

PALPATION OF THE PSOAS MAJOR

A THOROUGH EXPLORATION OF HOW TO ACCESS THIS CORE MUSCLE

The psoas major is an incredibly important muscle that can be involved in conditions of the lumbar spine, the sacroiliac and hip joints, and the diaphragm and pelvic floor (Image 1). To determine whether the psoas major is a factor in your client's health, you need to be able to perform an accurate physical assessment. At the heart of this assessment is palpation.

THE ART OF PALPATION

Muscle palpation assessment involves two steps. The first step is to find the target muscle, locate all its borders, and discern it from adjacent tissue. Once that's been completed, the second step involves assessing the health of the muscle tissue. Is the muscle globally tight or loose? Are there myofascial trigger points? Taut

and tender bands? This is the crucial step that determines what treatment, if any, is necessary for the client. But this second step can only be performed if you are successful with the first step. There are many books, articles, and videos that demonstrate palpation protocols on how to locate target muscles for palpation. But more important than memorizing these protocols is to understand and reason through fundamental guidelines of palpation.

An ideal palpation protocol usually involves finding a way for the client to perform an isolated contraction of the target muscle. If this can be done, the target muscle will be the only hard, soft tissue amidst a sea of soft, soft tissues. This way, it can be discerned from adjacent tissues, now allowing the therapist to confidently assess its health. Finding a way for the client to perform an isolated contraction requires knowledge of the attachments of the target muscle, as well as the actions of not only the target muscle but also all the adjacent muscles. Armed with this knowledge, you find a joint action that the target muscle possesses that the adjacent muscles do not. Therefore, the adjacent muscles remain relaxed and soft while the target muscle contracts and becomes palpably hard,

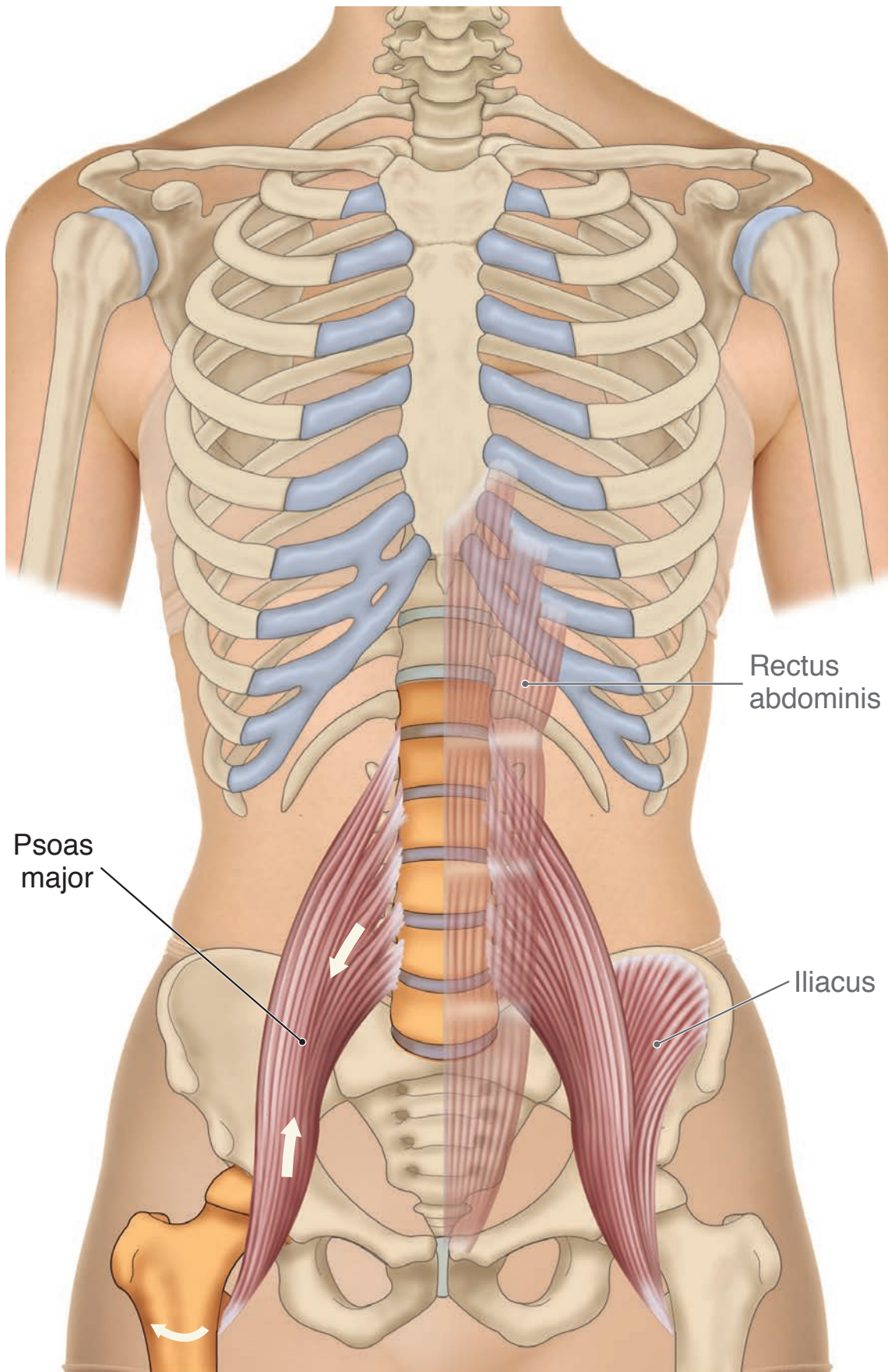
thereby succeeding in your goal of making the target muscle be the only hard, soft tissue amidst a sea of soft, soft tissues.

