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Kinesiolgy and Orthopedic Assessment

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Kinesiology is a fascinating science; as the study of human movement, it has considerable relevance in the clinical environment. Unfortunately, too often in massage education, this field of study gets reduced to memorization of muscle actions (in order to pass some test), and the whole purpose for studying kinesiology gets lost in the process.
Because kinesiology is the study of human movement, and because the field of orthopedics deals with movement-system disorders, kinesiology is an essential science for the process of evaluating movement-system disorders (orthopedic assessment). Once you grasp the importance of this relationship, you'll find that understanding kinesiology is an inseparable part of the assessment process.

The field of kinesiology is composed of three separate disciplines: musculoskeletal anatomy, neuromuscular physiology and biomechanics. Musculoskeletal anatomy is perhaps the most obvious of the three with relation to orthopedic assessment. Identifying the structures involved in various pain or injury conditions starts with knowing the anatomy. If the client has anterior knee pain from overuse, knowledge of the different tissues that could produce that pain, such as the patellar tendon, quadriceps retinaculum or sub-chondral bone underneath the patella, is essential in assessing the problem. A detailed knowledge of anatomy ,combined with well-developed palpation skills, are excellent tools for the soft-tissue practitioner; this gives us a distinct advantage in identifying pathologies.

Neuromuscular physiology, the second branch of kinesiology, is also important to assessment. While one might feel bogged down with the effort involved in memorizing muscle attachments (anatomy) and actions (physiology), there are more interesting applications of these studies. For example, in discussing neuromuscular physiology, anatomy texts focus on the role of a muscle's concentric action; eccentric and isometric actions are rarely listed. However, it is just as important to identify other functions of a muscle, because they may be more important for assessing the nature of an injury.

A case in point would include what commonly occurs when a person injures his or her back while bending over to pick something up. If you analyze the motion used in the midst of the injury, you notice that flexion of the torso occurs while bending over. Consequently, you might then assume that the muscles involved in forward torso flexion would be engaged, thus identifying the rectus abdominis and iliopsoas as the major muscles that flex the torso; however, bending over to pick something up does not use these muscles much at all. This motion is governed much more by eccentric activation of the spinal extensor muscles. The process of bending over from a standing position and using these muscles eccentrically is a common mechanism of injury. When you understand how these muscles are used in various activities, you can do a much better job of evaluating the muscles involved in the injury.

The final branch of kinesiology, biomechanics, is commonly confused with kinesiology, but it is actually a separate branch of science that helps make up the discipline of kinesiology. Biomechanics is the field that studies the application of principles of mechanical physics to organic systems. So, identifying how much tensile stress may occur to a ligament before the fibers become stretched and torn (a ligament sprain), for example, involves the field of biomechanics.

Simple biomechanical principles are routinely used in kinesiology and also become an important part of orthopedic assessment. If a client reports knee pain when descending stairs, we use biomechanical principles to identify the different types of stress to different tissues in and around the knee. The menisci of the knee are under compressive stress and could produce pain during this activity. The patellar tendon and retinaculum are under tensile stress and could also produce pain in an activity like this. There is some tensile stress on the anterior cruciate ligament as it helps in the deceleration process as well. Knowing what types of mechanical stresses these tissues are exposed to will give valuable clues for identifying the source of the client’s pain.

If you can get past the initial roadblocks to kinesiology that may have been constructed from previous experiences in school, you can appreciate this fascinating science. It is an integral part of orthopedic assessment and should therefore be a tool that is readily used in your clinical practice if you are attempting to treat any kind of pain or injury condition with massage.

Click here for more information about Whitney Lowe, LMT.