

Also known as:

**Jogger's Heel,
Tennis Heel,
Policeman's Heel**

Plantar Fasciitis

Definition: An overuse injury of the plantar fascia, characterized by mid-heel pain that can radiate toward the toes.



Massage Therapist Tip

Being Aware of Compensation in a Client's Body

When one part of the body is in pain, the person will move in such a way to avoid causing more pain in that region. Those often awkward movements are known as *compensation*. For instance, if you have a sore right wrist from performing too many massages, you may use your right forearm or left wrist more—either of which may be unaccustomed to the extra load. You are compensating for your right wrist pain by using another body part to perform the activity. Often, when clients are in pain, the hypertonicity in the compensating body part also needs treatment. When a client has plantar fasciitis, for example, the act of limping to avoid foot pain places unusual strain on the contralateral foot and the ipsilateral ankle, knee, hip, and lower back. Compensation is an important consideration when you're planning a treatment protocol.

GENERAL INFORMATION

- Multiple causes involving repetitive micro-tearing (sometimes accompanied by inflammation) to the plantar fascia, including improper foot biomechanics, nonsupportive footwear, excessive strain to the plantar fascia, exercise overload, obesity, pregnancy, extremely hypertonic gastrocnemius, arthritis
- Most common cause of heel pain
- Gradual onset
- Acute stage: new, nearly intolerable pain
- Chronic stage following acute: symptoms more bearable
- Duration usually no more than 1 year
- More prevalent in those who participate in high-impact sports, or after increasing the intensity of an exercise program
- More prevalent in diabetics and in people between ages 40 and 60
- Greater risk in people with pes cavus (high arch), pes planus (low arch, excessive foot pronation), increased inversion or eversion
- Occurrence usually unilateral

Morbidity and Mortality

Heel pain affects approximately 2 million Americans annually. About 10% of runner-related injuries and 15% of all foot symptoms requiring professional care involve damage to the plantar fascia. Complications of plantar fasciitis include bruising, swelling, numbness, tingling, and, in rare cases, rupture. When the condition is ignored, complications can arise in the foot, knee, hip, or back as the body compensates for the pain and subsequent abnormal footfall. The prognosis is good, and 80% of cases completely resolve within a year.

PATHOPHYSIOLOGY

The plantar fascia is a very tough aponeurosis (fibrous sheet or flat, expanded tendon that facilitates muscular attachments) located on the foot's deep plantar surface. It functions with every step as it absorbs shock, and serves as a bowstring to hold up the foot's longitudinal arch. It inserts into the base of the calcaneus (large heel bone), weaves into the deep transverse metatarsal ligament, and attaches to the proximal phalanx of each toe (Figure 29-1).

Overuse, combined with biomechanical foot abnormalities, causes straining, tiny tears, and sometimes inflammation of the fascia. This leads to further inflammation, occasional swelling, and persistent, often excruciating, pain. Plantar fasciitis is not technically an inflammatory condition as the "itis" indicates. The pain, previously believed to be inflammatory, often occurs as a result of degeneration of the aponeurosis and may or may not be accompanied by inflammation.

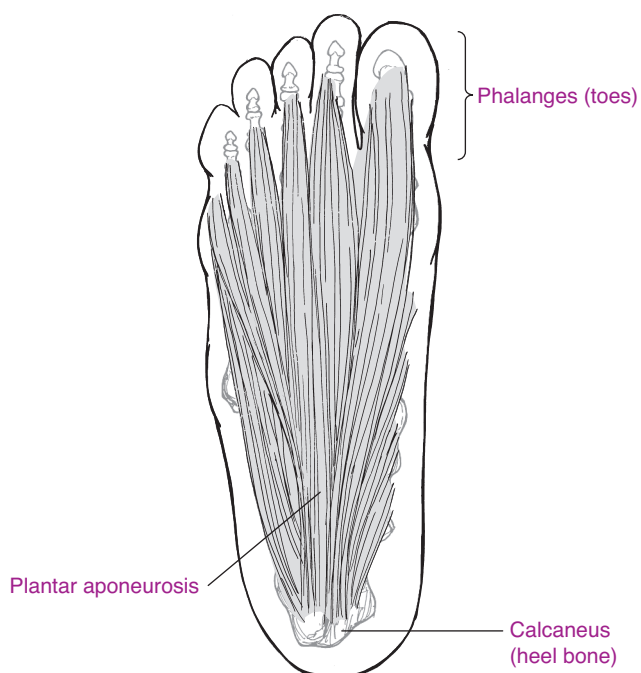


FIGURE 29-1 The plantar fascia. This fibrous sheet originates at the medial tubercle of the calcaneus, then spreads out over the bottom of the foot to insert onto the proximal phalanges and flexor tendon sheaths. From Hendrickson T. *Massage for Orthopedic Conditions*, Philadelphia: Lippincott Williams & Wilkins, 2003.

Diagnosis is usually confirmed with a verbal history of physical activity, gait assessment, visual observation of the feet and shoes, and palpation and stretching of the plantar surface of the foot. X-rays are not necessary but may be ordered to rule out fracture.

Although heel spur is used to be synonymous with plantar fasciitis, it has been clinically proven that while the two conditions sometimes coexist, they are two distinct conditions. Heel spur pain can mimic the discomfort of plantar fasciitis, yet a heel spur is often painless. Plantar fasciitis is never asymptomatic.

OVERALL SIGNS AND SYMPTOMS

- Heel pain, described as stabbing, burning, or deep aching
- Plantar surface pain radiating from the heel to the base of the toes
- Worse heel pain in the morning, easing for a while, worsening as the day progresses
- Increased heel pain after long periods of sitting
- Pain upon plantar surface palpation
- Plantar surface pain after, not usually during, exercise
- Mild swelling in and around the heel

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

- Compensatory hypertonicity can be treated with multiple routine massage therapy techniques.
- The local increased blood supply and subsequent tissue cleansing that are essential for healing can be initiated with careful, layer-by-layer tissue softening.



Massage Therapist Tip

The Effects of Prolonged Nonsteroidal Anti- Inflammatory Drug Intake

Since plantar fasciitis is usually treated outside of a medical setting and may last up to a year, your client may be taking an NSAID or aspirin. Although these medications can reduce the inflammation and pain, prolonged use of any medication should be medically supervised. Ask your client to be aware of the side effects of daily or frequent intake of even the most common OTC medication. If he complains of stomach burning, nausea, or ringing in his ears, refer him to his physician.

Step-by-Step Massage Therapy Protocols for Common Conditions

- The exquisite pain of the acute stage and persistent pain of the chronic stage can be addressed with cold and heat applications, respectively.
- The fact that this condition usually often persists for months gives the massage therapist an ideal opportunity for multiple, effective, client self-care assignments.

TREATMENT OPTIONS

Most patients who receive appropriate and prompt care will respond to conservative treatment. The first step is rest. The offending impact on the plantar surface of the foot must be relieved if healing is to begin. High-impact exercise regimens should be replaced by swimming, cycling, yoga, or another low-impact activity. It's interesting to note, however, that immobilization is *not* advised (except for the occasional night splint prescribed by a physician for specific biomechanical corrections) because it can lead to debilitating stiffness and increased pain. Ice massage and/or ice packs can reduce pain and inflammation. Custom-made or over-the-counter (OTC) orthotics and/or heel pads that support the arch and protect the heel are commonly used.

If conservative treatment, combined with taking nonsteroidal anti-inflammatory drugs (NSAIDs), does not completely resolve the condition, ultrasound physical therapy is used to decrease inflammation and promote healing. Anti-inflammatory injection directly into the heel is a painful, temporary treatment that carries the risk of breaking down the heel's fat pad, and exacerbating heel pain. Studies indicate that extracorporeal shock wave therapy (ESWT), which directs high-velocity sound waves at the painful heel, may stimulate healing. Surgery to detach the plantar fascia from the calcaneus is a rare treatment of last resort.

Preventing a recurrence includes moderating the exercise program, maintaining ideal body weight, wearing supportive shoes, stretching before and after exercise, and performing foot and ankle exercises to maintain strength and flexibility.

Common Medications

NSAIDs are used to reduce symptoms and prevent complications. No healing medication has been found.

