# DVRT Restoration: Gait

*"According to Pr Janda, upright posture is defined functionally in single leg stance since gait is our most fundamental function and 85% of normal cadence gait is on a single leg. Modern lifestyle involves a preponderance of constrained, seated postures along with reduced walking volume. It is estimated that for most of our 100,000 years we have taken between 20,000-35,000 steps/day. Today the average western adult takes only between 5000-8000 steps/day."-Dr. Craig Liebenson (1).*

As we have toured the world, one of our favorite questions to ask professionals is, "what is the MOST fundamental human movement?" I'll be honest, the answers are fascinating! From very common gym exercises to extremely specific and the smallest of human motions. The answer as you can tell from the Dr. Liebenson quote above is walking. Oddly, this is RARELY the answer we hear.

We don't ask this question to confuse, or show people they are wrong. It is to obtain a shift in their thinking. More times than not the answers we do receive are reflected of a very specific focus on the gym when we think about movement and NOT the real world. What we do in the gym SHOULD have carry over to the real world. Sadly though, we often don't have the means of measuring our success of real world performance because most are not trained in how to analyze the most fundamental human movement….walking.

## What We Miss In Gait Training

We discussed quite a bit how we would help the students of Restoration gain better understanding of gait. The challenge we realized was immense to do even in a course like this as gait analysis can be at least a semester of physical therapy school. However, we did believe it was important to give you a working knowledge of gait. Even if it simply spawned your interest in learning more about gait our goal is accomplished.

The other motivation for us to discuss gait is the popularity that carries has gained in functional training. The general concept of carries is a great one. Reflexive core stability, upper back strengthening, and in certain cases grip strength building. However, what RARELY gets discussed is the impact of different carrying positions and the impact upon one's gait!

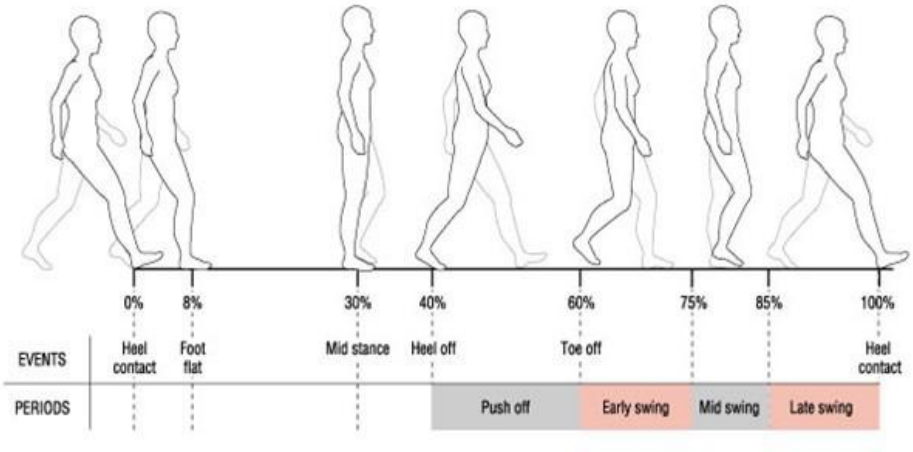
Most would agree with physical therapist, Gray Cook's philosophy that we "don't load dysfunction". We use this philosophy when we look at many of the foundational movement patterns, yet,

# An Overview of Gait

tend to completely ignore it when it comes to loading gait patterns. That is because we have to do a better job of providing people a good foundational understanding of gait. [1]

"Human ambulation or gait is one of the basic components of independent functioning that is commonly affected by either disease process or injury. (2)"

With this section on carries we want to open your eyes to the complexity of gait so that you can see that these movements and exercises are complex in nature and the importance of maintaining correct posture and propulsion under load.




Gait actually involves all three planes of motion, its a true tri-planar movement.

You do not have to have extensive knowledge of the components of gait but you may want to have a base level understanding of what involved when people are talking about gait and when you are initiating carries or any exercises that involved locomotion.

