PT Classroom - Muscle Balancing: Criterion-Based Evaluation and Treatment of the Knee Complex by Kerry D'Ambrogio DOM, AP, PT, DO-MTP and Trisha Becker, PT, DPT, MHS, OCS

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Muscle Balancing: Criterion-Based Evaluation and Treatment of the Knee Complex

Muscle Balancing (MB) is an easily applied manual therapy approach that reduces protective muscle spasm in as little as 90 seconds causing an immediate improvement in pain-free range of motion and function. **MB** techniques gently treat protective muscle spasm by inhibiting muscle spindle activation, thereby decreasing afferent impulses to the brain. By interrupting this pathway, the muscle resumes a normal resting tone thus relieving muscle tenderness, protective muscle spasm, fascial tension, joint hypomobility, and pain.

In the clinic, physical therapists commonly see patients who present with protective muscle spasm due to injury and trauma. Since **MB** is not only effective, but also efficient at treating protective muscle spasm, every physical therapist should consider utilizing this treatment approach to improve pain-free range of motion and function in those patients. **MB** is very easy to perform and can be successfully incorporated into any treatment session by using the following information from the criterion-based assessment provided in the sample case below.

During the initial visit, all manual therapists face the same question, where do I treat? Do I treat locally at the site of pain or treat holistically to address global dysfunctions and lesions that may be impairing the pathway for healing? Then, once we decide where to treat, we need to decide which manual therapy treatment approach to use. However, before you can decide which manual therapy treatment approach to use, including **MB**, you need to have a clear understanding of the source of the pain and dysfunction. Is the patient complaint coming from a muscle, joint, fascial, lymphatic, or energetic/emotional impairment? This is important because treating with an inappropriate treatment approach and manual therapy technique in an inappropriate area is not only inefficient for our patients, but could also be potentially harmful. Without some type of criteria, how can we as clinicians discern what the patient needs? To do that, each visit should begin and end with an assessment.

The preferred treatment approach begins with a patient history and a **Total Body Screening Examination (TBSE)** to determine if extraneous lines of tension and dysfunctions throughout the body may be influencing the local area of complaint. Some common areas are lines of tension found in the transverse diaphragms which, if restricted, can affect the vertical flow of vital structures, including the arterial, venous, lymphatic, nervous, and energetic flow necessary for healing. Additionally, dysfunctions

of the autonomic nervous system, which controls vasomotion of the blood vessels, can affect the pathways of healing for all bodily tissues. If lines of extraneous lines of tension and total body dysfunctions are found to be influencing the area of complaint, then treatment must be performed globally prior to local treatment.

For example, if a patient complains of right knee pain and dysfunction, we must consider that there may be extraneous lines of tension in the transverse diaphragms and/or dysfunction of the autonomic nervous that could affect the pathway of healing for that knee. Before treating locally at the knee, we need to consider what the structures of the knee need to heal. First, the knee will need an unobstructed supply of oxygenated and nutrient rich blood, balanced nervous input, and energy. Second, the knee will also need an unimpaired venous, lymphatic and energy drainage pathway removing deoxygenated blood and waste products. However, there is an old saying in osteopathy that for this to occur, drainage must precede supply. This means that for oxygen and nutrients to reach the knee to help it heal, we need to remove the metabolic waste product first. Since extraneous lines of tension and autonomic dysfunction affect the vertical flow of vital structures and pathways of healing for all bodily tissues, including the knee, these must be evaluated and addressed prior to local treatment.

However, if the **TBSE** determines that there are no extraneous lines of tension and autonomic dysfunction, then a local evaluation can be performed. Continuing with example of right knee pain, local evaluation consists of **ARTS**:
• **(A)symmetry**: Evaluate the postural alignment of the knee for asymmetry.
• **(R)ange of Motion**: Evaluate the active and passive range of motion (AROM/PROM) of the knee. Assess for restrictions and the end feel. Soft/boggy end feel indicates swelling, hard end feel indicates joint dysfunction, and firm end feel indicates muscle spasm or fascial tension.
• **(T)ension Tests**: Evaluate for tension in the knee looking for a soft, supple, and springy end-feel. A hard and restrictive end-feel indicates a joint lesion.
• **(T)issue Tenderness**: Evaluate for tenderness in the muscles of the knee. Increased tenderness such as an 8-10/10 can indicate protective muscle spasm.
• **(T)issue Texture Changes**: Evaluate for tissue texture changes in the knee, which indicate swelling.
• **(S)pecial Tests**: Evaluate using specific orthopedic (including fascial glide) and dynamic tests to confirm findings.

If the primary lesion found on the Local Evaluation **(ARTS)** contributing to the complaint of right knee pain and dysfunction is identified by a positive Tissue Tenderness Test (8-10/10), then **MB** is indicated for this case. Other findings supporting the use of **MB** are asymmetry in the knee and decreased knee range of motion with a firm end feel. If there is more than one muscle involved, and there typically is, you will need to determine and prioritize the muscle with the greatest tenderness.

The **MB** procedure involves placing the involved body part in a position of comfort for approximately 90 seconds to reduce and arrest inappropriate proprioceptor activity in the muscle. With the knee, if the patient has protective muscle spasm in the quadriceps, the muscle must be shortened into a position of comfort until the tenderness and pain decreases or disappears. Once reached, the patient is then held in this position for at least 90 seconds before passively returning to a neutral position. The tender point is reassessed to determine further treatment. If successful, then treatment continues with all additional points until none are found on further evaluation. However, if the priority tender point is treated first, as previously stated, then no additional treatment may be needed. After treatment, there will be an immediate decrease in tenderness and pain in the treated muscle allowing for an increase in functional level. As a result, **MB** alleviates both soft tissue and articular dysfunctions in the body, thus restoring proper pain-free movement.

When indicated on a criterion-based evaluation, the **MB** treatment approach helps reduce muscle tenderness, protective muscle spasm, fascial tension, and pain. Accordingly, **MB** increases joint mobility, decreases swelling, restores proper joint biomechanics, improved functional ROM, and normalizes postural alignment. Clinically, patients will see an immediate decrease in complaints of pain and an increase in functional level. **MB** can effectively treat patients with orthopedic pain, orthopedic dysfunctions, and postural deformities resulting from protective muscle spasm. Because of the gentleness

and effectiveness of **MB**, it is appropriate for the following patient populations: pediatrics, geriatrics, athletes, trauma patients, general orthopedic patients, amputees, respiratory compromised, and neurological patients.

Muscle Balancing is part of the extensive manual therapy curriculum offered at the D'Ambrogio Institute (DAI). **MB** courses include instruction in a criterion-based Local Treatment Approach to evaluate and treat protective muscle spasm found in the muscles of the Upper Quadrant (cranium, cervical spine, thorax, and upper extremity) and Lower Quadrant (lumbar spine, pelvis, and lower extremity). Please feel free to visit www.DAmbrogioInstitute.com for more information.

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http://www.cyberpt.com/musclebalancingkneecomplex.asp