



CHAPTER

7

The Low Back and Abdomen

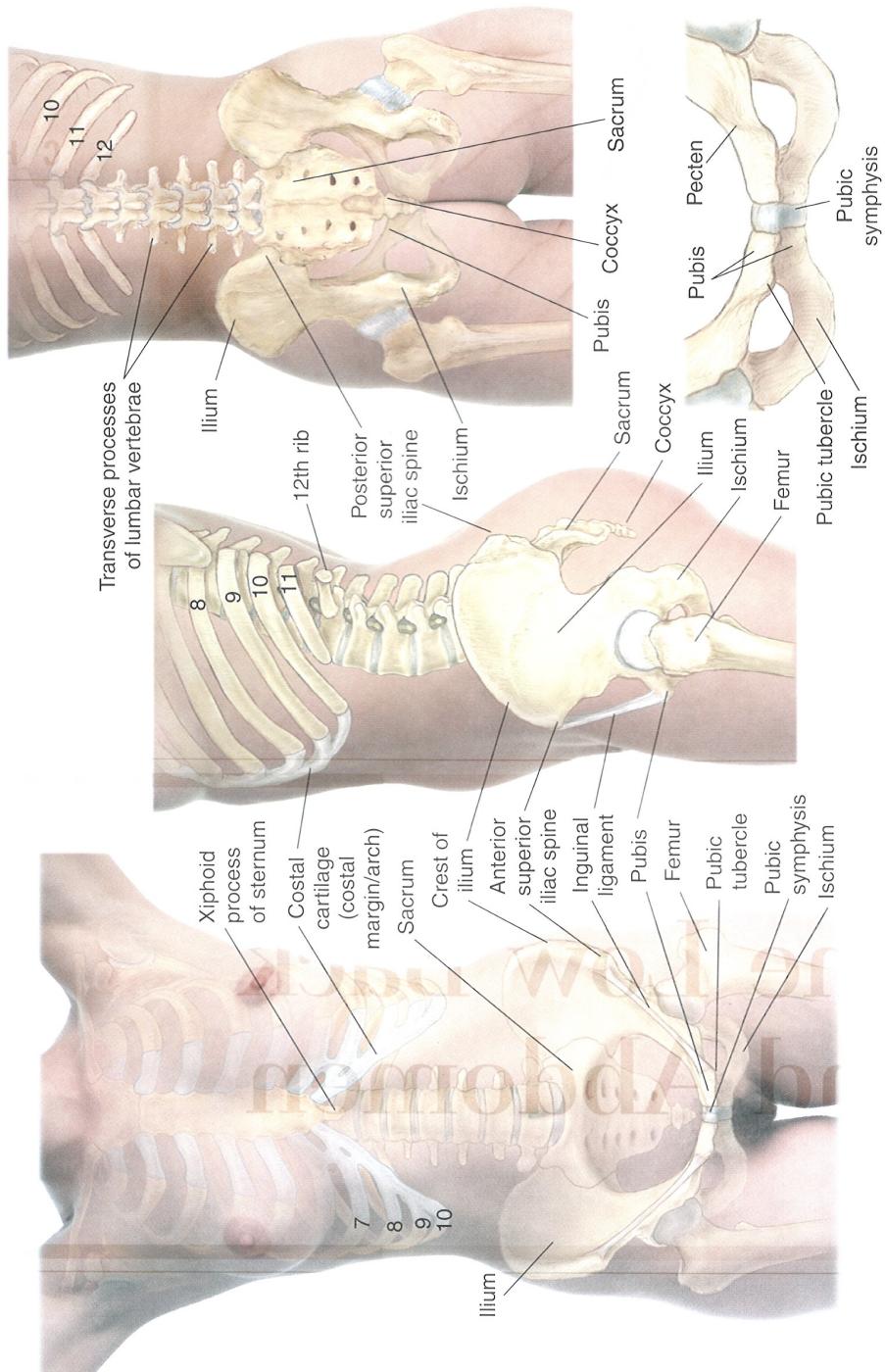


Plate 7-1 Skeletal features of the abdominal region and lower back

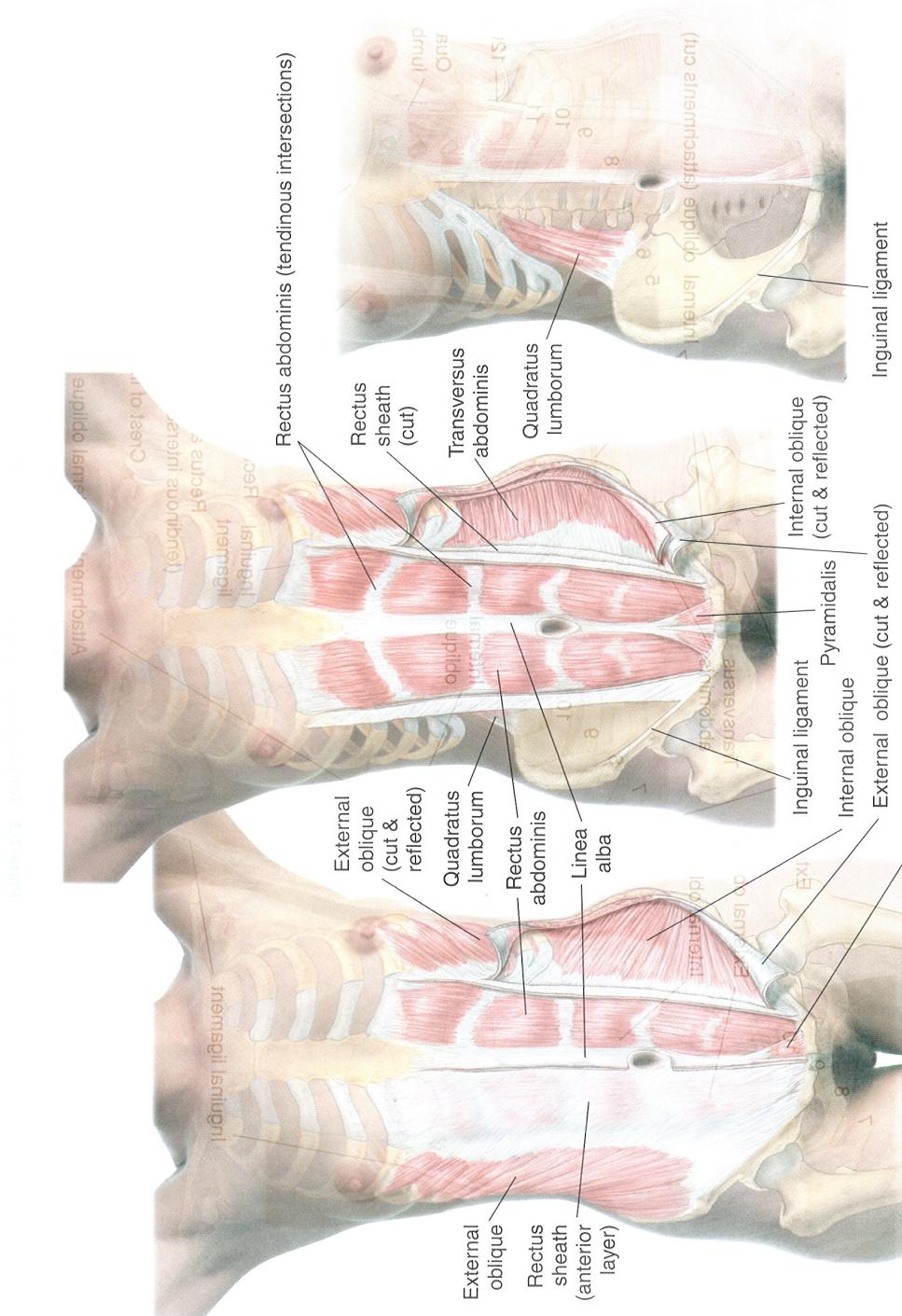


Plate 7-2 Muscles of the anterior abdomen

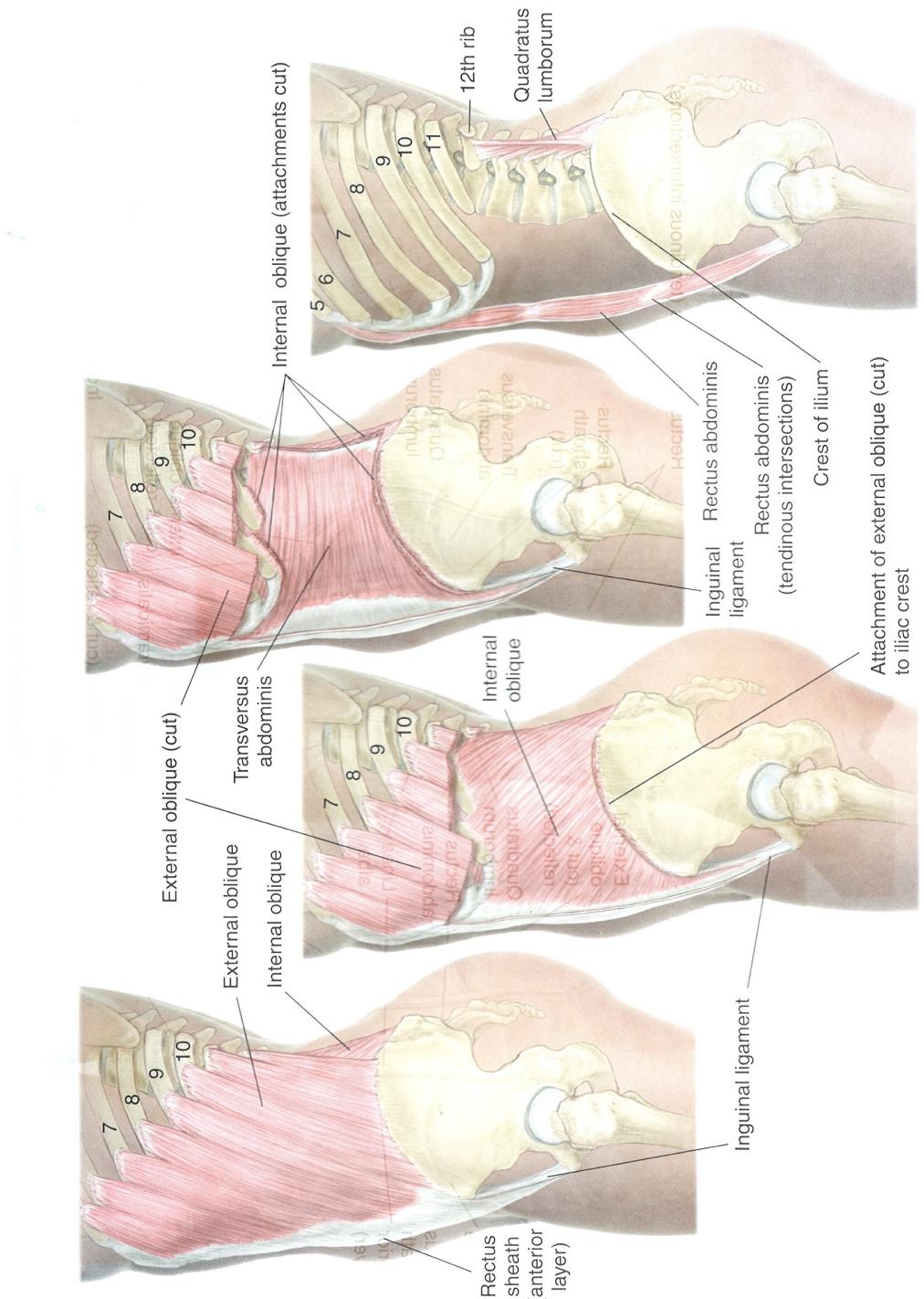


Plate 7-3 Abdominal and lower back muscles, lateral view

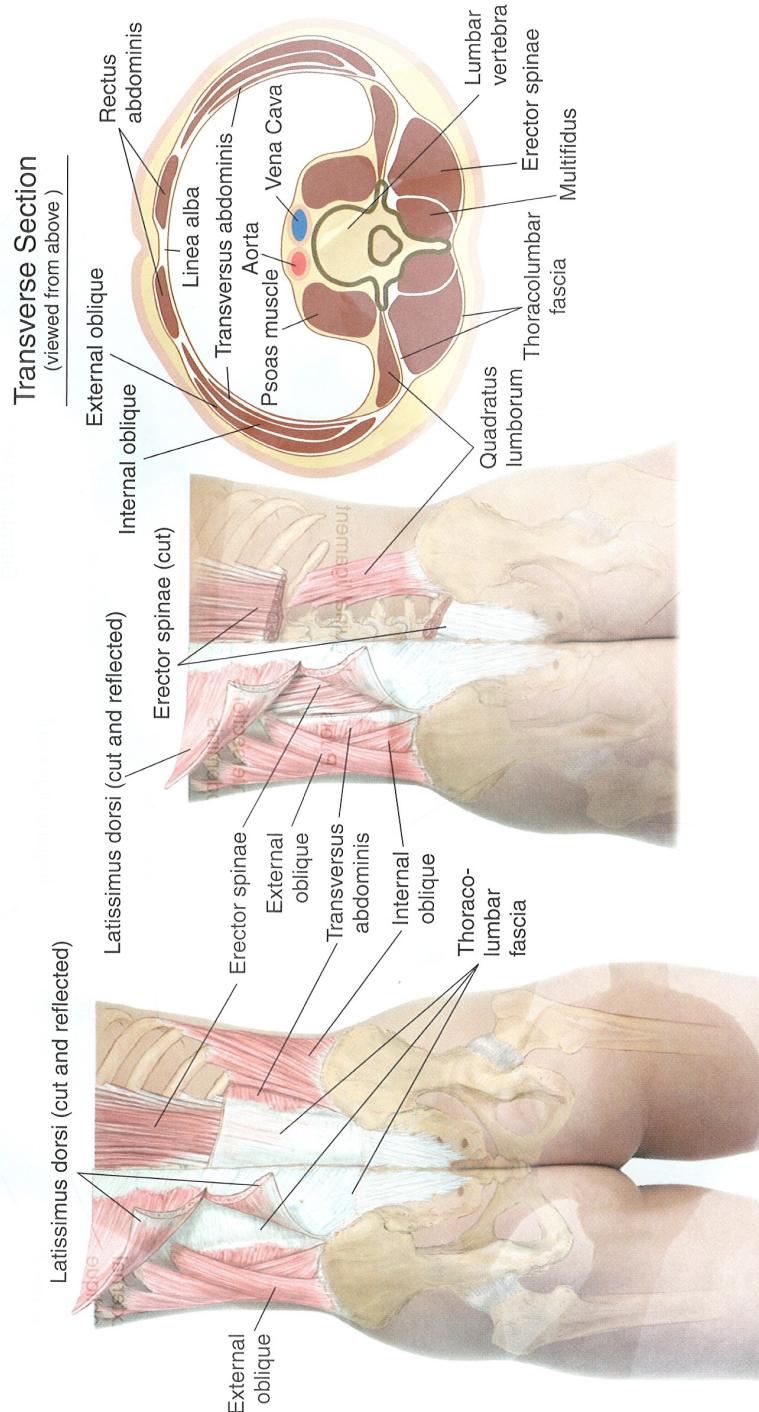


Plate 7-4 Muscles of the lower back

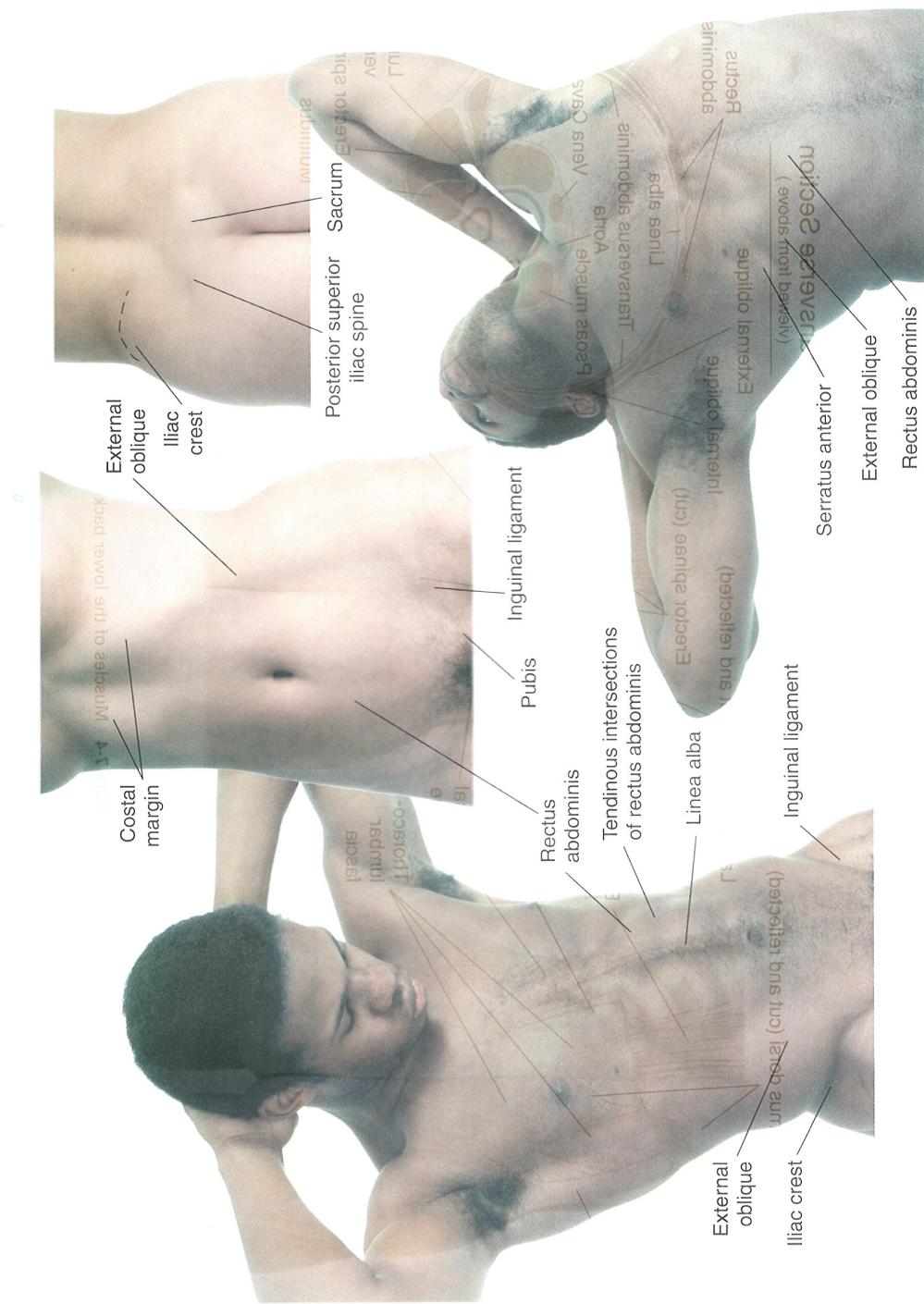


Plate 7-5 Surface anatomy of the abdomen and lower back

OVERVIEW OF THE REGION

The waist, which includes the low back (lumbar region) and middle abdomen, is a very vulnerable area because of its lack of bony armor and support. Above, the torso and spine are stabilized and the internal organs protected by the rib cage. Below, the pelvis provides stability and protection. In between, however, our need for flexibility and mobility require a space with very little support or protection. The muscles of this region, therefore, have a lot of work to do and are easily stressed or injured. Their primary actions are movement of the upper body in relation to the lower and vice versa: anterior flexion, lateral flexion, and rotation of the torso. Trigger points in these muscles refer to an extensive territory: upward into the back

and chest; inward into the viscera; and downward into the buttocks, lower abdomen, groin, genitals, and legs.

