21

Iliotibial Band Syndrome

Also known as:

ITBS; Iliotibial Band Friction Syndrome

Definition: An inflammatory condition resulting from repeated distal iliotibial band friction over the lateral femoral condyle of the knee.

GENERAL INFORMATION

- Primary cause: knee overuse during running or cycling
- Secondary causes: prolonged lower extremity immobility and/or prolonged sitting; habitual unilateral, lower extremity weight-bearing stance
- Contributing factors: running on hard or banked surfaces, inefficient or improper running techniques, worn-out or improperly fitting shoes, foot pronation, cycling long distances with improperly adjusted bicycle seat
- Gradual onset
- Prevalent in active and casual athletes, ages 15–50
- Presentation usually unilateral
- Second most common running-related sports injury

PATHOPHYSIOLOGY

The iliotibial (IT) band is located in almost a straight line from the anterior superior iliac spine (ASIS) to the lateral aspect of the tibial condyle. Originating at the tensor fascia lata and ending in a ligament-like structure, this dense fascial band crosses and helps stabilize the knee joint (Figure 21-1). This stringy, strong, mobile band also assists the lower extremity during inward and outward hip rotation, and extension and flexion of the knee. The only firm bony attachments exist at the proximal ASIS and the distal tibial condyle. The two, very distant, bony attachments allow this long structure to move freely, while continuously adjusting anteriorly and posteriorly during normal gait.

ITBS develops when irregular knee movement causes repeated unusual friction over the embedded bursa lateral to the knee joint. As mild inflammation develops, pain ensues, subtle abnormal gait or leg use follows, and the entire IT band becomes shortened and hypertonic, producing a cycle of pain and stiffness. Although ITBS is clinically an inflammatory condition, the classic symptoms of heat, redness, and swelling are usually absent, and only localized pain is used as a diagnostic indicator.

Diagnosis is confirmed based on clinical symptoms, the patient's complaints and history, palpation indicating a hypertonic IT band, reproducible localized pain, and occasionally the presence of an abnormal, stiffened gait. The patient can clearly identify point tenderness at the lateral knee and often complains of radiating pain up the lateral thigh. Leg and hip strength testing may indicate weakness in knee flexors and extensors and/or hip abductors. Knee pain experienced at rest, with no history of repetitive use or trauma, is *not* indicative of ITBS.

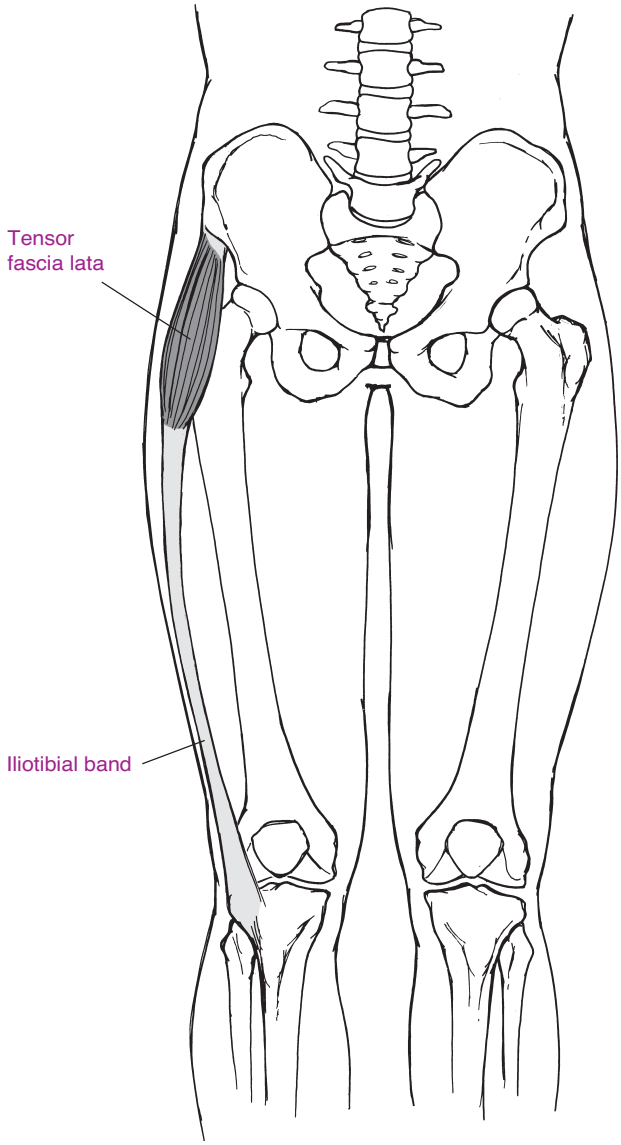

FIGURE 21-1 Tensor fascia lata and iliotibial band of the lateral thigh. From Hendrickson T. *Massage for Orthopedic Conditions*, Philadelphia: Lippincott Williams & Wilkins, 2003.

OVERALL SIGNS AND SYMPTOMS

Develops early in syndrome:

- Local aching or burning at the lateral aspect of the knee *during activity*; resolves, but sometimes worsens, with activity
- Radiating pain up the lateral aspect of the thigh *during activity*; resolves, but sometimes worsens, with activity
- Pain when ascending or descending the stairs or running downhill
- IT band hypertonicity

Develops later in syndrome:

- Feeling a "snap" or hearing a "pop" while walking, running, or cycling
- Pain during non training walking
- IT band hypertonicity and thickening
- Anterior pelvic tilt; hyperlordosis

Develops if untreated:

- Pain at rest
- Stiff-legged gait
- Extreme IT band hypertonicity
- Adhesions along the IT band

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

Since the IT band is an easily accessible soft tissue structure with clearly defined bony origins and insertions, ITBS is effectively addressed with massage therapy techniques.

- Hypertonicity is addressed with deep, aggressive manual techniques combined with heat applications.
- The shortened IT band is stretched using both on-the-table and homework exercises.
- The low-level knee joint inflammation is addressed with tissue flushing techniques.

TREATMENT OPTIONS

ITBS usually disappears if the person reduces, stops, or corrects the offending activity. If symptoms persist, treatment is conservative. Manual therapies, including massage, heat application, and stretching are effective. Physical therapy techniques help strengthen the patient's lower extremities if he wants to maintain and continue his exercise regimen. Non-weight-bearing cross-training techniques, such as swimming using only the upper body and arms, are suggested for the dedicated athlete who wishes to maintain his cardiovascular routine while his lower extremities heal. Although conservative, treatment must be continuous—even after activity correction and pain relief—if the patient wants to remain symptom-free.

Inflammation is easily controlled with the use of ice, rest, and nonsteroidal anti-inflammatory drugs (NSAIDs). Heat is used for chronic, dull, aching discomfort. Ice is applied for local flare-ups and more intensive pain. Local corticosteroid injections are used only when the ITBS does not respond to more conservative techniques. Surgery is rarely necessary.

Common Medications

- NSAIDs, such as ibuprofen (Motrin, Advil)

MASSAGE THERAPIST ASSESSMENT

A "weekend warrior" or consistent runner or cyclist may or may not have visited a physician's office before seeking massage therapy for ITBS. Assessment, not diagnosis, is fairly straightforward based on the client's history and simple palpation techniques.

The therapist should ask the client about his athletic habits, including questions about the condition of his running shoes, whether the track he runs on is slanted, and in which direction he consistently runs. He can describe the duration of his bicycle rides and whether his bicycle seat has been professionally fitted for his cycling habits and leg length. The therapist should also have him remove his shoes and observe whether the inside edges are more worn than the outside edges (indicating overpronation).

With the client standing in front of the therapist, she asks permission to palpate the *bilateral* IT bands from the ASIS all the way down to the lateral sides of

Thinking It Through

Regular exercise is essential to prevent chronic disease, help ensure a smooth aging process, and reduce symptoms in myriad medical conditions. Although ITBS most often results from improper or excessive exercising and the short-term treatment may involve exercise reduction or cessation, it is wise for the therapist to advise the client to maintain some form of activity. She might encourage him to continue his exercise regimen by considering the following:

- If ill-fitting shoes are the cause of my client's ITBS, together we can find a running store whose staff includes experienced runners. I can recommend his going there to get properly fitted, and buying a new pair of running shoes for motivation when he returns to his exercise program.
- If foot pronation has contributed to my client's pain, I can refer him to an expert foot physician who can examine his feet and prescribe orthotics or special shoes in anticipation of his returning to his exercise regimen.
- If my client is a cyclist and has not benefited from a professional evaluation of his riding position and bike equipment, we can search online and find proper cyclist alignment techniques and/or a bike shop that will properly adjust his bike seat.
- If my client is hesitant to return to weight-bearing exercises for fear of ITBS

Thinking It Through *(cont.)*

recurrence, I can recommend a personal trainer who might suggest cross-training techniques.

- Regardless of my client's specific complaint, I should encourage him to continue or return to his hard-won exercise regimen and remind him of the long-term benefits of regular exercise.

Massage Therapist Tip

Icing an Injury

Ice is most effective when applied locally within the first 48 hours of an acute injury, or anytime during a flare-up of a short-term or chronic inflammatory condition, such as ITBS. Here are three safe and effective ice application techniques: (1) Massage with an ice pop. Place a popsicle stick in a paper cup of water; freeze it, then peel off the paper right before use. Constantly move the ice pop in a wide range around the affected area. (2) Place a few ice cubes and a little water in a resealable plastic bag and lay it over the sheet covering the affected area, not directly on the skin. (3) Using a bag of frozen vegetables or fruit, follow the same previous techniques. *Never ice for longer than 15 minutes.* Allow the tissue to return to normal sensation and warmth, waiting at least an hour, before reapplying ice. Reapplication of ice is appropriate and safe if you observe these guidelines.

the knees. She notes hypertonicity and tenderness on the affected side. Reproducible lateral knee pain should be evident upon deep palpation and when the client is asked to walk swiftly or run across the office. (A normal walking gait may not reproduce the pain.) The therapist can ask if he has heard a popping or snapping sound while running or cycling. The therapist observes the client from a sideways position and looks for hyperlordosis (swayback).