- NSAIDs, such as ibuprofen (Motrin, Advil)

MASSAGE THERAPIST ASSESSMENT

It is best for a massage therapist to perform an assessment of a client presenting with heel pain as a reconfirmation of a physician's diagnosis. However, plantar fasciitis is so common; few people will seek a physician's care but instead will self-diagnose after a quick online search. With a sound clinical understanding of the signs and symptoms, the therapist can accurately assess for the presence of plantar fasciitis and then move ahead with an effective treatment plan. If the condition gets worse and does not respond to conservative treatment, a referral to a physician is necessary.

The first step is to determine whether the condition is acute or chronic. The acute stage is characterized by a relatively recent onset of exquisite pain, whereas the chronic stage is determined by the classic symptoms of morning pain that eases and then progresses. Clients in both stages usually report initial onset related to a specific activity, or to having spent an unusual or sustained amount of time on their feet.

The therapist observes the client's gait, checking for signs of limping. She asks the client to stabilize himself and then instructs him to carefully hop up and down on the affected foot. The pain should reproduce immediately. She tells him to stop as soon as he feels pain. The therapist asks to see the condition of the

client's shoe(s) and checks for uneven wear, indicating inefficient gait mechanics. She also notes whether his shoe provides adequate or inefficient support. She notes any compensatory movements that add duress to the ankle, knee, hip, and/or lower back.

With the client clothed but shoes and socks removed, he is positioned comfortably either prone or supine on the massage table. The therapist gently palpates for the presence of fibrotic thickenings and adhesions along the plantar (bottom) surface of the foot. Holding the foot in one hand so it can remain relaxed, she grasps the toes with the other hand and slowly bends the toes up toward the knee. This should reproduce the pain of plantar fasciitis. She immediately stops the passive stretch when the client indicates pain. She then observes and palpates for any slight swelling around the heel, gently palpating the heel and the entire aponeurosis, into the base of the toes. She watches the client's reaction, which will indicate the exact location of pain and tenderness. The therapist asks him to point his toes and flex his foot, bending the toes back toward his knee, and notes when pain is reproduced. Trigger points in the soleus muscle, along with other plantar flexors, commonly refer pain into the heel and plantar surface of the foot; therefore, calf palpation is performed during the assessment. The therapist asks about compensatory pain, his exercise or work regimen, and the kind of shoes he normally wears.

THERAPEUTIC GOALS

Since plantar fasciitis is a chronic condition lasting up to 1 year, in an effective long-term therapeutic regimen, the therapist can expect to reduce pain, reduce the hypertonicity of compensating structures, help heal the plantar fascia, instruct the client in the all-important daily self-care techniques, and help the client return to normal, pain-free activity.

MESSAGE SESSION FREQUENCY

In the acute stage:

- 30-minute sessions directly on the foot twice a week
- Followed immediately by 30 minutes of work to compensating structures or for relaxation

In the chronic stage:

- 60-minute sessions once a week until the pain is completely managed
- 60-minute sessions every other week as the pain lessens and the client takes on the responsibility of daily self-care
- 60-minute monthly maintenance sessions

MESSAGE PROTOCOL

Protocols for both acute and chronic stages of plantar fasciitis are included. Because the acute pain can be almost unbearable, the protocol will address the foot for only 30 minutes, with Swedish relaxation techniques used for the remaining time. Treating the chronic stage will require a full 60-minute session, with 30 minutes spent on the affected foot and the remaining time on compensating structures.

Many of the techniques used in the protocol mimic the self-care assignments. Read the Homework section of the chapter before beginning your protocol. You can then educate your client in both the technique and the reasoning behind your work.

When properly treating chronic plantar fasciitis, you will work down to the depth of the bone. This may seem counterintuitive, given the fact that the client is already



Thinking It Through

The *gait cycle* is a term that describes the biomechanics of leg and foot movements while walking, and it's worth reviewing in the context of determining an effective treatment plan for plantar fasciitis. A thorough understanding of the anatomy and physiology of the muscles used during walking and running will lead to a better understanding of the pain of plantar fasciitis. The terminology might seem awkward at first, but if the therapist stands and takes the steps directed as follows, the terms will become self-explanatory. The gait cycle includes a stance phase and a swing phase.

Stance Phase:

- *Loading response* is when the foot makes contact with the ground; usually, the heel strikes first.
- *Midstance* begins when the center of gravity is directly over the foot.
- During *terminal stance*, the heel leaves the ground and the foot is in a toe-off position.
- *Pre-swing* is the contralateral foot's stance as soon as the toe-off occurs.

Swing Phase:

- *Initial swing* indicates that the contralateral toe has left the ground (after toe-off) and the foot is ready to swing forward.
- *Midswing* is the period of maximum knee flexion.
- *Terminal swing* is the point at which the step has moved out as far as it biomechanically can swing, and the body is preparing for the next step.



Contraindications and Cautions

- If the client complains of numbness and tingling through the lower extremity, nocturnal pain, heat, or swelling anywhere in the leg, he should see a physician.
- Cross-fiber friction should be avoided if the client suffers from painful inflammation or if he is taking anti-inflammatories or anticoagulants.
- Deep work to the heel is contraindicated if the client has received an injection to the heel within the last week. (This does not mean you cannot treat the rest of the plantar fascia and/or compensating structures.)
- Frequent monitoring of the pain level by using the 0–10 pain scale will help you modify your work.

Step-by-Step Protocol for Acute Plantar Fasciitis

Technique	Duration
Do nothing more than hold the foot. Because of his acute pain, the client will resist any therapeutic attempts if trust is not initially established. While holding the foot, let him talk about his symptoms and discomfort.	1 minute
Continue holding the foot, and slowly and gently apply a cold pack. Tell the client what you are going to do; apply it gently and position it securely so the cold contacts the plantar surface. Tell him you're going to leave it in place for 5 minutes or until the discomfort from the cold is unbearable. Once the pack is secure, use compression, slow effleurage, petrissage, effleurage, medium pressure. <ul style="list-style-type: none"> • Entire gastrocnemius and soleus muscles • From the Achilles tendon to just below the popliteal fossa 	5 minutes
Remove the cold pack. Gentle finger compression, squeezing, and ROM. Make no contact with the plantar fascia yet; do not tug on the plantar fascia. <ul style="list-style-type: none"> • Every toe 	1 minute
Stroking, using your whole, flat hand, working in all directions, slowly with gentle pressure (not too light, to avoid a sympathetic response) <ul style="list-style-type: none"> • Entire plantar surface of the foot • Entire dorsal surface of the foot • All toes • Malleoli 	2 minutes
Using lubricant, effleurage, using your whole, flat hand, working in all directions, slowly, with more depth than the previous step but not moving to a firm pressure yet. Carefully gauge the client's response; do not cause pain. <ul style="list-style-type: none"> • Entire plantar surface of the foot • Entire dorsal surface of the foot • All toes • Malleoli 	3 minutes
Replace the ice pack. Return to the gastrocnemius. Effleurage, petrissage, effleurage, gentle tugging from proximal to distal while gripping the belly of the muscle, firm pressure, working slowly, but creating no discomfort. <ul style="list-style-type: none"> • Entire gastrocnemius and soleus muscles • From the Achilles tendon to just below the popliteal fossa 	5 minutes
Remove the cold pack. Effleurage, petrissage, effleurage, compressions, slow, medium pressure <ul style="list-style-type: none"> • Hamstring complex 	
Long, slow, smooth, effleurage, firm pressure, working cephalically <ul style="list-style-type: none"> • From the Achilles tendon to the ischial tuberosity 	2 minutes

(continued)

Technique	Duration
Long, slow, smooth, stroking using light but full hand pressure (avoiding a sympathetic response), stroking cephalically <ul style="list-style-type: none"> From the Achilles tendon to the ischial tuberosity 	2 minutes
Stroking, using fingertips only, slowly, very lightly, working in a cephalic direction <ul style="list-style-type: none"> In the popliteal fossa only 	1 minute
Instruct the client to perform ROM exercises at his ankle, point and flex his toes, point and flex at the ankle, bend his toes toward his knee just to the point of pain, and then release. Teach him how to deeply massage his calf muscles.	3 minutes
Effleurage, with as much pressure as he can tolerate, a little more briskly <ul style="list-style-type: none"> Entire plantar fascia 	1 minute
Simply hold the foot.	1 minute

experiencing pain. Remember, though, that your work is slow and careful, warming layer by layer well before you reach the bone. At the point when you finally palpate the deep fascia and the underlying bone, the client should be sufficiently relaxed and trusting to allow you to do the necessary deep work.

