

What Is Gait?



Walking is a complex process by which we move about.
It is our convenient-though complicated
and labor-intensive-method of locomotion.

Much like each person has his or her own signature,
each person also has his or her own particular "walk".

This individual "walk" is known as a person's gait.

Massage by Lucy

Lucy Dean, LMT, NMT

This is your Gait...

The Gait Cycle is the process of taking a step for the purpose of locomotion. This cycle, generally taken for granted, can give much information as to the structure and function of the neuro-muscular system. Essentially, the Gait Cycle refers to the activity that occurs between heel strike of one limb (reference limb) and the subsequent heel strike of that same limb after the progression through three specific phases (described below). The three phases of this cycle each serve as indicators of the efficiency or abnormalities of the human anatomical structure.



The first phase is known as the Stance or Support Phase. It begins when the heel of your forward limb makes contact with the ground and ends when the toe of the same limb leaves the ground. This phase is further divided into three smaller components: Heel Strike, Mid-Stance, and Toe-Off. Heel Strike is when the heel of the foot of reference (usually the forward foot) touches the ground. Midstance is when this reference foot is flat on the ground and the weight of the body is directly

over the supporting limb of the reference foot. Toe-Off occurs when the reference foot no longer has contact with the ground, with the exception of the big toe.

The next phase is the Swing Phase, which begins when the reference foot is no longer in contact with the ground and is thus free to move. The Swing Phase can be further broken down into two components: Acceleration and Deceleration.

During Acceleration, the swinging limb catches up to and passes the torso. During Deceleration, the forward movement of the limb is slowed down to position the foot for Heel Strike.

The third phase is referred to as the Double Support Phase, during which, both limbs are in contact with the ground simultaneously.

This basic sequence is repeated almost without thought, propelling you where you want to go, all the while preserving your weight-bearing stability. This stability can only be maintained by keeping your center of gravity positioned directly above what is known as your base of support.



OK, We Walk Already... Why Do We Care?

These phases are simple enough for most people, but there are a variety of conditions and structural imbalances that often cause deviations in the normal gait pattern. These deviations, or abnormalities, can provide a wealth of information concerning structural irregularities, medical issues, and pain. Problems in the Gait Cycle can originate anywhere from the top of your head all the way down to your feet.

This Is Your Gait After An Accident: Any Questions?

Of course you have questions! Motor Vehicle Accidents, or MVAs, can wreak havoc on a person's gait, in a huge variety of ways. It's impossible to cover all the possible injuries resulting from an auto accident, but we'll take a look at some of the more common ones and the effects they can have on your gait.

Muscle spasms and muscle soreness are common denominators in practically every MVA, no matter how minor. It doesn't take much, either—muscle soreness can result from simply falling to the ground, as you hit the floor under your own body weight. Often, a person knows they're about to be involved in an accident moments before it happens. This still allows ample time for your muscles to tense up. Upon impact, your muscles are very suddenly stretched. This activates a powerful "stretch reflex" that contracts your muscles just as the intensely as they were forced to stretch. This may be the cause of the soreness and pain in the days (or perhaps weeks or months) following an accident.



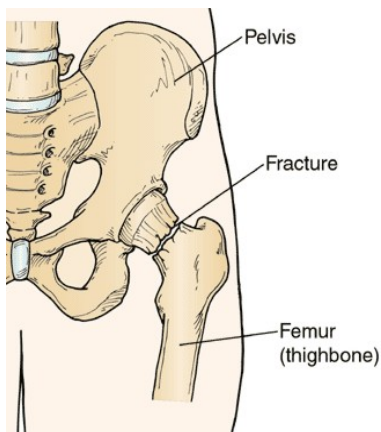
Sometimes the impact, or the bracing of the body in preparation thereof, can also send certain muscles into protective spasm. This is especially true for a muscle like

the psoas, a major pelvic stabilizer. This spasm prevents the destabilization of your pelvis and thus, your spine. If your psoas is shortened (contracted) on one side, your torso leans to the affected side. Your center of gravity is compromised, and the leg on your affected side is weakened, causing you to limp. This also leads to problems on your other side as those muscles are forced to compensate for the functions that the affected side can't carry out. Often, when someone is involved in an MVA, you have to use crutches, at least temporarily. While it's often preferable to be able to stand and walk rather than sit all the time, use of crutches isn't without some adverse consequences. First, it can take up to twice the energy to walk with crutches, depending on how well your legs are functioning. This is because your body has to rise in order for your legs to clear the ground completely, essentially forcing you to do a push-up for every step you take. The dramatic vertical fluctuation of your body's center of gravity destabilizes you and alters your gait. Also, depending on how long you need to use crutches, there may be a certain amount of atrophy in the muscles in your lower leg, primarily the peroneals, tibialis anterior, and possible weakening of the tendons that maintain the integrity of your ankle joint.