Finally, the therapist inquires about self-care measures, other health care professionals the client has visited, and medication intake.

THERAPEUTIC GOALS

There are two primary massage therapy goals for clients with ITBS: decreasing hypertonicity and increasing IT band flexibility. In addition, teaching home stretching exercises and encouraging clients to return to a regular exercise regimen as soon as possible are essential.

MASSAGE SESSION FREQUENCY

- 60-minute sessions once a week, until pain and hypertonicity completely resolve
- 60-minute sessions once a month, for maintenance

MASSAGE PROTOCOL

Helping a client who has ITBS is a classic work for the massage therapist. You can use many of the simplest, highly effective techniques you learned in massage school to achieve significant results.

The approach must be aggressive and deep in order to be effective. However, "no pain, no gain" is *not* a massage therapist's mantra. Effective, deep techniques are best accomplished this way:

1. Begin with warming techniques (jostling, vibrating, and shaking the tissue).
2. Stay keenly aware of the client's response.
3. Follow the tissue with hands intelligently aware of anatomy.
4. Work sufficiently deeply that you feel as if you have the entire IT band at your disposal.

Before beginning the session, your communication with the client should clarify that he *may experience some discomfort, but that you will never work to the point of causing pain*. Light, superficial massage for ITBS is ineffective.

Getting Started

If the client has a dull, aching pain, use hot packs. If he complains of a sharp, nagging pain, use ice packs. Review the table and homework stretches you will perform and assign for ITBS, so that you're comfortable and confident before you begin. Have adequate pillows to provide for a prolonged, comfortable side-lying position. Regardless of his level of athleticism, remember to praise your client for his efforts and encourage him to continue exercising.

HOMEWORK

Massage therapy must be accompanied by consistent, daily self-care if your client is to remain pain-free and return to his exercise program or athletic regimen. Applying

Step-by-Step Protocol for Iliotibial Band Syndrome

Technique	Duration
Position the client comfortably prone. Apply and secure a moist hot pack along the affected iliotibial band as you proceed with the following warm-up techniques.	1 minute
Compression, deep pressure, evenly rhythmic, brisk pace, using your whole hand • Achilles' tendon, to the gastrocnemius, to the hamstrings, to the ischial tuberosity • Move over onto the lateral aspect of the thigh, lateral aspect of the pelvic crest, and then (after asking the client's permission) deep into the entire gluteal complex. Start on the unaffected leg, and then move to the affected side, leaving the hot pack in place until you must move it to work on the affected lateral thigh.	5 minutes
Effleurage, petrissage, effleurage, deep pressure, not necessarily rhythmic, *starting proximal and working distal*, massaging the affected leg only • Gluteal complex • Hamstrings • Gastrocnemius • Achilles' tendon	5 minutes
Position the client comfortably side-lying, pillow between his knees, with his unaffected IT band lying on the table. Remove the hot pack. Position yourself in front of the client, facing his head while standing at the level of his knees. Make two fists, and apply your softly clenched fists on the anterior and posterior surface of his thigh. Very vigorously and deeply simultaneously jostle, shake, or vibrate: • Hamstring complex • Quadriceps complex	3 minutes
Skin rolling, skin plucking, wringing and/or flat-hand tissue broadening techniques (using no lubrication), working deeply but to the client's tolerance • Down the entire length of the IT band from the ASIS to the lateral aspect of the knee	5 minutes
Digital kneading and muscle stripping, using very precise, exact fingertip techniques as if trying to pry loose the entire IT band, working deeply. • The entire route of the IT band	5 minutes
Using your thumbs (use a small but sufficient amount of lubricant) deeply, rhythmically cross-fiber friction the entire IT band, working from • The ASIS • Down the front of the pelvic crest • To the femoral head • Deeply into the tensor fascia lata • Down the entire length of the IT band • To the insertion on the lateral tibial condyle	5 minutes

(continued)

Contraindications and Cautions

- **A client who presents with lateral knee pain but has no history of athletic endeavor or knee trauma may be suffering from either a neoplasm or an infection of unknown origin. Do not perform therapy on the affected leg. However, a general Swedish relaxation massage is fine, followed by a referral to a physician.**

Technique	Duration
Effleurage, petrissage, effleurage, deep pressure, brisk pace • From the ASIS • Down into the hamstrings and quadriceps • Into the gastrocnemius and the tibialis anterior • Deep into the Achilles' tendon	5 minutes
With the client still on the table, securely braced, perform the following table stretches: • Ask the client to flex his ankle as hard as he can so his toes are stretched toward his knee (not pointing his toes), while positioning himself in a fetal position. Ask him to tense his leg muscles for as long as he can possibly hold this position, and then release. • Ask the client to immediately open his position so he is completely stretched out on the table, still side-lying, and stretch to "become long" and hold that position as long as he can, and then release. • Stand behind the client; ask him to position himself close to the edge of the table where you are standing. Ask him to hold onto the opposite edge of the table. While securing him so he feels safe, ask him to slowly drop his top (affected) leg behind him and slightly off the table until he feels a significant stretch. (Stop this stretch if he experiences even mild back pain.) Ask him to hold it as long as he can, then return to a stable position. • Position the client supine, stand at his side. Ask him to place the heel of the affected leg on the knee of the unaffected leg. Place your hand on the affected knee. Gently push the bent knee across the client's body, moving it as close to the opposite side of the table as you can get it without causing pain. *Be sure the hips lie flat on the table and that the client's gluteals do not come off the table during this stretch; he should remain lying flat to achieve an effective stretch.* Ask him to take a deep breath if this is uncomfortable. *Stop if this stretch hurts his back.* Release the stretch and return to a comfortable supine position. Repeat 3 times. • Standing at the client's side, ask him to place the flat of the foot of the affected leg against the inside of the unaffected knee. His knee should now be bent outward, slightly off the table. Place your hands on his affected knee and thigh and begin pushing his bent leg up toward his head, keeping it lying as flat on the table as you can. Keep going until you meet sufficient resistance; ask the client to take a deep breath, and then move an inch farther. Release the stretch and return to a comfortable supine position. Repeat 3 times.	10 minutes
Digital kneading and muscle stripping, using very precise, exact fingertip techniques as if trying to pry loose the entire IT band, working deeply • The entire route of the IT band	5 minutes
Jostle, shake, vibrate, using your fists or the flat of your hands, deeply, vigorously • Quadriceps complex • IT band	5 minutes

(continued)

Massage Therapist Tip

Proper Stretching Techniques

Homework assignments often include muscle and joint stretches. For demonstrating and assigning proper stretching techniques, remember the following: Moving a muscle set or joint to the point of resistance is *not* a stretch; moving the muscle set or joint *beyond the point of resistance* is a stretch. The difference may be no more than an inch, but that *inch moved beyond the comfort zone means you have achieved a true stretch*. Tell your client that moving his joint just to the point of resistance does little toward achieving a true stretch. Here's one way of explaining the mechanics of an effective stretch: "While standing, bend over and try to touch your toes. Move slowly and carefully; don't bounce. When you've reached as far as you can, take a big breath, inhaling deeply. On your exhale, move even closer to your toes. The distance between where you stopped and where you ended up after your exhalation is the stretch. This feeling of slight discomfort is what you want to reproduce every time you stretch. Repeat several times for maximum results, but *never push to the point of pain*."

Technique	Duration
Effleurage, petrissage, effleurage, stroking • Quadriceps • IT band • Around the knee • Tibialis anterior	6 minutes

moist hot packs when he experiences a deep, dull pain and ice when he experiences sharper pain are two active measures he can take toward self-care. Although you cannot suggest taking medication, you can counsel your client to call his family physician for over-the-counter (OTC) pain medication suggestions. Most important, however, are the following daily exercises, which will stretch his IT band and surrounding muscles.

Talk through and *demonstrate*—yes, lie on the floor in your doorway—each exercise before your client leaves your office to make sure he understands these homework assignments:

- Standing IT band stretch (Figure 21-2): Cross your unaffected leg in front of your affected leg. Bend over and reach for your toes. Sweep your fingers along the floor (or as close as you can get) back and forth about 6 inches. Take a deep breath, and as you exhale, try to reach closer to the floor. Repeat three times.
- Side-leaning IT band stretch (Figure 21-3): Stand sideways, about a foot away from a wall, with your affected side nearest the wall. Reach out to the wall for support. Cross your unaffected leg in front of your affected leg, keeping the foot of your affected leg flat on the floor. Lean into the wall with your hip and hold for 15 seconds. Repeat three times.
- Lying-on-your-back hamstring stretch (Figure 21-4): Lie on your back, on the floor in a doorway, with your affected leg closest to the doorframe.