Your goal is to bring blood to the micro-tears in the plantar fascia and surrounding tendons. Recall from basic anatomy that fascia and tendons are not as sanguinous as muscle, so your work must be thorough and creative in your attempt to increase local blood supply. Flushing the area after treatment is important for ridding the tissue of accumulated metabolites. When treating chronic cases, half of your session will be dedicated to addressing proximal hypertonicity.

Getting Started

Have cold packs ready to treat the acute stage and moist warm packs ready for the chronic stage. Your inclination may be to ask the client not to disrobe completely since you “are only working on the foot.” However, remember your hands will find compensatory hypertonicity, which will lead you to work on the lower back, hips, and knees, in addition to the obvious footwork. Place pillows and bolsters under the knees (if supine) or ankles (if prone). Since the client will probably remain awake during this protocol, you might offer him a pillow to use under his head (if supine) or to hold (if prone) so he can “see” you as you work and instruct him.

HOMEWORK

Homework assigned for plantar fasciitis addresses both prevention and treatment. The goals are to reduce impact injury to the damaged fascia, to decrease inflammation, and to rebuild and stretch weakened foot and calf muscles.

- Before getting out of bed in the morning, deeply massage your affected foot. Perform range-of-motion (ROM) exercises at the ankle. Deeply massage your calf. Stretch your leg out, point your toes straight out and then back toward your knee (gently flexing the foot).

Step-by-Step Protocol for

Chronic Plantar Fasciitis

Technique	Duration
Apply a moist warm pack to the plantar surface of the client's foot. Leave in place as you perform the next step.	
Effleurage, petrissage, effleurage, medium pressure, slow, evenly rhythmic. Follow with gentle jostling. <ul style="list-style-type: none"> Gastrocnemius from the Achilles tendon to just below the popliteal fossa 	5 minutes
Remove the warm pack. Chat about whatever the client is interested in as you simply hold the foot. Do nothing but hold the foot.	1 minute
Passive but full ROM <ul style="list-style-type: none"> At the ankle At every toe 	1 minute
Active and full ROM. (Ask the client to trace the alphabet, using capital letters, while performing active ankle ROM.) <ul style="list-style-type: none"> At the ankle 	1 minute
Compression, squeezing, cross-fiber friction, ROM, deep effleurage <ul style="list-style-type: none"> Every toe 	2 minutes
Compression, squeezing, effleurage, petrissage, effleurage, cross-fiber friction, slowly rhythmic, light pressure <ul style="list-style-type: none"> Entire plantar fascia 	3 minutes
Compression, squeezing, effleurage, petrissage, effleurage, cross-fiber friction, little more quickly, medium pressure <ul style="list-style-type: none"> Entire plantar fascia 	3 minutes
Passive ROM, gently, slowly <ul style="list-style-type: none"> Each toe At the ankle 	1 minute
Compression, squeezing, effleurage, petrissage, effleurage, cross-fiber friction in all directions, moving very briskly and with as much depth as the client will tolerate	5 minutes
Effleurage, to the client's tolerance, slowly and firmly, moving cephalically, in the direction of the knee <ul style="list-style-type: none"> Plantar and dorsal surface of the foot 	2 minutes
Effleurage, petrissage, effleurage, medium pressure and speed, working cephalically <ul style="list-style-type: none"> Entire gastrocnemius and soleus complex 	2 minutes
Foot jostling, muscle, tendon and ligament stripping, deep compressions, hacking and brisk but careful passive ROM <ul style="list-style-type: none"> All structures below the malleoli 	4 minutes

(continued)

Technique	Duration
Gentle, slow, deep effleurage, working cephalically <ul style="list-style-type: none"> Plantar fascia 	1 minute
<i>This completes the first 30 minutes of this protocol, the direct work on the plantar fascia. The remaining 30 minutes is spent on compensating hypertonicity with the usual effleurage, petrissage, compression, jostling, muscle stripping, and passive and active ROM that you would use to address any hypertonic region of the body.</i>	30 minutes

- While sitting with bare feet, place a small, thin towel on the floor beneath your foot. With your toes only, gather up as much of the towel as you can and pick it up off the floor.
- Put an ice cube or ice pack on a thick towel, and place them both on the floor beneath your foot. Starting with light pressure and working progressively deeper, rub the sole of your foot over the ice. Periodically stop and hold your foot in one position on the ice, and gently press your foot into the cold. Hold it until the pain is very uncomfortable, and then begin moving your foot over the ice's surface. (You can perform this exercise while holding an ice cube or ice pack, but this can become uncomfortably cold to the skin of your hand.)
- Stand and stabilize yourself on the edge of a stair or a curb. Wriggle so just the balls of your feet rest on the edge of the step/curb. Raise yourself up on your toes; lower yourself so your heel moves slightly below the edge of the step/curb. Repeat until your calves tire.
- Sit with one leg crossed on your knee so you can reach the bottom of your affected foot. Gently bend your toes up toward your knee. With the thumb, knuckles, or fingers of your other hand, slowly push on the entire sole of your foot, moving from point to point, and working from your heel to the base of your toes. At very painful points, back off for a moment, *but then return into the painful area and gently press until the pain seems to lessen*. Bend your toes back the other way toward your heel, and deeply massage the sole of your foot. Repeat this several times a day, especially before you get out of bed, if that's when your symptoms are at their worst, if you have to stand for long periods throughout the day, and before and after exercise.
- Sit or stand. Place a tennis ball underneath your bare or socked foot. Roll the tennis ball along the bottom of your foot. Slowly increase the pressure you apply to the ball. Curl your toes to try to keep the ball underfoot. When the ball escapes, use your foot and toes to retrieve it, and continue the rolling.
- Grip the calf of your affected leg and deeply massage it. Massage all the way up to just below the back of your knee and all the way down until you can feel your heel bone.
- Monitor the intensity of your existing or new exercise program.
- Wear properly fitting and supportive shoes not only while exercising, but also if you stand for long periods.
- Avoid walking barefoot on hard surfaces.

Review

1. Explain how plantar fasciitis occurs.
2. What is compensation?
3. Describe the gait cycle.
4. Explain the difference between acute and chronic plantar fasciitis.
5. Outline suggested homework assignments for the typical client who has chronic plantar fasciitis.

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Post-Polio Syndrome

Also known as:

PPS

GENERAL INFORMATION

- Possible causes: long-term nerve damage and nerve overcompensation; long-term stress of aging, weight gain; enterovirus infection of polio survivor's motor neurons
- Onset gradual, approximately 30 years after acute polio
- Lifelong duration
- Increased risk related to severity and age of initial polio infection, and people who underwent intense physical rehabilitation following polio infection
- Spread through oral–fecal contamination
- No cure

Morbidity and Mortality

Until the 1950s, polio killed or disabled thousands of people, predominantly children. Of approximately 440,000 polio survivors in the U.S., 25–50% may be affected by PPS. Some researchers believe that if polio survivors are tracked long enough, all of them will develop signs of the condition. The prognosis is good; the condition is rarely life threatening. Symptoms are slowly progressive and can remain stable for 3–10 years. The Salk vaccine and Sabin oral vaccine eliminated polio in the U.S., and there have been no new polio cases in decades.

PATHOPHYSIOLOGY

Muscle movement is possible only when motor neurons (nerve cells) originating in the spinal cord provide stimulation, which produces movement. One of the most accepted theories of the pathophysiology of PPS is as follows: When the poliovirus attacks, it causes a paralytic disease that destroys nerve cells. Surrounding neurons try to compensate by generating new motor connections to the still working, but potentially orphaned, nearby muscles. After years of overwork, the nerve cells weaken, resulting in muscle weakness. Another theory posits that the normal aging process is accompanied by a decrease in functioning motor nerves. One final theory relates an autoimmune response triggered by the body's initial illness to the onset of PPS.

