is not really a weight-supporting structure and so it tears and becomes painful and inflamed. Risk factors for plantar fasciitis include flat feet, high arches, inflexible feet, weak calf muscles, and for runners, increasing the distance or intensity of their workout too fast. Being overweight or having deep tension in the calf muscles also puts more strain on the plantar fascia. Treatment for plantar fasciitis can include a consultation with a podiatrist, stretching and strengthening exercises, wearing proper shoes, receiving prolotherapy, and possibly wearing arch supports or orthotics (custom-made foot supports). The most radical medical treatments, should these conservative measures prove unsuccessful, are injections of cortisone into the fascia or surgical release of the fascia.

As a massage therapist, you can help relieve discomfort and promote healing with massage techniques, and you can add hydrotherapy treatments that decrease inflammation and relieve pain. Self-massage using a soda bottle filled with ice can relieve inflammation and stretch tight tissues, and contrast treatments can relieve inflammation and promote healing. Massage performed after ice massage or contrast treatments will increase circulation and release deep tension in the calf muscles. However, even if hydrotherapy and massage are helpful at reducing pain and muscle tension, the real cause of this injury must be addressed by the client and his or her doctor for permanent healing to occur.

**TREATMENT**

**STEAM BATH FOLLOWED BY BRIEF COLD**

The steam bath may be given in a steam room or individual steam cabinet. At the end of the steam bath, perform ice massage on the strained muscle and a few inches all around it for 1 minute.

Cross-Reference
See Chapter 6 for ice massage and Chapter 8 for steam baths.

Duration and Frequency
20 to 25 minutes. Perform before a massage session.

**ROTATOR CUFF TEAR**

The rotator cuff muscles consist of the supraspinatus, infraspinatus, teres minor, and subscapularis muscles. Together, these four short muscles that originate on the scapula pass around the shoulder, and their tendons come together to form the rotator cuff. They work together as a single unit, helping to stabilize the humeral head in the glenoid fossa by controlling its internal and external rotation. The supraspinatus is the most commonly torn of
the rotator cuff muscles, most often due to repetitive strain, followed by the infraspinatus and then the teres minor. The subscapularis is rarely torn, usually only when excessive force is used to reduce anterior shoulder dislocations. Most rotator cuff tears occur in people over 40 years of age, when direct trauma or mechanical stress on an aging or degenerated tendon leads to a tear. However, direct trauma, such as an anterior shoulder dislocation, a fall onto an outstretched hand, or a humeral fracture, can cause them even in younger people. Throwing too hard while playing baseball or serving too hard while playing tennis or volleyball can also cause rotator cuff tears. Dizzy Dean, the famous Hall of Fame baseball pitcher, even tore his rotator cuff muscles by pitching with a broken toe. He could not push off on his injured foot as he would normally, which increased the load on his shoulder and led to a career-ending injury.

In roughly half of cases, surgery is not necessary because more conservative treatment can heal the tear. Small rotator cuff tears are treated by immobilization in a sling for a few days or weeks, applications of cold or heat, massage, acupuncture, and gentle exercises to maintain and even increase the range of motion. Secondary changes that can take place if the tear does not heal properly include scarring, thickening of the involved tendon, chronic inflammation, and irritation of the overlying bursae. Large rotator cuff tears often require surgery.

Hydrotherapy treatments can help address the inflammation that so often accompanies rotator cuff tears and relax the muscles around the shoulder. Ice massage can numb the shoulder temporarily so that gentle range-of-motion exercises can be performed. It is particularly important that the client regain full range of motion as soon as possible, so that a frozen shoulder (adhesive capsulitis) does not develop. NOTE: Rotator cuff injuries should be treated only after the client has been evaluated by a physician and massage has been approved.
SCAR TISSUE

Scar tissue is made up of collagen fibers that the body makes to replace damaged or destroyed tissue. The body makes scar tissue after injuries such as cuts, burns, or trauma to muscles, ligaments, and fascia. Within 1 to 6 weeks after injury, there are higher levels of certain enzymes and an increased number of collagen-forming cells already in place. Collagen fibers, which are denser than normal skin and muscle tissue, orient themselves around the injury and grow together, forming a thick, firm scar. Unfortunately, collagen is also laid down randomly without a definite orientation or grain (Fig. 13-2A). Over about a year, scars begin to soften and fade somewhat as the enzyme collagenase digests extra collagen in the area of the scar. The old wound is now as flexible as it will ever be without outside intervention. However, scar tissue is not the same as the tissue it replaces. Compared with normal skin cells, scar tissue cells are denser, have fewer blood vessels supplying them, are less sensitive, do not contain sweat glands or hair follicles, and are less resistant to ultraviolet radiation. Scar tissue can create problems when collagen fibers from the injury site adhere to many layers of tissue below or trigger points in the scar refer burning, prickling, or lightning-like jabs of pain to adjacent tissues. Scar tissue in deeper tissues, such as muscles, can also cause problems, because it is less elastic than muscle and tears more easily when stretched. If scar tissue is deep enough or large enough, it can cause decreased muscle strength and prevents optimum contraction of muscle fibers.