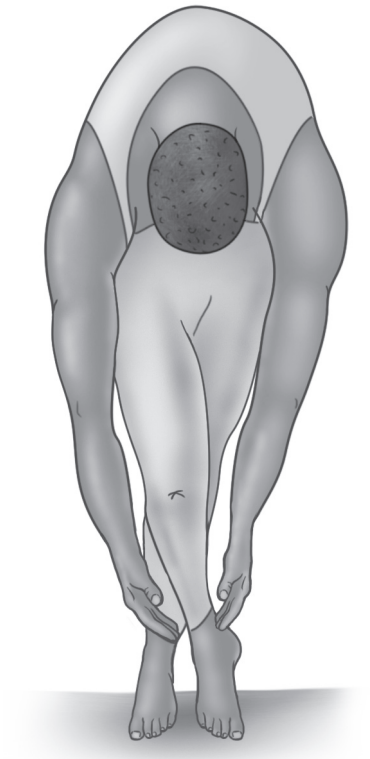

FIGURE 21-2 The standing IT band stretch.

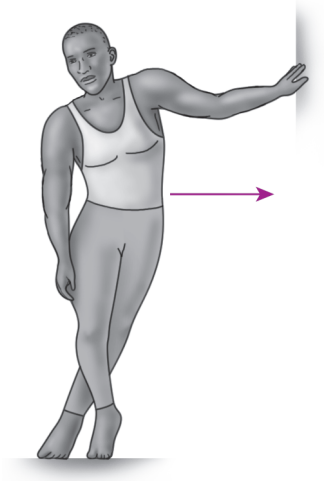

FIGURE 21-3 The side-leaning IT band stretch.

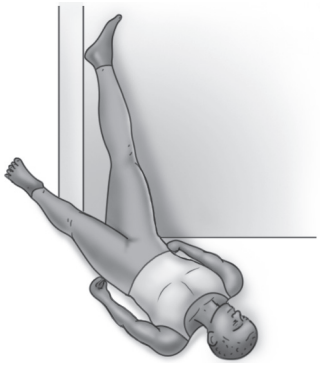

FIGURE 21-4 The lying-on-your-back hamstring stretch.

FIGURE 21-5 The standing quadriceps stretch.

Swing your leg up and lean it against the frame; allow your other leg to stay on the floor, lying through the doorway. Slightly shimmy your body through the doorway until you feel a stretch at the back of your leg (your hamstrings) as your affected leg remains up on the wall. Stay in this position while you feel the stretch for at least 30 seconds. Bring your leg down, rest. Repeat three times.

- Standing quadriceps stretch (Figure 21-5): Stand facing a wall about an arm's length away. Reach out and brace yourself with the arm of your unaffected side. With the arm of your affected side, reach down and grasp the ankle of your affected leg. Try to touch your heel to your buttocks. Stay stable and stand straight. Hold the stretch for about 30 seconds. Repeat three times.

Review

1. Name the causes of ITBS.
2. What are the symptoms of ITBS?
3. How would you describe the medical treatment for ITBS?
4. What are the effective yet mild massage therapy techniques for treating ITBS?
5. Explain the mechanics of effective stretching.
6. Describe the techniques for the safe application of ice.

BIBLIOGRAPHY

Cluett J. Orthopedics Iliotibial Band Syndrome: Information about this common sports injury. About.com. Available at: http://orthopedics.about.com/cs/sportsmedicine/a/itbs.htm. Accessed June 13, 2010.

Hendrickson T. *Massage for Orthopedic Conditions*, 2nd ed. Baltimore: Lippincott Williams & Williams, 2009.

Martinez JM. Physical Medicine and Rehabilitation for Iliotibial Band Syndrome. EMedicine article. Available at: http://emedicine.medscape.com/article/307850-overview. Accessed June 13, 2010.

National Institute of Arthritis and Musculoskeletal and Skin Diseases. Questions and Answers about Knee Problems. Available at: http://www.niams.nih.gov/Health_Info/Knee_Problems/default.asp. Accessed June 13, 2010.

Pinzon EA. Chronic overuse sports injuries. *Practical Pain Management.* May/June 2008:42–51.

Sportsinjuryclinic.net. Runners Knee: Iliotibial Band Syndrome. Available at: http://www.sportsinjuryclinic.net/cybertherapist/front/knee/irunnersknee.html. Accessed June 13, 2010.

Stirling JM. Iliotibial Band Syndrome. EMedicine article. Available at: http://emedicine.medscape.com/article/91129-overview. Accessed June 13, 2010.

Wanich T, Hodgkins C, Columbier JA, et al. Cycling injuries of the lower extremity. *Journal of the American Academy of Orthopedic Surgeons* 2007;15:748–756.

22

Insomnia

Definition: A sleep disturbance characterized by difficulty falling asleep or staying asleep, or awakening too early.

GENERAL INFORMATION

- Physiologic etiology poorly understood
- Caused by anxiety, mental ruminations secondary to real or imagined stress-inducing life events, medication side effects
- Common predisposing factors: over-the-counter (OTC) decongestants, pain medications, dietary supplements containing caffeine or stimulants, prescription thyroid hormones, antidepressants, corticosteroids, heart medications, caffeine, alcohol, or nicotine taken too close to bedtime
- Acute insomnia duration less than 1 month
- Chronic insomnia duration 1 month or longer
- Increased prevalence with age

Morbidity and Mortality

At least one-third of adults in the U.S. complain of difficulty sleeping, and 10–15% suffer from clinically diagnosed insomnia. Approximately 9–15% of the same population report insomnia serious enough to cause daytime impairments.

About 85–90% of insomnia cases result from a coexisting medical or psychiatric condition. In fact, insomnia coupled with a medical or psychiatric diagnosis annually doubles the incidence of hospital admissions and physician office visits.

Insomnia often occurs immediately prior to a diagnosis of depression. It is used as a diagnostic signal for recurring depression, is associated with increased suicide risk, and is a precipitating factor in manic episodes of bipolar disorder.

Insomnia is associated with a decreased life span. The mortality rate in older adults with heart disease, stroke, cancer, and attempted suicide doubles with accompanying insomnia.

PATHOPHYSIOLOGY

The number of hours of sleeplessness is not a good indicator of insomnia. Although 7.5 hours is the average amount of sleep most adults need, advanced age, illness, personal constitution, and subjective evaluations of overall health and mood indicate that the "normal" sleep cycle ranges from 4 or 5 to 10 hours. A distinction should be made between the sleep's quality and quantity, and whether inadequate sleep is merely secondary to an expected sleep disturbance. On-call hospital residents or mothers of newborns, for example, experience insufficient or nonrestorative sleep, but they do not necessarily have clinical insomnia. A sleep disturbance lasting more than a month, however, is considered a clinical condition and is a cause for medical intervention.

Insomnia is classified as primary or secondary. Primary insomnia can be pinpointed to life events, such as unusual or excessive stress, a job change, travel, financial

worries, or a new pet in the home. (Some references identify primary insomnia as that which presents with no known physiologic basis.) Secondary (comorbid) insomnia is sleeplessness with or resulting from a coexisting medical or psychiatric condition.

The condition is associated with musculoskeletal pain, arthritis, cancer, menopause, dementia, Alzheimer's disease, Parkinson's disease, pain syndromes, gastrointestinal and metabolic disorders, chronic fatigue syndrome, and fibromyalgia.

Consequences of acute or chronic insomnia include impaired concentration, performance, memory, reaction time, and coordination. Further, increased workplace absenteeism, diminished social functioning, increased pain perception, and compromised quality-of-life issues result from even mild sleep disturbances.

A polysomnography, or sleep test, usually administered in an overnight sleep clinic, measures sleep-wake cycles. However, the results merely indicate the presence of a sleep disorder and rarely provide sufficient diagnostic information.

OVERALL SIGNS AND SYMPTOMS

- Difficulty falling asleep
- Early morning awakening
- Daytime sleepiness, fatigue, malaise
- Accidents or errors at work or while driving
- Impaired judgment

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

When techniques are used to specifically quiet the person's mind and body and the session is given in the appropriate environment, massage therapy can help reduce stress and anxiety and thereby induce sleep.

TREATMENT OPTIONS

Cognitive behavioral therapy (CBT) is a nonpharmaceutical, behavioral treatment option that is relatively effective. CBT consists of educational steps aimed at teaching the insomniac how, where, and when to sleep, and combines talk therapy with relaxation techniques.

Preventive measures include reading medication labels of cough, cold, and pain relievers to discover the presence of stimulants and caffeine; avoiding exercise before bedtime; avoiding caffeine, nicotine, or alcohol anytime after lunch; avoiding naps; keeping the bedroom as a place strictly for sleep (not for reading, eating, watching TV, etc.); creating a quiet, dark, slightly cool environment in which to sleep; and observing a consistent bedtime.

Medications are commonly used to induce or maintain sleep; approximately $2 billion are spent annually on sleep-promoting agents, and about 25% of adults with sleep difficulties resort to OTC sleep medications. The insomniac's goal is to find a nonaddictive, effective medication that does not cause morning drowsiness. Alcohol is sometimes used as a sleep aid, and although it can be effective, quality of sleep is usually poor. OTC sleep aids containing antihistamines can cause drowsiness and are often the medication of choice for the occasional insomniac, even given the usual side effect of a morning-after dry mouth.

Melatonin, a natural hormone produced in the brain and directly related to the sleep-wake cycle, is available in tablet form without prescription and is found in most health food stores. With few, if any, side effects, it can hasten the onset and deepen the quality of sleep.

Physicians usually do not recommend the long-term use of sleep aids, citing adverse side effects and the risk of dependency.

