

Running Evaluations and Analyses

Visit our [AREF Department of Sport Medicine page](#), and discover what you can become part of. We provide motion capture-backed running analysis; you will get profound insights on your running technique.

Estimates show that about **70%** of runners eventually develop some type of injury, and nearly **50% get injured each year**. Many of these injuries may appear minor and start gradually; they can become more serious over time when not properly treated.

Small deviations from good technique can cause injury or otherwise decrease overall running performance. This is inherent to the repetitive nature of running.

Good running technique is important to prevent needless injuries. But what defines good running technique?

To answer that question we have created a database of the biomechanics of uninjured healthy runners. By comparing runners to this database, we can detect unusual patterns in their running style. Early detection of any potential issues will prevent unnecessary injury and keep you running well.

What does a Biomechanical Run Evaluation involve?

We start by gaining a history of current and previous injuries alongside the amount and type of training that you are doing. You answer and provide additional information related to your running/athletic history. We take into account goals and forthcoming events.

We offer two levels of analysis. Standard and advanced evaluations are offered by AREF. Both evaluations utilize our lab's instrumented treadmill to measure your forces and contact information. The advanced analysis includes wearing a set of reflective markers to determine your specific body positions at all times. The advanced review therefore contains additional information in your report. We include digital video recordings of your motion at both levels and our expert's insights related to your observed motion.

We conduct a physical assessment to identify your current status and establish a foundation. We look for joint restrictions, tight muscles or areas of weakness that may affect your movement patterns. We utilize our 13 high-speed 3-D motion capture system to record and analyze your running gait on our instrumented treadmill. We provide certified

athletic trainer instructed functional stretches and drills specific to our initial review. And end your visit with us, discussing a brief overview of your running form and provide the initial steps to improve your performance or reduce your chances of injury. A full report and review follows within 10 days.

What you get!

- An expert's evaluation.
- Recommendations, observations & training advice.
- A complete report with your results.

What's measured?

We measure the following running parameters:

Standard Evaluation includes;

- Ground reaction forces
- Stride length
- Stride width
- Cadence

Advanced Evaluation includes, all of the above plus the following;

- Pelvic obliquity
- Pelvic tilt
- Pelvic rotation
- Knee angle
- Ankle flexion
- Foot rotation
- Foot contact angle
- Hip joint positions

In addition, the report includes observations and recommendations from our running expert as well as video of your 3-D model. Of course, our expert will explain what the various parts of the report mean in layman's terms. Our run evaluations both include our professional performance assessment to identify overall functional motion status. This assessment provides useful functional information to improve performance and reduce injury potential.

The running assessment

We offer a unique running assessment service where runners of any skill level can come and get their running style analyzed.

Our experts will evaluate your results and give advice on how to improve your running technique. Your results will be given to you in a comprehensive report which will be accessible on-line.

The analysis takes place in the AREF Biomechanics Laboratory in Gulf Breeze, FL. The entire session takes approximately 50-55 minutes.

Sound interesting?

Included in the assessment

- A full-body assessment of your running style, using 13 Vicon motion capture cameras at a capture rate of 240 images per second.
- A comparison of your running biomechanics to our database of uninjured healthy runners.
- A scientific and extensive web based report of the results of your running assessment.

Advanced motion capture technology

Our movement lab is equipped with advanced motion capture technology that measures movements in 3-D space. This is the same technology that is used by film studios to animate 3-D characters in the entertainment industry for game and movie animations. The technology is used by AREF to discover ways to improve performance and reduce injuries.

Additionally, our camera system uses optical motion capture and passive markers, which offers greater accuracy than traditional video analysis systems.

How it works – the practical bits

A test session takes 50-55 minutes from the start to finish:

1. When you have booked a session you simply show up at AREF, where you will meet our experts and a technical assistant.

You will change into your training outfit, and perform several functional tests. Then have a total of 44 reflective markers attached to your body, if you have chosen the more advanced analysis.

2. You will then be asked to run on a treadmill to warm-up for 5-7 minutes. The speed will be adjusted to suit your preference, and find the rate at which you run

most days. Additional speeds are tested during the collection and are selected based on your performance level.

You will run for 5-10 minutes while your running motion will be recorded by the motion capture system. Then, the speed will be reduced for a brief cool-down run.

3. When you finish running, the motion data will be analyzed by software to generate a biomechanical model and produce a report full of charts and tables.
4. Our expert will provide a brief summary of the data and provide some initial data before you depart.

When our experts finish data processing and analysis, they will make a final evaluation and the report will be uploaded for online Internet access.

What to wear

- Tight running clothes are best for the advanced evaluations, as loose clothes will cause inferior analysis because of the potential for marker interference.
- Female runners are recommended to wear a sports top of some kind, if the advanced evaluation is selected.
- Running shoes you use most.

What does it cost?

We offer two options; a run evaluation based on the force platform data and qualitative video review, and a more in-depth evaluation with a full lower extremity marker set utilized.

Both evaluations include a certified athletic trainer movement assessment before the run portion of the visit.

The costs are \$295 for the standard evaluation, and \$495 for the advanced evaluation.