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## Evidence-based myofascial trigger point interventions

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**M**yofascial trigger points (MTrP) are a focus of hyperirritability in muscle or fascia. MTrPs can be a significant source of pain. A large percentage of patients with shoulder dysfunction, patellofemoral pain and medial longitudinal arch pain present with MTrPs. Ingraham described MTrP as a “clump of contracted sarcomeres living in a swamp of garbage molecules and waste metabolites.” There are histochemical milieus of eight substances in MTrPs that are not in normal, pain-free muscle. MTrPs are known to be in a vicious cycle of increased contractile activity with an increase in metabolic rate that leads to an increase in metabolites that fire the nociceptors to produce local and referred pain. Furthermore, sustained contractions decrease blood flow and ATP availability which interferes with the effectiveness of the calcium pump. This cyclic response begs the question, “How do we treat MTrPs?” Interventions geared towards restoring blood flow, removing metabolites and restoring ATP availability would be most efficacious. This presentation addresses numerous modalities. Topical agents such as lidocaine and diclofenac have been found to reduce pain (30-40%). Ischemic compression (30-60 seconds) has been found to increase the pain pressure threshold (PPT). Given the depth of MTrPs, 3 MHz ultrasound is the most appropriate mode. Class IV LASER has been shown to significantly increase tissue heating and enhance ATP levels. Last but not least, instrument-assisted soft tissue techniques (IASTT) using techniques such as sweeping, swiveling and fanning have been shown to reduce PPT. Yet, a multi-modal approach may be most efficacious.

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## Mis and missed diagnosis at the knee – biomechanical meniscal dysfunction

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**W**hat's wrong with my knee Doc?" Everyone is familiar with the three letter response – “IDK” which technically means internal derangement of the knee, but many times also stands for “I don't know”. Biomechanical Meniscal Dysfunction (BMD) may result from a meniscal tear, osteoarthritis, connective tissue disease such as Ehlers-Danlos, or as a secondary effect of other biomechanical dysfunction, typically involving the sacroiliac joint, ankle or foot. The net result is a meniscus or a fragment that ceases to move normally as the joint surfaces of the femur and tibia slide over it. This frequently causes non-specific knee pain, sometimes referred to the shin above the ankle on the affected side, which becomes tender to palpation. Because many different processes can be associated with BMD, it is frequently mis-diagnosed as osteoarthritis, or some other co-morbidity. Because a meniscal tear is not a prerequisite, BMD may be missed by diagnostic tools with good validity and reliability, such as the Thessaly test. It will almost certainly be missed by tests with poorer supporting evidence, such as McMurray's. In order to capture the vast majority of cases of BMD, a biomechanical test such as the retreating meniscus test should be employed. The retreating meniscus test relies on the examiner's ability to palpate the soft tissues. As the leg is turned passively in or out, the appropriate meniscus is palpated for movement. Failure to move away from the examiner's finger (i.e. retreat) is a positive test. The test can be employed for an anteriorly-displaced as well as a posteriorly-displaced meniscus. In a series of cases, with diagnoses ranging from arthritis to trochanteric bursitis, we have shown that employing the retreating meniscus test is a simple and effective step to a useful diagnosis. Making the diagnosis of BMD then allows the practitioner to choose an appropriate treatment, which, in most cases, allows the symptoms to be resolved almost immediately, thereby reinforcing the diagnosis and creating happy patients. Due to the mobile nature of the meniscus, there can be recidivism, but these episodes are usually just as easy to resolve as the initial episode. Serial recidivism requires further discussion with the patient to elucidate possible mechanisms. Some of these may include improper biomechanics while running, but others may be as simple as deterring the patient from pushing their chair away from their desk by extending their knees while sitting. Recidivism involving meniscal tears may require surgical intervention.

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