GENERAL GUIDELINES FOR PALPATION OF THE ABDOMINAL BELLY OF THE PSOAS MAJOR

Regardless of the position in which we place the client, palpation of the abdominal belly of the psoas major usually involves the following steps:

Have the client's thighs in flexion. Having the client's thighs flexed at the hip joints slackens the hip flexor musculature so that the pelvis can fall into posterior tilt. Posterior tilt of the pelvis allows the anterior abdominal wall musculature (the rectus abdominis, external abdominal oblique, internal abdominal oblique, and transversus abdominis) to be slackened, allowing your palpating fingers to sink through the anterior abdominal wall to reach the abdominal belly of the psoas major.

Contact the client immediately lateral to the rectus abdominis. The anteromedial rectus abdominis is thicker than the other three anterolateral abdominal wall muscles



1
Anterior view of the psoas major. The psoas major attaches from the anterolateral bodies of T12–L5 and the transverse processes of L1–L5 to the lesser trochanter of the femur. It has an abdominal (abdominopelvic) belly in the abdominal (abdominopelvic) cavity and a femoral belly in the thigh. The division between the abdominal and femoral bellies is the inguinal ligament that attaches from the anterior superior iliac spine (ASIS) to the pubic tubercle (see Image 12). *Permission Joseph E. Muscolino. The Muscular System Manual—The Skeletal Muscles of the Human Body, 4th Edition (Elsevier, 2017).*

(the external and internal abdominal obliques and transversus abdominis) put together. Therefore, successful palpation of the abdominal belly of the psoas major requires finding the lateral border of the rectus abdominis so you can drop immediately off it laterally and palpate through the anterolateral abdominal wall musculature. To accomplish this, ask the client to flex the trunk at the spinal joints, effectively doing an abdominal crunch (sit-up), and palpate from medial to lateral on the rectus abdominis until you locate its lateral border. Then, drop immediately lateral off it, and this will be your initial point to begin palpation of the psoas major.