A firm diagnosis is often difficult because the symptoms mimic those of arthritis, tendonitis, fibromyalgia, cartilage damage, Lou Gehrig's disease, multiple sclerosis, and the aches and pains that accompany aging. Diagnosis is confirmed if decades have passed since the initial onset of poliomyelitis, if symptoms persist for 1 year, and if positive signs of nerve damage are indicated on an electromyograph (EMG). The results of an MRI and/or CT scan, blood tests, and a spinal tap will rule out conditions that mimic the syndrome.

Definition: A progressively debilitating neuromuscular condition occurring decades after recovery from acute poliomyelitis.



Massage Therapist Tip

Reassuring Clients that Post-Polio Syndrome Is Not a Recurrence

A client suffering from PPS will often compound her diagnosis with a high level of anxiety over the fear that she again has polio. Her memories of isolation (because of the highly contagious nature of the disease) and the struggle with assistive devices, such as crutches and braces, may bring back painful memories and put her at risk for depression. You can assure your PPS client that she is not experiencing a recurrence of her original polio diagnosis. The syndrome rarely progresses to the severity of the original disease, she cannot "spread" her condition, and she certainly does not have to live in isolation, as was the case in her youth.



Thinking It Through

A variety of assistive devices may be prescribed to help stabilize clients with PPS. When treating a body restricted by braces, a cane, crutches, a walker, or a wheelchair, the therapist has the opportunity to address compensating pain and hypertonicity resulting from the use of such devices. The therapist might ask himself the following questions:

- **Cane use:** How hypertonic is the arm/shoulder that is clutching the cane? Are there blisters/calluses on the gripping hand? How has her gait changed due to cane use? Why is she using the cane? What other areas of her body are compensating?
- **Back brace use:** Can I safely remove the brace during treatment? If I remove it, does she need help putting it back on? Is the brace rubbing any skin, causing blisters or calluses? Is her breathing restricted? How have her neck muscles adapted? Have the back muscles become hypotonic or hypertonic?
- **Leg brace use:** How hypotonic or hypertonic are the braced leg's muscles? How is the contralateral leg compensating? How have the gluteal complex and lumbar spine compensated for the gait change? What is the condition of the foot muscles? Are there blisters or calluses around the brace? Can it be removed during massage treatment?

OVERALL SIGNS AND SYMPTOMS

Use of the word “new” in the context of muscle weakness indicates symptoms in muscles unaffected by the earlier diagnosis of polio. PPS symptoms can be so subtle and gradual that it is common for a firm diagnosis to be made only after a symptomatic retrospective of 15–50 years.

- New muscle weakness, fatigue, pain
- Deep aching myofascial pain
- Weakness in originally affected muscles
- Muscle wasting
- Joint pain
- Gait disturbance
- Exhaustion
- Difficulty swallowing, breathing, chewing
- Cold intolerance

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

- Given the musculoskeletal and myofascial nature of the condition, the massage therapist can treat most PPS symptoms.
- Compensatory muscular hypertonicity and pain can be relieved by the most ordinary massage therapy techniques.

TREATMENT OPTIONS

A person with PPS will experience lifelong intermittent symptomatic remission and progression. Treatment aims to control symptoms and maintain strength and endurance. Physicians may use regular MRIs, CT scans, neuroimaging tests, and electrophysiologic studies to track muscle decline and stabilization. An ongoing team of medical specialists may include a neuromuscular disorder physician, a neurologist, a physiatrist (rehabilitation specialist), and an orthopedist. The treatment plan will optimally include referral to a physical therapist (PT) and/or occupational therapist (OT). PT will teach the delicate balance between sufficient exercise and overexertion, as well as instruct the use of appropriate assistive devices, when necessary. OT will address potential swallowing, choking, and chewing difficulties and help adjust the home environment to adapt for any disability.

Rest, ice, heat, massage, pain medication, a healthy diet, and weight reduction further help the person maintain a near-normal lifestyle. No treatment has been found to prevent the progressive nerve cell deterioration of PPS.

Common Medications

Currently, there is no effective pharmaceutical treatment for PPS. Several drugs, including high-dose steroids and interferons, have not proven to be clinically significant in improving function or reducing symptoms. Over-the-counter (OTC) pain medications, such as nonsteroidal anti-inflammatory drugs (NSAIDs), are often suggested, but they provide pain relief only and do not address causes.

- NSAIDs, such as ibuprofen (Motrin, Advil)

MASSAGE THERAPIST ASSESSMENT

Since PPS manifests over a period of decades and the symptoms mimic common medical conditions, a therapist may treat a client with PPS without either her or the client realizing it. The two keys for appropriate assessment are being aware of the client's childhood history of acute polio, and noticing her present clinical symptoms.

While being careful not to diagnose, the therapist may be the precipitating factor in nudging the client toward a firm medical evaluation, if she combines these two pieces of information and believes the condition to be PPS.

Assessing for treatment, with or without a firm diagnosis of PPS, includes taking a detailed history about muscle and joint pain, gait disturbance, fatigue, and cold intolerance. Appropriate and effective treatment can proceed, with or without a physician's confirming diagnosis, since all of the earlier mentioned symptoms are safely treated by multiple, noninvasive massage therapy techniques.

THERAPEUTIC GOALS

Since PPS symptoms mimic those of many musculoskeletal conditions treated effectively by massage therapy, it is reasonable to expect these benefits: decreased hypertonicity, increased joint range of motion (ROM), decreased pain, increased balance, and reduced anxiety.

MESSAGE SESSION FREQUENCY

Once diagnosed, PPS persists for the remainder of the client's lifetime. Massage therapy should therefore become an integral part of the client's long-term medical care and self-care.

- Ideally: 60-minute sessions twice a month
- Helpful: 60-minute monthly maintenance sessions
- Minimally: Infrequent sessions when the client is experiencing pain or discomfort

MESSAGE PROTOCOL

You can feel completely comfortable addressing the symptoms associated with this long-term condition. Remember that you may be treating PPS without knowing it because your client might present with symptoms resembling fibromyalgia, arthritis, or other musculoskeletal complaints. Your primary frustration, however, could be that your client's symptoms might significantly vary from session to session, and she may never seem to completely recover or progress. Your key to pinpointing that you are caring for a client with PPS is her history of acute poliomyelitis.

Given that your client will be older, you can approach her with the same care and precautions you'd use with any client in her age group. Be aware of the skin's condition, the limited ROM, the reduced endurance, the fear of losing control and falling, the expected mild depression, and the frustration that accompanies a chronic condition.

Do not work energetically or with any techniques resembling sports massage. Use slow, long, careful, and precise strokes that do not stimulate or fatigue a muscle set or the person herself. You'll find plenty of hypertonicity and compensating structures, and each session will present you both with a different challenge. Keep excellent SOAP notes, documenting the client's progression and digression.

Remember this is mainly a neurologic condition, and the muscles will benefit from *gentle* stimulation. Since only motor nerves are affected, your client will be able to provide accurate sensory feedback.

Be perceptive in your questioning of the client before each session. Many aspects of her life may be compromised because of her PPS. Include questions about balance, the efficiency of her assistive devices, her mood and overall energy, and her compliance with homework assignments.

Getting Started

Have hot packs ready if the client regularly experiences dull, aching pain. If she uses assistive devices, rearrange your room and waiting area accordingly. You may need



Thinking It Through (cont.)

- *Crutch use:* Are the crutches fitted properly? Is she leaning too far forward during her crutch-assisted gait? How hypertonic are her forearms, arms, and shoulders? Does she have low-back pain? How are her neck and abdominal muscles affected? Can I safely position her to get on and off the table?



Contraindications and Cautions:

- Avoid vigorous, quick, or too deep massage techniques.
- Use cold packs only for short periods and only if the client complains of unrelenting and intolerable short-term local pain.
- The client's balance may be compromised; use caution when positioning on and off the table and maintain physical contact when repositioning.
- Other than the usual contraindications for musculoskeletal work—avoiding open sores and rashes, not treating during fever of unknown origin, and so forth—the contraindications for treating a client diagnosed with PPS are rare.