Gait analysis can get quite complicated and takes an extensive understand of how the body moves so we need to break it down in a way that is easily to understand and to extrapolate the key components for this section.

The gait cycle which is begins as the heal of one lower extremity, lets say the right foot contacts the ground, and then ends when same foot makes contact once again. So that is one full cycle of gait.

The gait cycle has two phases, stance and swing phases. In normal gait the stance phase constitutes about 60% of the gait cycle. The swing phase constitutes the other 40% of the gait cycle.

Now what is the stance phase? We are talking about the right lower extremity or the right foot, and lets say that foot is in contact with the ground. The stance phase is the time that foot, or the right foot since that is the foot we are talking about, is in contact with the ground. So what about the swing phase? The left foot would then be in the swing phase, so the swing phase is talking about the extremity that is not in contact with the ground.

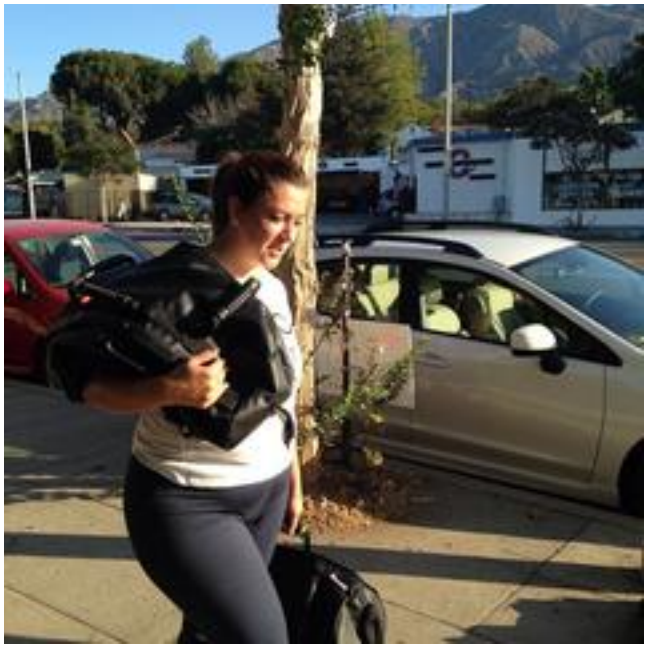
So now that we have those two phases of the gait cycle those phases then can be broken down into their components. Again, this can get complicated but it is necessary to show the complexity of the gait cycle to see how complex loaded movements can be when involving gait such as carry.

So the stance phase can be broken down into five components:

**Heel Strike:** this is the beginning of the stance phase where the heel makes contact with the ground.

**Foot Flat:** occurs right after heel strike when the sole of the foot makes contact with the ground. This is where the loading of the body starts to occur.

**Midstance:** This is where you body passes directly over the foot in contact.



**Heel off:** The heel leaves the ground.

**Toe off:** Toes are in contact with the ground of the foot the is in contact with the round

Sometimes you will here these as initial contact, loading response, mid stance, terminal stance or pre swing, these are interchangeable, the traditional terminology is just easier to visualize and for this content a bit easier to understand.

The swing phase is broken down into three parts:

**Acceleration**: When the toe leaves the ground
**Mid-swing**: When the lower extremity passes directly below the body
**Deceleration**: When the extremity is decelerating in preparation for the heel strike.

So now that you can see the different phases of the gait cycle one can start to understating the complexity of the movement that sometimes might assume is a rather easy thing to do.

So just like you clear people to lift over head or squat with load you might want to start clearing people to perform loaded gait exercises such as carries and possible even walking lunges.

Some influences on gait pattern can include pain, posture, flexibility, bas of support that being too narrow or too wide, leg length, gender, pregnancy, obesity and age.

So what are you looking for?