Brace/support your palpating fingers. Because the abdominal belly of the psoas major is so deep, it requires more force to reach it than the average muscle palpation. For this reason, it is a good idea to brace/support your palpating fingers with the fingers of your other hand. I usually like to palpate with the fingertips of my index, middle, and ring fingers. It helps to slightly flex the middle finger to create a flat surface of all three fingers for palpation, otherwise the middle finger sticks out more and can feel pokey and uncomfortable for the client. An alternative palpation contact is to use the thumb, supported by the fingers of the other hand. But caution should be observed

when using the thumb because it can be a strong and uncomfortable contact. You want to be sure that the client is comfortable.

As a general rule, it is best to palpate with your finger pads because they are more comfortable for the client. Fingertips can be pokey and uncomfortable. However, with deeper palpations, including the abdominal belly of the psoas major, you pretty much have to lead with your fingertips. But if you can, slightly modify the angle of entry of your fingers, you can flatten out your contact to be somewhat toward your finger pads instead of purely leading with your fingertips.

Work with the client's breath. The abdominal belly of the psoas major is quite deep, so the client is often sensitive to its palpation. This is especially true if this muscle has never been palpated before. Therefore, it is very important to help the client relax by working with their breathing. Ask the client to breathe in, then as the client exhales, slowly sink in toward the muscle.

Sink in slowly. Whenever you are palpating a deep muscle, it is a good idea to sink in slowly. This allows the client time to accept your palpation pressure.

Approach the muscle in two or three passes. Because the abdominal belly of the psoas major is so deep and the client is often sensitive, do not necessarily try to reach the abdominal belly all at once in one pass. Instead, approach the muscle in two or three passes. If three passes are used, as the client breathes out, sink in slowly, approximately one-third of the way. Then, on the second exhalation, sink in slowly another third of the way. Then on the third exhalation, sink in the rest of the way until you reach the muscle belly.

Ask the client to flex the thigh at the hip joint. Once you believe you have reached the psoas major, you can confirm you are there by asking the client to flex the thigh at the hip joint. This will engage the psoas major without engaging the anterior abdominal wall musculature. However, it is important to ask the client for only a gentle to moderate contraction. Ask them to move the thigh into flexion only 1 inch or less; otherwise, the musculature of the anterior abdominal wall might contract and harden to stabilize the pelvis (anterior abdominal wall muscles create a force of posterior tilt of the pelvis, which stabilizes the pelvis from the anterior tilt force from the hip flexor musculature). If this were to occur, you would not be able to palpate through the anterior abdominal wall to feel the psoas major.

DRAPING FOR THE ABDOMINAL BELLY

Draping is extremely important for professional modesty and client comfort. For clarity of visualization, the photos throughout this article show the client wearing clothing. However, appropriate draping techniques for the abdominal belly of the psoas major for a male and female client are shown here.



Palpate the entirety of the abdominal belly. The abdominal belly of the psoas major is fairly long, running from T12 all the way to the inguinal ligament. Therefore, you cannot access and assess all of it with just one palpation contact point. For this reason, you will likely need two or three contact points. At your initial point, to access as much of the muscle as possible, direct your force not just posteromedially toward the muscle, but also posteromedially and superiorly toward it and posteromedially and inferiorly toward it, covering a span of approximately 2–3 inches (Image 2). Then, lift your palpating fingers to find a new point of contact, either superior or inferior to your initial point of contact, depending on where you began along the muscle. At this new point, again direct your pressure



2A



2B



2C

To access as much of the psoas major as possible with each contact point on the client's body, we should direct our pressure as far superiorly and as far inferiorly as possible. 2A: Pressure directed posteromedially. 2B: Posteromedial and superior. 2C: Posteromedial and inferior. *Images by Christopher Paul Photography. www.christopherpaul.nl.*

posteromedial and superior to inferior along a span of 2–3 inches. Depending on how tall the client is (in other words, how long the muscle is), you should be able to access the entire abdominal belly with two or three points of contact.