Concentrated moist heat can relax the soft tissues around the scar and make scar tissue softer and more elastic. As mentioned in Chapter 7, using a paraffin bath before stretching scar tissue from a burn can yield significant, measurable increases in local freedom of movement. Beginning a session with the client's scar tissue warmer and more elastic means that many types of massage, especially cross-fiber friction, can be performed more effectively and with less discomfort. (Massage techniques aim to soften scar tissue cells already in place. Collagen fibers, which are denser than normal skin and muscle tissue, orient themselves around the injury and grow together, forming a thick, firm scar. Unfortunately, collagen is also laid down randomly without a definite orientation or grain (Fig. 13-2A). Over about a year, scars begin to soften and fade somewhat as the enzyme collagenase digests extra collagen in the area of the scar. The old wound is now as flexible as it will ever be without outside intervention. However, scar tissue is not the same as the tissue it replaces. Compared with normal skin cells, scar tissue cells are denser, have fewer blood vessels supplying them, are less sensitive, do not contain sweat glands or hair follicles, and are less resistant to ultraviolet radiation. Scar tissue can create problems when collagen fibers from the injury site adhere to many layers of tissue below or trigger points in the scar refer burning, prickling, or lightning-like jabs of pain to adjacent tissues. Scar tissue in deeper tissues, such as muscles, can also cause problems, because it is less elastic than muscle and tears more easily when stretched. If scar tissue is deep enough or large enough, it can cause decreased muscle strength and prevents optimum contraction of muscle fibers.

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TREATMENT

MOIST HEAT APPLICATION

Apply a hot water bottle with a wet cloth underneath, moist heating pad, hot compress, or hydrocollator pack to the area for 10 to 15 minutes before massage, until the tissue is thoroughly warm.

Cross-Reference

See Chapter 5.

Duration and Frequency

10 to 15 minutes. Use before or during a massage session.

SHIN SPLINTS

Shin splints is a catchall term for a variety of lower leg problems that are characterized by aching pain along the medial or lateral border of the tibia. The basic cause of this injury is strenuous use of the legs combined with poor foot alignment. Running and dancing on a hard surface are the most common activities that lead to shin splints, but a client of the author's developed shin splints from walking on a treadmill after being completely inactive for a long time. Muscle fibers, particularly those of the tibialis anterior and posterior, may tear and become inflamed, and the periosteum may become inflamed as well. A person with shin splints has tender, painful, and swollen pretibial muscles and discomfort while performing the aggravating activity. If the person continues the activity, shin splints may progress to stress fractures or lower leg compartment syndrome.

The treatment for mild shin splints includes rest from the aggravating activity, light stretching, contrast treatments followed by simple exercises, and possibly orthotics to correct the alignment of the foot. More extreme cases, such as those that have progressed to compartment syndrome, may require more medical intervention including surgery.

Hydrotherapy, particularly contrast treatments, can help increase circulation to injured muscles and relieve pain. Deep friction and massage can follow hydrotherapy treatment for mild shin splints, but massage is not suitable for advanced cases, which may actually be compartment syndrome. The client should consult a physician before receiving massage for shin splints.

PARAFFIN BATH FOR SCARS ON THE WRISTS, HANDS, ANKLES, OR FEET

Perform a standard paraffin bath treatment of the area containing the scar before massage.

Cross-Reference

See Chapter 7.

Duration and Frequency

20 minutes. Use during a massage session. Perform a standard paraffin bath treatment of the area with the scar before hands-on massage.

LOCAL WHIRLPOOL

Have the client immerse the body part in warm water (98°–105°F) for 15 to 20 minutes before massage. Gentle exercises may be performed in the water if desired.

Cross-Reference

See Chapter 7.

Duration and Frequency

15 to 20 minutes. Use before a massage session.
after violent coughing. When muscle soreness is felt after strenuous exercise, partial-body showers, Epsom salt baths and gentle circulatory massage will increase the circulation to sore muscles, help relieve swelling and pain, and help the muscles repair themselves. (11) Hot whirlpools and ice massage are not effective for muscle soreness (12), but contrast treatments and cold whirlpools have been found effective. Many collegiate and professional long-distance runners take a cold lower-leg whirlpool bath after long runs; because peripheral blood vessels are constricted and blood flows to deeper vessels, the cold water helps prevent fatigue and soreness to deeper leg muscles. Heat-trapping compresses can also soothe muscle aches and pains.

**TREATMENT**

**CONTRAST BATH TREATMENT OF THE LOWER LEG**

Cross-Reference
See Chapter 7.

Special Instructions
Gentle, painless movements that are performed while the ankles and feet are in the water will further increase local circulation.

Duration and Frequency
15 minutes. Perform during a massage session, or the client may perform this as a home treatment two or three times daily.

Procedure
1. Fill two buckets or washtubs with enough water to immerse the lower legs, one at 110°F and the other at 50°F.
2. Have the client put both lower legs and feet in the hot water for 3 minutes.
3. Have the client put both lower legs and feet in the cold water for 30 seconds.
4. Repeat steps 2 and 3 three times, for a total of four rounds of hot followed by cold.
5. Remove the feet from the water and dry them thoroughly.

**ICE MASSAGE OF THE LOWER LEG**

Perform a standard ice massage treatment, moving over the entire length of both pretibial muscles for 8 to 10 minutes before beginning local hands-on massage.