Thinking It Through

Even if sleep is induced as a result of an expert massage therapy session, the client must be roused after 60 minutes and returned to the real world. It is unlikely that the client can experience deep, restorative sleep in a mere 60 minutes. The question then becomes, "Does it serve the client to perform sleep-inducing techniques in the massage therapy treatment room?" The exercise for the massage therapist involves thinking through *where and for how long* the session takes place. She might ask herself the following questions:

- If I successfully put this client to sleep on the massage table in my treatment room, can I allow her to sleep until she awakens? Do I have two treatment rooms—one of which I can leave undisturbed, the other one in which I can treat my next client?
- If I know a client is coming to see me for insomnia, should I schedule her for the last appointment of the day?
- Should I allow a client who has fallen asleep on my table and is in a profound state of relaxation to drive home after her appointment? Should I ask her to be sure someone accompanies her to the session?
- Would it be best to go to my client's home in order to treat her insomnia?
- If my client requests that I massage her in her home and in her own bed so she can simply fall asleep and stay asleep after the massage, is this appropriate and ethical? Am I comfortable in the home environment?

Massage Therapist Tip

Massage in a Hospital or Nursing Home Setting

A highly effective sleep-inducing massage can be given to a patient lying in a hospital or in a nursing home bed. Using the following protocols, a 15- or 30-minute session of slow, gentle massage given to the patient suffering from intractable pain or insomnia goes a long way toward producing a desperately sought-after good night's sleep. If you have the chance to volunteer to provide massages in either a hospital or a nursing home setting, aim for arriving around bedtime. The work is satisfying and effective—and may open the door for future employment.

Common Medications

- Benzodiazepine hypnotics, such as estazolam (ProSom)
- Benzodiazepine hypnotic sedatives, such as temazepam (Restoril)
- Sedatives, such as triazolam (Halcion)
- Sedative hypnotics, such as zaleplon (Sonata), zolpidem tartrate (Ambien), and eszopiclone (Lunesta)
- Melatonin receptor agonists, such as ramelteon (Rozerem)

MASSAGE THERAPIST ASSESSMENT

Since only about 50% of adults who experience insomnia tell their primary physicians about this condition and most health care practitioners fail to ask about sleep habits, the massage therapist is in a unique position to ask about sleep with every new client intake, as well as at the beginning of every session. If the client complains of malaise, difficulty concentrating, or drowsiness—especially in the absence of any obvious medical condition—a question about her recent sleep habits is in order. The therapist should also be aware of common medication side effects and any possible comorbid symptoms from a client's current medical diagnosis. If a client informs the therapist of an impending wedding, divorce, house sale, job loss or promotion, or any stress-inducing life event (both positive and negative events can produce physiologic stress), the therapist should expect that the client has at least a temporary sleep disorder.

THERAPEUTIC GOALS

Helping a client achieve a deep parasympathetic state—whether or not sleep is induced—is a worthy therapeutic goal. The body is thus "reminded" what deep relaxation feels like and can begin its journey toward reversing the effects of stress.

MASSAGE SESSION FREQUENCY

Given that insomnia may last for weeks or months; that the therapist may be treating this condition in a home, practice room, or medical setting; and that the protocol can last from 15 minutes to 1 hour, massage session frequency should be individualized.

MASSAGE PROTOCOL

Two simple sleep-inducing techniques are used by many massage therapists working in hospitals, hospices, nursing homes, and private practices. These techniques are highly effective in treating the insomnia experienced by agitated psychiatric, pediatric, cancer, intensive care unit, or critical care unit patients, and those enduring intractable pain or unrelenting stress.

The following two protocols can be provided alone or in combination with other relaxing Swedish techniques. Duration is not indicated in the step-by-step parts because you may be offering these techniques in a hospital setting, in your treatment room, or in the client's home, and durations will vary according to the situation and the client. As soon as sleep is attained, however, the session should cease.

Slow-Stroke Back (or Front) Massage

This protocol assumes the client is positioned prone, but in many cases (as in a hospital or nursing home environment), the patient may be able to lie supine only.

- Stand at the side of the hospital bed or massage table, facing the client's head. Lay your *non-lubricated* hands (either directly on the client's skin or over clothes) at the base of the client's neck (Figure 22-1). Using only the weight of your hands (no lighter, because this will be stimulating to the body, and no

FIGURE 22-1 Beginning the slow-stroke back massage. LifeArt image. Philadelphia: Lippincott Williams & Wilkins.

deeper, because your intent is not to massage muscle) and maintaining full hand (not fingertip) contact, slowly slide your hands down the client's back to her sacrum. It should take you about 1 minute to travel the length of her spine.
- When your hands reach the sacrum, slowly "brush off" your hands to either side of the body.
- Return to the base of the neck immediately and repeat. *This work is unidirectional—running down the spine only.*
- Duration: 15–20 minutes

Hold and Stroke

This technique can be performed with the client lying in any comfortable position.

- Facing the massage table, standing at about the location of the client's waist, gently place one of your hands on your client's shoulder and the other on her hand. Simply rest *for a full minute*. Focus, and determine your intent. Breathe slowly and evenly. Do nothing. Do not speak.
- Once you are focused, begin stroking *down* the arm with the *non-lubricated* hand that was holding your client's shoulder. Use the weight of your full, open hand; do not use your fingertips. Move slowly. This work is performed to the depth at which you would normally apply lubricant and goes no deeper than superficial fascia.
- Repeat three times on one arm.
- Move silently to the contralateral upper extremity and repeat.
- Use slow-stroke back (or front) techniques to the trunk of the body.
- Moving to the lower extremities, place one hand near the head of the femur and the other as far down the leg as you can comfortably reach. Again, center yourself and focus in silence.
- Repeat the slow stroking down the leg.
- Silently move to the other lower extremity and repeat.
- Finish with about 5 minutes of slow-stroke back (or front) massage.
- Duration: 15–30 minutes

Step-by-Step Protocol for Insomnia

Technique	Duration
Slow-stroke back massage	15–20 minutes
And/or a combination of any of the following Swedish relaxation techniques	30–45 minutes
With the client positioned prone or supine, general warming compression, medium pressure, evenly rhythmic, very slowly • Head to toe	
With the client positioned prone, effleurage, petrissage, effleurage, stroking, evenly rhythmic, medium pressure, very slowly • The entire back, from the base of the skull to the sacrum	
With the client positioned either prone or supine, gently rock the body • Applying alternating pressure on either side of the pelvis, hands on the gluteus medius	
Stroking through the hair, slowly raking your fingers through the length of the hair from the scalp to the tips. Alternate gentle, rhythmic scalp massage with long, slow strokes through the hair.	
Slow, large, clockwise circles, light pressure, rhythmic • On the abdomen, from below the ribs to just above the mons pubis	

Getting Started

As simple as these techniques are, they can cause back spasms in a massage therapist who is not used to performing slow, focused work. Be careful to bend your knees, work from your core, breathe deeply, and shift your weight rather than stretch from your shoulders as you perform these highly effective but surprisingly demanding massage therapy techniques.

Warm packs are often very soothing and can be applied anywhere on the client's body. A heated table pad is also comforting. Make sure the post-session environment has been considered before beginning the session.

Remember, as soon as the client achieves sleep (watch for deeply even, rhythmic breathing or a light snore), work for about another minute and then gently move away from the body and stop treatment.

If the client is comfortable with complete silence, consider foregoing the use of music.

HOMEWORK

As ubiquitous and seemingly innocuous as insomnia is, be aware that its long-term presence can profoundly affect mortality and quality of life, and that insomnia often coexists with serious medical or psychiatric disorders. Therefore, client homework assignments involve quality-of-life and self-awareness issues.

- Be aware of OTC decongestants, pain medications, dietary supplements containing caffeine or stimulants, prescription thyroid hormones, antidepressants,

corticosteroids, heart medications, caffeine, alcohol, or nicotine taken too close to bedtime.
- If your bedroom is the family's "Grand Central Station," find ways to restructure the room so it is a calmer place and more conducive to peaceful sleep.
- Notice if there are any long-term side effects of the sleep aids you've been using.
- Find a naturopath who can talk to you about alternative supplements.
- Keep a sleep journal, and write down sleep disturbances and habits to report to your physician.

Review

1. How would you explain the difference between primary and secondary insomnia?
2. What are some nonpharmaceutical treatment options for insomnia?
3. Name some practical considerations for a massage therapist who is treating a client experiencing insomnia.
4. Describe the slow-stroke back massage.
5. Describe the hold and stroke technique.

BIBLIOGRAPHY

Doghramji P, Moxin C. Treatment options for patients with insomnia. *ADVANCE for Physician Assistants* May/June 2008;29–34.

MayoClinic.com. Insomnia. Available at: http://www.mayoclinic.com/print/insomnia/DS00187. Accessed June 13, 2010.

Mok E, Woo CP. Massage benefits stroke patients. *Complementary Therapies in Nursing & Midwifery* 2004;10:209–216.

Neubauer D. Optimizing the Long-Term Treatment of Insomnia. Medscape.com. Available at: http://www.medscape.com/viewarticle549102. Accessed December 9, 2008.

Riley WT, Hunt CE. Manifestations and Management of Chronic Insomnia: NIH State-of-the-Science Conference Findings and Implications. Medscape.com. Available at: http://www.medscape.com/viewprogram/4784. Accessed June 13, 2010.

Versagi C. Hands of Peace: How to Touch the Dying. *Massage Magazine.* November/December 1999:68–77.

23

Multiple Sclerosis

Also known as:
MS

Definition: An inflammatory disease of the central nervous system (CNS) in which the myelin sheath deteriorates, resulting in the destruction of nerve fibers.