Step-by-Step Protocol for Post-Polio Syndrome (Bilateral Lower Extremities)

Technique	Duration
Position the client comfortably and securely supine. Provide sufficient pillowing under her shoulders to maintain comfortable breathing and under her knees to relieve low-back tension.	
<p>Begin by providing long, slow, steady, light-to-medium pressure, effleurage while applying ample lubrication.</p> <ul style="list-style-type: none"> • Bilateral feet • Bilateral legs • Bilateral knees • Bilateral thighs • Abdomen (ask permission) • Bilateral superior pectoralis major and minor • Bilateral arms • Bilateral shoulders • Neck and occipital ridge 	15 minutes
<p>Gently grasp one foot at the ankle.</p> <ul style="list-style-type: none"> • Perform full passive ROM. • Place your palm against the plantar surface of the foot. Instruct the client to push against your hand as you offer gentle resistance to her tolerance. Hold a few seconds. • Hook your hand around the front of the foot. Instruct the client to push against your hand as you offer gentle resistance to her tolerance. • Repeat on the contralateral foot. 	3 minutes
<p>Ask her to point her toes as hard as she can and hold to fatigue. Ask her to point her toes toward her knee as hard as she can and hold to fatigue. (You are trying to engage the gastrocnemius.) Perform on the contralateral leg.</p>	2 minutes
<p>Grasp the client's leg gently but firmly so that you can move the knee joint.</p> <ul style="list-style-type: none"> • Perform gentle, repeated extension and flexion at the knee joint. • With her leg bent, place the client's foot flat but positioned a few inches up off the table. Gently grip her ankle and ask her to "kick out" against your resistance. (You are trying to engage and strengthen the muscles surrounding the knee.) Hold to fatigue. • Repeat on the contralateral knee 	2 minutes
<p>Grasp the client's leg gently but firmly so you can mobilize the hip joint.</p> <ul style="list-style-type: none"> • <i>Very</i> gently perform ROM at the client's hip. Watch for signs of discomfort. • With the client's hip rotated laterally as far as she can comfortably hold, place your hand on the medial surface of the thigh and ask her to "squeeze inward" as you offer gentle resistance. Hold to fatigue. • Repeat on the contralateral hip. 	4 minutes

(continued)

Technique	Duration
<p>Ask the client to place both feet flat on the table.</p> <ul style="list-style-type: none"> Place your hand on her lower abdomen. Ask her to “tighten her abs” so you can feel the movement with your hand. Hold to fatigue. Repeat several times. 	
<ul style="list-style-type: none"> While in the same previous position, ask the client to gently push her hips up off the table a few inches. Hold to fatigue. Repeat several times. 	3 minutes
<p>Effleurage, petrissage, effleurage, slow, evenly rhythmic, medium pressure</p> <ul style="list-style-type: none"> Bilateral feet Bilateral legs Bilateral knees Bilateral thighs Abdomen Bilateral superior pectoralis major and minor Bilateral arms Bilateral shoulders Neck and occipital ridge 	10 minutes
<p>Ask her to inhale as deeply as she can. <i>Very gently</i> place your open hands against her rib cage and offer slight resistance as she exhales. Ask her to inhale again, this time against your <i>gentle</i> pressure. Repeat this 3 times. Stop if she becomes light-headed.</p>	3 minutes
<p>Digital kneading, effleurage, petrissage, effleurage, medium pressure</p> <ul style="list-style-type: none"> All compensating upper extremity structures Bilateral hands, forearms, arms, and shoulders 	15 minutes
<p>Effleurage, long, slow, sweeping strokes, evenly rhythmic, light-to-medium pressure</p> <ul style="list-style-type: none"> Any area that will provide profound relaxation according to the client’s request 	3 minutes

to remove throw rugs, move a chair in your treatment area to provide more maneuvering room, and lower your table for easier on-and-off access. If her breathing is compromised, be sure to provide sufficient pillowing for a comfortable supine or side-lying position. Prone positioning might not be possible.

Since most PPS symptoms manifest in the lower extremities, the following protocol treats bilateral legs for an older client who uses an assistive walker. The techniques can be adapted to any region of musculoskeletal discomfort. Allow for additional session time at the beginning and end of the appointment to accommodate challenges in dressing, undressing, furniture movement, and stabilizing the client on the walker.

HOMEWORK

As with any musculoskeletal and neuromuscular condition, homework is essential in order to keep the client working up to her personal potential. A regular routine of

physical activity is essential. Your suggestions may repeat those of the client's PT or OT, but they are worth reinforcing.

- Take full, deep breaths several times throughout your day. Inhale as deeply as you can, hold for a few seconds, and then exhale forcibly.
- Perform gentle ROM exercises every day, especially at particularly stiff joints.
- Check with your PT and confirm that you can sit and bounce on a large exercise ball. This will increase both your balance and your leg strength. Make sure you hold onto something secure during your bouncing.
- If you can do nothing else, go for a walk. Try to use more energy than a stroll would require, but do not work to the point of exhaustion. Swing your bent arms back and forth with a little vigor.

Review

1. Describe the incidence, spread, and cure of acute poliomyelitis.
2. Describe symptoms of PPS.
3. This syndrome mimics what other medical conditions?
4. Explain the adaptations to a massage therapy treatment area required to accommodate various assistive devices.
5. Are there medications or a cure for PPS?

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31

Post-traumatic Stress Disorder

Also known as:

PTSD
(historically:
Shell Shock,
Battle Fatigue,
Soldier's Heart)

Definition: An anxiety disorder triggered by a traumatic event.

GENERAL INFORMATION

- Caused by altered brain chemistry in response to witnessing or experiencing an event that instills fear, helplessness, and horror
- Contributing factors: inherited predisposition to psychiatric illness, anxiety, or depression; intensity of trauma experienced since or during early childhood; individual temperament
- Increased risk with severity, intensity, and/or duration of the event, and with lack of emotional support after the event
- Onset typically within 3 months or even years after the event
- Occurs in people of all ages and in women four times more than men
- Prevalence among survivors of combat, imprisonment, torture, torment, and stalking
- Higher prevalence among African Americans than Caucasians
- Unclear why some experience PTSD and some do not

Morbidity and Mortality

Approximately 60% of men and 50% of women will experience a traumatic event in their lifetime, and about 8% of them will experience PTSD. About 7.7 million American adults suffer from PTSD annually. Experts believe that 30% of Vietnam veterans, 10% of Gulf War veterans, 6–11% of those returning from Afghanistan, and about 12–20% of Iraq War veterans will experience PTSD.

Psychological comorbidities include depression, relationship difficulties, drug and alcohol abuse, eating disorders, and suicide. Physical comorbidities include cardiovascular disease, chronic pain, autoimmune disorders, and musculoskeletal conditions.

The prognosis is poor for those who do not receive treatment, and it is significantly improved for those who receive both therapy and medications. Although troubling memories continue, they lose their power to significantly alter behavior and function.

PATHOPHYSIOLOGY

It is normal to experience temporary discomfort, or even dysfunction, after a traumatic event. A physiologic chain of events sends powerful hormones from the brain to every organ in the body in response to any perceived or real trauma. A car accident, a natural disaster, the death of a loved one—any of these can produce anxiety, lack of focus, sleeping or eating changes, bouts of crying, and even nightmares and recurrent, unwelcome thoughts. After the event passes, the level of “fight-or-flight” response hormones decreases and returns to normal.

The expected response to trauma and loss is to experience strong emotions, coupled with some physiologic reactions, talking about the experience with family and friends, perhaps seeking short-term counseling, and eventually regaining composure and control over a functioning life. (See references to the body's response to stress in Chapter 38.) If, however, symptoms persist in severity and become life- and routine-altering, the person could be experiencing PTSD. Research using MRI and PET (positron emission tomography) has shown on scans that PTSD actually changes the brain's biochemistry and the way memories are stored. Scientists do not know whether the condition is reversible.

Diagnosis is confirmed by a mental health professional who reviews signs and symptoms and performs a psychological evaluation after symptoms have persisted for at least 1 month. PTSD is listed in the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, published by the American Psychiatric Association, and criteria for a diagnosis are confirmed by the signs and symptoms listed as follows. This step in categorizing the condition as a recognized mental disorder gave PTSD the credibility it did not have previously.

