Collaborative Care for Better Outcomes

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LOWER EXTREMITY REVIEW

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GAIT ANALYSIS

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the fundamental understanding of normal human locomotion, identification of pathologic deviations and the correlation between what we do and how it effects complex joint kinetics/kinematics/energy consumption and balance demonstrates the profound impact that the study of human motion has had on orthotics/prosthetics. Everyday we make clinical decisions based on our gait analysis. Component selection, design features, alignment, and material selection are all contributing factors to the optimal outcomes we strive for. The relationship is inextricable and profound. ler

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…In Running

Weekly I am posed the question from patients, physicians, therapists, and coaches as to whether I perform "gait analysis." The simple answer is YES, as I am keenly interested in the unique movement patterns of all of my patients. As a sports medicine clinician, I need to understand an athlete's asymmetries and weaknesses that may lead to pathologies. This is particularly true for runners.

The part that becomes confusing is what the asker's expectations are of what this term means and how this process is carried out. The common practice of having a runner hop on a treadmill and watching them from behind is not gait analysis and should never be touted as such. Understanding the runner's movement patterns through an organized approach is the only way to help them achieve metabolic efficiency and decrease the risk of injury.

By definition, gait analysis is the systematic study of human motion, using the eye and brain of the observer. This may be augmented by instrumentation that may help measure the movements and mechanics of the body.

The process begins with GREAT communication. A thorough history will help the physician understand what the athlete's goals are. Once the goals are established, the clinician must listen to the patient's story to understand where they have come from and why they are seeking your expertise.

To truly understand a runner's gait, a simple dynamic assessment is critical. Asking the runner to perform simple tasks of single leg balance and squats are key to uncovering areas of weakness and asymmetries. Typically, these inequalities are quite glaring and the source is usually higher up the kinetic chain from where the pathology is felt. The great aspect of this is that the runner can actually feel and see their deficit if we are utilizing a mirror or video recording.

While not always realistic, the best way to analyze a runner's gait is to observe them when they do not know they are being watched. Sometimes even catching their movement patterns when walking into the clinic can be quite informative.

Finally, it is imperative to understand how the runner uses stability, power, and strength when running to analyze their form. The best way to do this is to watch them run from a multitude of perspectives outside as opposed to on a treadmill. Motorized treadmill running takes quite a bit of acclimation and may not truly assess the individual's form.

The goal of gait analysis is to tie in all of the above information in order to document and quantify objectively normal gait, functional deficits, and put forth a therapeutic plan. ler

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…In Falls Prevention

Walking is a complex motor task generally performed automatically by healthy adults. Yet, by the older adult, walking is often no longer performed automatically. Older adults require more attention for motor control while walking than younger adults. Falls, often with serious consequences, can be the result. Gait impairments are one of the biggest risk factors for falls. Several studies have identified changes in certain gait parameters as independent predictors of

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