
“The most competent clinical therapist is the one who marries the science of knowledge with the art of hands-on skills.”

{effective palpation}

THE SCIENCE & ART OF MUSCLE PALPATION

{by Joseph E. Muscolino}

The profession of massage therapy has grown tremendously in recent years as the value of therapeutic touch has become increasingly recognized. Therapeutic touch can bring general emotional, psychological and physical relaxation to clients, as well as improve local fluid circulation.

In this regard, massage is always "clinical" in nature. However, the term "clinical massage" is often applied only when massage is done with intent toward healing a specific condition. Clinical massage can generally be divided into medical massage—primarily geared toward treating visceral/metabolic problems in hospital settings—and orthopedic massage, primarily oriented toward the treatment of musculoskeletal conditions.

Orthopedic massage

When working clinically, the massage therapist requires a greater "set of tools" than when working with the general application of touch. Certainly, knowledge of anatomy, physiology, kinesiology and pathology is always appropriate and helpful for all massage therapy.

However, with clinical orthopedic massage, it's essential. A foundational understanding of science arms the therapist not only with a base of knowledge, but also with the critical reasoning skills necessary to be able to accurately assess and treat a client who presents with a specific musculoskeletal condition. It is largely the expansion of massage therapy into clinical orthopedic work that has solidified the role of massage therapy in the world of complementary alternative medicine, also known as integrative health.

Necessity of assessment

In the world of medicine, there is an adage that states that treatment should never be administered without a diagnosis. Similarly, clinical orthopedic massage should never be done unless an accurate assessment has first been made. An assessment informs the therapist about the physical integrity of the tissues of the client's body that are to be treated, and points the therapist toward the appropriate treatment tools to facilitate the healing of the condition.

Of all assessment tools available to the massage therapist, palpation, especially palpation of the musculature, is the most important. Indeed, muscle palpation is so integral to the field of massage therapy that it's likely that the massage therapy profession leads all other health fields in muscle palpation skills.

{Palpation objectives}

The term palpation comes from the Latin term "palpare," which literally means to touch. However, in the context of muscular assessment, palpation involves much more than simply touching the muscle. Muscular palpation has two major objectives. The first is to locate the target muscle that is being palpated. Once it has been located, the second objective is to assess its health by feeling for its tone and texture: Is it tight or loose? Are there trigger points located within it? Is it inflamed or tender to touch? Are fascial adhesions present?

Assessing the health of the muscle is the most important aspect of palpation because the integrity of the tissues is what informs our decisions regarding treatment. However, if we do not first locate and discern the muscles of the region, we will not even know what musculature we are assessing. Further, effective massage therapy often involves working the entirety of the muscle, from attachment to attachment, which can only be done if we know the exact borders of the muscle.

{Palpation protocols}

For these reasons, accurate location of target musculature is supremely important, and is the basis for clinical orthopedic massage. For each target muscle, there is a palpation protocol that can be carried out to identify and locate it (at times there may be a number of possible protocols that work equally well for a muscle). Unfortunately, muscle palpation is often not well learned by students and therapists alike because of the manner in which it's presented in textbooks and the classroom.

Muscle palpation is often presented as protocols to be memorized with little understanding of why each step is done. As with most things that are memorized, they are often forgotten or in time become fuzzy, leaving us with weak palpation skills. Further, the protocols are often passed along without being critically examined, setting the stage for massage therapists to learn less-than-ideal technique.

Instead of memorizing a protocol for each and every muscle, it's better to learn how to palpate. In other words, we need to learn an approach to muscle palpation that allows us to figure out how to palpate the muscles of the body. Further, it's important to be sure that each protocol is ideal for not only locating the target muscle, but also clearly discerning it from adjacent musculature and other soft tissues. This can be accomplished with a set of guidelines that addresses the science and art of palpation.

To thoroughly cover this topic, a fairly long list could be given; however, this list can be pared down to the most important guidelines that, when followed, allow us to accurately and easily figure out how to palpate most every muscle of the body.

These guidelines are presented in a straightforward and commonsense manner that facilitates critical reasoning. Critical reasoning skills not only inform and improve our ability to palpate; they also inform and improve our hands-on clinical treatment technique, making us more effective clinical therapists. Together, these guidelines comprise the science and art of muscle palpation.