During an MVA, it is common to sustain broken bones. Your gait can be impaired, to varying degrees, or impossible, depending on which bones are broken. When there's a fracture in the bones of your neck and upper spine, you may become paralyzed and unable to walk, either temporarily or permanently.



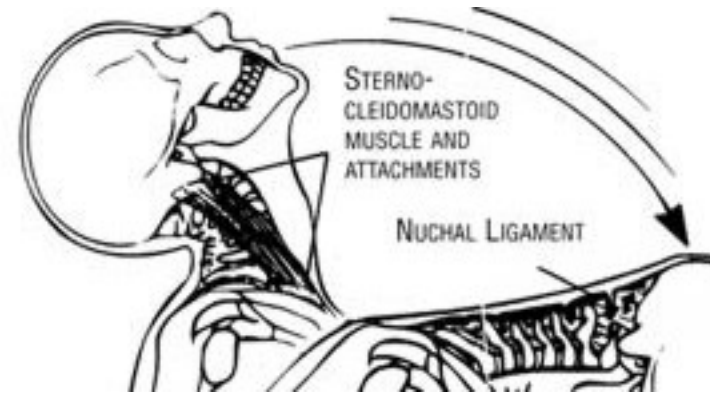
The calcaneus is the big bone that makes up most of the heel. If it breaks, it may be a few weeks before you can walk again, and even if you can resume walking, you may have very limited side-to-side movement. This will affect the Swing Phase (remember the Gait Cycle?), where your weight has to shift to the other side in order to lift that reference limb from the ground. You may experience restricted movement during the Gait Cycle and this may create more compensatory patterns on the non-affected side as that side has to take over the functions of the affected side.



In the case of a hip fracture (the proximal femur), it may take six weeks before your hip can bear any weight.

You may specifically experience a loss of function in your adductor muscles, which are the muscles that pull your leg in closer to the midline. Weakness in the adductors can

exacerbate tightness in the IT Band, the large tendon that runs down your outer thigh.



Whiplash is relatively common, particularly during a rear-end collision. Whiplash is when your neck gets jerked forward and then back again, quickly and forcefully. This often predictably leads to pain and/or stiffness in your neck or arm, but it can also cause a wide variety of other debilitating symptoms, like myalgias, headache, vertigo, and fascial pain. These can all affect your gait. When you're dizzy or in pain, you can't walk straight. While 65% of whiplash sufferers recover completely and roughly 25% experience some minor residual pain, for about the remaining 5-10%, the pain becomes chronic.

Among the more serious consequences of an MVA is brain injury, which can range from mild to severe, depending on the nature of your particular accident. You can also suffer brain injury without sustaining a blow to your head. Severe whiplash can have practically the same effect on the neurons in your brain, their neurological connections, and maybe even the conducting fibers themselves, as hitting your head. This can lead to emotional

disturbances, depression, an inability to multi-task, among other things. You can also experience impaired depth perception, and your balance may be unstable, sometimes permanently depending on the degree of brain damage you suffer.

OK, So How Can NMT Help?

When you walk in to be treated, part of the initial assessment is simply watching you walk. Many clues are evident right away. Pain causes people to walk differently from their norm. Limping, walking with casts on or with crutches, being stooped forward, dragging a foot, exhibiting "toe-out" (where your toes are pointed outward like a duck) and other abnormalities can clue the NMT practitioner in as to which muscles may be tight, weakened, spasming, or compensating. While further muscle testing is often required, examining a person's gait can serve as a good starting place.

Certain specific problems can be identified and treated. NMT can help the circulation needed for oxygen transport, tone weakened muscles, improve posture, reduce pain, increase range of motion and flexibility, and help you to regain proper posture and gait. Certain NMT protocols can even help you breathe easier.

It is also beneficial to receive chiropractic treatment for your accident injuries. NMT works very well in conjunction with chiropractic care. Distressed muscles can easily pull a chiropractors adjustment back out of place. NMT may decrease this problem. Muscles and bones should both be

treated for structural balancing, or traumatic acute injuries can become chronic problems.



This often involves pain, which is the last symptom to show itself, and, deceptively, the first symptom to disappear when you begin treatment. The goal of NMT is to help decrease pain, improve tissue, and help to balance your body structure. The advantage of NMT is that it can accomplish this naturally, holistically, and often completely, with no adverse side effects, and it's relatively cost-effective in comparison to medication or unnecessary surgery. The important thing is to go for help immediately after a car accident. Healing time can be greatly reduced.

A competent NMT practitioner may include a "homework" component in a client's care plan. This involves a simple "assignment" or two between every session. These assignments can include certain movements, exercises, stretches, increased water intake, or simply to pay more attention to your body and which actions make you hurt worse or get better. This puts you, the client, in control of your own health and health care, which is the way it should be!

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