GENERAL INFORMATION

- Exact etiology unknown
- Multiple triggers: genetic, environmental, and autoimmune factors; history of serious viral or bacterial infection
- Usual onset: age 20–40; occurrence as early as age 15 and as late as age 45
- Most common chronic CNS disease among young adults in the U.S.
- Lifelong duration
- Twice as prevalent in young women as in young men; after about age 30, both genders affected almost equally
- Higher prevalence in Caucasians living in temperate climates

Morbidity and Mortality

Approximately 300,000 Americans are currently affected by MS, with 25,000 new cases diagnosed annually. Once diagnosed, patients typically follow a clinical course of flares and remissions. Although complete asymptomatic remission does occur, it is rare. Debilitation directly relates to the form of MS, genetic history, environmental factors, and how aggressively and consistently the disease is treated. The average life expectancy after diagnosis is 25–30 years. There is no cure.

Complications include minor to severe decrease in quality of life, contractures, mild to complete debilitation, secondary infections, clinical depression, and altered self-image.

PATHOPHYSIOLOGY

Nerve signals travel at lightning speed within the CNS (brain and spinal cord) via fibers from the brain to the spinal cord and back again. These delicate nerve fibers are surrounded and protected by a fatty, slick coating called the myelin sheath (Figure 23-1). Innumerable signals—for vision, smell, gross and fine muscle movement, and so on—allow graceful and efficient function.

Demyelination is damage to the myelin sheath from disease or injury, after which signals do not travel smoothly. As the body attempts to repair the damaged sheath, scar tissue builds and hardens (sclerosis) in multiple spots along the myelin sheath—thus, the name multiple sclerosis. Hardened, scarred patches of myelin sheath cause halting or stuttering signals from and to the brain, leading to symptoms like muscle weakness, spasticity, and eye pain.

Here's an easy way to understand demyelination. Decades ago, household electrical cords were covered in a black, fuzzy, threadlike material. The flow of electricity from the wall socket to a lamp was sometimes inconsistent as it ran through these fibers. Troublesome grandchildren (myself included) found it a great source of entertainment (and irritation for the grandparents) to jump up and down on these cords,

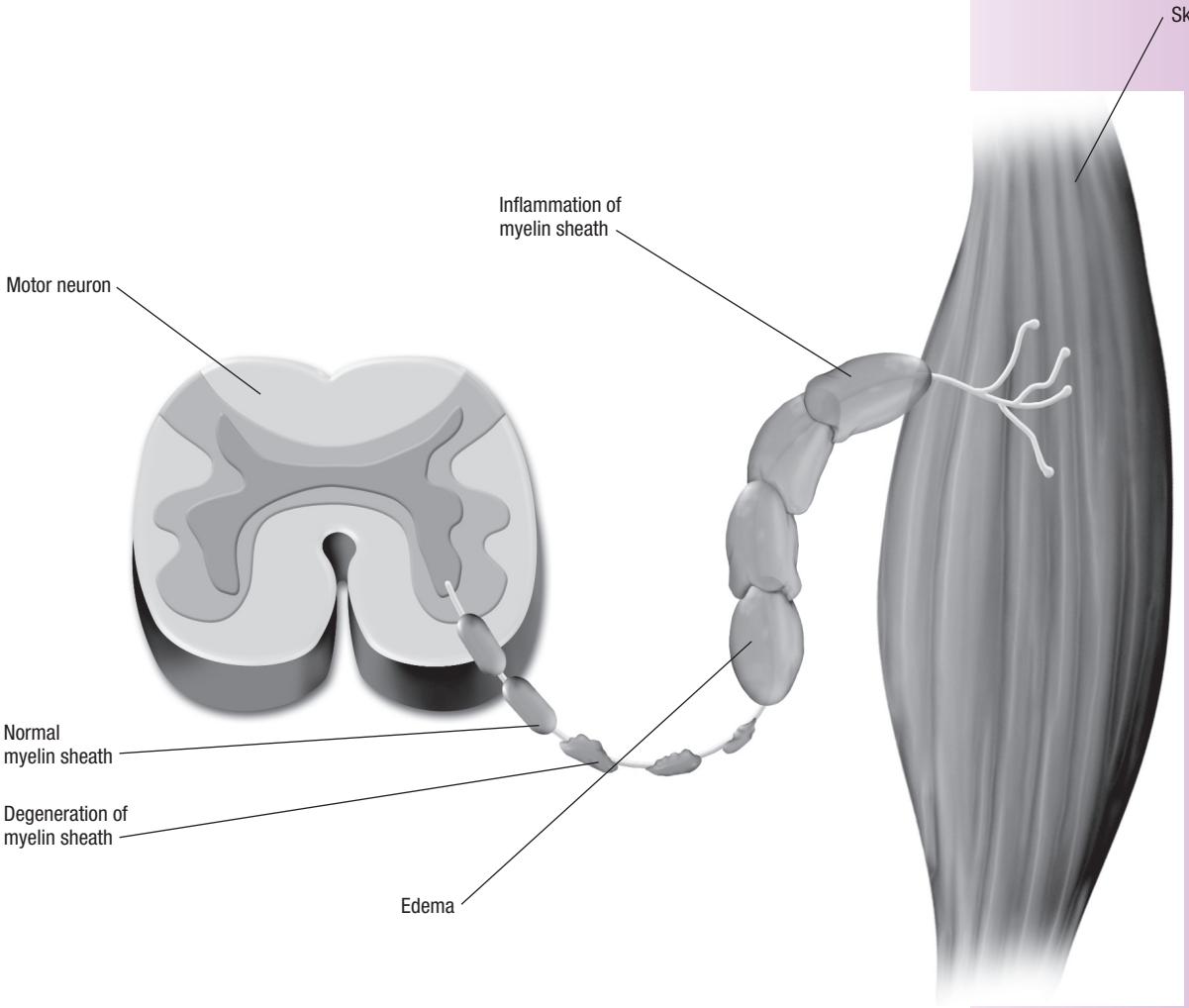

FIGURE 23-1 A myelinated motor nerve. MS involves the destruction of the myelin sheath, thereby impairing nerve signals.

causing a flickering—if not a total extinguishing—of the lamp's light. Demyelination is similar. The normally smooth electrical conduction from the brain (wall socket) to the body (lamp) "flickers" because the smooth flow of "electricity" (nerve signals) has been interrupted. Destruction of the smooth surface coating of nerve fibers in MS has the same effect as ill-mannered grandchildren stomping on electrical cords; it interrupts the smooth electrical flow, and thus functions, distally.

The CNS has both motor and sensory nerves. If you pick up a hot cup of coffee, the *motor* nerves in your hand provide the strength and coordination to grasp and hold the cup; the *sensory* nerves provide information to the brain, registering, "Aha—hot liquid." Therefore, nerve damage can result in *both* motor and sensory abnormalities.

There is no single clinical portrait of a typical MS patient; in fact, patients are often misdiagnosed because symptoms associated with such conditions as scleroderma, fibromyalgia, lupus, and even CNS tumors often mimic those of MS. In addition, the clinical course of the condition varies widely and highly depends on the initial form of MS. MS patients usually linger for years or decades in the stage at which they are diagnosed before gradually progressing to a more serious form. Rarely, MS is diagnosed as malignant, in which case the condition worsens rapidly and leads to an early death.

Patients with benign MS:

- Experience one or two early flares
- Can continue to live relatively symptom-free for decades

Thinking It Through

Most people are needle-averse, and many people with MS have to administer weekly or monthly self-injections into alternating thighs or belly fat, and/or endure IV infusions to control their symptoms. A massage therapist treating an MS patient must be aware of these important concerns: the sites and frequency of injections or infusions, whether the injection has occurred within the last 24 hours, and whether the injection site is tender. Here are some questions and points the therapist can consider regarding her patient's medications:

- Does my patient complain about giving herself injections? Does she know about auto-injectors?
- If my patient has recently self-injected, I should not apply local heat because I could increase the rate of drug absorption; conversely, I should not apply cold, which might impede drug absorption.
- Is she bruised locally from her injections? How close can I work around her injection site, and how should I adjust my pressure in this area?
- Since flu-like symptoms lasting 1–3 days are a common side effect of most MS self-administered medications, I should remind my patient to schedule our massage sessions either immediately before or a few days after her injection.

- Experience longer survival than in the other forms of MS
- Sometimes remain in the benign stage (15% of patients), but more typically progress to a more serious form of MS

Patients with relapsing/remitting MS (the most common form):

- Experience long periods of remission, during which recovery is almost complete, interspersed with definite flares
- Can remain in this form for life but more often develop the next, more serious form

Patients with secondary progressive MS:

- Follow a similar clinical pattern as relapsing/remitting MS, but healing during remission is less successful

Patients with primary progressive MS:

- Experience constant, low-grade flares that allow very little time to heal
- Often steadily decline

Patients with malignant MS (the rarest form):

- Experience severe flares that rapidly progress into severe disability or death

No single clinical examination or medical test confirms the existence of MS. The clinician depends on each patient's symptomatic and family history, combined with the results from spinal taps, MRIs, and nerve conduction tests, to make a near-final diagnosis. Even after clinical testing is completed, a firm diagnosis is not possible without these two factors: (1) The patient has experienced two flares at least 1 month apart, affecting different parts of the body; and (2) test results have ruled out similar conditions.

Prognosis is determined by the form of MS from the initial diagnosis, the severity and frequency of flares, and the efficiency with which the body heals during remissions.