Cross-Reference
See Chapter 6.

Duration and Frequency
8 to 10 minutes. Perform during a massage session, or the client may perform this as a home treatment two or three times daily.

**SORENess AFTER EXERCISE**

Muscle soreness caused by strenuous exercise is generally felt for about 24 to 36 hours afterwards. Working muscles very vigorously causes microscopic tears to muscle fibers, along with local swelling, and then pain messages are sent from the nerves in the muscles to the brain. Soreness after exercise can be prevented by warming up the muscles that are to be used and then stretching them, gradually increasing the frequency and intensity of workouts, stretching again after exercising, and then cooling down completely. Sometimes, however, it is not possible to avoid muscle soreness when exercise comes in unexpected ways. For example, the intercostals, pectorals, and even the diaphragm itself can become sore after violent coughing.

**TREATMENT**

**HOT PARTIAL-BODY SHOWER**

Cross-Reference
See Chapter 9.

Duration and Frequency
5 minutes. Perform before a massage session, or the client may perform this as a home treatment three or four times daily.

Procedure
1. Using a handheld shower massager, spray the sore area with water that is as hot as the client can tolerate for about 5 minutes.
2. Have the client dry off and proceed with massage.

**EPSOM SALT BATH**

Cross-Reference
See Chapter 7.

Duration and Frequency
20 minutes. Perform before a massage session, or the client may perform this as a home treatment three or four times daily.

Procedure
1. Add 2 pounds Epsom salt to a full tub of water at 98° to 104°F.
2. Have the client soak in the tub for 20 minutes.

**SPINAL CORD INJURIES**

Spinal cord injuries occur when strong forces applied to the spinal cord damage some or all of its fibers. Figure 13-5 shows a 12th thoracic level spinal cord injury caused by a crushing blow. Almost all of these injuries happen during motor vehicle accidents, falls, or some type of violence, and they happen almost exclusively to single males aged 16 to 30. The force that tears, bruises,
or severs the spinal cord is generally powerful enough to cause many musculoskeletal injuries at the same time. When the cord is damaged, sensation as well as controlled movement may be partially or completely lost below the level of the injury. Common problems associated with spinal cord injuries include pain so severe that it interferes with daily life; development of contractures and scoliosis from spasticity or from continual sitting in a wheelchair; pressure sores in body areas where feeling has been lost; urinary infections; decalcification of the leg bones from lack of exercise; and lack of stimulation to the circulation that exercise provides. Persons with spinal cord injuries also have difficulty controlling their body temperature in hot weather.

Massage therapists should work with patients who have acute or subacute spinal cord injuries only after they have been treated by a physician and massage has been approved. Hydrotherapy can help persons with spinal cord injuries get the most out of their massage therapy in a variety of ways. Applications of moist heat can prepare the person’s tissues for massage by increasing local circulation and relaxing muscles. Contrast applications will also stimulate local circulation. Cold footbaths can reduce the body temperature up to 4°F when a client is in danger of becoming overheated on a hot day. (See the section on cold footbaths, Chapter 7.) Muscle strength may be temporarily

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**CASE HISTORY 13-1**

**Muscle Soreness and Bruises After a Fall out of a Tree**

**Background**

David was a healthy and active 11-year-old boy who was climbing a fir tree one day and fell 15 feet. He landed on a few large branches on the way down, then hit the ground, and his entire back was severely bruised. David was examined by his physician and told that he had no fractures or other serious musculoskeletal injuries. Although this was welcome news, David was in a lot of pain, and he felt stiff and sore whenever he tried to move around. On his doctor’s advice, he rested quietly, and his mother began applying ice packs over his bruises at intervals of 20 minutes on and 20 minutes off. However, 3 days later, David’s mother called and scheduled a massage for him because, despite using ice and resting, his body still felt stiff and sore, and the bruise itself was still painful.

**Treatment**

Although the therapist felt that massage was likely to relieve much of David’s discomfort, she was not sure he could tolerate being touched, and therefore, she suggested he try several 20-minute warm Epsom salt baths, using 2 pounds of salt in the tub each time. The next day, David’s mother called to say that the Epsom salt baths had relieved much of his pain and he could still come in after school for a massage. During the session, the therapist planned to use alternating compresses in remaining areas of muscle soreness and even over David’s bruise, to make massage more tolerable for him.

**Discussion Questions**

1. What made the Epsom salt baths effective?
2. Why would alternating compresses be appropriate during the massage session?
stimulated (for about 20 minutes) with the immersion of different parts of the body in cold water. This helps the client with an incomplete lesion, which leaves some function and sensation intact below the level of the injury, to perform exercises to build muscle strength. And finally, hydrotherapy can be an important source of sensory stimulation for the skin and for the entire body. Pool therapy is a wonderful way for a person with a spinal cord injury to exercise without fighting gravity, improve the circulation as a whole, decrease muscle spasms, and receive sensory stimulation. (14) (See Appendix A for more information.) Besides promoting general relaxation, massage is helpful in addressing a range of problems associated with spinal cord injuries, including chronic pain, constipation, lack of sensory stimulation, and overuse of some parts of the body coupled with underuse of other parts.