SUPINE POSITION—ABDOMINAL BELLY PALPATION

Having the client in supine position is likely the position most often used by therapists to palpate the abdominal belly of the psoas major. The client lies supine with a bolster under the knees (Image 3A). It is important to have a bolster that is large enough to slacken the hip flexor musculature so the pelvis falls into posterior tilt sufficiently to slacken the anterior abdominal wall. If you do not have a large bolster, multiple bolsters can be used. If only one small bolster is available, another option is to place that bolster under the fitted sheet, assuming sheets are being used for draping, and place the client's feet against the bolster. The tension and friction of the fitted sheet should hold the bolster in place and support the position of the client's lower extremities (Image 3B). If there is no fitted sheet, a long towel (or flat sheet) could be used instead. Place the towel under both sides of the client's buttocks with the middle of the towel wrapped around the distal anterior legs of the client (Image 3C). The weight of the client's body will hold the towel in place and the client can relax in this position, allowing a slackened anterior abdominal wall.

The contact point to begin palpation can be anywhere along the course of the abdominal belly of the psoas major. One commonly used guideline is to begin with the palpating fingers halfway between the umbilicus and the anterior superior iliac spine (ASIS) (Image 4). However, this location is not necessarily correct because you need to be lateral to the rectus abdominis, and this muscle is fairly wide in many people. Ask the client to flex their trunk at the spinal joints (an abdominal



3A



3B



3C

It is important to have the client's thighs in flexion at the hip joint so that the anterior abdominal wall is slackened. 3A: A large bolster is placed under the client's knees. 3B: A small bolster is placed under a fitted sheet. 3C: A towel is placed under the client and around the distal legs.



4

An initial guideline for where to begin palpation of the abdominal belly is halfway between the umbilicus and the anterior superior iliac spine (ASIS).



5A



5B

Locating the precise contact location for palpation of the psoas major. 5A: The client flexes the trunk at the spinal joints to engage and palpably harden the rectus abdominis. 5B: The therapist drops their palpating fingers immediately lateral to the rectus abdominis, directing pressure anteromedially toward the muscle.



6

The client actively flexes the thigh at the hip joint to confirm that the therapist's contact is on the psoas major.

crunch) while you feel for the lateral border of the rectus abdominis (Image 5A). Once located, drop immediately lateral to it and begin your palpation there. Direct your pressure posteromedially toward the muscle (Image 5B). There is some leeway for the lateral to medial component of your direction given that the psoas major is approximately 2 inches wide.

With the guidelines listed above, approach the muscle in two or three passes, working with the client's breath, and sinking in slowly. Once you believe you have reached the muscle, confirm this by asking the client to perform a very small contraction of flexion of the thigh at the hip joint, feeling for the psoas major to noticeably harden under your fingertips (Image 6). Then, palpate as much of the muscle as can be reached from superior to inferior, and repeat this at other contact points along the muscle as necessary to assess the entire abdominal belly.

There are many advantages to the supine palpation position: the client is often in this position, you can use body weight to a fair degree, it is easy to locate the lateral border of the rectus abdominis because trunk flexion is against gravity, and it is easy to engage the psoas major because flexion of the thigh is against gravity. However, the disadvantage of the supine palpation position is that if the client has a large amount of abdominal fat, it will be between your palpating fingers and the psoas major, blocking your ability to easily sink in and reach the muscle.

SIDE-LYING POSITION— ABDOMINAL BELLY PALPATION

Side-lying position is often recommended for palpation of the abdominal belly of the psoas major because if the client has a lot of abdominal fat, then the fat falls down toward the table and away from your palpating fingers. Still, a pure side-lying position presents certain logistical challenges. If you stand behind the client, then the direction of your force into the client is not in line with your core, and there is no efficient use of body weight (Image 7A). Both of these factors are improved if you stand in front of the client. However, now the anterior side of your pelvis is close to the client's face and this positioning might be deemed unprofessional, and therefore not appropriate (Image 7B).

