Dynamic Chiropractic

DIAGNOSIS & DIAGNOSTIC EQUIP

Motion Palpation

Motion palpation is not a technique. Motion palpation is a method of examining the various components of the subluxation complex. Motion palpation is based upon the work of many authors and clinicians from a diverse background and from locations throughout the world. The history of motion palpation includes the contributions of Illi; Gillet; Kaltenborn; Grieve; Mennel; Cyriax; Dvorak; Faye; Grice; Gittleman; Fligg; Palmer; Wyke; Korr; Carrick; Seaman; Edwards; Gonstead; Lantz, etc.

Motion palpation has many components, each of which is a major study of its own. Many of the authors mentioned above have contributed to the various components of the subluxation complex, none of which can be separated from the complex itself. In other words, each and every component is a component of the other, and it is their relative interaction that motion palpation is all about.

Motion palpation and the subluxation complex in chiropractic are inseparable, as the two coexist, with the final complex being greater than the sum of its parts. The subluxation complex as it exists today includes eight component parts:

- kinesiopathology
- neuropathology
- myopathology
- connective tissue pathology
- vascular abnormalities
- inflammatory response
- histopathology
- biochemical abnormalities

As research continues, new parts will be added as they apply to the science of today's chiropractic.

Motion palpation itself allows the doctor or student of chiropractic to evaluate the kinesiological component of the subluxation more than any other component and will be dealt with in this paper more so than the obviously associated muscular component. A common language is necessary; therefore, prior to beginning this discussion, a number of terms will be defined for use in this paper.

Joint Play

According to Magee, in his textbook Orthopedic Physical Assessment: "All synovial and secondary cartilaginous joints, to some extent, are capable of an active range-of-motion, termed voluntary movement. In addition, there is a small range of movement that can be obtained only passively by the examiner; this movement is called joint play, or accessory, movement. These accessory movements are not under voluntary control; they are necessary, however, for full painless function of the joint and full range-of-motion of the joint. Joint dysfunction signifies a loss of joint play movement. The existence of joint play movement is necessary for pain free voluntary movement to occur. An essential part of the detailed assessment of any joint includes an examination of its joint movements. If any joint play movement is found to be absent, this movement must be freed before functional voluntary movement can be fully restored. In most joints, this movement is less than 4

mm in any one direction."

Kaltenborn defines joint play as "short, straight-lined (rectilinear), passive bone movements. When this movement is performed parallel to the treatment plane, it is called translatoric gliding. When passive, rectilinear bone movement is at a right angle and away from the treatment plane, it is called traction. The third joint play movement, compression, is performed by moving a bone perpendicular and towards the treatment plane. All three joint play movements are utilized to test passive joint movements."

Dvorak and Dvorak describe joint play in their text Manual Medicine: "Decreased angular range-of-motion or diminished joint play, either with hard or soft end feel. A hard end feel is most likely due to articular (structural) degenerative changes, while soft end feel is usually associated with shortened muscles. Pain in conjunction with introduced motion indicates a segmental somatic dysfunction."

Dr. Bruce Fligg, in chapter six of the text entitled Upper Cervical Syndrome, states "that the greatest advantage of motion palpation, however, lies within the specific objectives. These objectives center around the actual application of the manipulation. Motion palpation procedures help us to select the specific manipulation and to identify the specific motion segments that require manipulating. They also establish the angle of thrust, the depth of thrust (amplitude), and most importantly, a tool for outcome assessment, the effectiveness of our manipulation. Ultimately, we must ensure that (1) the coupled motion manipulation, (adjustment/reduction -- mine, not a part of the quote) produced increased mobility at the motion segment specifically desired, and (2) the dysfunction motion pattern has been corrected." It should also be noted that the specific mechanoreceptor pathways will have been activated and the doctor should be aware of the appropriate pathways activated.

