Body Mechanics

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The Importance of Joint Mobilization

Many factors are important for musculoskeletal health. Arguably, the two most important factors are flexibility of soft tissue and strength of musculature. Although strength of musculature is often beyond the scope of massage therapy, massage therapists excel at increasing soft tissue flexibility. In this regard, massage therapy holds an extremely important place in the world of clinical orthopedic manual therapy.

Often the key to remedying a client's musculoskeletal condition is loosening tight soft tissues that directly cause pain and/or decrease the client's range of motion (ROM). Unfortunately, for many years, the field of massage therapy has limited its effectiveness by focusing only on tight musculature. With the recent understanding and acceptance of the importance of fascia and the role that fascial adhesions (and fascial contraction) can play in a client's condition, the field of

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massage therapy has been expanding its focus. This is an excellent step forward for manual therapy.

INTRINSIC FASCIAL TISSUE

However, this increased focus on fascial tissue has largely limited itself to myofascial tissue (via Myers' work with myofascial meridians/anatomy trains) and subcutaneous fascia (via the Stecco family's work on superficial fascial tissue/membranes). As a result, most massage therapists still largely ignore an incredibly important fascial tissue component of the body: joint capsules and their associated intrinsic joint ligaments.

After all, tautness in any soft tissue will decrease motion and impact the quality of the client's life. This is true whether the taut soft tissue is muscle myofascia, subcutaneous fascia, or intrinsic capsular/ligamentous fascial tissue. Therefore, if our goal is to increase soft tissue flexibility, loosening muscles and their associated myofascial and subcutaneous fascial tissues while ignoring intrinsic fascial joint tissue may be an excellent job halfway-done—and may likely be the reason for limited success when treating a client's musculoskeletal condition.

The province of intrinsic fascial tissues has been largely left to chiropractic and osteopathic physicians. Yet, if massage therapy is to take its rightful place as the preeminent manual therapy for clinical orthopedic manual treatment of soft tissue myofascioskeletal conditions, then learning how to treat intrinsic joint tissues needs to become a part of the treatment strategy. Toward this end, joint mobilization, specifically Grade IV joint mobilization, can be an extremely important technique to incorporate into the treatment strategy for our clients. And when properly learned, is effective and safe.

JOINT MOBILIZATION

Joint mobilization is actually quite simple to perform. It involves pinning/stabilizing one bone at a joint, and then moving/mobilizing the adjacent bone relative to it. In effect, joint mobilization is identical to a treatment method that is already prevalent in the world of massage therapy: pin-and-stretch technique. Pin-and-stretch as it is performed involves pinning within the belly of a muscle and then stretching one of the muscle's attachments away from the pinned point. This has the effect of focusing the stretch to the part of that muscle that is located between the pinned point and the attachment that is moved. With joint mobilization technique the therapist instead pins one bone at a joint, and then moves the other bone of the joint away from it, thereby focusing the stretch to the intrinsic capsular/ligamentous tissue (as well as any deep intrinsic musculature) located between those two bones (Figure 1). Both techniques involve pinning and stretching, in other words, pinning and mobilizing. With typical pin-and-stretch we focus our mobilization on muscular tissue; with Grade IV joint mobilization we focus our mobilization on intrinsic joint fascial tissue.

TECHNIQUE GUIDELINES

As with any technique, there are guidelines for the efficient and safe employment of joint mobilization.

- Most typically, the proximal bone is pinned and the distal bone is stabilized.
- When placing the pin to stabilize the bone, it is important to find a bony surface that is as broad and flat as possible; this ensures that the bone is securely and comfortably held.
- It is important to also find a broad and flat surface on the bone that is being mobilized so that it is securely and comfortably contacted.
- It is usually optimal to contact each bone as close to the joint surface as possible. This is especially important for nonaxial motion joint mobilization.
- If the skin and other overlying soft tissue is loose, a *soft tissue pull* might be necessary. A soft tissue pull is accomplished by first contacting the client proximal to the desired stabilization point and then pulling the skin and subcutaneous fascia toward that point. This ensures that any soft tissue slack is removed so that your grasp is secure on the underlying bone.
- First adding traction to the joint adds to the efficiency of the mobilization.
- The actual mobilization is usually done by performing 3-5 oscillations.
- The oscillation motion is performed slowly; *a fast thrust is never involved*.
- The excursion of the oscillation is very small, usually only a few millimeters.
- Each oscillation is held for a fraction of a second and then released.