OVERALL SIGNS AND SYMPTOMS

Symptoms manifest according to the form of MS, whether medication has been recently administered, the presence or absence of flares, and whether the patient is in remission. Overall, however, the following represents the most common symptomatic picture of the MS patient:

- Weakness, spasm, stiffness, and/or cramping in the extremity muscles
- Paresthesia (numbness, tingling, and burning) in the hands and feet
- Pain in the eye or eyes, with compromised vision
- Dysfunction in urinating and sexual performance
- Stumbling and/or loss of coordination
- Impaired cognition
- Depression
- Nausea, diarrhea, and indigestion
- Profound fatigue

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

- The careful administration of massage therapy techniques can help relieve muscle cramping, spasm, spasticity, and hand and foot paresthesias.
- The secondary limb and joint compensatory stiffness, contractures, and localized edema can be addressed with effective soft tissue and range-of-motion (ROM) techniques.

- Depression can be reduced, and an altered self-image can be improved, by compassionate bodywork.

TREATMENT OPTIONS

After the initial diagnosis is confirmed and a baseline MRI is taken, serial MRIs (multiple scans taken at consistent intervals to track disease progression or remission) are used to determine the treatment plan. Although a holistic approach to MS is important and incorporates gentle cardiovascular exercise, strength training, high-quality nutrition, stress reduction, and an increase in the quality and quantity of sleep, the treatment for the condition is largely pharmaceutical.

Although steroids can quiet flares, drugs that limit the immune system's response to inflammation and secondarily reduce flares, while prolonging periods of remission, are now the ones most commonly used to treat MS. Interferon betas allow many patients to live almost symptom-free. These drugs, which are immunomodulators, help manage relapsing MS and reduce the development of brain lesions (injury to nerves in the brain caused by demyelination). Chemotherapeutic agents, also called antineoplastics, quiet the immune system but are reserved to treat the most severe cases of MS. Drug cocktails (combinations of two or more medications) can address a variety of symptoms. All of these medications have serious long-term adverse side effects.

Common Medications

- Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (Motrin, Advil)
- Antiviral immunoregulators, such as interferon beta-1b, recombinant (Betaseron)
- Antineoplastics, such as mitoxantrone hydrochloride (Novantrone)
- Antiviral, antiproliferative immunomodulators, such as interferon beta-1a (Avonex, Rebif)
- Immunomodulators, such as glatiramer acetate (Copaxone) and natalizumab (Tysabri)

MASSAGE THERAPIST ASSESSMENT

No two MS patients will present with the same complaints, and even the same patient will present with different symptoms before each session. The following questions will help the therapist assess the patient's immediate concerns and determine short- and long-term treatment goals:

- In which stage of MS has she been diagnosed?
- When was her last flare?
- Is she in pain today? Where?
- Is she experiencing bowel or bladder difficulty?
- When was her last injection? Which site? Is it tender?
- Which activities of daily living (ADLs) are the most challenging?
- How are her muscles compensating for her altered gait?
- Does she experience paresthesias? Where?
- What other health care specialists is she seeing?
- Which specific symptoms would she like to address today?

THERAPEUTIC GOALS

Because of the mercurial symptomatic picture presented by most MS patients, therapeutic goals will shift frequently. Given both the musculoskeletal involvement of MS and the understandable accompanying stress, the following three general goals

Thinking It Through *(cont.)*

- Is her physician suggesting over-the-counter (OTC) pain relievers, such as NSAIDs, which can be taken an hour before each injection and then about every 6 hours after the injection for the first 24 hours? If she is not aware of this avenue of pain relief, how can I suggest that she approach her physician without going outside my scope of practice?

Massage Therapist Tip

Never Stretch the Limbs of a Multiple Sclerosis Patient

You've learned to instruct a client to "Stretch to the point of resistance, take a deep breath, and then stretch slightly beyond that point." *Exactly the opposite is true when working with MS patients.* Here's why: (1) These patients can't tolerate any form of sympathetic nerve firing, which might cause a spasm. (2) They might have an inadequate physiologic reporting mechanism to sense how far they can stretch. (3) If they have contractures, you can cause harm with even mildly overzealous passive ROM. When treating or assigning homework to an MS patient, remember that *stretching must be performed only to the point of slight resistance, and then stopped.* Any further stretching or strengthening exercises should be performed by a physical therapist.

can be combined with the patient's specific concerns: relieving musculoskeletal pain, stiffness, and spasm on the affected and compensating sides of the body; reducing stress; and helping maintain thoracic capacity and efficient breathing patterns.

MASSAGE SESSION FREQUENCY

- Ideally: 60-minute sessions once a week
- If patient tolerance is limited, two 30-minute sessions in the same week
- Mildly effective: 60-minute sessions every other week
- Inconsistent, infrequent therapy yields little improvement but can provide situational stress relief

MASSAGE PROTOCOL

MS is a complicated medical condition, and patients endure it for their entire lives. Therefore, you have an opportunity to maintain a long-term therapeutic relationship; you can make a significant difference in their quality of life and help them manage their level of pain. Remember, you will never accomplish all that needs to be done in one session, and patience and keen listening skills will help keep each session in perspective.

Deep-breathing exercises can be interjected at any point during your session. Passive ROM (remembering not to fully stretch) will help ease stiffness and prevent contractures. If you notice edema, gentle effleurage and stroking performed cephalically will help. If your patient experiences a spasm during your session, stay with the spasm—don't come off the body, but instead gently hold the limb, stop massaging for a moment, and continue to apply gentle pressure. The spasm will stop and you will be able to continue your work. In this way, you are training the body to "let you in," and the cumulative effects cause the muscles to more readily yield to your work.

Detailed, medium-pressure digital work into and around each joint is extremely important to maintain joint health, assist lymphatic flow, help reduce contractures, and soften hypertonic tissue. At each session, digitally explore each joint to familiarize yourself with the body so you can objectively track functional and anatomical progression or digression. The ill effects of contractures, spasticity, and spasm are bilateral, so remember to work both sides of the body.

Keeping copious and detailed SOAP notes will increase your effectiveness and help the patient realize that she is making progress, even if it's minimal. Your patient is seeing multiple medical specialists and dealing with an insurance company; your notes, or at least a treatment summary, may be requested by a physician or an insurer.

Getting Started

Before her first appointment, ask whether she uses a cane or a wheelchair. Arrange your reception and treatment rooms accordingly. Practice transferring a patient from a wheelchair to the massage table (with a colleague, for example) to ensure a confident, accident-free process. During inclement weather, have towels available at the door so you can wipe off the wheelchair wheels and not track snow, rain, or mud into your professional area.

Since each MS patient is unique, for protocol purposes, the following treatment is based on a 45-year-old Caucasian woman with relapsing/remitting MS. She is not currently in a flare, walks with a stumbling gait, and occasionally uses a cane. Both legs are primarily affected, and she injects Avonex into alternating thighs every other week. Her last injection was 1 week ago into her superior left thigh. Lying prone is uncomfortable; she prefers side-lying or supine. She is concerned about thigh and calf spasms, as well as mild, bilateral ankle edema.

Step-by-Step Protocol for Multiple Sclerosis

Technique	Duration
Note: This protocol is slightly longer than 60 minutes due to the amount and detail of therapy involved; times can be altered according to patient tolerance. After positioning the patient comfortably supine, ask which massage technique she finds particularly relaxing (e.g., scalp massage, face massage, or total body stroking). Perform this technique to initiate deep relaxation.	2 minutes
Effleurage, medium pressure, slow, evenly rhythmic, working cephalically • Right lower extremity • Right foot	1 minute
Effleurage, petrissage, effleurage, medium pressure, slow, evenly rhythmic, *start proximally* • Right lower extremity	3 minutes
Digital kneading, medium pressure • Origins and insertions of the quadriceps • Around the patella • Origins and insertions of the IT band • Origins and insertions of the tibialis anterior • Around the malleolus	
Effleurage, medium pressure • Entire lower extremity	4 minutes
Stroking, using your fingertips only, brushing cephalically • Around the malleolus and up about 4 inches toward the knee	1 minute
Effleurage, medium pressure • The foot below the malleolus	1 minute
Digital kneading, medium pressure • Every toe, between the toes, between all metacarpals, plantar and dorsal surface of the foot, in between all bones and ligaments, around the malleolus	3 minutes
Effleurage, medium pressure • The foot and malleolus	1 minute
Passive ROM (watch the extent of your stretch, move only to mild resistance and stop) • At the hip • At the knee • At the ankle (attempt full circumduction and plantar and dorsal flexing and extending)	4 minutes
Effleurage, slightly more briskly, medium pressure, not necessarily rhythmic • Entire lower extremity	1 minute

(continued)

Contraindications and Cautions

- **Never work deeply or vigorously enough to overheat a muscle complex or to raise the patient's core temperature. MS patients react poorly to heat, and you could initiate a flare.**
- **Do not apply hot packs; even a table warmer could produce too much heat and cause a flare.**
- **Do not use mechanical muscle vibrators to quiet a spasm; use your hands only. A mechanical vibrator can stimulate the sympathetic nervous system.**
- **Be aware of the day, time, and location of the patient's last injection; avoid working around puncture sites within 24 hours of the injection.**
- **Since many MS patients experience vertigo, ask permission before using any rocking techniques.**
- **Watch for red, inflamed, hot, or swollen areas over bony prominences. The patient may not be able to feel these signs and symptoms of skin infection or breakdown. If symptoms exist, refer the patient to a physician immediately.**

