Run3D

WELCOME TO RUN3D

A spin-out from the University of Oxford

OBJECTIVE & ACCURATE –

3D GAIT ANALYSIS FOR ATHLETES

www.run3d.co.uk

3D GAIT ANALYSIS – SCIENTIFIC AND ACCURATE

What is 3D gait analysis?

3D gait analysis uses infrared cameras to accurately measure the positions of markers attached to a person's legs. This data is used to create a 3D model of the person moving and sophisticated software then calculates joint angles and velocities at the pelvis, hip, knee and ankle.

These values are compared to a database so that the person's unique biomechanical profile can be calculated. Additional measures of the person's flexibility, strength and alignment can also be compared to the database, enabling a clinician to determine the cause of any abnormal biomechanical function and optimise the treatment plan.

3D gait analysis technology is used in Hollywood for animations and by Universities for biomechanical research.

Why is 3D gait analysis important?

The body functions in three planes, which combine to form a complex set of movements and rotations. For example, when the knee bends, it also rotates and moves towards the other leg. In order to properly understand biomechanical function, it is important to measure all of these movement patterns and 3D gait analysis enables us to do this.

Conventional video analysis only records motion in 2D and does not measure the rotational movements of the body. Furthermore, video analyses are usually subjective and not sensitive enough to detect the subtle abnormalities that can lead to injury.

Run3D uses the most advanced form of gait analysis available. The data allows our clinicians to accurately identify the root-cause of injury and recommend the optimal treatment pathway.

RUN3D – WHAT WE DO AND WHY WE DO IT

Run3D is an Oxford University spin-out company and our aim is to bring advanced 3D gait analysis to everyone. All our clinicians have been expertly trained to use our technology and will be able to use the results of your assessment to recommend the optimal treatment pathway for you.

There are two levels of assessment:

- **3D Gait Analysis:** An accurate 3D assessment of your walking and/or running in order to identify any underlying dysfunction.

- **3D Gait Analysis and FASTest:** An accurate assessment of your walking and/or running (as above) AND objective flexibility, alignment and strength tests.
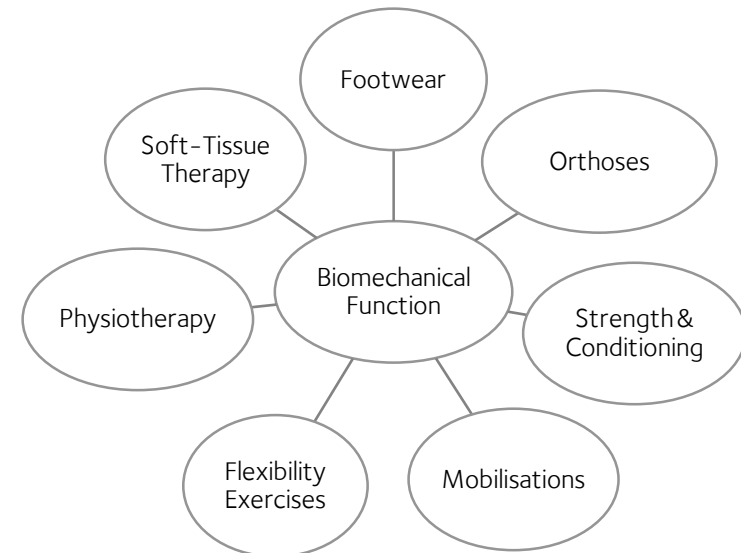
Why do we take all these measurements?

Biomechanical function (the way your joints move and rotate) is a combination of your underlying alignment, muscular strength, muscular flexibility and neuromotor control (the way in which the muscles are recruited). By taking scientific measures of these parameters and combining them with the results of your gait analysis we can fully understand why you are moving in a certain way and this is the first step to putting things right.

What do we do with the results?

The results are used to recommend the optimal treatment pathway for your injury. Depending on what we find, this might be a referral for Physiotherapy, a customised rehabilitation programme and/or footwear advice.

Tests Performed	3D Gait	3D Gait & FASTest
3D pelvis, hip, knee and ankle joint kinematic testing (sagittal, frontal and transverse plane angles and velocities)	✓	✓
Objective flexibility testing (hip flexor and internal/external rotator muscles, ITB, hamstrings, quadriceps, gastrocnemius and soleus, 1st ray)	✘	✓
Objective strength testing using dynamometer (hip flexor, internal/external rotator & abductor muscles, hamstrings, ankle inverter/everter muscles)	✘	✓
Objective alignment testing (static rear-foot and tibial alignment, Q-Angle, leg length, arch height)	✘	✓
Identification of biomechanical dysfuntion by comparison of all results to normative database	✓	✓
Custom report and recommendations (see opposite)	✓	✓

RUN3D – SOME THINGS YOU MIGHT LIKE TO KNOW

How can a Run3D assessment help me?

Our assessment is far more advanced than any video-based analysis and enables us to:

- **Accurately identify the root-cause of a musculoskeletal overuse injury and recommend the optimal treatment pathway to the problem.**

- **Recommend evidence-based rehabilitation protocols, foot-wear and orthopaedic solutions on the basis of precise data**

- **Prevent musculoskeletal injuries before they occur by identifying and addressing biomechanical risk-factors.**

Who is suitable for 3D gait analysis?

3D gait analysis can be beneficial to a wide-range of people, including:
- Runners & Triathletes
- Those with hip or knee replacements
- Anyone with difficulty walking
- Those involved in a sport that includes running & walking (rugby, football, golf)

What happens if I am already seeing a clinician?

That is not a problem. We will work with your clinician and provide him/her with a report based on the analysis. The Run3D assessment can be seen as a form of investigation that can help to accurately and objectively diagnose the extent of any dysfunction. We are happy to discuss the assessment and accept referrals from all clinicians.

The novelty of infrared technology means that the assessment generates a lot of media interest. The Run3D service has featured in many national magazines, including:

The Sunday Telegraph — Run3D's CEO Dr Leitch advised on an article entitled 'The Secrets of Mo Farah's Success'.

RUNNER'S WORLD — The Run3D service was listed as Number 1 in the Runner's World hot-list

220 Triathlon — Run3D enjoyed a two-page feature in the UK's leading triathlon magazine.

women'srunning — Run3D's *"ground breaking 3D biomechanical running analysis"*

theguardian — Run3D was featured in the Guardian online in Sam Murphy's review of how to train like an elite athlete.

BBC — Run3D's first Oxford clinic was opened by Olympian Jo Pavey in 2011. The opening was shown on BBC Oxford and BBC South-West news.

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What are people saying about us?

'Run3D identified the root-cause of my injury, now I'm armed with the tools to rectify it' Jo Pavey, Team GB

'My Run3D assessment was one of the most valuable two hours of my career to data' Luke McKenzie, 6 x Ironman Champion

'The Best Gait Analysis' Runner's World Magazine

'After 30 mins, Dr. Leitch and her computer identify the problem and tell me what is causing it - that's the first step to putting it right.' Triathlon 220

'For anyone serious about running, about staying injury free and enjoying running for life, I'd highly recommend a session with Run3D.'
Fiona Bugler, Blogger and Journalist