Because paralyzed areas may be numb, all hydrotherapy applications must be very carefully monitored. Observe and feel the client’s skin more often than usual to prevent burns from hot applications and frostbite from cold applications. Begin by making hot applications cooler and cold applications warmer than usual until you can see how the client responds.

**TREATMENT**

**MOIST HEAT APPLICATION**

**Cross-Reference**
See Chapter 5.

**Duration and Frequency**
10 minutes over each body area that will be massaged. Perform during a massage session.

**Caution**
Do not let the client become overheated. If this should occur, either discontinue heat applications, or add a cold application on another part of the body.

**Special Instructions**
Apply a moist hot pack, a compress (washcloth wrung out in very hot water), or a hydrocollator pack for 10 minutes before massaging an area. Then, while that area is being massaged, apply it to the part of the body that will be massaged next.

**CONTRAST TREATMENT FOR SENSORY STIMULATION**

**Cross-Reference**
See Chapter 6.

**Duration and Frequency**
12 minutes. Perform during a massage session.

**Procedure**
1. Apply a moist hot pack, a compress (washcloth wrung out in very hot water), or a hydrocollator pack to an area for 10 minutes.
2. Place an ice pack or a washcloth wrung out in cold water over the same area.
3. Leave the cold application on the area for 2 minutes before removing it.
4. Begin massage over the area.

**COLD WATER IMMERSSION AND EXERCISE FOR WEAK OR SPASTIC MUSCLES**

For this treatment, after the cold immersion, have the client perform strengthening exercises or even contract muscles while you provide resistance. The client must have an incomplete lesion that leaves some function and sensation intact below the level of the injury.

**Cross-Reference**
See Chapter 7.

**Duration and Frequency**
5 to 10 minutes. Perform during a massage session, and repeat during the session if desired.

**Special Instructions**
A body part can also be wrapped in very cold towels (crushed ice wrapped in wet towels) if it cannot be immersed.

**Procedure**
1. Massage the weak or spastic part for 2 to 5 minutes.
2. Fill a large container with water and ice in order to chill the water to 35° to 40°F. (Check to make sure that the client is comfortably warm before beginning the cold water immersion.)
3. Warn the client that the part will be dipped in cold water.
4. Immerse the part in the water for 3 seconds.
5. Take the part out of the water and have the client perform exercises for 30 seconds. If he or she becomes fatigued, stop the exercises until after the next cold water immersion.
6. Repeat steps 4 and 5 twice more for a total of three rounds of cold immersion followed by exercises.
7. Massage the weak or spastic part for 2 to 5 minutes.

**SPRAINS**

A sprain, or ligament tear, occurs when a joint is wrenched or twisted past its normal range of motion. Minute tears occur in one or more of the ligaments that normally stabilize the joint, blood and fluid leak into the tissues around the joint, and trigger points in the ligaments and joint capsules may be activated immediately. Ligaments, like other soft tissues, respond to tensile strain and are more likely to tear if they are too short. For example, in the case of ankle ligaments, if one pronates while walking, the ligaments on the
outside of the ankle tend to become shorter and the ones on the inside of the ankle stretch more and more. According to podiatrist Gary Null, “Under these conditions, all it takes is a moment of sudden pressure for the too-taut ligaments to rip.”(13)

Sprains are classified by the amount of ligament fibers that are torn. First-degree tears, involving only a few fibers of a ligament, are characterized by slight swelling, pain, and loss of function. Second-degree tears involve many more fibers of a ligament and are characterized by modest swelling, diffuse tenderness, and loss of function. Third-degree tears are actual ruptures, where the ligament tears completely through and is no longer attached to the bone. A tear of this severity involves extensive bleeding, severe pain, and greater instability. Muscles spasms often occur near the sprained joint and are an indication that the person should rest the injured area; often there are spasms farther away as well. (Joint separations are also a type of ligament sprain.)

The specific treatment for sprains depends on their severity, but no matter how mild or severe the sprain is, the ligaments must be supported and protected during their healing process. For many years, first-degree sprains have been treated with ice, additional support such as braces or taping, compression, and elevation. Second-degree sprains have been treated with additional support, crutches, and isometric exercises. Third-degree sprains have been treated with a rigid cast and surgery to reattach the ligament in its proper place, followed by strengthening and stretching exercises once the cast is removed. As many as one-third of ankle sprains do not heal completely, and so proper care is very important.

Massage therapists should treat new sprains only after the client’s injury has been diagnosed by a physician and massage has been recommended. Ice is applied during the first 24 to 48 hours, followed by contrast treatments to reduce joint swelling and pain. While ice applications can relieve muscle spasm, applications of ice also depress the circulation and so are useful primarily in acute stages, when bleeding is a concern. For sprains of the shoulder and spine, you can perform contrast treatment in the form of hot packs followed by ice massage. Mild sprains without swelling are sometimes treated by a heating compress that is left on overnight. For old, poorly healed ankle sprains, the deep heat of a paraffin bath may be used to ease joint stiffness, particularly before massage.

