

## THIGH PAIN

The thigh is composed of all the structures existing between the hip and knee joints. The main supporting structure of the thigh is the femur bone. The vastus intermedius, vastus lateralis, and vastus medialis muscles originate on its anterior, lateral, and medial aspects. The adductor magnus, short head of the biceps femoris, medial and lateral head of the gastrocnemius, popliteus (actually on the lateral condyle), and plantaris muscles originate on its posterior aspect. The proximal anterior end of the femur provides insertion sites for the gluteus minimus, piriformis, psoas major (on the medial aspect), the obturator internus, and the gemelli muscles. The posterior aspect provides insertion sites for the gluteus medius, quadratus femoris, iliacus, gluteus maximus, pectinius, adductor brevis, and adductor magnus muscles. The quadriceps muscle group provides the anterior muscle bulk while the hamstring muscle group provides the posterior muscle bulk. Medially, the hip adductor muscle group provides the bulk. The muscles all have their various tendons and fascial coverings that are also considered thigh structures.



**Anterior view of the thigh and the high skin resistance patterns associated with the vastus medialis and hip adductor trigger points**

Other structures of the thigh include lymph glands and their tracts, ligaments, blood vessels, and various nerves. The nerves, blood, and lymph vessels are numerous and varied in size, the smaller bifurcating from the larger. Anteriorly, the main structures include the femoral artery, vein, and nerve. Posteriorly, they include the sciatic nerve and the popliteal artery.

*Thigh pain* may be caused by trauma, muscle strain or spasm, nerve impingement (sciatica), phlebitis, deep vein thrombosis, soft tissue inflammation, referred pain from the bladder, referred pain from interspinous ligaments, and infection of the deeper tissues. The most common sources of thigh pain are referred pain patterns from trigger point formations and hamstring tendonitis (the bane of *weekend athletes* and *weekend ballerinas*).

A DSR survey should be made to establish the presence of inflammation and chronic trigger points.

## Treatment

The course of treatment will depend on which treatable causes have been identified.

### Application:

- If the condition is **acute**, icepack the inflamed zone. If the condition is **chronic**, the electrically stimulate the inflamed zone. Place a negative electrode over the inflamed zone and a positive electrode over a more proximal site. Preset an electrical stimulation unit to deliver a visible contraction, at 7 Hz. Stimulate for 10 minutes. Then set the unit to deliver a medium frequency current, with a duty cycle of 10-seconds on and 10-seconds off, sufficient to produce a near tetanic contraction of the involved muscles. Stimulate for 10 minutes.
- In either case (acute or chronic), manipulate the tissues in and around each inflamed zone to eliminate any adhesions that are present.
- Preset the ultrasound unit to deliver a 1 MHz pulsed waveform, at 1.5 W/cm<sup>2</sup>. Ultrasound the inflamed zone(s) utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes.

*The following treatment forms have also been effective.*

### Variation:

- Preset the ultrasound unit to deliver a 1 MHz pulsed waveform, at 1.8 W/cm<sup>2</sup>. Ultrasound the inflamed zone(s), utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes. This procedure is designed to soften the adhesions that may be present.
- Manipulate the tissues in and around the inflamed zone(s) to eliminate any adhesions that may be present.
- Twenty minutes after the first ultrasound, preset the ultrasound unit to deliver a 1 MHz pulsed waveform, at 1.5 W/cm<sup>2</sup>. Ultrasound the inflamed zone(s) utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes. This is performed to “cool off” the manipulated zone by effectively halting the production of prostaglandins by the stressed tissues.
- Apply mechanical vibration, delivered at 60 to 120 Hz, to the origin, insertion, or tendon of the muscle(s) associated with the inflamed zone, for two minutes. Apply the vibration at a relatively high but tolerably comfortable level for the patient. This is performed to increase capillary circulation in the involved tissues.

### Variation:

- Preset the ultrasound unit to deliver a 1 MHz pulsed waveform, at 1.8 W/cm<sup>2</sup>. Ultrasound the inflamed zone(s), utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes. This procedure is designed to soften the adhesions that may be present.
- Manipulate the tissues in and around the inflamed zone(s) to eliminate any adhesions that may be present.
- Apply cold laser (with or without simultaneous electrical stimulation provided by the laser applicator) to the inflamed zone(s) for approximately 6 minutes. This is performed to “cool off” the manipulated zone

by effectively halting the production of prostaglandins (or facilitating enzyme destruction of **all** inflammatory being produced) by the stressed tissues.

- Apply mechanical vibration, delivered at 60 to 120 Hz, to the origin, insertion, or tendon of the muscle(s) associated with the inflamed zone, for two minutes. Apply the vibration at a relatively high but tolerably comfortable level for the patient. This is performed to increase capillary circulation in the involved tissues.

### **Trigger Points**

The following is a list of trigger point formations which may, singly or in combination, refer pain into the region of the thigh: Multifidus (S1), External Oblique [B], Pyramidalis, McBurney's point, Gluteus minimus, Adductor longus, and Biceps femoris (hamstring), and Vastus medialis.