{The Science of Palpation}

GUIDELINE NO. 1: KNOW THE ATTACHMENTS OF THE TARGET MUSCLE

The first guideline is to know the attachments of the target muscle that is being palpated. Knowing the attachments is the first necessary step because it gives us the general location of where to place out palpating fingers. Simply put, we palpate between the muscle's attachments.

For example, if the target muscle is the deltoid, knowing that it attaches from the lateral clavicle, acromion process, and spine of the scapula to the deltoid tuberosity of the humerus, tells us to place our palpating fingers between the scapular/clavicular attachment and the deltoid tuberosity (Figure 1). More specifically, if we want to palpate the anterior deltoid, we place our palpating fingers just distal to the lateral clavicle. If we want to palpate the middle deltoid, we place our fingers just distal to the acromion process. And if we want to palpate the posterior deltoid, we place our fingers just inferior to the spine of the scapula.

Hence, knowing the attachments of the target muscle is the first necessary step for successful palpation. Each muscle palpation protocol should begin here. The protocol should not end here, however. Unfortunately, this is often the case.

Often, the student is told the attachments of the target muscle and instructed to simply palpate from attachment to attachment. The problem is that although this approach may work well when palpating the center of a superficial muscle, once we continue to palpate that muscle toward its borders, how do we know if we have strayed off it and onto an adjacent muscle?

The problem is that this guideline does not help us discern the borders of the target muscle from the adjacent muscles and other soft tissues. For

ADDITIONAL GUIDELINES

This article discusses four guidelines that primarily address the science of muscle palpation. The art of muscle palpation depends on the quality of our touch and how we weave together the guidelines presented. Following are a number of additional palpation guidelines that primarily address the art of how muscle palpation is carried out.

LOOK BEFORE YOU PALPATE. Very often, the target muscle can be seen to engage, especially when it's superficial. Before we place our palpating fingers on the client and possibly block visual observation, be sure you look for the target muscle's contraction.

FIRST FIND IN THE EASIEST PLACE POSSIBLE. To facilitate palpating a target muscle from attachment to attachment, try finding the muscle wherever it can most easily be palpated, and then continue to palpate it from there.

STRUM PERPENDICULAR. The target muscle can usually be better felt by strumming perpendicularly across it, instead of palpating along its length. The "strum" should be large enough to start on one side of the muscle/tendon, palpate onto its belly, and then fall off the other side.

FOLLOW IN BABY STEPS. To help ensure you don't veer off course when palpating the target muscle, advance along the muscle in "baby steps," each time palpating directly adjacent to the last place you felt the muscle.

ALTERNATELY CONTRACT AND RELAX. When engaging the target muscle, changes in palpatory hardness are what we often feel best, in other words, when the target muscle first engages and pops. For this reason, instead of having the client hold a prolonged contraction, ask the client to alternately contract and relax the target muscle (it is also more comfortable for the client). Having the client contract and relax approximately once every 3–5 seconds works well.

CLOSE YOUR EYES AND VISUALIZE THE STRUCTURES. Mindful palpation involves being in your hands and not being distracted by other stimuli. As you palpate, close your eyes and focus on and mentally visualize the structures that you're palpating under the skin.

USE APPROPRIATE PRESSURE. Using pressure that is too light is one of the most common errors made when palpating musculature, especially deeper musculature. On the other hand, using pressure that is too deep can lessen our sensitivity and be uncomfortable for the client. Best is to use whatever degree of pressure is effective and appropriate, which varies from muscle to muscle, and from client to client.

SINK SLOWLY INTO MUSCULATURE. When palpating, move slowly, so you can both process what you're feeling and for the comfort of the client. Sinking slowly into musculature is especially helpful when palpating deeper musculature that requires stronger pressure.

USE THE OPTIMAL PALPATION POSITION. Often, there is an optimal position for the palpation of a target muscle. If the client is not in this position, ask them to move and change position. This is often needed if an accurate assessment is to be made.