Really you are just watching your client walk, is there any thing that grossly stands out? I am not asking you to assess this down to the littlest of details as that might not be in your scope of practice, but you should know if your clients should loaded and perform walking exercises without possible harm to them.

There are three main areas you want to look at and again if you see anything that grossly stands out you might want to supplement an other activity or exercises for them. We are not asking you to diagnosis we just are asking you to "clear" the individual for loaded carries and movements.

So what are you looking for? Well you will want to look at the foot/ ankle, knee, hip/pelvis and then the trunk to see if there is anything that might become more apparent when loading the body.

**Foot/ Ankle:** Are you seeing a foot slap or toe dragging and or lack of control of the foot when walking? Do both sides appear to be about equal when ambulating? Any significant differences occurring side to side?

**Knee**: Is there excessive knee flexion or more bend in the knee? Is there a lack of knee flexion or bend in the knee? Again looking for gross differences side to side.

**Pelvis/ Trunk:** Do you see any hip hiking, excessive rotation occurring? Again, looking for things that are grossly obvious.

So if you do see things that look out of place or gross asymmetries side to side, you may not want to add in loaded carries or loaded movements that involved walking until you work from a more sound base.

No one expects you to diagnose anything, just know when maybe certain exercises might not improve the overall movement efficiency of a person. Just as we wouldn't want to load someone in a squat, lunge, hinge, or any functional pattern with dysfunction, we want to be careful about how we load gait.

The most obvious means in which we are training gait is via loaded carries. However, ALL of our DVRT Restoration concepts, progressions, and methods have a DIRECT impact upon gait. So, if you do find that your client is not benefitting, or shouldn't be performing carries right off the bat don't feel badly. Trust if you work them through much of the DVRT Restoration progressions their stability, strength, and gait performance will improve!

## Better Than Deadlifts?

Something that frustrates us greatly in the fitness industry is the blind adherence that any specific exercise is absolutely necessary for strength and fitness. That is because one exercise may actually aggravate one individual while not another. That is because no matter how we careful we are in assessing and screening people's movement, the reality is that movement is so complex and people's tolerance and capacity so many different training stressors is so individualized.

If you have a system though you can always make good training accessible to as many people as possible. In fact, Dr. McGill, is often adamant about people being aware of one's spine ability to be under a variety of loads, *"Determining the tolerance and capacity of each individual is paramount to ensure that a given exercise dosage is matched to the client. Each individual has a loading tolerance which, when exceeded, will cause pain and ultimately tissue damage. For example, a patient may tolerate a birddog extension posture but not a superman extension over a gym ball which imposes twice the compressive load on the lumbar spine. A person's capacity is the cumulative work that he or she can perform before pain or troubles begin. An example, someone who can only walk 20 meters before pain sets in has a low capacity. This kind of person won't benefit from therapeutic exercise that's performed 3 times per week; instead, he or she has a better chance with 3 sessions per day. Corrected walking in 3 short sessions per day, never exceeding the current tolerance and capacity, is an alternate approach to building capacity. Typically, patients will progress to 1 session per day as their pain-free capacity grows and then be tolerant of a good session with their clinicians."*

Sometimes the answer to such issues is finding BETTER methods of accomplishing the same goals. It might surprise some coaches to hear that you do NOT have to deadlift heavy to achieve the results that deadlifts offer you. Yes, a VERY interesting by Winwood, et al, found *"The farmers lift may be an effective lifting alternative to the deadlift, to generating more anterior-propulsive and vertical force with less stress to the lumbar spine due to the more vertical trunk position (3)."* That is really interesting since the deadlift often gets promoted as one of the most functional exercises we see that properly performed loading carries could offer the strength and less of a beating to the spine that heavy deadlifts might cause.

## The Ultimate Sandbag Solution: Watch Here

We often tell people that we are NOT in the sandbag business. Of course that gets us really confusing look, but we explain to them, we only care about one thing for you, results! If we could get a BETTER result with something else we would, trust me, we have in the past.