The lower back region is characterized by several layers of thick, strong tendinous and fascial tissue, including the thoracolumbar fascia and tendinous portions of the erector spinae and latissimus dorsi. These connective tissues may themselves become tight, congested, and tender, and they should be treated along with the muscles.

The lumbar/abdominal muscles constitute one of the muscle groups chiefly implicated in complaints of low back pain. The others are the buttock muscles, pelvic floor muscles, and iliopsoas, all of which are addressed in the next chapter.

MUSCLES OF THE ABDOMEN

Comment

These muscles form the wall of the abdomen, and include **rectus abdominis**, **transversus abdominis**, and the **external** and **internal oblique muscles**. Aside from their various primary functions, all of these muscles assist in forced exhalation through compression of the abdominal cavity. They are extremely important clinically, as trigger points in these muscles can refer pain into the viscera and even cause visceral problems (somatovisceral disease). Likewise, visceral disorders can cause pain in the abdominal musculature that can persist even after the disorder is resolved. They can also refer pain into the low back.

It is helpful to do some preparatory work on the abdomen prior to deeper manual therapy on specific muscles in order to stimulate local blood flow and relax the superficial musculature. This work may include general massage techniques such as effleurage as well as myofascial stretching.



Manual Therapy for the Abdomen

MYOFASCIAL STRETCHING

- The client lies supine.
- The therapist stands beside the client at the hips.
- Place one hand flat on the upper abdomen on the near side of the client, the fingers resting just inferior to the rib cage
- Cross the other hand over the first and place it on the lower abdomen on the far side of the client, the fingers over the ASIS (anterior superior iliac spine) (Fig. 7-1).
- Let the hands sink into the tissue until they engage the superficial fascia of the abdomen.

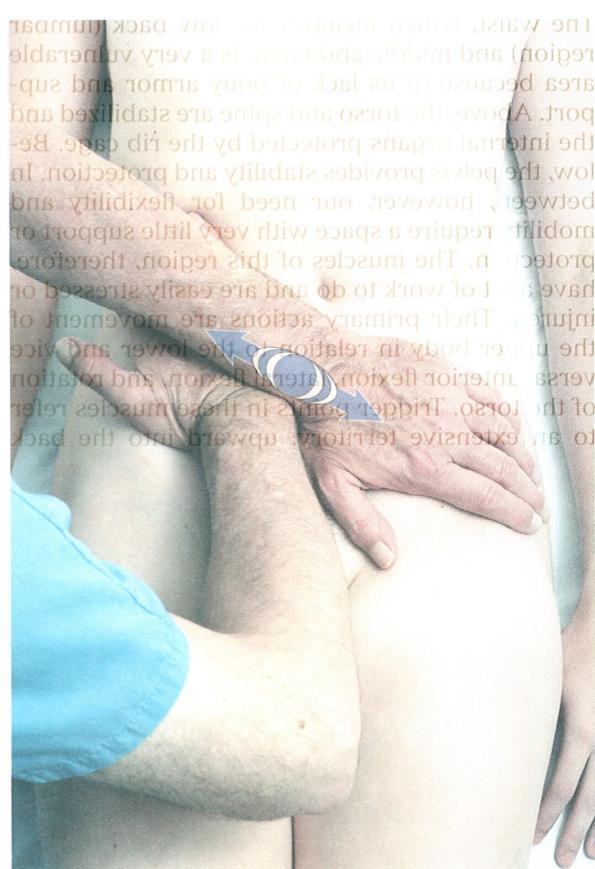


Figure 7-1 Myofascial stretch of abdomen (Draping option 2)

- Press the hands apart without allowing them to glide on the skin. Hold for release.
- Repeat on the opposite side.

Rectus Abdominis (Fig. 7-2)

REK-tus ab-DAHM-in-iss

Etymology Latin *rectus*, straight, upright + *abdominis*, of the abdomen

Comment

Rectus abdominis is composed of a series of muscle bodies separated by tendinous intersections and divided in the center by the **linea alba** (Latin *linea*, line + *alba*, white). This muscle connects the anterior thorax (rib cage) to the anterior pelvis (pubis). It flexes the spine, and resists extension of the spine.



Attachments

- Inferiorly, to the crest and symphysis of the pubis
- Superiorly, to the xiphoid process and fifth to seventh costal cartilages

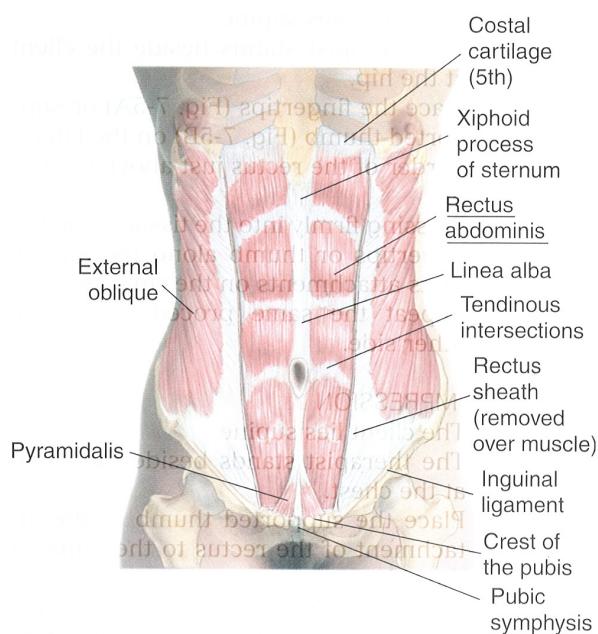


Figure 7-2 Anatomy of rectus abdominis



Action

- Flexes the lumbar vertebral column
- Draws the thorax inferiorly toward the pubis



Referral Area

- Over the abdomen from the xiphoid process to the pubis
- Across the back just below the scapulae; the region around the xiphoid process (epigastrium, precordium)
- Across the top of the buttocks (iliac crest) and sacrum
- Into the lower lateral quadrant of the abdomen
- Mid-abdomen just inferior to umbilicus
- (Also abdominal fullness, dysmenorrhea)



Other Muscles to Examine

- Pyramidalis
- Serratus posterior inferior
- Iliopsoas
- Abdominal obliques
- Transversus abdominis
- Gluteal muscles
- Quadratus lumborum



Figure 7-3 Stripping of rectus abdominis (Draping option 2)



Figure 7-4 Stripping of lateral border of rectus abdominis (Draping option 2)



Manual Therapy

STRIPPING (1)

- The client lies supine.
- The therapist stands beside the client at the hip.
- Place the fingertips on one side of the rectus just superior to the pubis.
- Pressing firmly into the tissue, slide the fingertips superiorly along the muscle to its attachments on the ribs (Fig. 7-3).
- Repeat the same procedure on the other side.