INDICATIONS/CONTRAINDICATIONS

The indication for joint mobilization is simple. Given that the goal of this technique is to increase motion at a joint, the indication is joint hypomobility: if the joint's motion is decreased as a result of taut intrinsic joint tissues, joint mobilization is indicated. The contraindication to joint mobilization is joint hypermobility: if the joint's motion is excessive due to slackened tissue or if the integrity of the tissue is compromised or unstable, joint mobilization is contraindicated.

MOTION PALPATION ASSESSMENT

Joint hypomobility or hypermobil-

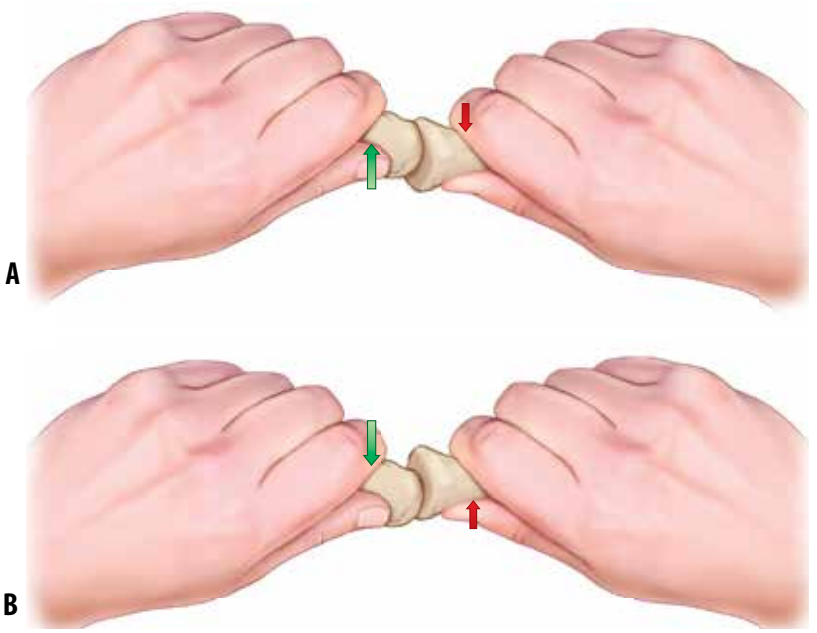

Figure 1 Joint mobilization is performed by pinning one bone and mobilizing the adjacent bone relative to it, thereby stretching the intrinsic soft tissues located between them.

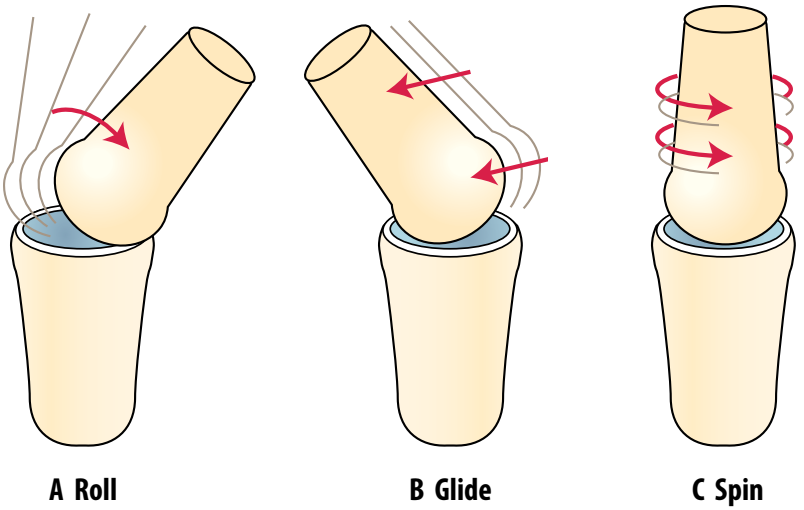

Figure 2 Fundamental motions of roll, glide, and spin. A, Roll. B, Glide. C, Spin.
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"The term joint mobilization is actually a broad term that may be defined in many ways. **One classification of joint mobilization divides it into five grades.**"

ity is determined by an assessment technique known as *motion palpation*. Motion palpation assessment is performed in an identical manner to joint mobilization treatment technique; in other words the joint is challenged to move into its joint play ROM at the end of its passive ROM, and the quality of the *end-feel* motion is felt.