Technique	Duration
Perform the previous protocol on the left leg, using caution around the injection site.	19 minutes
Position the patient side-lying. Effleurage, medium pressure, slow, evenly rhythmic • Hamstrings • Gastrocnemius • Heel	2 minutes
Effleurage, petrissage, effleurage, medium pressure, slow, evenly rhythmic • Hamstrings • Gastrocnemius • Heel	4 minutes
Digital kneading, medium pressure, slow, evenly rhythmic • Origin and insertions of the hamstrings (work up into the ischial tuberosity) • Origins and insertions of the gastrocnemius • Around and into the calcaneus	4 minutes
Effleurage, medium pressure, slow, evenly rhythmic • Lower extremity	1 minute
Stroking, using your fingertips only, brushing cephalically • Around the malleolus	1 minute
Reposition patient on the other side, and repeat the previous side-lying protocol.	12 minutes
End the session with a few minutes of a deep relaxation technique.	2 minutes

HOMEWORK

You can provide much-needed holistic support as your MS patient attempts to maintain her regular ADLs and bolster her wobbly self-image. While reminding her not to work to the point of heat exhaustion and to always be gentle with herself, you can offer the following homework assignments:

- Purchase a big exercise ball; blow it up until it's firm, not squishy. Place the ball next to a couch, a sturdy armchair, or the wall. Put one hand on a secure surface to steady yourself, and sit on the ball. Gently begin bouncing. Bounce as long as you can. Take frequent deep breaths. You'll start to feel this in your thighs. When you feel the slightest bit tired, stop and rest. Then continue bouncing. This simple exercise helps keep your thigh muscles strong and is extremely effective in maintaining your sense of balance.
- Find a gentle yoga or tai chi class; either one will help strengthen your balance and maintain your flexibility without overheating your central body core or major muscles.
- Consider swimming or a water aerobics class, but be sure that the water is not too warm. You should not sweat while in the water or when getting out of the pool.

- Take deep breaths several times throughout the day. Inhale deeply, hold it for a few seconds, and then forcibly exhale.
- Investigate personal deep relaxation techniques that work for you, and set aside time to practice one daily.
- Be sure to get enough hours of deep, restful sleep.

Review

1. Describe the various stages or forms of MS.
2. What is the medical treatment for MS?
3. List three cautions that you should observe when massaging an MS patient.
4. Why should your SOAP notes be particularly thorough when documenting sessions with MS patients?
5. How might you have to alter your massage treatment room to accommodate your patient?
6. Is there a cure for MS?

BIBLIOGRAPHY

Bar-Or A. The Immunology of Multiple Sclerosis. Available at: http://www.medscape.com/viewarticle/572284. Accessed May 31, 2008.

Cohen BJ. *Memmler's The Human Body in Health and Disease*, 11th ed. Baltimore: Lippincott Williams and Wilkins, 2008.

Jeffrey DR. Managing Clinically Definite Multiple Sclerosis. A CME Course. Available at: http://www.medscape.com/viewprogram/8268. Accessed June 29, 2010.

Jeffrey S. BEYOND and PRECISE Results Suggest Equivalence for Multiple Sclerosis Treatments. Available at: http://www.medscape.com/viewarticle/573185. Accessed June 29, 2010.

Jeffrey S. Multiple Sclerosis Gene Discovery First Major Genetic Advance in 30 Years. Medscape. Available at: http://www.medscape.com/viewarticle/560661. Accessed June 29, 2010.

May TS. Most Cases of "Benign" MS Progress After 20 Years, but Survival Is Longer. Medscape. Available at: http://www.medscape.com/viewarticle/564612. Accessed June 29, 2010.

Rattray F, Ludwig L. *Clinical Massage Therapy: Understanding, Assessing and Treating over 70 Conditions*, Toronto: Talus Incorporated, 2000.

Werner R. *A Massage Therapist's Guide to Pathology*, 4th ed. Philadelphia: Lippincott Williams & Wilkins, 2009.

24

Also known as:

Muscle Cramp; Charley Horse

Muscle Spasm

Definition: An involuntary contraction of a voluntary skeletal muscle.

GENERAL INFORMATION

- Caused by trauma, muscle overuse, emotional stress, chilled muscles, prolonged immobilization, ischemia (temporary lack of oxygen in localized tissue), dehydration, or insufficient calcium, sodium, magnesium, potassium, or vitamin D
- Muscles commonly affected: gastrocnemius, soleus, hamstrings, deep back muscles (especially the erector spinae complex), and sternocleidomastoid (SCM)

PATHOPHYSIOLOGY

A review of normal muscle anatomy and physiology will help clarify the pathophysiology of a muscle spasm. Muscle tissue is one of the most sanguineous (well-vascularized) tissues in the body. In order to function quickly and efficiently on both gross and fine motor levels, a muscle must receive a constant flow of fresh blood from and release metabolic waste into the bloodstream. As muscles move, Golgi tendon organs (GTOs; nerve receptors located in tendons) signal the brain about the extent a muscle can stretch before injury will occur. The vigilant GTOs constantly fire signals during normal muscle activity and will produce sudden and severe pain if an overly zealous exerciser, for example, stretches too far and thereby possibly risks snapping a tendon off a bone. When a tendon is injured or inflamed, the GTOs "register their objections" by firing continuous pain signals in order to prevent the person from continuing offending activity.

Conversely, immobilized muscle produces its own set of painful signals. Local ischemia, which accompanies immobilization, leads to metabolite buildup, causing pain and further muscle immobilizing, thereby continuing the pain-spasm-pain cycle (see Figure 3-1).

There is no diagnostic test for identifying a muscle spasm. The clinician palpates for the presence of tightened, painful muscles and will take an oral history of recent activity, lack of activity, or the presence of recent trauma or disease.

OVERALL SIGNS AND SYMPTOMS

- Temporary skeletal muscle pain, spasm, and/or cramping
- Temporary decreased range of motion (ROM) secondary to muscle shortening and pain
- Unusually firm, hard, and/or congested muscle tissue

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

- The pain-spasm-pain cycle is effectively broken with skilled therapeutic massage.
- ROM is increased with passive techniques applied to the post-spasm muscle and proximal joint.
- Accumulated toxins can be hastened out of the muscle and sent into circulation with the use of several massage modalities.

TREATMENT OPTIONS

Rest, *ice*, and nonsteroidal anti-inflammatory drugs (NSAIDs) or muscle relaxants are suggested during the first 3 days if muscle spasms occur secondary to trauma. Rest, *heat*, NSAIDs, and, more rarely, muscle relaxants are suggested for chronic or infrequent muscle spasms that result from minor injury, exercise, or immobilization.

When a spasm results from exercise dehydration, water and sports drinks are suggested before, during, and after activity. Spasms occurring secondary to metabolic imbalance or circulatory diseases often do not resolve until the primary condition is addressed.

Common Medications

- NSAIDs, such as ibuprofen (Motrin, Advil)
- Skeletal muscle relaxant, such as cyclobenzaprine hydrochloride (Flexeril)

MASSAGE THERAPIST ASSESSMENT

The client experiencing a muscle spasm may present after unusual or excessive physical activity, such as shoveling after the first snow storm of the year, or because of one sudden, unusual awkward movement, such as jerking to catch something. Before proceeding with the treatment of a seemingly innocuous muscle spasm, however, the therapist must be assured that no underlying metabolic pathology exists. In addition, a therapist should not treat muscle spasm secondary to recent injury or trauma. Before continuing in the safe treatment of a muscle spasm, the therapist can:

- Ask the client about the specific, suspected origin of the muscle spasm.
- Ask him to clearly identify the exact location of the spasm.
- Find out whether he experiences chronic spasms or if this is an unusual occurrence.
- Ask how he normally treats the spasm.
- Ask if he is diabetic, dehydrated, experiencing unusual stress, or is a smoker.
- Ask if he is seeing a physician, chiropractor, or physical therapist for his spasms or for any medical condition.
- Palpate the muscle belly to determine the character of the spasm. Is it accompanied by heat, coolness, or increased hypertonicity?
- Ask the client to demonstrate his ROM at the affected limb.

THERAPEUTIC GOALS

Reasonable goals for treating muscle spasm include softening hypertonic muscles, quieting the firing GTOs, removing accumulated metabolic waste, increasing circulation to the affected muscle, enhancing the healing process, and relieving the pain.

Massage Therapist Tip

Treating a Sudden, Painful Spasm of Unknown Cause

When a client, or even a colleague or an acquaintance, suddenly experiences an intolerable muscle spasm and requests that you "do something, anything," your first thought as a massage therapist is to dive right in and massage the muscle belly. But unless you know the cause of the cramp, you could easily make matters worse. You can safely contract and massage the antagonist muscles—those muscles that perform the opposite action of the spasming muscles. For example, if the hamstrings are in spasm, you could work on the quadriceps. This will quiet the muscle spasm without placing your client at risk. Once you determine the client's history, you can proceed with a full treatment protocol.

Thinking It Through

As uncomfortable as a muscle spasm may be, it should not be massaged if there is even a remote possibility that the spasm is a result of physical trauma. Post-traumatic muscles that go into spasm are compensating to protect an injured area; this is referred to as *splinting* or *guarding*. In the case of whiplash, for example, the cervical muscles, tendons, and ligaments that hold the head upright are so injured

Thinking It Through *(cont.)*

that they cannot support the 10-pound head. Therefore, surrounding muscles splint or guard the surrounding anatomy. These muscles work so hard at compensating that they painfully spasm, yet their job is to provide support for the head. *If the massage therapist loosens these muscles, the head will not have the much-needed support; the muscles will release, causing further, possibly serious, injury to the already injured area.*

The careful therapist must think through her treatment of a muscle spasm and consider the following before proceeding:

- Is the spasm the result of trauma?
- If I massage splinting muscles, what will be the effect?
- Should I perform relaxation massage on the surrounding tissue and not work on the splinting area?
- Would an application of ice packs for a few minutes provide temporary relief without loosening the muscles and creating functional instability?
- Should I consider not treating this client, and instead refer him to a physician until the splinting has passed?
- How can I best explain to this client that I should not work on his painful muscles?

