

# Muscle Palpation Assessment and Orthopedic Massage

*by Dr. Joe Muscolino*

## The Art and Science of Muscle Palpation

When performing clinical orthopedic massage on a client, having an accurate assessment of the tone and health of each of the muscles is imperative. After all, with orthopedic massage, working to loosen tight muscles is usually our main objective. Probably the two most common presenting complaints of a client are stiffness, in other words loss of range of motion, and pain. By massaging tight muscles, we strive to relieve pain and restore range of motion. To make an accurate assessment and know which muscles need to be worked requires a number of assessment skills. Foremost among these is muscle palpation.

Muscle palpation can be broken into two parts. The first part is locating the target muscle that we are looking to find. Once accurately located, the second part is to assess its health, in other words feeling for its tone by determining whether it is tight or loose. Although assessing the tone of the muscle is clearly the most important aspect of palpation, it cannot be performed unless we first determine with certainty where the target muscle is located. Effective massage usually requires working a muscle from attachment to attachment. But if we are not quite sure exactly where the borders of a muscle are, how do we know when we are working it and when we aren't. Further, if a client presents with a tight area, and we cannot determine exactly what



Figure 1. A, Knowing the attachments of the deltoid allows us to accurately place our palpating fingers. B, Knowing the actions of the deltoid, we ask the client to abduct the arm at the glenohumeral joint, making it contract and become easier to palpate.

muscle or muscles are involved, then how can we counsel the client as to what activities likely caused their problem?

So, the key to effective muscle palpation for orthopedic massage lies in being able to accurately locate each of the target muscles. And for each target muscle, there is a palpation protocol that can be performed to accomplish this. Unfortunately, muscle palpation is often not well learned by students and therapists alike. As a matter of course, it is often presented in textbooks and taught in the classroom as a series of protocols that are memorized instead of being understood. As with most things that are memorized, they are often forgot-

ten or become fuzzy in time, leaving us with weak palpation assessment skills.

The art and science of muscle palpation lies in the fact that muscle palpation protocols do not need to be memorized; rather they can be reasoned out by learning some basic common sense guidelines. Knowledge of these guidelines then allows us to figure out how to palpate each muscle of the body, equipping us to become powerful and effective clinical orthopedic therapists! The focus of this article is to discuss a few of the fundamental guidelines that are necessary when learning the art and science of muscle palpation.

# Palpation

## The Art of Muscle Palpation:

The first two guidelines are what can be called the science of muscle palpation because they are based on knowing the attachment and action information of the target muscle that we learned in our science (anatomy and physiology/ kinesiology) classes. **Guideline #1** is to use our knowledge of the attachments of the muscle to know where to place our palpating fingers. For example, if we are palpating the deltoid, then knowing that it attaches from the lateral clavicle, acromion process, and spine of the scapula, to the deltoid tubercle on the humerus allows us to place our palpating fingers on it (Figure 1a). However, as we explore this muscle, how do we know if at a certain point we have strayed off it and are now on a different muscle? Further, if instead of the deltoid our target muscle is deep instead of superficial, how do we know that we are palpating it and not adjacent musculature? In these cases, it is helpful to utilize **Guideline #2** which is to know the action(s) of the muscle to have the client engage it and make it contract. In the case of the deltoid, we can ask her to abduct her arm at the glenohumeral joint (Figure 1b). The deltoid contracts and becomes palpably harder and we can easily feel the entirety of the muscle, discerning it from the adjacent soft tissues. These first two guidelines form the fundamental basis for locating a target muscle. They require that we either recall the attachments and actions that we have learned, or go back and look them up.

## Beginning the Art of Muscle Palpation

The key to effective palpation is not just feeling the target muscle, but being able to clearly *discern* it from the adjacent muscles and other soft tissues. This requires the

**Knowing how to choose the best action of the target muscle can be reasoned out if we know the actions of the target muscle and we also know the actions of the adjacent muscles.**

contraction of the target muscle to be as isolated as possible. For this reason, our goal is to have *only* the target muscle contract, and all the adjacent muscles remain relaxed. This brings us to **Guideline #3**, which is choosing the *best action* of the target muscle when we ask the client to engage and contract it. For example, if our target muscle is the flexor carpi radialis of the forearm/wrist joint and we ask the client to flex the hand at the wrist joint, not only will the flexor carpi radialis contract, but so will the adjacent palmaris longus (Figure 2a). This will make it difficult to know when we are on the flexor carpi radialis versus the palmaris longus. The answer is to choose radial deviation as the action instead of flexion (Figure 2b). Now the flexor carpi radialis will engage and can be palpated, but the palmaris longus will remain relaxed. Knowing how to choose the best action of the target muscle can be reasoned out if we know the actions of the target muscle and we also know the actions of the adjacent muscles. Our goal is to find an action of the target muscle that is different from the actions of the adjacent musculature.