In the acute phase, massage may be performed proximal to the sprained joint but not on it. Massage is helpful for sprains in the subacute phase: circulatory, deep friction, and/or trigger point massage can reduce pain and swelling, which impair healing, and can relieve muscle tightness and spasm, which hamper movement and prevent or reduce adhesions. Massage of the area can also help prevent chronic muscular guarding caused by trauma and pain. (See Box 13-1, second section, for presents an example of how musculoskeletal pain can lead to this problem.)

<table>
<thead>
<tr>
<th>TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICE PACK OVER A SPRAINED JOINT IN THE ACUTE PHASE</td>
</tr>
<tr>
<td>Cross-Reference</td>
</tr>
<tr>
<td>See Chapter 6.</td>
</tr>
<tr>
<td>Duration and Frequency</td>
</tr>
<tr>
<td>20 minutes on, 20 minutes off, repeated every 2 hours for the first 24 to 48 hours</td>
</tr>
<tr>
<td>Cautions:</td>
</tr>
<tr>
<td>Do not overuse ice. Injuries have occurred from ice being applied to acute injuries for too long.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOCAL EPSOM SALT BATH</th>
</tr>
</thead>
<tbody>
<tr>
<td>A local bath with Epsom salt can be used for subacute sprains to enhance local circulation and reduce edema. Gentle range-of-motion exercises may be performed during the bath.</td>
</tr>
<tr>
<td>Cross-Reference</td>
</tr>
<tr>
<td>See Chapter 7.</td>
</tr>
<tr>
<td>Duration and Frequency</td>
</tr>
<tr>
<td>20 minutes. Perform before a massage session, or the client may perform this as a home treatment three or four times daily.</td>
</tr>
<tr>
<td>Special Instructions</td>
</tr>
<tr>
<td>1. The water should be well over the sprained joint, so that even for a foot sprain, the water should be up to mid-calf level.</td>
</tr>
<tr>
<td>2. Gentle, painless movements performed while the part is in the water will further increase local circulation.</td>
</tr>
<tr>
<td>Procedure</td>
</tr>
<tr>
<td>1. Add 1 cup of Epsom salt per gallon to a container of water at 98° to 104°F.</td>
</tr>
<tr>
<td>2. Have the client soak the sprained part (e.g., hand and wrist, foot and ankle) in the tub for 15 to 20 minutes.</td>
</tr>
<tr>
<td>3. Dry the part and begin massage.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HEAT-TRAPPING COMPRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat-trapping compresses may be used for subacute sprains of the foot, ankle, knee, elbow, wrist, or hand to provide a mild prolonged warmth.</td>
</tr>
<tr>
<td>Cross-Reference</td>
</tr>
<tr>
<td>See Box 6-2.</td>
</tr>
<tr>
<td>Duration and Frequency</td>
</tr>
<tr>
<td>1 to 8 hours. This can be used daily in the subacute stages of healing. The client can apply the compress at bedtime and remove it in the morning.</td>
</tr>
</tbody>
</table>
Special Instructions
At the end of a massage session, the massage therapist may assist the client in applying a heat-trapping compress to keep the sprained joint warm for a few hours or overnight.

**CONTRAST BATH FOR THE ANKLE JOINT**

This treatment may be done on any joint, but because the most commonly sprained joint is the ankle, we use a contrast treatment for the ankle as an example.

**Cross-Reference**
See Chapter 7.

**Duration and Frequency**
15 minutes. Perform before or during a massage session. As a home treatment it can be performed two or three times daily.

**Special Instructions**
Gentle, painless movements performed while the part is in the water will further increase local circulation.

**Procedure**
1. Fill two deep buckets or washtubs with water, one at 110°F and the other at 50°F.
2. Put both feet in the hot water for 3 minutes. Water should reach mid-calf level.
3. Put both feet in the cold water for 30 seconds.
4. Repeat steps 2 and 3 three more times for a total of four rounds of hot followed by cold.
5. If prescribed by the client’s physician, an adhesive bandage can now be applied to the sprained ankle.

**PARAFFIN BATH FOR OLD, POORLY HEALED SPRAINS**

We use the ankle as an example, but other joints may benefit from paraffin as well.

**Cross-Reference**
See Chapter 7.

**Special Instructions**
For joints that cannot be dipped, paraffin can be painted directly over the joint.

**Duration and Frequency**
10 to 15 minutes. Perform before a massage session, or the client may obtain a paraffin bath and perform this daily as a home treatment.

**Procedure**
1. Soak the client’s foot and ankle in warm or hot water (98°–110°F) for 1 minute or longer.
2. Dip the foot and ankle at least six times in hot paraffin.
3. Wrap the foot to keep it warm and leave the paraffin on for at least 10 minutes before massage and range-of-motion exercises or stretching.

**TENDONITIS**

Tendonitis, or inflammation in a tendon, usually occurs when a muscle has been under extreme stress. Vigorous athletic training can create such conditions as biceps tendonitis (pitching), quadriceps tendonitis (dancing, basketball), rotator cuff tendonitis (tennis), or Achilles tendonitis (long-distance running), but tendonitis can also occur as the result of repetitive strain. Massage therapists are prone to this injury because their work involves the repetitive use of a few muscles for long periods, often while applying much force. Tears in the collagen of the tendon can cause pain, inflammation, and possibly a buildup of scar tissue as the tendon partly heals and then tears again. Tendon injuries take a longer time to heal than muscle injuries because they do not have as great a blood supply as muscles.

