Dynamic Chiropractic

SPORTS / EXERCISE / FITNESS

Movement Analysis and Proprioceptive Retraining

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Do you tackle the musculoskeletal system using manipulation only? Do you use a combination of modalities with a "shotgun" approach to treatment and hope the pain goes away? Or do you customize and individualize your evaluation and treatment process? Do you include a movement diagnosis and understand the cause of the pain? Thoughtfully looking for embedded movement dysfunction helps the practitioner create a plan to successfully guide patients to be more durable, stronger, robust and healthy. Without using movement analysis and making a movement diagnosis, the opportunity for re-injury remains high, especially in active patients.

Repeated episodes of injuries, whether a hamstring strain one time, an ankle or Achilles strain / sprain the next time, an SIJ dysfunction that doesn't fully resolve, or a lumbopelvic hip-region pain sustained over time, suggest the patient is coping poorly with movement, especially loads experienced in activities of daily living or imposed through workouts, training and sports. In such cases, performing a movement analysis can help uncover when movement-related injuries are creating problems. The typical chiropractic evaluation using palpation, orthopedic testing and muscle testing may not supply you with enough information to sufficiently resolve chronic movement dysfunctions that cause pain.

The Value of Movement Analysis

Movement analysis can inform us about the patient's movement system. The only way I know if movement patterns are compromised (from the short-term presence of pain or fatigue, or the longer-term impact of muscle and joint restriction, chronic pain or deficits left by previous injury) is to ask the patient to move. I observe if the patient can do what I ask – then I try to answer, "Was there normal range of motion? Was there control of motion in the various planes (sagittal, frontal, transverse)?"

When I ask a patient to perform a squat or a lunge, it's like asking them a verbal question. I am questioning the patient's pattern of movement under body-weight load, or with a load such as a band, free weight or kettlebell. I am looking for movement quality, synergies of muscle activation and coordination with other muscles. I am looking at proprioception. It's about fluidity, balance, timing and symmetry / asymmetry of motion. This process of asking the patient to perform a movement analysis (functional task) may provide greater insight as to why they were at risk to begin with.

Consider This Scenario...

A patient suffers a hamstring injury and presents to your office. After ruling out any fractures or instabilities, you might reduce the pain using the new mnemonic POLICE, where:

- P = Protect
- OL = Optimal Loading
- I = Ice

- C = Compress
- E = Ergonomics

You might use techniques such as adjustments, ice, electric stimulation, myofascial release, and laser therapy, just to name a few. Once the patient can tolerate the motion, you could introduce some passive stretching to restore flexibility and gradually move into active and proprioceptive neuro-facilitation (PNF) stretching, as well as eccentric strength training.

Although this sounds thorough, there are additional questions we could ask: What information do we need to know for additional treatment and exercise therapy design? Answer: How about the proprioceptive system and the information it is sending back and forth to the brain and injured muscle system of the hamstring.

Movement analysis reveals deficits in movement control, even as the pain diminishes or disappears and the tissues appear healed. Does training the ankle / foot complex and lumbopelvic hip complex functionally help to prevent hamstring injuries or reduce their recurrence? Yes! What kind of a rehab training program will help this patient's condition? Our patient will require proprioceptive training because muscle rehabilitation for hamstring injury is not enough.

Proprioceptive Training: Sample Exercises

Movement analysis gives me a snapshot of the patient's movement. Knowing what normal, desired movement is allows me to introduce countless proprioceptive training exercises. For example, you could try these simple maneuvers with your patient:

- Balance on two legs against a gym ball; progressing to balancing on one leg against the gym ball.
- Progress to throwing and catching a ball while balancing against a gym ball.
- Balance on a wobble board; start on two legs, progressing to one-legged stands.
- Balance on one leg while working a ball clockwise on one foot, then counter-clockwise.

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