## Perfecting the Art of Muscle Palpation

In **Guideline #2**, we asked the client to engage the target muscle so it would be easier to palpate and would stand out. But sometimes, simply asking the client to contract the target muscle does not cause a strong enough contraction to make it palpably clear. In these cases,



Figure 2. A, Adding resistance to flexion of the hand at the wrist joint causes the flexor carpi radialis (FCR) to contract, but it also causes the adjacent palmaris longus (PL), another wrist joint flexor, to contract. B, Adding resistance to radial deviation of the hand at the wrist joint causes the FCR to contract but the adjacent PL to remain relaxed.

**Guideline #4**, adding resistance to the client's contraction, can be used.

This was seen in Figure 1b; the therapist used his left hand to add resistance to abduction of the client's arm. The optimal amount of resistance that should be added varies from muscle to muscle and client to client, so we need to be willing to be creative and experiment. If the muscle is not clearly felt with a little resistance, we add more; if the muscle is not clearly when adding a fair amount of resistance, we add less.

Adding resistance is often the key to finding the target muscle. But it is where errors so often occur. Indeed, it is this step that is often inaccurately portrayed in many books and articles on palpation. When resistance is added, it is imperative that we do not add resistance across a joint that does not need to be crossed. If our contact

# Palpation



Figure 3. When palpating the pronator teres and adding resistance to pronation of the forearm at the radioulnar joints, the resistance should be added by contacting the client's distal forearm, not her hand.

**When resistance is added, it is imperative that you do not add resistance across a joint that does not need to be crossed!**

on the client crosses another joint, we will in effect ask the client to contract other muscles, and this will cloud our ability to discern the target muscle. Remember, our goal is to isolate a contraction of the target muscle so that it can be discerned from the adjacent musculature.

There are many examples that demonstrate this. In Figures 2a and 2b, note that the therapist contacted and added resistance to the palm (body) of the client's hand; he did not cross over the finger joints to press against the client's fingers. Doing so would have caused the client's finger flexor muscles (flexors digitorum superficialis and profundus) to also contract, making it difficult to discern the flexor carpi radialis from them. Another example is palpation of the pronator teres. When adding resistance to

forearm pronation, it is important that our hand contacts the distal forearm, not the hand (Figure 3). Otherwise, adjacent wrist joint flexors (flexor carpi radialis, palmaris longus, flexor carpi ulnaris) will contract, making it impossible to be sure when we are on the pronator teres or when we have veered off onto these other muscles. Yet another example is the brachioradialis. When palpating this muscle, it is often recommended to resist flexion of the client's forearm at the elbow joint by "shaking" their hand. However, doing this causes us to cross the client's wrist joint to add resistance against their hand, which will cause adjacent muscles (extensors carpi radialis longus and brevis) to contract as well, making it difficult to discern the brachioradialis from them. In this case, adding resistance properly requires contacting the client on the distal forearm as seen in Figure 4.

Although many more guidelines exist to continue and perfect the art of muscle palpation, these first four guidelines form the fundamental basis for muscle palpation. When applying these guidelines, the key is to critically think through the palpation protocol by utilizing our knowledge of the attachments and actions of the target muscle as well as the attachments and actions of the adjacent muscles. Armed with critical reasoning skills and accurate palpation assessment, we can be effective clinical orthopedic therapists!

*For a thorough discussion of all 20 muscle palpation guidelines, along with illustrated palpation protocols and video demonstration of the palpations protocols, see The Muscle and Bone Palpation Manual, with Trigger Points, Referral Patterns, and Stretching, by Joseph E. Muscolino, 2009, published by Mosby of Elsevier Science ([www.learnmuscles.com](http://www.learnmuscles.com)).*



Figure 4. When palpating the brachioradialis and adding resistance to flexion of the forearm at the elbow joint, the resistance should be added by contacting the client's distal forearm, not her hand.

## ABOUT THE AUTHOR:

Dr. Joe Muscolino has been a massage therapy educator for 24 years. He is author of *The Muscle and Bone Palpation Manual*, with *Trigger Points, Referral Patterns, and Stretching*; *The Muscular System Manual*, the *Skeletal Muscles of the Human Body*, 3rd Edition; and *Kinesiology, the Skeletal System and Muscle Function*; as well as other publications by Mosby of Elsevier Science. His books are being translated into seven foreign languages. He also runs numerous continuing education workshops. He can be reached at [www.learnmuscles.com](http://www.learnmuscles.com).

## CREDITS:

All illustrations reproduced from *The Muscle and Bone Palpation Manual*, 2009, Elsevier.

Photography Yanik Chauvin / Elsevier