

MotionMetrix[®]

An abbreviated Case Study of Abbie Johnson: MotionMetrix

The Before

Abbie is a healthy 22-year-old former elite swimmer who runs for fun and fitness. In January 2020, Abbie's running gait was analysed using MotionMetrix to help her identify areas of weakness. MotionMetrix instantly highlighted several key areas for Abbie to work on. She also scored an overall performance score of 'C' - on the MotionMetrix 'A++' to 'D' scale.



MotionMetrix gait analysis is quick and evidence based as it compares users scores to 600 elite athletes who ran at the same speed.

Abbie had a poor Running Economy score of C. This score is calculated by working out the amount of energy it takes to move 1kg of Abbie's mass, 1 metre. In this instance 3.23 Joules/kg/m. Her stride parameters showed a high ground contact time, large overstride, too much lateral and braking force plus not enough vertical force.

As MotionMetrix identified these areas as needing improvement, Abbie was then able to adapt her training to make her running more efficient. She incorporated some plyometrics (eg box jumps, squat jumps) and skipping to increase her reactive strength which in turn helps to reduce ground contact time. To reduce her overstride, she worked on creating more range of motion in her knee and hip flexion. She worked on knee flexion exercises with the resistance band (e.g. knee-hikes) as well as step-ups. She also now does yoga classes to help increase her hip mobility.

The After



After working on the areas highlighted above, Abbie ran again on MotionMetrix 9 months later, in September 2020. Her efficiency score went from a 'C' to a 'A+' meaning Abbie now expends a lot less energy for the same speed and distance. Her vast improvements can further be seen in her contact time (down from 0.312s to 0.274s), overstride (down from 173mm to 94.4mm), lateral forces (down from 0.041_{FV} to 0.027_{FV}), braking forces (down from 0.095_{FV} to 0.063_{FV}) and vertical forces (up from 1.94_{FV} to 2.5_{FV}). Being able to show Abbie the comparisons between her two runs has given her the confidence that her training has helped improve her running efficiency and she is now motivated to continue her training and make further progress.

Mar-Systems

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https://www.mar-systems.co.uk/motionmetrix_3d-running-analysis/

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Or telephone +44 (0)1344 623883

Book an Online Demonstration or come and see us when Covid Allows.