OVERALL SIGNS AND SYMPTOMS

Signs and symptoms are categorized according to the age at which the disorder manifests. They do not appear linearly, that is, from immediately post-event and then dissipating in the future. Instead, signs and symptoms are transient and changing in both frequency and intensity, taking the person by surprise, and often accompanying periods of stress unrelated to the original trauma. Symptoms can become severe enough to place the person at risk for endangering himself or others. Children may experience symptoms that include passivity, feelings of helplessness, and regressive behaviors, while adults, especially men, may manifest much more aggressive and destructive behavior. The signs and symptoms are grouped into three categories:

Intrusive memories:

- Flashbacks, lasting minutes, hours, or days
- Nightmares

Avoidance and emotional numbing:

- Avoiding thoughts about the event
- Avoiding any intense feelings (positive or negative)
- Feeling hopeless
- Difficulty concentrating
- Difficulty maintaining relationships

Increased anxiety and emotional arousal:

- Overwhelming anger, irritability, guilt, or shame
- Self-destructive behavior, including drug and/or alcohol abuse
- Insomnia
- Being easily startled or frightened
- Auditory or visual hallucinations
- Irrational fear for one's own or another's safety

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

- Many massage techniques induce the parasympathetic state, and these modalities are appropriate for the client suffering with PTSD.
- PTSD is a mental disorder. Symptoms are unpredictable and can be agonizing and/or violent. The normal listening skills and compassionate approach most massage therapists use must be finely honed to prevent transgressing into psychotherapy.
- Massage therapy for a client with PTSD must approach the *muscular hypertonicity* that classically accompanies stress and anxiety and *nothing more*.



Massage Therapist Tip

Preventing Your Client from Falling Asleep

If a client suffers from PTSD, especially if he has recently returned from active combat, he may experience unexpected and violent flashbacks. These usually occur while falling asleep or during sleep. It is wise, in your work on such a fragile client, *not to allow him to fall asleep*. Although you want to perform techniques that let him relax, if he falls asleep, he may experience a flashback that you are not trained to handle. You can prevent sleep by periodically asking him how he is doing, asking him if the strokes are relieving tension in his muscles, playing music that is slightly more upbeat than the usual soothing massage music, and asking a few questions about one of his favorite topics.

- Advanced training in emotional-release techniques and close supervision by a mental health professional are essential if the therapist is to perform more than the most rudimentary massage techniques.

TREATMENT OPTIONS

Several forms of therapy are recommended to treat PTSD; their effectiveness depends on the person's age and the severity of the symptoms. Cognitive therapy is a talk therapy that helps identify and change painful thought patterns. Exposure therapy, another talk therapy, teaches the safe confrontation of the person's worst nightmares and how to effectively cope. Eye movement desensitization and reprocessing (EMDR) is a series of guided eye movements that helps the brain process traumatic memories. Cognitive behavioral therapy teaches positive behavior after unhealthy beliefs are identified.

Group therapy can be helpful by providing support from like-minded trauma sufferers. Family therapy can help significant others work through their concerns. Any safe and nonaddicting therapy that can help the person achieve a relaxed, parasympathetic state can be highly effective in relieving anxiety and stress and thus lessening the attendant symptoms. (PTSD sufferers must be vigilant not to use alcohol or recreational drugs to mask their pain.)

No therapeutic techniques have been found that can prevent PTSD for those directly affected by trauma. However, immediate debriefing, followed by counseling and peer support, have been proven effective in preventing the disorder from occurring in firefighters, police officers, rescue workers, medical personnel, and volunteers who respond to trauma.

Common Medications

- Selective serotonin reuptake inhibitors (SSRIs), such as fluoxetine hydrochloride (Prozac), paroxetine hydrochloride (Paxil), and sertraline hydrochloride (Zoloft)
- Antipsychotics, such as risperidone (Risperdal), olanzapine (Zyprexa), and quetiapine fumarate (Seroquel)
- Anticonvulsants, such as lamotrigine (Lamictal) and tiagabine hydrochloride (Gabitril)
- Antiseizure medications, such as divalproex sodium (Depakote)

MESSAGE THERAPIST ASSESSMENT

The therapist assesses the client for muscular hypertonicity *only*. A psychological intake is not done because that is beyond the scope of practice. Ideally, the therapist should be made aware that the client has been diagnosed with PTSD or that he has recently experienced a traumatic event. It will help her treat the client more effectively—and safely—if the client offers a short, historical perspective to explain his stress level and muscular tension. The therapist should *not inquire about any psychological symptoms or the initial event*.

THERAPEUTIC GOALS

Reducing muscular hypertonicity that accompanies stress and anxiety, stopping the pain-spasm-pain cycle, and inducing a mild—not deep—parasympathetic state are appropriate treatment goals.

MESSAGE SESSION FREQUENCY

- Ideally: 60-minute sessions once a week
- Minimally: 60-minute sessions every other week
- Infrequent, intermittent 60-minute sessions can provide relief



Thinking It Through

The massage therapist might be the professional who first helps identify that her client is, indeed, suffering from PTSD. Well-reasoned suggestions for the client to seek counseling or medical help may save him and his family from further agony. Referring him to the professional associations listed at the end of this chapter could guide him in the right direction. It may be very difficult for the therapist to remain within her scope of practice, and she can ask herself the following questions as she maintains professional boundaries while simultaneously being of service:

- Am I focusing on the musculature alone? How can I keep myself clearly focused on the muscular hypertonicity and addressing that which I do best?
- What should my responses be if he starts to talk about his traumatic event?
- What will I say if he asks me if I think he has PTSD?
- What will I say if he wants to talk about the conflict in which he was engaged?
- What will I do if he suffers a flashback?
- What is my intention as I treat this client?
- Do I have a list of mental health professionals I can offer him—if he asks for help?
- How can I offer compassionate support while maintaining professional boundaries?



Massage Therapist Tip

If a Flashback Occurs or He Begins to Remember

The only black eye I ever received was because, without taking proper precautions, I treated a Vietnam veteran suffering from PTSD and allowed him to talk at length about his war experiences and then to fall asleep on the table. The black eye occurred when I attempted to wake the veteran to turn him over; he went into a flashback and struck out. You can avoid these errors—and protect yourself—by gently informing the client that discussing any details about the traumatic event should be saved for his friends, family, and counselor. If he does become emotional or teary, stop the massage, offer a tissue, and sit quietly by the table until the emotions quiet. On your intake form, be sure to have the name and phone numbers for the nearest family member and/or the treating psychiatrist or counselor. Be sure you received permission to contact someone if a flashback occurs.

MASSAGE PROTOCOL

The Massage Protocol section of this chapter varies from the usual setup because of the preponderance of necessary precautions. Two possible optional techniques are provided.

The moment you lay your hands on a client's body with a helping intention, the healing process begins. That process is best facilitated if the client reaches a deep parasympathetic state. Before proceeding with the following techniques, both of which induce deep relaxation, make sure that your client does *not* tend to have nightmares or flashbacks. These techniques can be used at the end or the beginning of a session. They can also be ideal for a home or hospital setting, where you do not have the luxury of providing a full 60-minute treatment, and are effective on either a clothed or a disrobed body.

Slow-Stroke Back (or Front) Massage

This protocol assumes that 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 the client's clothes) at the base of the client's neck (see Figure 22-1). Using only the weight of your hands (no lighter, because this will be stimulating to the body, and not 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 the sacrum. It should take you about 1 minute to travel the length of his 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 is 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 his 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 *nonlubricated* 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 for about 5 minutes of slow-stroke back (or front) massage.
- Duration is 15–30 minutes.

Routine muscle-relaxing techniques are outlined in the step-by-step protocol that follows. Before beginning, ask the client to identify specific areas of hypertonicity; this protocol focuses on the neck and shoulders.