Standard medical treatment for tendonitis is rest, ice, and anti-inflammatory medications. These may include either steroidal or nonsteroidal anti-inflammatory types. A brace or wrapping may be used as well. Stretching and/or strengthening exercises are often prescribed. As their symptoms resolve, many clients gradually return to the aggravating sport or activity, although for some this may not be possible.

During the acute phase of tendonitis, contrast treatments, ice massage, and lymphatic drainage techniques may be used to increase local circulation and decrease inflammation.

In the subacute phase, contrast treatments continue to be appropriate for promoting healing, and both cross-fiber friction and techniques that treat muscle tension in the entire muscle (not just the tendon) are helpful to prevent scar tissue buildup.

Although the recommended treatments that follow may be used on any tendon, we show how to use them on the elbow for epicondylitis, a type of tendonitis caused by repetitive strain. There are two common types of epicondylitis. **Medial epicondylitis**—inflammation of the wrist flexor tendons at their insertion on the medical epicondyle—can be caused by repeated and forceful bending of the wrist, such as swinging a golf club, or in other activities that involve gripping or grasping and then turning the hand with a great deal of force. **Lateral epicondylitis**—inflammation of the wrist extensor tendons at their insertion on the lateral epicondyle, also known as tennis elbow or typing elbow—is far more common. It can be caused by many activities that are performed using repeated forceful contractions of the wrist extensors in a pronated position, such as during backhand strokes in tennis, pitching, and performing repetitive work with a hammer or screwdriver.

In both conditions, the treatment is basically the same. In the acute phase, the arm is rested and may even be splinted in a position that relieves tension on the tendons. Strengthening exercises may be begun after a week
of rest so strength and flexibility are not lost. Contrast treatments may be used two or three times daily to relieve inflammation, as may ice massage or paraffin dips. Lymphatic drainage and gentle transverse friction techniques are appropriate for acute tendonitis. Local salt glows followed by castor oil and a heating compress may be applied during a massage session or used by the client at night. The client’s doctor may also prescribe anti-inflammatory medication. In the subacute phase, this therapy may continue, except circulatory massage and deep transverse friction techniques are now appropriate. Massage therapists should not treat tendonitis until it has been diagnosed by a physician and massage has been approved.

**Treatment**

**Contrast Bath Treatment of Inflamed Tendons at the Elbow**

**Cross-Reference**
See Chapter 7.

**Duration and Frequency**
15 minutes. Perform before or during a massage session, or the client may perform this as a home treatment two or three times daily.

**Special Instructions**
1. The tendon and an area at least 6 inches around it should be covered by the water.
2. Gentle, painless movements performed while the elbow is in the water will further increase local circulation.
3. Contrast immersion baths are used here, but hydrocollator packs and ice massage can be used instead.

**Procedure**
1. Fill two deep buckets or washtubs with water, one at 110°F and the other at 50°F.
2. Put the elbow with the inflamed tendon in the hot water for 3 minutes.
3. Put that elbow in the cold water for 30 seconds.
4. Repeat steps 2 and 3 three more times for a total of four rounds of hot followed by cold.
5. Remove the elbow from the water and dry it thoroughly.

**Ice Massage of Acutely Inflamed Tendons at the Elbow**

**Cross-Reference**
See Chapter 6.

**Duration and Frequency**
8 to 10 minutes

**Special Instructions**
Perform the ice massage on the tendon and 6 inches all around it.

**Local Salt Glow Followed by Application of Castor Oil and a Heat-Trapping Compress, Suitable for Acutely or Subacutely Inflamed Tendons at the Elbow**

Apply at the beginning of a massage session, remove after 30 minutes, and then perform massage over and around the inflamed tendon.

**Cross-Reference**
See Chapters 5, 6, and 11.

**Duration and Frequency**
45 minutes

**Caution**
Do not wrap the joint so tightly that you cut off circulation.

**Special Instructions**
If the client is using this as a home treatment, he or she may leave the heating pad on for up to 2 hours, then remove the heating pad and leave the compress on overnight.

**Procedure**
1. Perform a local salt glow over the muscle and tendon and about 6 inches around it, using Epsom salt.
2. Rub a liberal amount of castor oil over and around the tendon.
3. Cover the castor oil–coated skin with a piece of celophane, then apply a heating compress over it.
4. Cover with a heating pad set on low and leave in place for 30 minutes or more. If the client is using this as a home treatment, he or she may leave the heating pad on for up to 2 hours, then remove the heating pad, go to bed, and remove the compress in the morning.
5. Remove the heating compress and wash the oil off using hot water and baking soda, then finish with a brief friction rub with very cold water.

**Paraffin Dip Before Massage for Subacutely Inflamed Tendons at the Elbow**

**Cross-Reference**
See Chapter 7.

**Duration and Frequency**
15 minutes. Apply before beginning a massage session.

**Procedure**
1. Immerse the elbow, especially the tendon, in the paraffin bath and wrap it well.
2. After unwrapping the area, either give the client's arm a cold mitten friction or have the client dip the elbow in cold water for a few seconds.