STRIPPING (2)

- The client lies supine.
- The therapist stands beside the client at the waist.
- Place the fingertips on the lateral border of the rectus just above the pubis.
- Pressing firmly into the tissue, rotate the hand so that the fingertips move superiorly along the edge of the muscle (Fig. 7-4).
- Beginning just superior to the previous spot, repeat this procedure all the way along the muscle to the rib cage.
- Repeat the same procedure on the other side.

STRIPPING (3)

- The client lies supine.
- The therapist stands beside the client at the hip.
- Place the fingertips (Fig. 7-5A) or supported thumb (Fig. 7-5B) on the lateral border of the rectus just above the pubis.
- Pressing firmly into the tissue, slide the fingertips or thumb along the muscle to its attachments on the rib cage.
- Repeat the same procedure on the other side.

COMPRESSION

- The client lies supine.
- The therapist stands beside the client at the chest.
- Place the supported thumb at the attachment of the rectus to the pubis at the side nearest you.
- Press the muscle firmly against the bone, looking for tender spots. Hold for release.

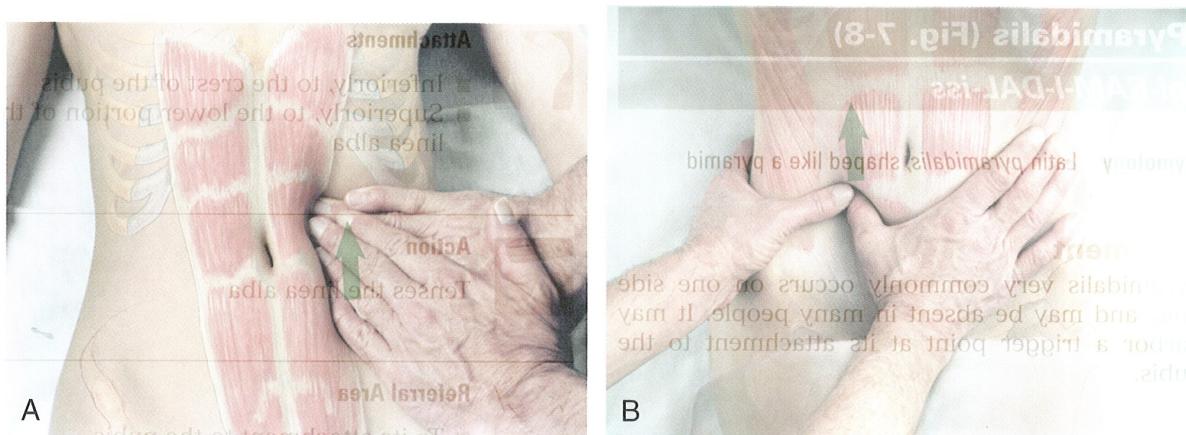


Figure 7-5 Stripping of lateral border of rectus abdominis with fingertips (A) or supported thumb (B) (Draping option 2)

- Move the hand medially to the next spot and repeat until you reach the linea alba at the center (Fig. 7-6).
- Repeat this procedure on the other side.

CROSS-FIBER STROKING

- The client lies supine.
- The therapist stands beside the client at the waist.
- Place the tip of the thumb on rectus abdominis at the linea alba (center line)

just superior to the pubic symphysis, with the fingertips resting on the abdomen laterally.

- Pressing firmly into the tissue, slide the tip of the thumb laterally toward the fingertips.
- Beginning just superior to the previous point, repeat this procedure.
- Repeat the same procedure (Fig. 7-7), continuing along the rectus until you reach the rib cage.
- Repeat this procedure on the other side.

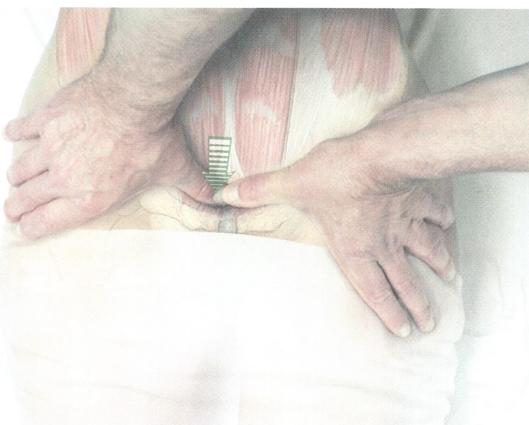


Figure 7-6 Compression of rectus abdominis attachments at the pubis (Draping option 2)

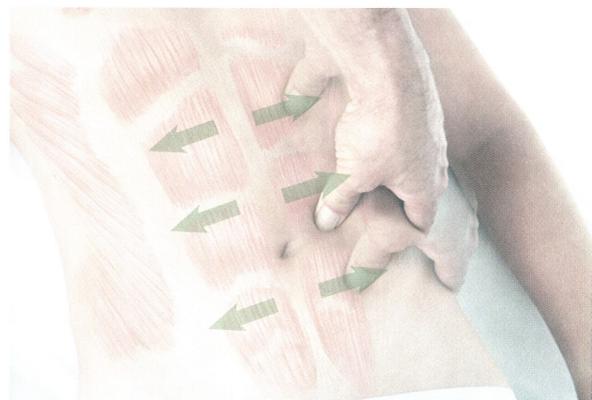


Figure 7-7 Cross-fiber stroking of rectus abdominis (Draping option 2)

Pyramidalis (Fig. 7-8)

pi-RAM-I-DAL-is

Etymology Latin *pyramidalis*, shaped like a pyramid

Comment

Pyramidalis very commonly occurs on one side only, and may be absent in many people. It may harbor a trigger point at its attachment to the pubis.

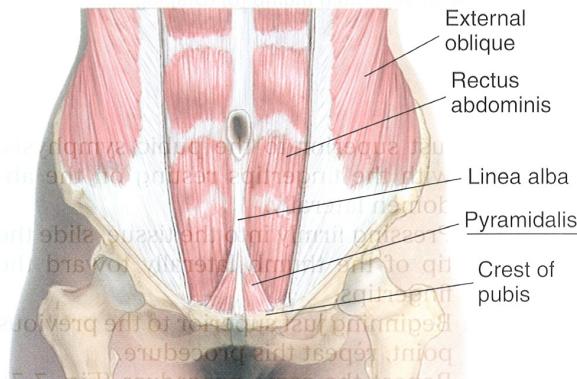


Figure 7-8 Anatomy of pyramidalis



Attachments

- Inferiorly, to the crest of the pubis
- Superiorly, to the lower portion of the linea alba



Action

- Tenses the linea alba



Referral Area

- To its attachment to the pubis
- Along the midline to the umbilicus



Other Muscles to Examine

- Rectus abdominis
- Iliopsoas
- Abdominal obliques



Figure 7-9 Compression of pyramidalis (Draping option 2)



Manual Therapy

COMPRESSION

- The client lies supine.
- The therapist stands beside the client at the hip.