Rotation

Rotation is a curved motion around an axis which lies within or outside the boundaries of the moving bone. All points in the bone move in a curved manner and form an arc of motion. Rotation, however, produces an associated roll-gliding in the joint as it forms the arc. Rotation, therefore, causes the joint to participate in the physiological motion of roll-gliding in whichever plane it is moving in.

Roll-gliding is a combined motion that is only possible between incongruent, curved surfaces. Since all of our joints are, for the most part, incongruent, it follows that physiologic motions will result in roll-gliding. Generally speaking, the more congruent the surfaces the greater the proportion of gliding motion to rolling motion. This fact is paramount to joint play, as a decrease in glide will effect movement in other planes of joints that are near congruent in nature.

The rolling motion is always in the same direction as the bone movement and rarely occurs without gliding, as this could result in joint injury. Joint damage could occur if only rolling took place as the joint surfaces could be compressed on the same side towards which the bone is moving. This could pinch intra-articular structures such as meniscoids or cartilage; therefore, pure rolling movements are never used when making an adjustment.

The direction of glide in the joint depends on whether a concave or convex articular surface is moving. If a concave surface is the moving segment, then joint gliding and bone motion are in the same direction. In other words, the moving segment and its concave articular surface are on the same side of the axis of motion. If a convex joint surface is the motion segment, then the articular gliding and segmental motion are in the opposite directions, as the moving segment and its convex articular surface are on the opposite sides of the axis of motion. These are important concepts to

remember. As joint hypomobility is treated by manipulative techniques through translatoric gliding motions, it follows that one should know the direction of the fixated joint gliding motion or one will be thrusting for nothing but noise.

Translatoric Gliding (translation of a bone)

As previously stated, translatoric gliding is a motion in a straight line or rectilinear movement and the corresponding joint play motions are traction, compression and gliding. These motions are not pure motions, as we are not symmetrical or congruent beings; therefore it is crucial to the comprehension of motion palpation joint play analysis that these motions be performed in a combined movement way. We will call this coupled joint motion palpation.

Joint play is what takes place in a joint when translatoric bone motions are initiated; joint play is not possible without translatoric motion. The significance of translatoric gliding motion to motion palpation is that all synovial joints can be examined in all planes of motion thus allowing the doctor to be very accurate relative to the adjustive procedures' direction of thrust as well as enabling the usage of coupled motion adjusting, the body's own naturally occurring movements.

Coupled or Combined Movements

Coupled or combined movements are motions that naturally occur simultaneously around more than one axis and in more than one plane. For example, flexion of the cervical spine occurs in a transverse axis; a roll-glide movement, through the formation of the segmental arches of the cervical spine. In a sagittal plane, the translatoric motion that will allow us to perform joint play analysis; right and left lateral flexion occur in a sagittal axis, a roll-glide and spin (ipsi- or contralateral in nature) motion; in a frontal plane, the translatoric portion; and rotation (remember that there is no such thing as pure rotation as it is always coupled with another motion) occurs in around a vertical axis, the roll-glide portion, and a transverse plane about which the angles of inclination predetermine the translatoric component.

From the above descriptions, it should be obvious that functional movements around combined axes and in multiple planes are necessary to reproduce the patient's chief complaint, and to understand the exact mechanism of injury. Your diagnosis and subsequent treatment plan depend on it as well.

End Feel

End feel of a joint motion is the relationship between the pain experienced and the axis and plane in which the resistance is encountered. The doctor's ability to palpate and glean meaningful information from this coupled joint motion palpation end feel is directly proportional to his or her understanding of the myology, osteology and arthrokinematics beneath the fingers. The single biggest reason for failure is a lack of practice and the taking of short cuts.

The range-of-motion is not a good indicator of the source of the dysfunction. Take, for example, a patient that has pain on rotation of the cervical spine during the first 12-15 degrees, but can continue to full rotation without any significant change in the pain. A second patient also has pain during the initial 12-15 degrees of rotation; however, when attempting to reach full range-of-motion the pain now radiates down the arm and posterior thoracic region. Note that both patients have the exact same range-of-motion, however they produce totally different symptoms. These patients must be treated differently as fixations of coupled motions in multiple planes and axes dictate the presenting complaint and pain patterns.