> "Instead of memorizing a protocol for each and every muscle, it is better to learn how to palpate."

deeper muscles, approaching palpation just by palpating from attachment to attachment is even more problematic because we can never be sure whether we are feeling our target muscle or a more superficial muscle that overlies it. So, as important as using guideline No. 1 is, it's not sufficient for effective palpation.

GUIDELINE NO. 2: KNOW THE ACTIONS OF THE TARGET MUSCLE

When the target muscle contracts, it hardens and becomes palpably clearer. Continuing with the deltoid as our example, if we know the muscle's actions, we know what to ask the client to do to make it contract: We ask the client to abduct their arm at the glenohumeral joint. The deltoid contracts and becomes palpably harder, allowing us to palpate its entirety and more easily discern it from the adjacent musculature (Figure 2).

GUIDELINE NO. 3: CHOOSE THE BEST ACTION OF THE TARGET MUSCLE TO ENGAGE IT

Adding contraction of the target muscle to knowing where to place our palpating fingers (guidelines No. 1 and No. 2) often creates an effective palpation protocol. However, there are many times when simply choosing any action of the target muscle will not be sufficient for a successful palpation. This is another place where some palpation protocols are less than ideal.

The purpose of guideline No. 2 is to engage the target muscle so that it hardens and stands out from the adjacent soft tissues. However, if the chosen action also causes other muscles to engage and contract, then discerning the target muscle from these other muscles will be difficult, and our palpation will not be clear. Always keep in mind that *our goal is not just to feel the target muscle, but to be able to know when we are on it and when we are not. In other words, we must clearly discern the target muscle from all other tissues.*

This means that we need to find an action that engages the target muscle *but does not* engage the adjacent muscles. In effect, we want an isolated contraction of the target muscle. Although this is not always perfectly

FIGURE 1 The deltoid is located between the scapula and clavicle proximally and the deltoid tuberosity of the humerus distally.

FIGURE 2 The entire deltoid contracts with abduction of the arm at the glenohumeral joint.

FIGURE 1: FROM MUSCOLINO JE: THE MUSCLE AND BONE PALPATION MANUAL, WITH TRIGGER POINTS, REFERRAL PATTERNS, AND STRETCHING. ST. LOUIS, 2009, ELSEVIER. PHOTO TAKEN BY YANIK CHAUVIN. / FIGURE 2: FROM MUSCOLINO JE: THE MUSCLE AND BONE PALPATION MANUAL, WITH TRIGGER POINTS, REFERRAL PATTERNS, AND STRETCHING. ST. LOUIS, 2009, ELSEVIER. PHOTO TAKEN BY YANIK CHAUVIN.

possible, most of the time it can be achieved quite well. Here, guideline No. 3 becomes important: Choose the best action to engage the target muscle. In a sense, this guideline is a refinement of guideline No. 2. However, it's a *critically important* refinement.

Choosing the best action to create an isolated contraction of the target muscle requires knowledge of not just the actions of the target muscle, but also the actions of all the adjacent muscles. This is where our foundation of science knowledge and critical thinking skills truly become important. What we need to do is think through all of the actions of the target muscle to find the action that is most different from the actions of the adjacent muscles.

For example, continuing with the deltoid as our example, glenohumeral abduction will engage anterior, middle and posterior fibers of the deltoid. However, if we want to palpate and discern only the anterior deltoid, flexion of the arm at the glenohumeral joint is a better joint action because it engages the anterior deltoid without also engaging the middle deltoid.

In fact, an even better action for palpation of the anterior deltoid is horizontal flexion of the arm at the glenohumeral joint because it creates a more powerful contraction, and engages fewer adjacent muscles (Figure 3a).

Similarly, if we want to palpate the posterior deltoid, glenohumeral joint extension is better than abduc-

FIGURE 3 3A [TOP], horizontal flexion of the arm is the best action to engage and palpate the anterior deltoid. 3B [BOTTOM], horizontal extension of the arm is the best action to engage and palpate the posterior deltoid.

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Another example is palpation of the flexor carpi radialis (FCR) of the wrist flexor group. If we ask the client to flex the hand at the wrist joint, the FCR engages, but so will many other muscles of the anterior forearm, including the adjacent palmaris longus (PL) (Figure 4a). This might not matter if we