With that said though, we think it is also powerful when you hear the voices of other great coaches in the industry share very similar ideas that we do in DVRT Ultimate Sandbag Training. Whether or not you are aware, there is a revolution in this industry. One that care less about how you look when you train and more with the results you get FROM the training!
That is one reason I was really happy to see this article by strength coach, Dan John, resurface (you can read the full thing here). He calls it Anaconda Strength, sounds a bit scary right? Like a little "Snakes on a Plane" right?!

Actually what Coach John is referring to is what many of you in DVRT Ultimate Sandbag Training may already know. Using TENSION is what makes us strong and what can build crazy real world and gym strength! It is one of the REAL reasons we romanticize the idea of manual labor.

When manual labor was far more common than checking your Facebook status we saw strength completely differently. You could imagine what happens when you carry things all day, when you lug heavy, awkward objects around and REALLY work with your hands. Something that is almost impossible to replicate in the gym....almost.

*"The best movements include snatch-grip deadlifts, Zerchers, loaded carries, sled and sandbag work, kettlebell cleans, and thick bar exercises."*

You will want to use these A LOT! One of the benefits we didn't talk about was their impact upon your breathing. You will notice it is kinda hard to breathe. Why?

When the core creates tension, your breathing must become more shallow and efficient. If you REALLY want to build that crazy type of endurance that athletes like fighters and tactical athletes are looking for you are FAR better off using long duration Front Loaded exercises like Up Downs, Squats, and Lunges than you are oxygen masks!

You see it is a BIG issue right now with high intensity training. People are picking exercises that DO NOT build that crazy real world strength because high tension exercises KICK YOUR BUTT! Going 30 seconds of high tension like the DVRT Ultimate Sandbag Training drills I just mentioned is VERY different than let's say 30 seconds of burpees!

I Warned You!!!

Now you might EXPECT the next recommendation to come from the "sandbag guy", but it isn't my words! Coach John has a very strong suggestion for your super strength…

"An alternate way to train anaconda strength – perhaps the best way to train it – is bag carries...The best training tool is to simply bear hug the load and walk away. You can quickly feel the odd breathing pattern that you need to walk and hug."

That tension you create in the upper body is SOOOO important. You don't want to simply walk with the Ultimate Sandbag and survive. You want to "break the bag apart" as hard as you can! All of a sudden you feel your lats, core, and pretty much every muscle you have go into overdrive!

How can something so simple work? Well, why don't you try this workout from Coach John?
Bear crawl for 50 yards.

Stand up, grab the bag, and bear-hug for another 50 yards.

Now, we at DVRT Ultimate Sandbag Training have of course other evil, er, I mean effective ideas for you. Some of you may not have 50 yards, some of you just might find the need to make this a bit more challenging than you think it is.
So, try this....

**60 Seconds Bear Crawl with Forward Drag (Ladies aim for a 15 pound Core Ultimate Sandbag, Guys, a 25 pound Power Ultimate Sandbag)**

## DVRT Carry Progressions: Watch Here

**Bear Hug and Walk for 60 seconds (Ladies aim for a 60 pound Strength, Guys, a 100 pound Burly Ultimate Sandbag)**

**Rest ONLY as you need and see if you can go for 15-20 minutes. You will find that your body is DONE and no ONE thing is tired. Your body just gets this overall feeling of WORK!! THAT is how you know you are building the type of strength that is going to get you serious results in and out of the gym.**