- Place the thumb on pyramidalis, just superior and lateral to the symphysis pubis (Fig. 7-9).
- Press firmly into the tissue, examining for tenderness. Hold for release.
- Repeat this procedure on the other side.

Abdominal Obliques (Fig. 7-10, 7-11)

oh-BLEEKs

Etymology Latin *obliquus*, slanting, diagonal

Comment

The external and internal abdominal obliques run in the same respective directions as the external and internal intercostals. A good way to remember their directions is to place one hand on the opposite side of the abdomen with your fingers pointing diagonally downward, then place the other hand on top of it pointing perpendicularly. The top hand represents the externals, the bottom hand the internals (Fig. 7-12).

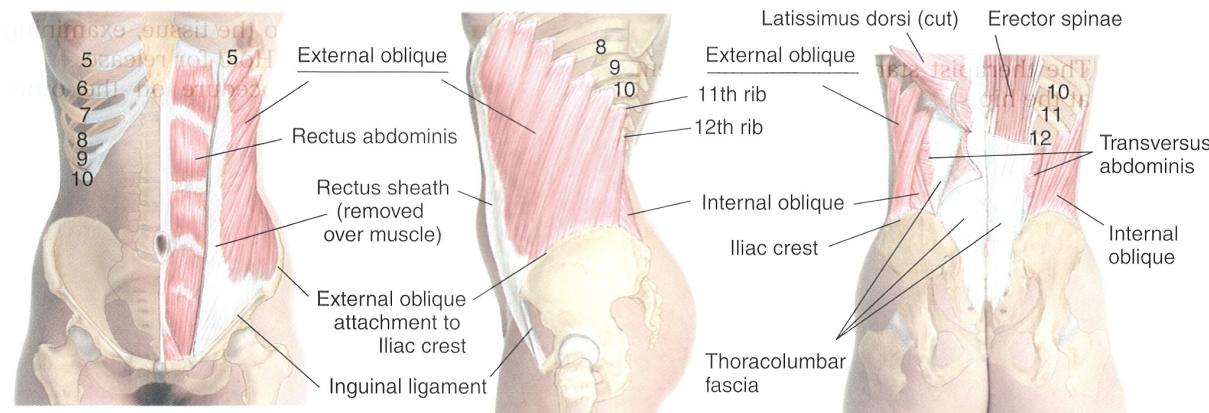


Figure 7-10 Anatomy of external oblique

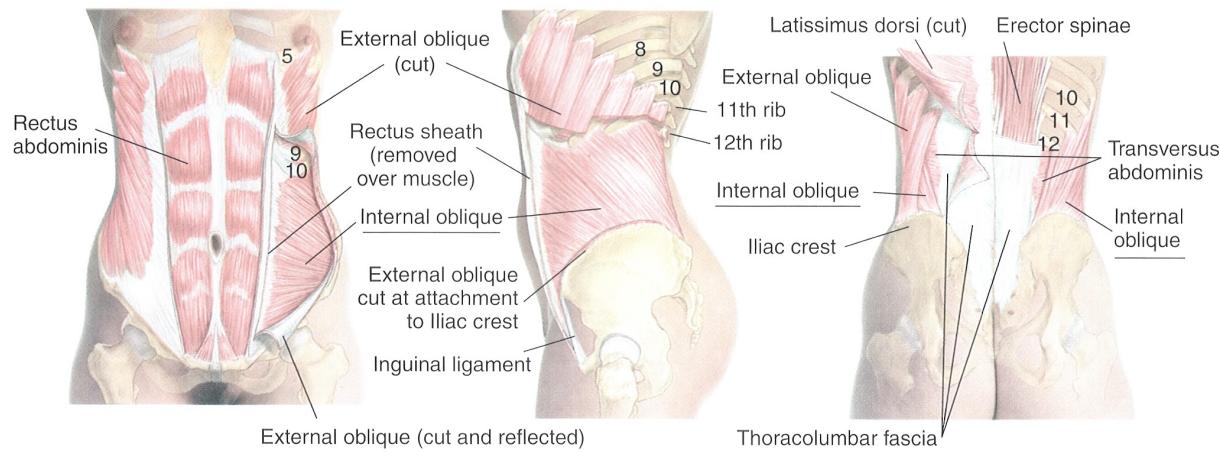


Figure 7-11 Anatomy of internal oblique



Attachments

External

- Superiorly, to the fifth to twelfth ribs
- Inferiorly, to the anterior half of the lateral lip of the iliac crest, the inguinal ligament, and the anterior layer of the rectus sheath

Internal

- Inferiorly, to the iliac fascia deep to the lateral part of inguinal ligament, to the anterior half of the crest of the ilium, and to the lumbar fascia
- Superiorly, to the tenth to twelfth ribs and the sheath of the rectus abdominis

**Action**

- Bilaterally, increase intra-abdominal pressure and flexes the spine.
- Unilaterally, assist in lateral flexion and rotation of the spine.

**Referral Area**

- To the epigastric region (below the xiphoid process between the costal arches), over the lower chest, and diagonally below the costal arch
- The lower lateral quadrant of the abdomen, into the groin and the testicle, up over the abdomen to the pubis, the umbilicus, and the costal arch

**Other Muscles to Examine**

- Rectus abdominis
- Iliopsoas
- Quadratus lumborum

**Manual Therapy****STRIPPING**

- The client lies prone.
- The therapist stands beside the client at the chest.



Figure 7-12 Mnemonic hand position for direction of external and internal obliques (top hand, external; bottom hand, internal)

Place the hand between the client's abdomen and the table (Fig. 7-13A) with the palm on the abdomen and the fingertips just superior to the pubis at the attachment of the inguinal ligament.

- Pressing firmly upward into the tissue, slide the fingertips superolaterally along the muscle to the rib cage (Fig. 7-13B). (NOTE: the client is shown standing in the photograph for illustration of the procedure.)
- Beginning at the same spot, repeat this procedure at a more oblique angle until the whole surface of the abdomen has been treated.
- Repeat the same procedure on the other side.

