



Slow motion video & changing faulty running form to treat an injury

In otherwise healthy individual there can be multiple reasons for running with faulty form including: faulty underlying anatomical structure or weakness; a low level of pain, nagging lingering injury; and repetitive movements done in a faulty way as a result of bad habits and/or fatigue will lead to faulty form.

There should be a high index of suspicion of faulty underlying anatomical structure if there is a history of congenital orthopedic problems, previous traumatic injury, recurring over use injury. In order to adequately address an underlying anatomical structural fault an in-depth orthopedic examination is indicated. Once the structural fault is identified decisions can be made as to whether the anatomical structural fault can be corrected, alleviated or compensated for. If the underlying anatomical structural fault is addressed with equipment changes, remedial exercises, or surgery the faulty running form still may need intervention with gait training and re-education.

Movements performed on a daily basis repetitively can lead to the development of pathological structural abnormalities. Observations of runners who tend to keep their weight line posterior – closer to the rear than to the front of the foot – will use their hip flexor muscles and anterior shin muscles more. In contrast runners who keep their weight line forward can be observed to use more calf muscles. The repetitive activity of running miles and miles in a particular manner can lead to muscle imbalances. As muscles imbalances develop this could lead to movement faults or movement which deviates from the ideal standard. This is particularly true if the is pain involved.

Returning to training too soon after an injury a runner may be running with a low level of pain. Running in pain is likely to cause faulty movement. Even though the injury eventually heals and the pain is gone often the faulty movement pattern remains.

Excessive amounts of training can result in many miles being run in a relatively fatigued state. Fatigue leads to faulty movement. Excessive

amounts of training may result in the preferred running form that is considered relatively faulty.

This following case study is an example where the primary treatment intervention of slow motion video analysis and consciously modifying faulty running form can have a positive effect on treating an injury. A recent client a veteran runner presented with left heel pain focused to the lateral aspect of the heel which had troubled him for 6 months. Slow motion video analysis walking barefoot on a treadmill revealed asymmetrical movement, the left foot/ankle supinated early and excessively in comparison to the right side.



The working hypothesis was that this excessive movement of the left foot and ankle was correlated with the development of the left lateral heel pain. When he was an adolescent he sprained his ankle. An in-depth orthopedic examination revealed one foot was a half shoe size smaller than the other foot. Apparently the injury to his ankle/foot during his period of growth resulted in a difference in his foot size. It is impossible to correct his asymmetrical foot size. In this case the treatment intervention focused on the faulty movement, he was simply asked to consciously pronate more at toe off on the left. He was queued to take notice of the different sensation of his left foot compared to the right, and to strive to move the left foot to match the movement of the right.

Using a repeat slow motion video he was given visual feedback that he had successfully modified the faulty movement, and that his foot movement was symmetrical. He was encouraged to practice this new running form in a progressive way and to slowly build his running mileage

back to his baseline level of training. At follow up 3 weeks later his heel pain had decreased significantly, he had returned to his baseline of level of running mileage, and a repeat slow motion video his preferred walking running style was symmetrical.

This runner had faulty running form because of faulty underlying anatomical structure. The underlying anatomical structural fault could not be corrected, and we are depending on his ability to consciously compensate for this anatomical impairment by modifying his running form. Slow motion video feedback was the modality used to help learn this running form.

Assessing your running form can be accomplished by "feeling" how you run. Unfortunately, you may feel that you have good form, but if you or someone else could see your running form the assessment could be the running form was extremely faulty. Have someone video tape you running.