- If the end-feel is hard and abrupt and the motion is felt to be restricted, the joint is hypomobile and joint mobilization is indicated.
- If the end-feel is mushy and the joint exhibits excessive motion, the joint is hypermobile and joint mobilization is contraindicated.
- A gentle bounce or spring to the end-feel is optimal and indicates a healthy joint. In this case, joint mobilization is neither indicated nor contraindicated, but may be performed proactively to maintain healthy joint motion.

Palpating for the quality of end-feel motion can be subtle and challenging to discern at first. As with any technique, practice and focused attention are the keys to becoming skilled at motion palpation assessment and joint mobilization treatment techniques.

AXIAL AND NONAXIAL MOTIONS

The type of motion that is performed during the mobilization can be axial, nonaxial, or a combination of the two. Therapists often think of joint motion only in terms of axial motion. For example, the glenohumeral joint motions that are usually taught are flexion and extension in the sagittal plane, abduction and adduction in the frontal plane, and lateral and medial rotations in the transverse plane. All of these motions are described as axial because they involve the humerus moving in a circular manner around an axis

Grading Joint Mobilization

THE TERM JOINT MOBILIZATION IS ACTUALLY A BROAD TERM THAT MAY BE DEFINED IN MANY WAYS. ONE CLASSIFICATION OF JOINT MOBILIZATION DIVIDES IT INTO FIVE GRADES.

Grade I: Slow, small-amplitude movement performed at the beginning of a joint's active/passive ROM.

Grade II: Slow, large-amplitude movement performed through the joint's active ROM.

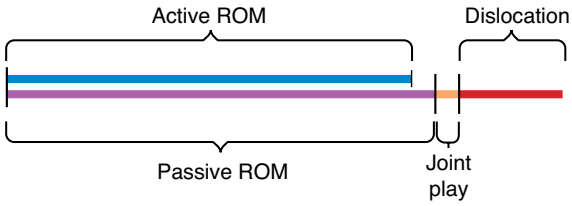
Grade III: Slow, large-amplitude movement performed to the limit of the joint's passive ROM.

Grade IV: Slow, small-amplitude movement performed at the limit of a joint's passive ROM, and into resistance (joint play) (see accompanying Figure).

Grade V: Fast, small-amplitude movement performed at the limit of a joint's passive ROM, and into resistance/joint play.

In this grading system, Grade I is any beginning ROM at a joint; Grade II is the client's active ROM; and Grade III is a typical stretch that is performed by a therapist on a client (or a self-care stretch performed by the client himself/herself) to the end of passive range of motion. Grade IV is joint mobilization as the term is used in this article. It involves stretching the soft tissues at a joint such that the joint is challenged to move past its passive ROM into the range of motion that is known as joint play.

Note: It should be pointed out that Grade V joint mobilization is a chiropractic/osteopathic high-velocity (fast thrust) manipulation that is not within the scope of practice for massage therapy.



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Caution

Before practicing any new modality or technique, check with your state's or province's massage therapy regulatory authority to ensure that it is within the defined scope of practice for massage therapy. Grade IV joint mobilization is within the scope of practice for massage therapy in most (but not all) states in the US.

Further, it is critical that you understand, study, and practice Grade IV joint mobilization technique carefully before attempting to use it with your clients. The steps of joint mobilization are actually quite simple, and this article provides an excellent conceptual framework and set of guidelines for performing this technique. However, the challenge lies in practicing the technique sufficiently to develop a refined sense of joint motion before using it with your clients. For this reason, it is strongly recommended to attend in-person workshops with experienced continuing education instructors before incorporating this technique into your practice.

Any technique that has the power to help also has the power to do harm, and joint mobilization is an extremely powerful technique. Joint mobilization, when applied inappropriately, can cause serious harm to the client. Inappropriate application of joint mobilization technique includes applying joint mobilization to a condition for which it is contraindicated, most likely an unstable/hypermobile joint or to tissue that does not have sufficient integrity. It also includes applying joint mobilization to a condition for which its use is indicated, but executing the technique incorrectly—for example, performing it too forcefully.

If you have any doubt about whether it is appropriate to use joint mobilization for a particular client, be sure first to obtain written permission from the client's chiropractic or allopathic physician.

It is also extremely important to emphasize that a fast thrust should never be employed when performing joint mobilization. A fast thrust defines a Grade V joint mobilization and is not within the scope of practice of massage therapy in the United States.

