Clinical Application of Neuromuscular Techniques

Practical Case Study Exercises

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Before considering professional referral, a variety of methods can be incorporated as adjuncts to NMT. These might include positional release techniques, variations of muscle energy techniques (including Ruddy's pulsed MET and isokinetic exercises), and/or Mulligan's mobilization with movement methods, to help restore functionality. In addition, balance rehabilitation might be useful to this patient.

It is important to restore function to the hallux. Treatment might include stretching of associated muscles and gait retraining. If this is not successful, custom-made orthoses to accommodate the dysfunction are worthy of consideration.

It is reasonable to assume that there could be long-lasting neurological implications after an injury such as this. It would be important to assess for nerve entrapment of the peroneal nerve, metatarsalgia, and Morton's neuroma. If found, treatment of compensation patterns that these factors might create should minimize their impact.

It would be an advantage to differentiate between ankle joint (talotibiofibular) problems and subtalar problems and, if possible, to differentiate ligamentous ankle sprains from tendinitis and bursitis. It is possible that functional hallux limitus has been present for some time and might be part of the etiology/pathology of the symptoms.

For long-term results, a full assessment and treatment (if needed) of pelvis dysfunction is indicated. It is important to determine if her uneven leg length is functional or structural and to indicate for appropriate corrections in either case. Two calibrated scales placed side by side with the patient simultaneously standing on them will help to assess whether she is bearing weight on one side more than the other side. However, this simple test does not point to the actual cause of inappropriate weight bearing, only that one foot is bearing more weight.

Soft tissues that need further attention include all three compartments of the leg. Tibialis anterior and peroneus longus, brevis, and tertius warrant particular attention due to potential nerve entrapment (common peroneal nerve) as well as their role in musculoskeletal slings in gait cycle.

This patient's feet show indications of needing better support, including the wearing of properly fitted shoes. Orthoses, in particular postural insoles that offer a microwedge of the first metatarsal head (see Box 27.3) might be useful. A full assessment of foot function and performance in nonweight bearing, weight bearing, and dynamic positions is justified.

‹ 27.3

Microwedge concepts

Hyperpronation is a dysfunction of the foot commonly referred to as 'fallen arches'. When the medial longitudinal arch undergoes collapse, a whole kinetic chain of events occurs, including misalignment of the knees, anterior tilt of the pelvis, upper crossed syndrome, and forward head posture.

Rothbart (2002) has associated Morton's foot structure (which displays with hyperpronation in many people) with insufficient vertical height of the first metatarsal. He notes that when the foot is placed in neutral position by palpating the subtalar joint for symmetry, the second, third, fourth, and fifth metatarsal heads are usually in contact with the ground. However, the first metatarsal and hallux are often elevated. When the unsupported first metatarsal then bears weight, it falls to the ground with a resultant collapse of the plantar vault and pronation of the foot. This results in a cascade of postural compensations upward through the body.

Rothbart (2002) proposed that providing a microwedge of the first metatarsal head and hallux (at approximately {½} of the measured insufficiency) offers an earlier ground force reaction, and with this correction, a reduction in dynamic hyperpronation is obvious (Figures 27.4 and 27.5).

Postural insoles, designed as a microwedge insert, can reduce the vertical insufficiency. This can result in greater ankle stability, decreased structural stress on