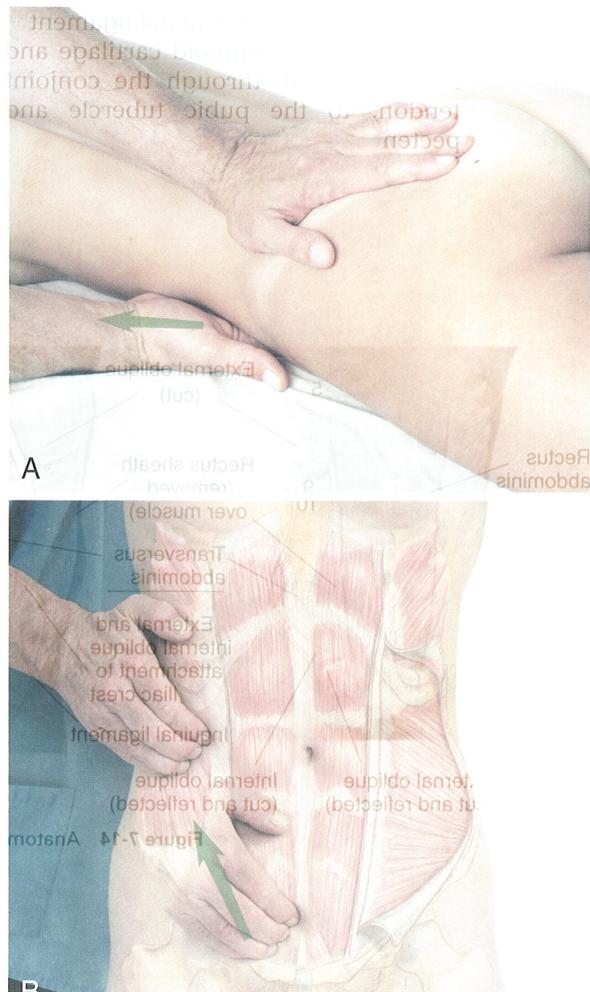


Figure 7-13 Client prone (A) for stripping of obliques (B) with fingertips (Draping option 7)

Transversus Abdominis (Fig. 7-14)

trans-VERs-us ab-DOM-in-iss

Etymology Latin *trans*, across + *versus*, turned

Comment

Transversus abdominis lies deep to the other abdominal muscles. There is no separate manual treatment for it that is appropriate to this text.



Attachments

- Laterally, to the seventh to twelfth costal cartilages (interdigitating with fibers of the diaphragm), lumbar fascia, iliac crest, and inguinal ligament
- Medially, to the xiphoid cartilage and linea alba and, through the conjoint tendon, to the pubic tubercle and pecten



Action

Compresses the abdomen



Referral Area

Along and between the anterior costal margins



Other Muscles to Examine

- Rectus abdominis
- Abdominal obliques



Manual Therapy

Not applicable

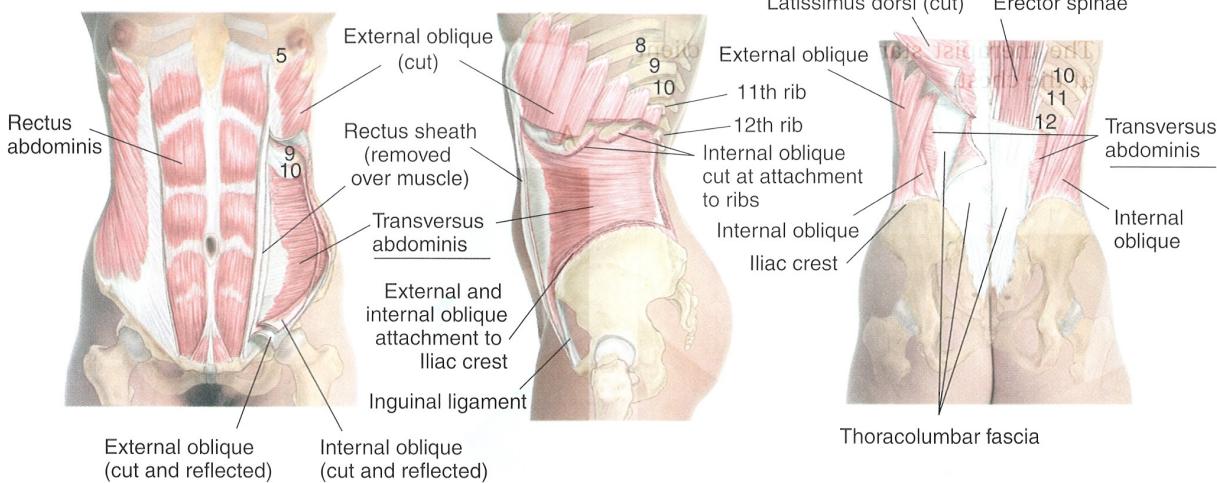


Figure 7-14 Anatomy of transversus abdominis

MUSCLES OF THE LOWER BACK

Comment

Shoulder muscles in the lower back are covered in Chapter 4. Vertebral muscles in the lower back are covered in Chapter 6.

Quadratus Lumborum (Fig. 7-15)

kwa-DRAY-tus lum-BOR-um

Etymology Latin *quadratus*, four-sided + *lumborum*, of the loins

Comment

When cinematographers have to shoot a scene in which the camera is moving around, either on someone's back or on a truck, they use a device called Steadicam™—to prevent the movement of the carrier being transferred to the camera. The same coordination between our upper and lower bodies is needed when we perform complex actions with our eyes and hands while running or riding on horseback, or keep our feet and legs steady while performing actions with our arms. In addition to its responsibility for side-bending, **quadratus lumborum** performs this service. For this reason, you will often find quadratus lumborum problems in horseback riders, kayakers, golfers, and anyone whose activities involve separation of movement between the upper and lower body.

Quadratus lumborum is not an easy muscle to access manually, as it lies deep to the lumbar paraspinal muscles (erector spinae) and the thick layers of fascia and aponeurotic tissue of the lumbar region. It can be approached obliquely with the elbow just adjacent to the lumbar paraspinal muscles or laterally with the fingers or thumbs.



Attachments

- Inferiorly, to the iliac crest, iliolumbar ligament, and transverse processes of the lower lumbar vertebrae
- Superiorly, to the twelfth rib and transverse processes of the upper lumbar vertebrae



Action

- Lateral flexion of the spine (unilaterally)
- Extension of the spine (bilaterally)
- Stabilization of the lumbar spine

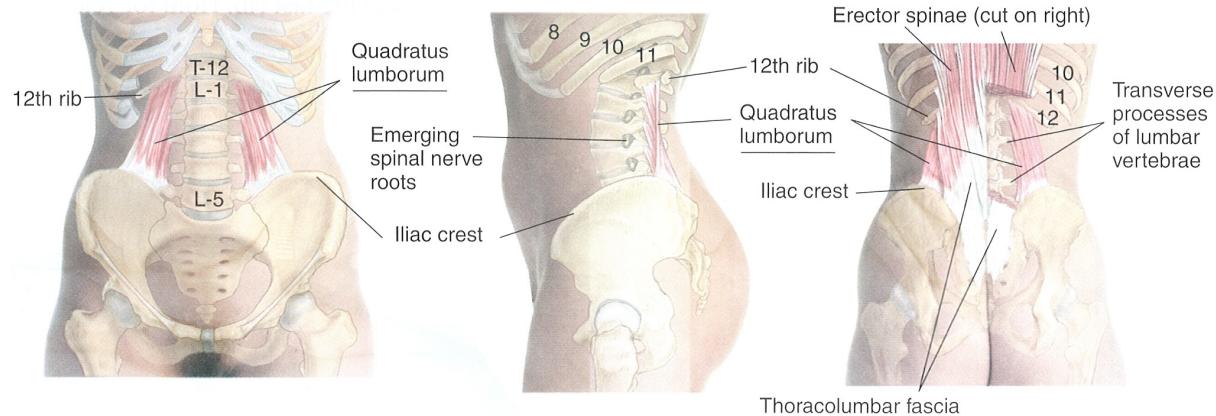


Figure 7-15 Anatomy of quadratus lumborum

Referral Area

- Into the buttock
- Over the hip
- Down the back of the leg
- Over the iliac crest
- Into the groin and sometimes the testicle
- Into the lower lateral quadrant of the abdomen