TIRED FEET
Muscular fatigue in the feet often affects clients who have been walking or running long distances or who have been competing in sports that involve a great deal of running, such as basketball and soccer. It is also common in clients who have poor alignment, poorly fitting shoes, or structural problems in the feet. Along with hydrotherapy treatments, massage can address this type of simple muscular fatigue. Hydrotherapy is used frequently by competitive runners to ease muscular fatigue and rejuvenate muscles, and massage can bring great relief for feet that ache from or are fatigued by vigorous exercise. An athlete can receive these treatments and massage during a rest break and then go back on the field rejuvenated; using massage after a vigorous workout can reduce muscular fatigue more effectively than resting quietly. (11)

TREATMENT

CONTRAST FOOTBATH
Cross-Reference
See Chapter 7.
Duration and Frequency
10 minutes. Perform before or during a massage session. As a home treatment, it can be performed two or three times daily.
Special Instructions
Gentle, painless movements performed while the feet are in the water will further increase local circulation. Many runners find a simple cold footbath very refreshing and more practical. Simply follow the procedure that follows, but use only one footbath of water as cold as can be tolerated and have the client soak for 10 minutes. Another option is to have the client sit in a half-bath of cold water for 10 minutes.
Procedure
1. Fill two deep buckets or washtubs with water, one at 110°F and the other at 50°F.
2. Put both feet in the hot water for 3 minutes.
3. Put both feet in the cold water for 30 seconds.
4. Repeat steps 2 and 3 twice more, for a total of three rounds of hot followed by cold.

LOCAL SALT GLOW AND WARM FOOTBATH
Cross-Reference
See Chapters 7 and 11.

WHIPLASH
The head and neck can be snapped violently forward and back (Fig. 13–6) during a fall, a head-on collision in an athletic event, or a rear-end collision in a motor vehicle. This snapping action can cause what is known as a whiplash injury, that is, damage to many of the structures of the neck. Strain of the neck muscles, sprain of the neck ligaments, fractures of cervical vertebrae, herniation of cervical discs, and/or injury to the spinal cord itself can occur. Depending upon the severity of the whiplash, the result can be an accumulation of excessive scar tissue, ongoing muscle spasms in neck muscles that attempt to splint unstable joints (a job normally performed by the ligaments which now are weakened), trigger points, and possibly cranial bones being out of alignment. Muscles around the cervical spine, including the sternocleidomastoid, scalenes, and splenius cervicis, may be injured in a whiplash. The amount of damage to these muscles may be greater if they were very tight previously. Spinal ligaments may be sprained so severely that they will not hold the spinal column together tightly enough and the vertebrae are unstable. Clients may feel almost nothing at the scene of a car accident, be cleared by an emergency department doctor, and in the ensuing days have...
increasing stiffness and pain. Whiplash injuries, even when they do not show up on radiography, are often serious and long-lasting, and they require a doctor’s ongoing care.

During the subacute stage of whiplash, hydrotherapy treatments can reduce pain and inflammation, increase local circulation, and help relax muscles before massage. Many types of massage can help heal whiplash injuries, from trigger point to deep friction and craniosacral techniques. Because of the variety of injuries that can occur when the neck is forced into hyperextension and then hyperflexion, massage therapists should not work with clients with whiplash injuries until they have been diagnosed by a physician and massage has been approved.

**TREATMENT**

**NECK EXERCISE PERFORMED IN A HOT SHOWER**

This will gently warm and relax the neck muscle tension and improve local circulation. For subacute whiplash only

**Cross-Reference**
See Chapter 9.

**Duration and Frequency**
5 to 10 minutes. Perform at the beginning of a massage session, or if used as a home treatment, two or three times daily.

**Special Instructions**
Remind the client, if necessary, that this is a gentle limbering exercise and should not cause any pain or discomfort.

**Procedure**
1. Have the client step into a hot shower and let the water beat on the neck for at least 3 minutes to thoroughly warm the cervical muscles.
2. Have the client very slowly, and with no pain or straining, while the hot water continues to beat on the neck muscles, draw the letters of the alphabet with the nose one by one.
3. Have the client towel off and dress quickly to avoid chilling
4. The client may now lie down for a rest or a massage session, if planned.

**CONTRAST TREATMENT FOR THE NECK**

**Cross-Reference**
See Chapter 6.

**Duration and Frequency**
5 to 10 minutes. Perform at the beginning of a massage session, or if used as a home treatment, two or three times daily.

**Special Instructions**
A contrast treatment may be performed in the shower using a handheld shower attachment and the same intervals of hot and cold.

**Procedure**
1. Have the client lie prone upon the massage table.
2. Apply a moist heating pad or hydrocollator pack to the back of the neck for 3 minutes. Wrap it around to the front of the neck as far as possible but do not cover the carotid arteries.
3. Wring out a washcloth in ice water and rub the area that was under the moist heat for 30 seconds, or perform ice massage on the area for 1 minute.
4. Repeat hot and cold two more times for a total of three rounds.
5. Dry the client’s skin and begin hands-on massage.
Hydrotherapy and Massage for Subacute Whiplash Injury

Background
Dimitri Hall was a 32-year-old landscaper who was in excellent health and who had no history of back or neck injuries. Recently, as he sat at a stoplight with his head turned to the right, his car was struck from behind by a car traveling 30 miles per hour. Within 2 hours after the accident, Dimitri’s neck began to hurt. His neck pain gradually increased and he began to feel tingling and numbness in his right arm and right leg. After being examined at a hospital emergency department, where radiographs showed no cervical fractures, Dimitri received a cervical collar and was prescribed muscle relaxant, anti-inflammatory, and pain medications.