## Bear Hug Walks



# Double Farmers Walks

# Front Loaded Walks

## Fist Carry

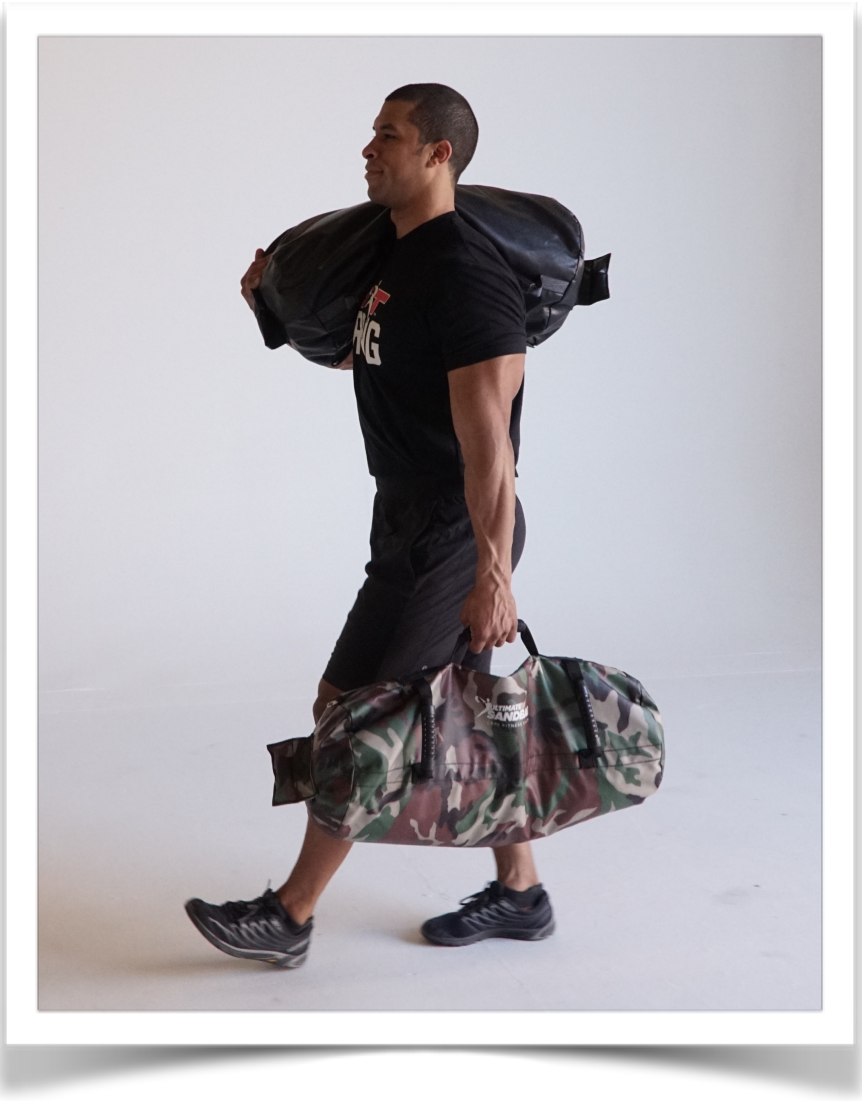
# Single Arm Suitcase Carry

# Single Side Shoulder Carry

# Overhead Press Carry

# Overhead Snatch Carry

# Cross Pattern Load Shoulder/Suitcase Carry



Any of the holding positions just mentioned can be made more challenging by performing a march instead of a walking pattern. Marching increases the instability of the body position, specifically lateral stability. However, it also teaches the individual to drive through the ground with the stance leg and to focus upon driving force from the ground to lockout of the glut. This gives the pelvis stability and strength.

Each carry and marching position should be looked to be performed up to 2 minutes of work at a time. Once this is achieved we can raise the level of performance by moving to various holding positions, load, or going into the marching movements.

**References:**


1. Liebenson, Craig, “What is the Fundamental Human Function?”, December 18, 2011, http://www.craigliebenson.com/what-is-the-fundamental-human-function/
2. O’Sullivan, S. B., and T. J. Schmitz. "Physical rehabilitation 5th edition." FA Davis Co (2006).
3. Winwood, Paul W., et al. "A biomechanical analysis of the farmers walk, and comparison with the deadlift and unloaded walk." International Journal of Sports Science & Coaching 9.5 (2014): 1127-1143.