

BRC Gait Analysis Lab

Gait Analysis for Injury Prevention and Performance

This analysis combines elements from the Injury Prevention and Performance programs described in the previous presentations. If you have not looked through these, simply press the space bar or the right arrow button at the bottom of this screen to learn what is involved!



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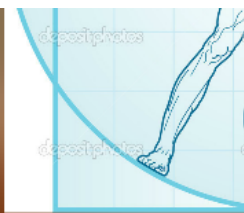
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Step 1

outdoor video recordings



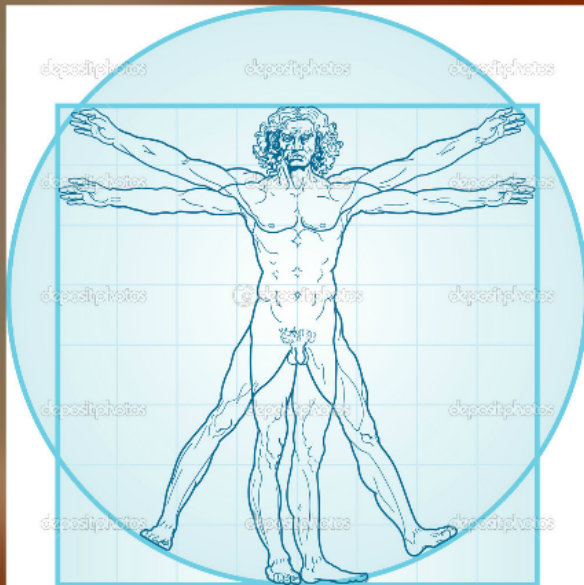
When it comes to analysing form for improved performance, capturing how one runs outdoors, as opposed to on the treadmill, becomes most important.



Participants in the Gait Analysis for Injury Prevention and Performance first meet at a track in Wellesley. The outdoor recordings will take 15-20 minutes, after which there is a short drive (5-8 minutes) to the lab room for the indoor recordings and measurements.

Step 2

static posture assessment



Running form, and how we move in general, is largely determined by posture. Soft-tissue imbalances or distortions adjust the positioning of our skeletal system and predetermine movement patterns. During this step several tests and measurements are done regarding posture and its effect on the lower body, including:

- navicular drop test
- girth measurements
- standing posture assessment
- leg length discrepancy test

Step 3

Optogait



On to the treadmill. Here right vs left leg measurements are gathered through 2 HD 30 mps cameras and the state-of-the-art Optogait gait analysis system. Measurements taken in this step include:

- range of motion differences at the hip and knee
- stance time right vs left
- flight time right vs left
- initial contact right vs left
- dynamic posture while running

Step 4

Soft tissue Assessment

In most cases, by step 3 the causative factors to a current or potential future injury have become quite clear. In this step we begin the process of determining the initial corrective actions.

Improving asymmetrical soft-tissue tension of the postural muscles of the shoulder, back, and hip is often the first process the runner needs to work through.



Special care needs to be taken such that this work is done on true causative factors to a current or past repetitive motion injury.

This process can take several weeks of daily work.



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Step 5

Flexibility and range of motion

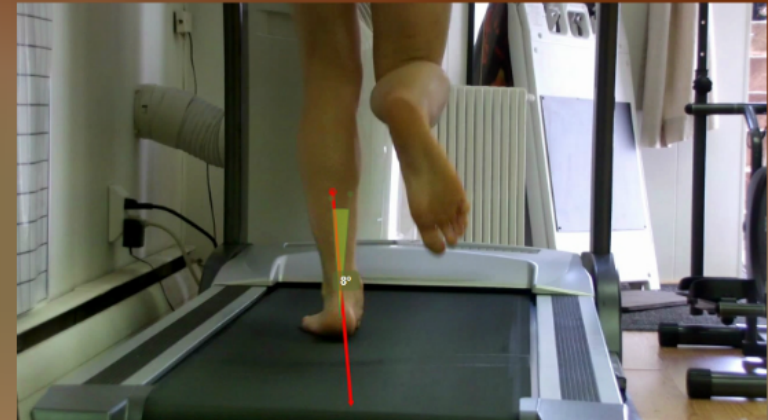


In this step we begin the process of refining corrective actions. By simplifying attributes of the gait analysis to basic movement patterns while standing, sitting, or lying, we often learn where specifically we need to spend time relaxing, loosening, or lengthening soft tissue to allow for more balanced movement while running.

Step 6

dynamic posture assessment

Body movement patterns are next analyzed through basic movements, rotations and right to left comparisons of upper and lower body excursions.



Step 7

Strength, power, leg stiffness



Through a series of body weight exercises, and through the use of the state-of-the-art Optogait system, comparative measures are made to identify areas in need of improvement. Areas addressed here are related to stride power, stride efficiency, muscle stiffness, and lower body elasticity.

Step 8

Review session

Bio-Mechanical Video Golf Analysis Results

Fig. 10.1. 1. Impact of the program on the swing. 2. The color of the cell indicates the degree of deviation from the target. 3. The color of the cell indicates the degree of deviation from the target. 4. The color of the cell indicates the degree of deviation from the target.

Category	Target	Current	Delta	Color
Backswing	110	115	+5	Green
Downswing	100	95	-5	Red
Full Swing	100	95	-5	Red
Impact	100	105	+5	Green
Follow-through	100	105	+5	Green
Ball Flight	100	105	+5	Green
Swing Path	100	105	+5	Green
Clubhead Speed	100	105	+5	Green
Swing Time	100	105	+5	Green
Swing Length	100	105	+5	Green
Swing Angle	100	105	+5	Green
Swing Plane	100	105	+5	Green
Swing Tempo	100	105	+5	Green
Swing Rhythm	100	105	+5	Green
Swing Balance	100	105	+5	Green
Swing Stability	100	105	+5	Green
Swing Consistency	100	105	+5	Green

7-10 business days after the recordings and measurements are completed, participants return for a 20-40 min session to review the video and test results.

Step 9

Homework

At the review session participants also receive their homework - a detailed outline of the recommended next steps, complete with pictures and videos where needed. Clients are urged to ask any and all questions as our goal is to have each runner leave with a clear idea of the tasks ahead.



Being consistent with the recommended corrective actions is often the biggest barrier to ones success.



Generally next steps involve new habits and routines that the runner can do on their own at home. In some cases, however, it is recommended to see a massage therapist, physical therapist, orthopedist, or other health practitioner. If this is the case we will direct you to the best fit for your based on the results of your analysis.

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Step 10

Check-in Sessions

Often times a 40-60 minute session is needed 6-12 weeks after the initial gait analysis. During this session additions to homecare, adjustments to exercises, or further suggestions are given based on the results of the homework and the effect this work has had on the gait.

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