MASSAGE SESSION FREQUENCY

- Ideally: 60-minute sessions once a day until the painful spasm is under control
- Preventive: 60-minute sessions once a week if the client is sedentary

MASSAGE PROTOCOL

Once you have determined that it is safe to proceed, your approach to a spasming muscle should be gentle but firm, and your protocol will have a definite beginning, middle, and end. Haphazard work will produce unnecessary pain and may injure the client.

Your first task is the application of ice for an acute spasm (if it occurred within the last 3 days) or heat (if the spasm is chronic or if it occurred longer than 3 days ago). You must attempt to break the pain-spasm-pain cycle and use the gate control theory of pain to your advantage (see Chapter 3). Use frequent deep-breathing techniques to help relax your client and bring oxygen to the blood-starved muscles. You'll "slay the dragon" while the ice or heat begins to work, and then gently perform techniques that will bring blood to the muscle belly and quiet the GTOs. Take your time and don't overwork the muscle set; start at the tendon sites, not on the muscle belly; be sure to work on surrounding and antagonist muscles and not solely on the painful muscle.

Passive ROM and deep vibratory techniques—both highly effective and necessary components of this protocol—should not be performed until well after you are sure the spasm has quieted. Even then, you may find that as you attempt to reposition the client, or as he gets off the table at the end of the session, the muscle may re-spasm. These repeated spasm cycles will quiet with rest, heat or ice, anti-inflammatories, and time.

The following protocol is based on the treatment of nontraumatic back muscle spasms resulting from snow shoveling.

Getting Started

Try to gather information from a telephone intake before your client arrives to ensure that you can safely treat him. Once you determine it is safe to proceed, have ice and hot packs ready.

This protocol focuses on treating the rhomboids, so the client will probably be positioned prone for an extended period. Allow him to move his head from side to side, and shift positions frequently so he does not lay prone for 60 minutes. This sustained position is usually not well-tolerated and can produce sinus congestion and headache. The side-lying position can be a helpful alternative.

HOMEWORK

Your client's healing is only possible if he continues to attend to his muscle spasm after he leaves your table. Appropriate homework assignments are determined by the client's acute or chronic symptoms.

Acute Muscle Spasm

- Place an ice pack or bag of frozen vegetables on your spasming muscle for 5–10 minutes every hour. Repeat frequently.
- Find the end of your muscle, the place where it attaches to your bone. Deeply massage into this area. Don't cause further pain and don't massage directly on the painful muscle.

Step-by-Step Protocol for Muscle Spasm of Bilateral Rhomboids

Technique	Duration
Position the client comfortably prone or side-lying. Apply a heavy, moist hot pack (over the sheet) directly on the spasming muscles.	
Use slaying-the-dragon techniques to the lower back or legs. Ask the client to inhale and exhale, slowly and deeply, several times.	3 minutes
Remove the hot packs. Place your hands directly on the spasming muscles. Just remain in contact with the spasming muscles. The client's body must know you intend no harm before you proceed.	1 minute
Effleurage, medium pressure, very slow, evenly rhythmic • In all directions, over the entire back, being sure to work over the rhomboids (Lighten your pressure if the client retracts when you work over the rhomboids but be sure to engage the rhomboids with some pressure.)	1 minute
Compression, light pressure, evenly pumping • The entire back beginning at the lumbar spine region, working laterally out to the sides of the body and then toward the spine; work up the entire spine and back until you reach the base of the skull	3 minutes
Compression, medium pressure, evenly pumping • The entire back beginning at the lumbar spine, working laterally out to the sides of the body and then toward the spine; work up the entire spine and back until you reach the base of the skull	4 minutes
Effleurage, medium pressure, slow, evenly rhythmic • The entire back, working in all directions	3 minutes
Place your hands on the rhomboids. Rest them on the tissue. Feel for the quieting of the spasm	1 minute
Digital kneading, medium pressure, very slow, evenly rhythmic • Superior and lateral border of the bilateral scapulae (Do not approach the rhomboids yet.)	5 minutes
Effleurage, medium-to-deep pressure • Around the thoracic vertebrae and bilateral scapulae	3 minutes
Digital kneading, medium pressure, very slow, evenly rhythmic. Combine this movement with deep effleurage periodically "cleaning" the area. • Lateral border of the bilateral scapulae and into the deep spinalis complex from T-1 through T-12	6 minutes
Place your hands on the rhomboids; be sure they have quieted and are no longer spasming before you proceed.	1 minute

(continued)

Contraindications and Cautions

- **Gastrocnemius cramps are often associated with third-trimester pregnancy. The cause is thought to be either vitamin insufficiency or spinal disc involvement secondary to the baby's placement against the spine. Since pregnant women are also at risk for lower extremity blood pooling and blood clots, it is best to get a physician's clearance before treating muscle spasms in a pregnant client.**
- **A *unilateral* dull, aching, sometimes cramping sensation in the gastrocnemius (or any muscle) accompanied by heat, redness, slight swelling, pain, and localized tenderness are dangerous signs and symptoms of a potentially lethal deep vein thrombosis (DVT). Never massage a muscle that feels unilaterally warm, appears reddened, is even mildly swollen, and is uncomfortably tender to the touch. The client should see a physician before you proceed.**

Technique	Duration
Gently but firmly grip all three edges of one scapula in your fingertips, and try to move it on the back of the thoracic cavity. If the adipose tissue or musculature prevents this move, ask the client to lay his arm onto his lower back, which will help the scapula "pop out" and move off the back. Gently but firmly continue to move the scapula, passively, as much as you can. Repeat on the contralateral scapula.	3 minutes 3 minutes
Immediately slowly effleurage, medium pressure • Rhomboids	2 minutes
Effleurage, petrissage, effleurage, digital kneading, medium-to-deep pressure, *not evenly rhythmic* • Along the transverse processes of the cervical spine, thoracic spine, around both scapulae, into the QLs (bilateral quadratus lumborum), down to the lumbar spine and sacrum	6 minutes
When you are certain that the spasming has completely stopped, digital vibration, deep to tolerance, rhythmic • Directly over the spasming muscles, on both lateral borders of the scapulae	5 minutes
Immediately change your pace and slowly but deeply effleurage • Over the entire posterior thoracic region, focusing on the scapulae	4 minutes
Ask the client to sit up on the side of the table, facing away from you. Position the sheet for modesty. Place his feet on a stool for support if necessary. Make sure the spasming has not recurred because of this repositioning. Ask him to take a couple deep breaths.	2 minutes
Effleurage, very slowly, medium pressure, using long soothing strokes • Over the entire back, up into the base of his skull, down to his lumbar spine region	4 minutes

Contraindications and Cautions *(cont.)*

- **Diabetic patients often suffer from chronic arteriosclerotic vascular disorders, which cause leg pain and cramping. Be sure to get a clearance from the client's physician before proceeding with deep work.**
- **Chronic smokers often have circulatory disorders that can inflame vessels. Be sure to get a physician's clearance before performing deep work on a chronic smoker.**
- **Women who take birth control pills are at increased risk for DVT.**
- **Never massage a set of muscles that are splinting or guarding after trauma or injury. Immediately refer the client to a physician.**
- **Do not stretch or work deeply into a spasming muscle until it has completely relaxed.**
- **Do not apply heat to a muscle spasm that occurred as a result of injury or trauma.**

- Slowly and carefully perform ROM exercises without placing the muscle into even the slightest stretch.
- Call your physician to determine if you should be taking NSAIDs, or if she wants to prescribe a short-term muscle relaxant. Don't drive if you're taking muscle relaxants.
- Return for another massage session as soon as your schedule allows.
- Rest.

Non-Acute Muscle Spasm

- Apply a moist hot pack directly onto the affected muscle; leave it on for as long as it's comfortable.
- Find the end of your muscle, the place where it attaches to your bone. Deeply massage this area, but don't cause further pain.
- Find the exact affected muscle. Massage into the muscle belly. Start superficially, working progressively deeper. Do not cause pain.

- Perform slow, careful ROM exercises, moving your joint until you can't move any farther; hold this stretch for about 20 seconds and then release. Don't bounce. Repeat several times.
- If you are exercising, be sure to drink plenty of water for adequate hydration.
- Stretch before and after your regular workout.
- Rest.

Review

1. List some causes for muscle spasms.
2. Explain muscle splinting or guarding.
3. When is it unsafe to massage a muscle spasm?
4. Describe the difference in the use of ice or heat in the treatment of either acute or chronic spasm.
5. List the signs and symptoms of a DVT. What should you do if you suspect a DVT?
6. What would cause painful leg cramps in a woman in third-trimester pregnancy?

BIBLIOGRAPHY

Joseph TN. Charley Horse. MedlinePlus. Available at: http://www.nlm.nih/gov/medlineplus/ency/article/002066. Accessed December 22, 2008.

Rattray F, Ludwig L. *Clinical Massage Therapy: Understanding, Assessing and Treating over 70 Conditions*, Toronto: Talus Incorporated, 2000.

Werner R. *A Massage Therapist's Guide to Pathology*, 4th ed. Philadelphia: Lippincott Williams & Wilkins, 2009.

Wible J. *Drug Handbook for Massage Therapists*, Philadelphia: Lippincott Williams & Wilkins, 2009.