If you do choose to palpate the abdominal belly of the psoas major with the client in side-lying position, then observe the guidelines listed above. Contact lateral to the rectus abdominis, work with the client's breath, and sink in slowly, approaching the muscle in two or three passes. When you believe you have arrived at the muscle, ask the client to perform a gentle/moderate contraction of flexion of the thigh at the hip joint and feel for the psoas major to contract and palpably harden. Once you are confident you are on the muscle, palpate the entirety of the abdominal belly, assessing for the health of its tissue.

PRECAUTIONS FOR ABDOMINAL BELLY PALPATION

A certain amount of caution is advised when palpating the abdominal belly of the psoas major. If you direct your pressure too far medially, you may contact the abdominal aorta, which lies directly over the anterior bodies of the lumbar spine. But for an experienced therapist with sensitive touch, this should not be a major concern because if you approach the muscle slowly, you will feel the pulse of the aorta and know to change your direction to be slightly more lateral. Another precaution for palpation of the abdominal belly is any visceral condition of the intestines, such as gas, irritable bowel syndrome, or Crohn's disease. Further, when palpating the right-sided abdominal belly, be aware of the possibility of an inflamed appendix. If there is any doubt about the presence of a visceral condition that contraindicates psoas major palpation, written permission from the client's physician should be received before proceeding with palpation.

Pure side-lying position for palpation of the abdominal belly of the psoas major. This position presents certain logistical challenges. 7A: Therapist stands in back of the client. 7B: Therapist stands in front of the client.



7A



7B

¾ SIDE-LYING POSITION— ABDOMINAL BELLY PALPATION

All of the disadvantages to a pure side-lying position can be eliminated, and advantages gained, if you modify the position to be a ¾ side-lying position that is halfway between side-lying and supine (Image 8A). This position, although not commonly used in the world of massage and manual therapy, can be very effective for palpation of the abdominal belly of the psoas major. First, you still have the abdominal fat falling out of your way to allow for easier access into the muscle with heavier clients. But now, you can not only place your core in line with the force of the palpation pressure, but you can place your body weight directly above the client so you can simply drop down with body weight to sink through the anterior abdominal wall tissue toward the psoas major.

To support the client in this position, place a bolster behind their back so they can rest their body weight against it (Image 8B). If you do not have an appropriately sized or shaped bolster for this, you can place your

begin the palpation, place your palpating fingers approximately halfway between the ASIS and umbilicus, and then find the lateral border of the rectus abdominis by having the client actively flex the trunk at the spinal joints. In this position, flexion of the trunk is partially against gravity, so is usually sufficiently resisted by body weight to contract and harden the rectus abdominis enough to allow you to accurately locate its lateral border.

With your palpating fingers in the correct location, perform the protocol to find the abdominal belly, working with the client's breath and sinking in slowly, approaching it in two to three passes. Once you believe you have reached the muscle, ask the client to actively perform gentle to moderate flexion of the thigh at the hip joint. However, because the ¾ side-lying position does not offer as much resistance of gravity to flexion of the thigh, it might be necessary for you to add a small amount of resistance. This can be done with one of your hands, but if you want to use your other hand to support your palpating



PALPATE OVER A THIN LAYER OF CLOTH

As a general rule, I believe it is best to palpate directly on the client's skin because having any layer of cloth, whether it is clothing, a sheet, or a towel, is one more layer to palpate and feel through to locate and assess the target muscle. However, with any muscle that must be approached with your fingertips instead of finger pads, having a thin layer of cloth, preferably cotton, is a good idea because palpation with fingertips means leading with your fingernails, and even short and smooth fingernails can be uncomfortable for the client if you sink deep into their tissues. For deep muscles, including the psoas major abdominal belly, palpating through a thin layer of cloth is recommended so that your nails are blunted and the client can be

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