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At the last two seminars I delivered (one on fascial release; the other on the examination and treatment of the shoulder), I asked the audience if they used Dr. James Cyriax's method of differentiating between passive and contractile tissue. To my surprise, at least 80% of the chiropractic audience did not use his methods. Over 20 years ago, I attended a three-day seminar on the functional examination techniques of Dr. Cyriax, an English orthopedist who revolutionized the examination methods of soft tissue. His methods have stood the test of time, as proven in a paper in 1996 by Pellecchia et al.¹ in which Cyriax's method of examining 21 shoulder cases was compared with MRI evaluation. Nineteen of 21 cases evaluated were put in the same diagnostic category as MRI for a percentage agreement of 90.5%. A "*kappa*" value of .875 indicated "almost perfect" agreement among the examiners.

Cyriax proved years ago that just using a series of orthopedic tests, which often tested more than one function, was not as valid as his logical functional methods. One of the essentials in Cyriax's functional examination was using passive and contractile tests to determine the source of the pain. Just using passive tests to determine passive range of motion and contractile tests to determine pain and weakness without correlating the two will result in insufficient information. Examiners interested in treating soft tissue must determine exactly what tissues they're testing.

Passive testing refers to tissue that does not have its own contractile ability, such as joint capsules, bursae, fasciae, ligaments, nerve root and *dura mater*.² The problem with passive testing of passive tissue is that we are also stretching muscular tissue. Therefore, it is usually best to first test passively, then isometrically to see if contractile tissue was stressed by the passive test. This article cannot explain all the peculiarities of passive and contractile testing, but I want to mention some of the more important factors. The second reference at the end of this article can be studied for a more complete understanding.

When you passively stretch a joint, you might experience a bone-to-bone sensation; a soft tissue sensation; a "twang"; a capsular feel; a springy block; or an "empty feeling." Each of these sensations denotes a separate interpretation as to the status of the tissue:

- Passively extending an elbow should reveal a bone-to-bone sensation, while flexing an elbow should reveal a soft tissue sensation.
- A springy block on elbow extension might reveal a loose body in the joint, while a twang might reveal a spasm or a bony pathology.
- A capsular sensation of hardness, such as leather being stretched, is rarely found in the elbow but often in the shoulder or hip as a normal feeling.
- An "empty feeling," especially in the hip on passive testing, means that the examiner feels that more motion is available but the patient demands that the examiner immediately stop the testing. This could be serious and represent pathology of the joint.

Contractile testing is usually an *isometric muscle* test in which pain may indicate involvement of a muscle or its associated tendon. Sometimes pain inhibits the muscle test, creating weakness in otherwise strong muscle tissue. Weakness without pain may indicate a neurologic problem or, in the shoulder, a partial cuff tear.

Differentiating between contractile and passive tissue allows the practitioner to determine whether, for example, a ligament or capsule is involved versus a tendon, musculotendinous or belly of a muscle as the cause. A chronic adhesive capsulitis would show limited passive motions and strong contractile tests pinpointing passive tissue as the cause. Treatment would therefore be directed to the passive capsule. A chronic acromioclavicular (AC) sprain would be stressed by passive horizontal shoulder adduction or passive abduction above 90 degrees. The AC joint is a totally passive structure, and contractile tests would only be positive if the sprain were acute with damage to associated muscles. Tendinopathy of, for example, the supraspinatus tendon, if lesioned, would naturally test positive on contractile testing, and most of the shoulder passive tests would be negative (except perhaps for horizontal adduction or internal rotation, which might stretch this tendon, but which might not be the source of the complaint).

Resisted testing of the supraspinatus does not necessarily tell us what portion of the muscle is involved. Palpation of the supraspinatus belly, musculotendinous junction, tendon body or periosteal insertion would localize the problem area, allowing effective soft tissue treatment. One cannot logically arrive at a diagnosis of subscapular tendinopathy without testing the subscapularis, nor can one logically diagnose medial collateral knee sprain without passively putting the knee in valgus. At the same time, muscle testing of the knee area would usually show minimal pain on testing muscles that make up the pes anserine, quadriceps or adductors, but the most significant pain would show up on the passive *valgus* test.

Contrasting contractile and passive results are an absolute necessity for every joint of the body, and are extremely important for soft tissue practitioners. This same system can also apply to spinal examination.

References

1. Pellecchia GL, et al. Intertester reliability of the Cyriax evaluation in assessing patients with shoulder pain. *Orthop Sports Phys Ther* 1996:23.
2. Hammer WI. *Functional Soft Tissue Examination & Treatment by Manual Methods: New Perspectives*, 2nd. ed. Gaithersburg, MD: Aspen Publishers, 1999.

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