Motion Characteristics

Motion characteristics that impact upon one another are important to the examination. The following list details, these according to Grieve.

"(1). Flexion reduces lateral flexion and rotation ranges; it eradicates the cervical curve, usually most noticeably at segments C-4-5-6, and sometimes slightly reverses the lumbar curve from the L-3 segment upwards.

"(2). Extension also reduces the range of lateral flexion and rotation.

"(3). Lateral flexion restricts flexion and extension, and while the vertebral region concerned is held in the position of lateral flexion, the following tendencies will be noted:

a. In the cervical spine, lateral flexion makes rotation easier to the concavity than to the convexity, whether the neck be in neutral, flexion or extension.

b. In the thoracic spine below T-3 and in the lumbar spine, lateral flexion makes rotation easier to the convexity than the concavity, when lateral flexion occurs in neutral or extended position. If the thoracic and lumbar spine be flexed, and then bent to one side, rotation will be easier to the concavity.

"(4). Rotation restricts flexion and extension, and is invariably accompanied by a degree of lateral flexion.

"The physiological tendencies are thus: Typical cervical region (C2-C6) lateral flexion is invariably accompanied by rotation to the same side, and vice versa, from all positions of sagittal movement, i.e. whether the neck be flexed, neutral or extended.

"Cervicothoracic region (C6-T3). Although movement rapidly diminishes from above, downwards lateral flexion is accompanied by rotation to the same side, and vice versa.

"Thoracic and lumbar regions. Lateral flexion is accompanied by rotation to the same side (and vice versa) only in flexion. In the neutral or extended position, side bending is naturally accompanied by rotation to the opposite side, and vice versa.

"Summarised, in all sagittal starting positions of the cervical spine, and in the flexed thoracic (below T-3) and lumbar spines, lateral flexion is per force accompanied by rotation to the same side, and vice versa; in the neutral or extended thoracic (below T-3) and lumbar spines, lateral flexion is perforce accompanied by rotation to the opposite side."
Motion palpation is a vital link between the patient's subjective symptoms and the why, where, and how you are going to adjust the patient. The major indication for joint manipulation is reversible hypomobility; however, it must always be paramount in the doctor's mind that the maintenance of mobility and the slowing or prevention of progressive joint dysfunction, maintenance of the mechanoreceptor-nociceptor relationship, and the prevention of the formation of the subluxation complex is always omnipresent.

Three major differential diagnostic criteria are emphasized in coupled joint motion palpation analysis:

1. The determination of joint hypomobility vs. muscular fixation vs. compensatory joint dysfunction elsewhere as the primary cause;

2. The existence of the arthrokinetic reflex as a major contributor to reflex sympathetic

dysfunction via the dorsal horn, and to a lesser extent, the ventral horn. These two locations are the origins of second order neurons involved with pain. The dorsal horn is also a focal point for mediating autonomic and somatomotor reflexes initiated by nociceptive stimulation. Quite simply, it is uncontrolled nociceptive activity that causes pain, muscle spasm and vasoconstriction; the very things we see and feel in and on our patients every day;

3. In the acute stage, joint pain and inflammation occur together and often will limit the doctor's ability to perform a thorough examination. In this situation, treatment is predetermined by the patient's symptoms and only procedures intended to decrease pain and/or inflammation are performed during this session.

From the above few quotes, descriptions, and plethora of terms, one thread is obvious: coupled motion segmental joint dysfunction must be corrected for the patient to enjoy a pain free life.

Keith Innes, DC
Scarborough, Ontario, Canada
dockeith@aol.com

DECEMBER 1997

©2024 Dynanamic Chiropractic™ All Rights Reserved