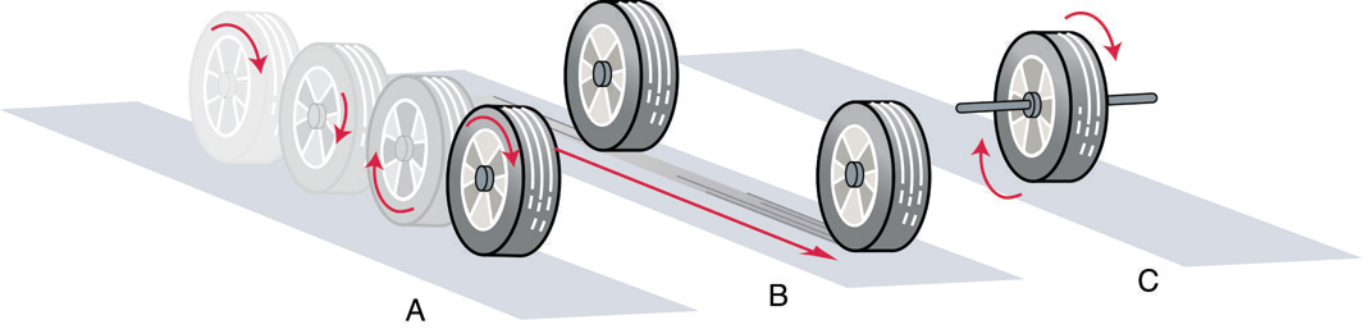

Figure 3 Roll, glide, and spin motions: tire analogy. A, Tire that is rolling along the road. B, Tire that is gliding/skidding along the road. C, Tire that is spinning in place on the road.
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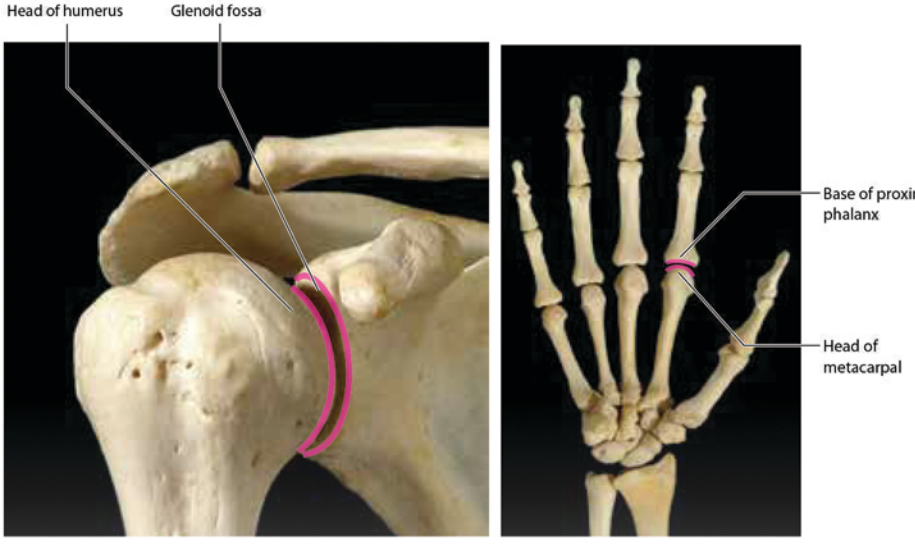

Figure 4 Convex and concave joint surfaces. A, The glenohumeral (GH) joint. B, The metacarpophalangeal (MCP) joint.
(Figure modeled from Elsevier, Kinesiology, The Skeletal System and Muscle Function, 2nd Edition, JE Muscolino)

of rotation that passes through the joint. However, underlying most axial motions such as flexion or abduction are more fundamental component motions called roll, glide, and spin. To perform joint mobilization, these fundamental motions of roll, glide, and spin must first be understood (Figure 2).

ROLL, GLIDE, AND SPIN

Spin and roll are axial motions, but roll must occur in conjunction with skidding along the road. And spin is the tire spinning in place on the surface of the road (Figure 3).

CONVEX/CONCAVE KINEMATICS

Now that roll and glide motions are understood, let's apply this knowledge to convex/concave kinematics. This will allow us to determine how to assess and mobilize the nonaxial glide component of joint motion to improve the ROM of the joint. The term *kinematics* simply means motion. Looking more closely at the GH joint, the proximal bone, the glenoid fossa of the scapula, is concave; and the distal bone, the head of the humerus, is seen to be convex. At other joints, the proximal bone is convex and the distal bone is concave. Examples include the metacarpophalangeal (MCP) and metatarsophalangeal (MTP) joints. Looking more closely at the MCP joint, the proximal bone, the head of the metacarpal, is con-