He later visited his family doctor, who examined him and found that his paraspinal muscles from T10 to C1 were hypersensitive to light touch and hurt far more on the injured side. He also found that Dimitri’s neck range of motion was very limited and that even light pressure on suboccipital and scalene muscle trigger points caused severe referred pain up into his head. The doctor told Dimitri that he had soft-tissue damage and inflammation in his neck and prescribed physical therapy and massage therapy twice a week for 4 weeks. He advised Dimitri to wear a cervical collar for all but 2 or 3 hours out of every 24 and to avoid moving his neck when it was off.

Treatment
Session 1. On the seventh day after the accident, Dimitri entered the massage therapist’s office wearing a cervical collar and having the moderate to severe neck pain, hypersensitivity to touch, highly active trigger points, and limited neck range of motion noted by his doctor. The session began with Dimitri lying prone on the massage table while hot compresses alternated with ice massage were applied to the back of his neck and his upper back. Dimitri stated that this made his neck feel better.

He was then treated with gentle fingertip kneading and pétrissage on his neck, entire back, and chest. At the end of the session, the massage therapist explained how to perform contrast treatments to the upper back and neck in the shower, using a handheld shower attachment. Hot water could be used for 2 minutes, followed by cold for 30 seconds to 1 minute, and three to five rounds could be performed. Dimitri was told he could perform this treatment as many as four times daily.

Sessions 2 to 7 were similar to the first. Dimitri continued to have neck pain, although it was never as extreme as during the first few days, and his neck continued to hurt when he looked down. However, his pain very gradually began to decrease. He continued to wear his cervical collar almost all the time. He performed contrast treatments in the shower every day and found that they relieved his pain for 1 to 2 hours.

Dimitri’s massage treatments were similar to what the therapist performed at the first visit but were always adjusted to the amount of pressure he could tolerate. Each session, before massage was performed on any part of his back or neck, he received 10 minutes of heat followed by a short ice massage of the area. First, a small towel wrung out in hot water was placed on his upper back and the back of his neck, then the towel was covered with a thin sheet of plastic and a heating pad set on medium. Massage was performed on the Dimitri’s arms for 10 minutes. Then 1 minute of ice massage was performed on his upper back and the back of his neck. The massage therapist then placed the heat on Dimitri’s lower back while she performed hands-on massage on his upper back and the back of his neck. After 10 minutes of hands-on massage, she removed the heat from his lower back and performed ice massage for 1 minute. She again placed the heat on the upper back while she performed hands-on massage on Dimitri’s lower back. She then repeated this entire sequence and finished treating his back with 1 minute of ice massage on Dimitri’s entire spine. He said this made his back feel great. He then turned to the supine position and massage was performed on the his neck, shoulders, and chest.

As time went on, Dimitri’s situation began to improve. He received twice-weekly massage and physical therapy and continued contrast treatments in the shower for pain relief and relaxation. Although he had occasional setbacks caused by forgetting to wear his cervical collar or practicing his physical therapy exercises too vigorously, his neck pain began to decrease. Gradually, the muscles in his back and neck became noticeably less hypertonic and less swollen and he was able to tolerate more pressure during massage. At his eighth and last massage session, Dimitri entered with little or no pain and an improved range of motion in his neck. He was noticeably less sensitive to pressure on his entire back and shoulders, his upper back muscles were noticeably less hypertonic and swollen than they were at the beginning of massage therapy, and pressure on trigger points produced much less pain. Dimitri would continue to receive physical therapy for some time and planned to continue contrast treatments at home for residual pain and stiffness in his neck.

Discussion Questions
1. Why did the massage therapist recommend shower contrast treatments at home rather than hot showers or cold showers alone?
2. Why did the massage therapist use heat followed by hands-on massage followed by heat again?
4. Sprains are injuries to __________, while strains are injuries to __________.

5. A cold-water immersion bath is given to someone with a spinal cord injury to stimulate __________.

**Multiple Choice**

6. All but one of the following are inflammatory conditions:
   a. Bursitis
   b. Epicondylitis
   c. Exhaustion after exercise
   d. Plantar fasciitis

7. All but one of the following can benefit from contrast treatments:
   a. Sprains
   b. Scar tissue
   c. Amputation
   d. Plantar fasciitis

8. All but one of these treatments is appropriate for acute bursitis:
   a. Upper half-body pack
   b. Paraffin bath
   c. Contrast treatment
   d. Ice massage

9. When scar tissue is formed improperly, one of the following results:
   a. Arthritis
   b. Swelling
   c. Hematoma
   d. Adhesions

10. All but one are signs of inflammation:
    a. Redness
    b. Cool skin
    c. Swelling
    d. Pain

**REFERENCES**


RECOMMENDED RESOURCES