Step-by-Step Protocol for

Post-traumatic
Stress Disorder

Technique	Duration
With the client positioned comfortably prone, compression, light pressure, using your whole hand <ul style="list-style-type: none"> Entire posterior surface of the body 	3 minutes
Effleurage, petrissage, effleurage, medium pressure, evenly rhythmic <ul style="list-style-type: none"> From the occipital ridge to the sacrum 	5 minutes
Digital kneading, medium pressure <ul style="list-style-type: none"> In the laminar groove, on either side of the spinous process, from the occipital ridge to the sacrum 	3 minutes
Effleurage, slightly deeper pressure <ul style="list-style-type: none"> Entire back 	2 minutes
Rolling petrissage, kneading, compression, digital kneading, effleurage. Work deep to the client's tolerance. <ul style="list-style-type: none"> Bilateral superior trapezius 	10 minutes
Turn the client supine, and sit on a stool near his head. Effleurage, deep to his tolerance, working both sides simultaneously. <ul style="list-style-type: none"> From the superior deltoids, into the base of the neck, and then up to the occipital ridge 	3 minutes
Digital kneading, deep to his tolerance <ul style="list-style-type: none"> Occipital ridge 	3 minutes
Effleurage, petrissage, effleurage, deep to his tolerance <ul style="list-style-type: none"> Superior trapezius 	5 minutes
Digital kneading, deep to his tolerance <ul style="list-style-type: none"> Laminar grooves, next to the spinous process of the cervical vertebrae 	5 minutes
Effleurage, slow, medium pressure <ul style="list-style-type: none"> Entire shoulder and neck region 	5 minutes
Cleanse your hands. Ask permission to touch the client's face. Digital kneading, medium pressure; slow, evenly rhythmic. <ul style="list-style-type: none"> Bilateral temporomandibular joint (TMJ) Entire mandible 	5 minutes
Ask permission to touch the client's scalp. Deep digital kneading, slow, being careful not to tug hair <ul style="list-style-type: none"> All scalp muscles 	5 minutes
Ask the client to get dressed. Demonstrate door stretching or other appropriate stretches to help relieve hypertonicity.	6 minutes



Contraindications and Cautions

- Do not ask questions about the precipitating traumatic event.
- Use caution when asking about PTSD symptoms. Focus on the secondary musculoskeletal symptoms.
- If the client is mentally unstable, touch may not be an appropriate therapy.
- If at all possible, and only with the client's permission, work with the counseling therapist to coordinate your care and discuss the results you are seeing.

HOMework

You can offer gentle reminders regarding relaxation and self-care to a client whose emotional and psychological state causes constant stress. Stretching tight muscles will help alleviate hypertonicity. Here are some appropriate homework assignments:

- Before sleep, starting at your toes, tighten and release every major muscle group in your body. Tighten and then relax the muscles in your feet, calves, thighs, abdomen, shoulders, neck, and face. Take a few deep breaths once you complete the exercise.
- Throughout the day when you feel anxious, stop what you're doing and take some very long, slow, deep breaths.
- Find small activities that help you relax, such as lighting a candle and playing soft music, working a jigsaw puzzle, doing a crossword puzzle, or watching a relaxing, upbeat movie.
- Be sure to perform the stretching exercises that were demonstrated at the end of your massage session.

Review

1. Define PTSD.
2. Explain several signs and symptoms.
3. Who is at an increased risk for this condition?
4. Describe various appropriate therapies for treating PTSD.
5. Explain, in detail, ways you might unintentionally cross your professional boundaries when treating a client suffering from PTSD.

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32

Raynaud's Phenomenon

Also known as:

Primary Raynaud's (or Raynaud's Disease); Secondary Raynaud's (or Raynaud's Syndrome)

GENERAL INFORMATION

- Primary Raynaud's: cause unknown
- Secondary Raynaud's: caused by disease, injury, or repetitive impact damage to arteries and nerves in hands and feet, exposure to vinyl chloride (a plastic component), frostbite, or medications that narrow arteries or affect blood pressure
- Primary Raynaud's onset: age 15–25; secondary Raynaud's onset: after age 40
- Increased risk from nicotine inhalation; migraine medications containing ergotamine; cancer medications, such as cisplatin and vinblastine; beta-blockers; contraceptive pills; and over-the-counter (OTC) cold, allergy, and diet pills
- Primary Raynaud's more common, less severe than secondary Raynaud's; affects people of all ages
- Fingers usually affected, toes less frequently, usually bilateral; nose, ears, lips rarely
- Possible genetic link
- Primary Raynaud's prevalence: women age 30 or younger who live in a cold climate, or have a family history of the disorder
- Lifetime duration
- No cure

Morbidity and Mortality

About 5% of the U.S. population and 3–20% of the worldwide population have some form of Raynaud's phenomenon. Primary Raynaud's can be so mild that it presents neither medical nor lifestyle challenges. Secondary Raynaud's, however, coexists with underlying conditions, making it more difficult to manage and thus causing substantial medical and life-altering challenges. Comorbidities of secondary Raynaud's include rheumatoid arthritis, atherosclerosis, scleroderma, lupus, carpal tunnel syndrome, and Sjögren's syndrome.

Tissue damage or limb disability does not usually result from lifelong Raynaud's, but occasionally repeated, severe episodes can lead to skin sores and gangrene (death or decay of body tissues). Although there is no cure, both forms of the condition can be successfully managed and controlled.

PATHOPHYSIOLOGY

When the body is exposed to cold, the normal physiologic response is a redirection of blood flow from the periphery (hands and feet) to the core. A similar response occurs during episodes of anxiety or stress, and as a side effect of taking certain medications. During a Raynaud's attack, which is usually triggered by exposure to cold, and sometimes by emotional upset, the body overreacts by severely constricting blood vessels that feed (and thus warm) the hands and feet, leaving the affected areas with

Definition: Chronic, episodic peripheral vasoconstriction (blood vessel narrowing), usually precipitated by an extreme response to cold temperatures.

a longer-than-usual sensation of extreme cold. The initial cause of this physiologic reaction remains unclear.

Diagnosis is confirmed by medical history and physical examination, combined with a cold simulation test, during which the hands or feet are briefly placed in ice water in an attempt to trigger Raynaud's symptoms. A nail fold capillaroscopy, to examine microscopic nail cells, can help confirm a diagnosis and differentiate between the primary and secondary forms. No simple tests exist that can absolutely confirm Raynaud's. Blood tests, arterial Doppler studies, and arteriograms help rule out other circulatory disorders.

OVERALL SIGNS AND SYMPTOMS

Signs and symptoms, although they share the same physiologic basis, differ significantly in primary and secondary Raynaud's. Primary Raynaud's symptoms can be so mild and fleeting that a firm diagnosis is never made and treatment is never sought. The frequency and intensity of secondary Raynaud's, however, often prevent normal daily activities, and the condition is sufficiently distressing to require medical attention. Attacks can begin in one finger or toe and thereafter move to other digits. The same toes or fingers are not affected every time. Attacks vary in length from 1 minute to several hours and can occur daily or weekly. Typically, the following signs and symptoms occur sequentially in the fingers and/or toes:

- Skin turning white, then blue
- Numbness, coldness, pain
- Skin turning red
- Throbbing, tingling, burning
- Severe pain and/or discomfort, and/or difficulty with hand or foot function

SIGNS AND SYMPTOMS MASSAGE THERAPY CAN ADDRESS

- Because Raynaud's phenomenon involves compromised peripheral circulation, massage therapy, which increases circulation, can successfully address this condition.
- When symptoms result from comorbidities, the therapist must address the coexisting condition *first* and then attend to the circulatory challenges.
- When anxiety and/or stress are known triggers, massage techniques that induce a parasympathetic state are effective in increasing circulation and instilling a sense of calm.

TREATMENT OPTIONS

The treatment of Raynaud's depends on its classification. Primary care physicians and internists will treat both forms of Raynaud's while aiming to reduce the number and severity of attacks, prevent tissue damage, and address underlying medical conditions.

Prevention and self-care include keeping the body warm, maintaining a room temperature higher than 68–70°F, avoiding exposure to cold, using hand warmers, exercising regularly, and massaging the hands and feet. Clients are also counseled to reduce anxiety, stop smoking, and avoid caffeine, nicotine, and certain medications that trigger attacks. Pragmatic lifestyle adaptations include wearing gloves while removing frozen items from the freezer, drinking hot liquids, warming the hands under *warm* (not hot) running water, and swinging the arms in a large circle to temporarily increase peripheral blood flow.