Other Muscles to Examine

- Iliopsoas
- Lumbar paraspinal muscles
- Gluteal muscles
- Piriformis and other deep lateral rotators
- Rectus abdominis and pyramidalis

Caution

In working in a superior direction on quadratus lumborum, do not place excessive pressure on the last rib. It is joined only to T12, and can be broken with pressure.



Figure 7-16 Myofascial stretch of low back (Draping option 7)

**Manual Therapy**

- MYOFASCIAL STRETCH**
- The client lies prone.
 - The therapist stands beside the client at the waist.
 - Place the hand nearest the client's head flat on the lumbar area lateral to the vertebrae with the fingers over the iliac crest just lateral to the sacrum.
 - Crossing the other hand over or under the first, place it flat on the thoracic area over the lowest three or four ribs.
 - Let your hands sink into the tissue until you feel contact with the superficial fascia.
 - Press the hands in opposite directions, with enough downward pressure to engage and stretch the superficial fascia (Fig. 7-16).
 - Hold until you feel significant release in the fascia.
 - Shift both hands laterally (toward yourself) by one hand's width and repeat the technique.

COMPRESSION

- The client lies prone or on one side.
- The therapist stands beside the client at the waist.
- Grasp the client's waist laterally, with either the thumb (Fig. 7-17, 7-18A) or the fingertips (Fig. 7-18B) pressing under the erector spinae bundle into quadratus lumborum.
- Press firmly into the muscle, looking for tender spots, which may range from the attachments to the ilium to the attachments to the last rib. Hold for release.



Figure 7-17 Compression of quadratus lumborum with the thumb, client prone (Draping option 7)

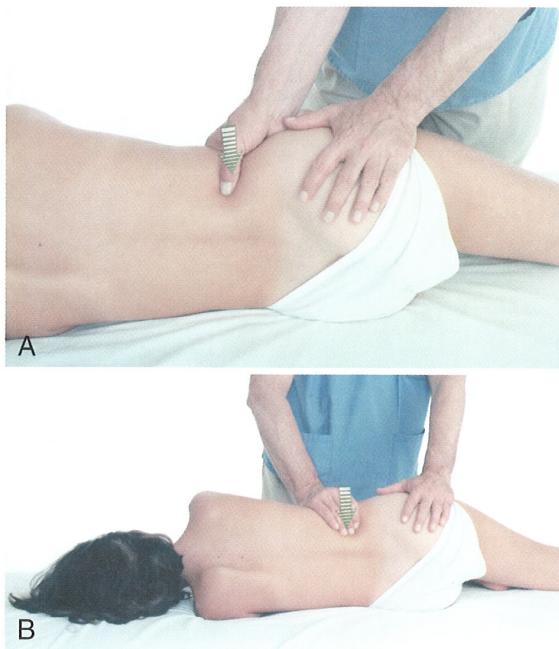


Figure 7-18 Compression of quadratus lumborum with the client side-lying, using the thumb (A) or fingertips (B) (Draping options 11,15)

COMPRESSION

- The client lies prone.
- The therapist stands beside the client at the waist.
- Place the elbow just lateral to the erector spinae bundle.
- Press firmly into the tissue, obliquely in a deep and medial direction. Hold for release.
- Repeat this procedure, first pressing superiorly toward the muscle's attachment to the last rib (Fig. 7-19A), then inferiorly toward the muscle's attachment to the ilium (Fig. 7-19B).

STRETCH

- The client lies prone.
- The therapist stands beside the client at the waist.
- Place the heel of the hand just lateral to the erector spinae bundle on the opposite side of the client's body, between the ilium and the last rib.
- Pressing deeply toward the table, let the heel of your hand slide slowly away from you (Fig. 7-20), compressing all the muscles between the pelvis and the last rib, until your hand comes off the client's side.

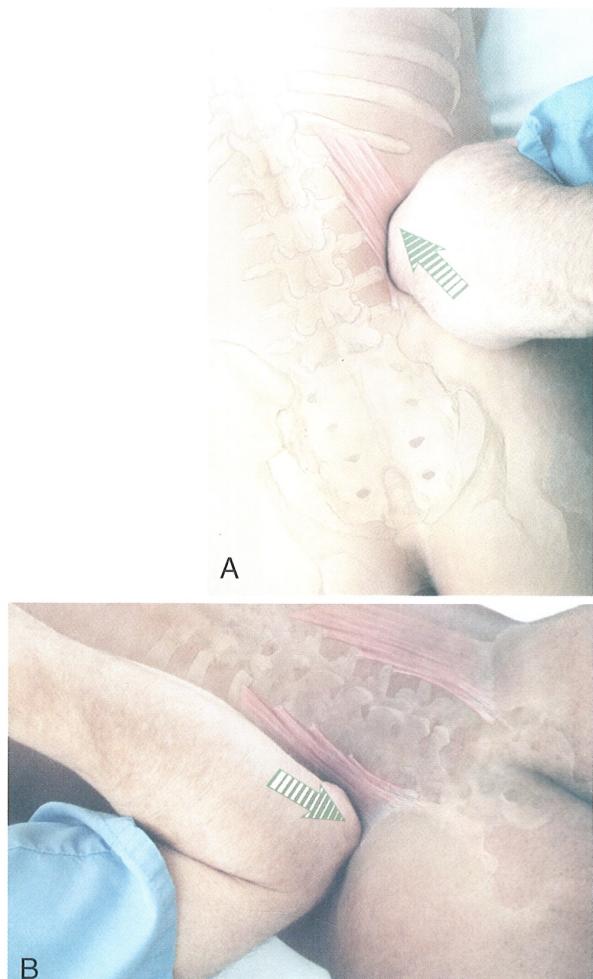


Figure 7-19 Compression of quadratus lumborum with the elbow superiorly (A) and inferiorly (B), client side-lying (Draping option 7)



Figure 7-20 Stretch of quadratus lumborum with the hand (Draping option 7)