Ginkgo biloba has been shown to reduce the number of attacks, and several ongoing studies support the use of this herb in the treatment of Raynaud's. Fish oil



Massage Therapist Tip

Curbing the Power of Your Handshake

You may be seeing a client who is experiencing a current Raynaud's attack, and her hands might be painfully throbbing. If your usual approach includes a warm, firm handshake, you may want to forgo this greeting until you are sure your Raynaud's client is pain-free. Even if she has only mild Raynaud's, her hands may be constantly sensitive, in which case she may be guarded. A warm, verbal greeting is the best approach.

supplements, evening primrose oil, and ginger have also been used with varying levels of success. In rare cases, nerve-blocking surgery is necessary.

Common Medications

Medication is not generally prescribed to treat primary Raynaud's. The use of vasodilating medications is common only for secondary Raynaud's. Prescription skin creams can address local circulation and treat compromised and damaged tissue.

- Antianginals, such as nifedipine (Adalat) and diltiazem hydrochloride (Dilacor)
- Antihypertensives, such as prazosin hydrochloride (Minipress)

MESSAGE THERAPIST ASSESSMENT

The client will most likely present to a massage therapist after a physician has diagnosed either primary or secondary Raynaud's. Primary Raynaud's symptoms will be mild, may be visible and palpable by the therapist, and rarely pose a therapeutic challenge. However, comorbidities associated with secondary Raynaud's will require the massage therapist to speak directly with the physician. Questions about the underlying disease, the possibility of the presence of tissue damage, lurking deep vein thrombosis (DVT), or potential gangrene must be addressed before the therapist proceeds.

Since primary Raynaud's is far more common, the succeeding protocol addresses treating these signs and symptoms. A protocol is not given for secondary Raynaud's because the array of comorbidities is too numerous.

In either case, the therapist's assessment includes questions about the frequency and duration of the attacks—whether the hands, feet, or, more rarely, the nose and lips are affected—and the pain level. Asking about what causes an attack (cold temperatures, emotional upset) further helps determine the therapy's focus.

Gentle palpation of the affected tissue will help identify the extent of tissue damage, if any. Palpation will also determine sensory and motor function and pain tolerance. The therapist can safely proceed with treatment at any time before, during, or after an episode.

THERAPEUTIC GOALS

Therapeutic goals for treating Raynaud's include increasing local circulation and inducing a deep parasympathetic state. As mentioned, with secondary Raynaud's, the goals must be appropriate to the treatment of the underlying medical condition.

MESSAGE SESSION FREQUENCY

Primary Raynaud's: With a chronic yet episodic circulatory condition, it is best if the client routinely receives massage therapy as part of her self-care regimen, rather than wait for the episodes to cause distress and discomfort, which can further exacerbate the condition.

- Ideally: 60-minute sessions every other week
- Minimally: 60-minute sessions once a month

Secondary Raynaud's: Addressing this condition is possible only after treating the underlying medical condition. The therapist determines session frequency and duration based on the client's medical history, and treats secondary Raynaud's concurrently.



Thinking It Through

As always, empathy leads to more effective massage therapy. Although it may be tempting to think that a medical condition that merely produces cold hands and/or feet is somehow less severe than other, more dramatic conditions, awareness might be increased if the therapist performs the following exercise.

- Fill a large container with cold water and ice cubes.
- Wear a buttoned shirt. Place some pins or other small items on a nearby surface.
- Place both of your hands in the container until the sensation of cold is intolerable.
- Remove and dry your hands.
- Now, try to unbutton and button your shirt.
- Try to pick up the small items.
- Be aware of how long it takes your hands to return to normal sensation and function, and of the uncomfortable sensations along the way.
- Think about how your life would be affected if these symptoms appeared whenever you were even mildly cold or emotionally upset.



Contraindications and Cautions

- Cold should not be applied anywhere on the affected extremities, whether or not an attack is occurring.
- Stimulating techniques, as a rule, should be avoided because you want to induce a parasympathetic state, and stimulation may further send blood to the body's core.
- Deep techniques on affected tissue must be used cautiously and are contraindicated if the tissue's integrity is compromised.
- Hot packs should be used with caution because the client may have impaired sensory reactions. It is better to use warm packs.

Step-by-Step Protocol for

Primary Raynaud's (Bilateral Hands)

Technique	Duration
Perform relaxing techniques, anywhere the client requests, to bring the body into a parasympathetic state.	10 minutes
With the client positioned supine, effleurage, petrissage, effleurage, medium-to-deep pressure <ul style="list-style-type: none"> • Bilateral superior trapezius 	5 minutes
<i>From this point forward, perform the techniques on one arm only before moving to the contralateral side.</i> Effleurage, petrissage, effleurage, medium-to-deep pressure <ul style="list-style-type: none"> • Entire anterior, medial, and posterior deltoid 	3 minutes
Effleurage, petrissage, effleurage, kneading, long, deep strokes performed from elbow to shoulder <ul style="list-style-type: none"> • Biceps and triceps • Flexors and extensors 	5 minutes
Digital kneading, ROM followed by long, deep strokes from wrist to elbow <ul style="list-style-type: none"> • Carpals 	2 minutes
Hold the client's hand in both of yours. Ask her to relax so all muscles are loose and easy to get to. Working <i>cephalically</i> , use your thumbs and fingers to deeply and broadly spread and massage all tissue. <ul style="list-style-type: none"> • Carpals • Palmar and dorsal surface of the hand • Each finger 	4 minutes
Still holding the hand, digitally massage, deep to the client's tolerance, each section of every finger, beginning distally, working proximally, and massaging <i>cephalically</i> .	5 minutes
Effleurage, deep to the client's tolerance <ul style="list-style-type: none"> • From the fingertips to the wrist • From the wrist to the elbow • From the elbow to the deltoids 	2 minutes (Total for one arm: 21 minutes)
Repeat the previous steps to the contralateral arm, forearm, and hand.	21 minutes
Perform relaxing techniques, at the client's request, to ensure the client leaves the table in a parasympathetic state.	8 minutes

MASSAGE PROTOCOL

The following protocol addresses primary Raynaud's. Even with mild symptoms, affected extremities must be approached with care and attention. After a thorough visual and manual examination, you will most likely spend significant time deeply massaging the *proximal* region of the affected limb, after which you will approach the affected area. Work will be detailed, specific, localized, and intelligent as you attempt to soften and spread affected tissue, increase local circulation, and return waste products to the

proximal limb. Your work will be not only therapeutic but also possibly preventive. An important element of your work will be teaching self-massage to your client.

Getting Started

Determine which limbs you will focus on, and be prepared to pillow and position the client accordingly. Your main focus will most likely be on the bilateral arms and hands, but the feet can also be affected. Rarely will you have to address both upper and lower extremities. Because you do want to bring the body into a parasympathetic state, the client will need to disrobe if you intend to perform relaxing Swedish techniques before you begin your localized work.

HOMEWORK

The ease of reaching one's own hands and feet proves to be advantageous when instructing your Raynaud's client about self-care massage. Although she has been warned by her physician to be vigilant about handling cold items and exposing herself to cold temperatures, it is well within your scope of practice to offer supportive advice in this area also. Here are some recommended homework assignments:

- Massage your hands and/or feet frequently and deeply, but not to the point of pain. Work from your fingertips to your wrists, or from your toes to your ankles—stroking, pulling, and tugging in the direction of your elbow or knee.
- Shake your hands or feet vigorously after you massage them.
- Swing your arms in vigorous big circles several times each day.
- Run your hands or feet under *warm* water if you feel an attack coming on.
- Keep gloves near the refrigerator, and don't take anything out of the freezer with your bare hands.
- Stay warm at all times.
- Try to avoid becoming anxious or overly stressed.

Review

1. Define Raynaud's phenomenon.
2. Distinguish between primary and secondary Raynaud's.
3. Which form is more common and less severe?
4. Explain the physiology of Raynaud's phenomenon.
5. Describe your challenge as a massage therapist when treating secondary Raynaud's clients.

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