MotionIQ

ALTIS x VueMotion

FREQUENTLY ASKED QUESTIONS

WHAT EXACTLY IS MOTION-IQ?

Motion-IQ is a partnership between ALTIS and VueMotion. The technology is a video-based tool that uses computer vision and machine learning to help coaches understand kinematics of movement, and apply the data to inform their coaching.

WHAT IS THE DATA GOING TO BE USED FOR?

Simply put, the Motion-IQ data will help you improve the performance and reduce the injury risk of the athletes you work with. When you have access to accurate biomechanical data, you will understand what your athletes strengths and weaknesses are — and be able to use this information to improve the quality of their movement — and thus positively affect their health and performance.

Secondary to this, we will use the collected metrics to build the world's largest database of sprint biomechanics data, which will help us all to better understand norms within each population. We have identified 30 groups, and will be establishing norms for each. This way, you will be able to see where your athletes fit in comparison to the rest of their peers all around the world.

HOW DOES MOTION-IQ WORK?

Motion-IQ has been designed to allow coaches to use their own smartphone or GoPro device to capture and analyze video. Motion-IQ is a cloud-based service that allows you to capture video from your own device and upload it to the platform for analysis.

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WHAT EQUIPMENT DO I NEED TO USE MOTION-IQ?

Motion-IQ only requires a smartphone with 4K and 60fps capability, a tripod, and 5 training cones. And some athletes!

HOW CAN MOTION-IQ BENEFIT MY ATHLETES?

Through better understanding how they run, you can better understand what you need to do to improve it. Motion-IQ takes the guesswork out of coaching technique, allowing you to measure the variables that most-matter to health and performance.

HOW QUICKLY WILL I RECEIVE THE BIOMECHANICS REPORT AFTER USING MOTION-IQ?

When videos are uploaded and analyzed, it produces a subset of augmented reality videos and a Motion-IQ biomechanical report. All results are turned around generally within 24 hours if the videos have been captured as per the setup standards.

CAN MOTION-IQ BE USED ACROSS VARIOUS SPORTS OR IS IT LIMITED TO ATHLETICS?

We suggest that Motion-IQ be used for all sports where sprinting is an important factor in performance. It is especially key for track and field, but also can have significant impact in soccer, football, baseball, rugby, AFL, and so much more!

We have partnered with a number of professional teams in American football especially for our initial beta-testing – and the feedback from them has been outstanding!

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ARE SPRINT MECHANICS EVEN ALL THAT IMPORTANT FOR TEAM SPORT ATHLETES ANYWAY?

Yes! The best athletes, regardless of the sport, are almost always the best movers. Sprinting is the foundation for so many field-based sports, and how players sprint often determines both their performance and their health.

I SEE THAT YOU RECOMMEND 60FPS FOR THE FRAME RATE. ISN'T THE 240FPS ON THE IPHONE MORE ACCURATE?

Based on the capability of current smartphone technology, there is a maximum frame rate of 240 fps and a resolution of 4K - 2160 x 3840 pixels. Although this is maximum resolution and frame rate it is not capable of doing both simultaneously. At 240 fps the maximum resolution is 1080p FHD or 1920 x 1080 pixels.

As Motion-IQ has been designed to be used in the athlete's natural environment, the devil is in the detail and having a higher resolution allows for more accuracy in how a person is mapped in the air- and ground-based measures from a distance. 60fps is also significantly more consistent that 240 fps, especially with some of the older models of smartphone

HOW IS MOTION-IQ DIFFERENT FROM OTHER ATHLETIC ASSESSMENT TOOLS AVAILABLE?

Video is by far the most used tool for coaches, as everyone has access to a smartphone or modern camera. Motion-IQ helps takeaway the time consuming administrational task from having to manually assess an athlete's movement.

Developed by world leaders in imaging and computer vision, and with input from industry experts, the technology provides fully automated results and detailed analysis to help support your coaching eye.

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IS THERE A LIMIT TO THE NUMBER OF ATHLETES I CAN TEST USING MOTION-IQ?

No – we have tested over 100 athletes in a day, and the system handles it without any issues. It might just take you a little longer to wait for the upload!

I COACH YOUNGER ATHLETES – CAN I USE MOTION-IQ FOR THIS POPULATION, OR IS IT DESIGNED ONLY FOR PROFESSIONALS?

While biomechanical analysis is almost essential for elite sprinters, it might be even more so with younger athletes, as the opportunity to tweak technique is increased.

HOW WILL MY FEEDBACK AS A BETA-TESTER BE USED TO IMPROVE MOTION-IQ?

As it is with all artificial intelligence, it generally gets better the more data you feed it – so one half of your beta testing will simply be in providing data. The second half is your actual feedback on the technology and product: we want to hear from you. What would you like to see that you don't currently? What questions do you have? What is working for you? What is not?

HOW OFTEN SHOULD I USE MOTION-IQ FOR OPTIMAL RESULTS?

This depends upon your context. For all athletes where sprinting is important to their sport performance, we would recommend at least three times yearly analysis of their acceleration and upright sprinting. For sprinters, it might be useful to analyze every cycle, or even every week.

Some of our initial beta-testers [coaches of the two fastest juniors in history] used it every day in their training!

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CAN I USE THE MOTION-IQ APP INDOORS, OR IS IT DESIGNED FOR OUTDOOR USE?

Motion-IQ can be used in any environment, and on any surface to assess the performance of an athlete or group of athletes – as long as it is well lit, and there is a clear view of the athlete within the capture zone. Indoor lighting can sometimes cause some motion blur. This is currently being worked on by the development team to help minimize motion blur in these environments .

IS THERE A TUTORIAL OR GUIDE ON HOW TO BEST USE THE MOTION-IQ TOOL?

There is a tutorial on how to set up a scene, capture the video and upload and process the videos through the Motion-IQ course. All users will be adequately trained on how to use the system and there will be further support available for new users.

WHAT SORT OF SUPPORT CAN I EXPECT AS A USER OF MOTION-IQ?

Motion-IQ is a cloud based system powered by computer vision and machine learning developed by VueMotion.

Five cones are required to be set up on a flat surface as per the setup protocols. The cones are detected and used to calibrate the scene.

The system has been designed to allow any coach to be able to use their own smartphone device and have access to a detailed Motion-IQ biomechanics analysis of their athlete at the time and over time.

Correct placement of the cones, camera settings and a stable camera setup is required to get good quality results. Results including augmented reality videos and reports are generally delivered

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within 24 hours as long as there are no exceptions. An exception may occur when there is poor placement of cones, if the camera is positioned too far back, incorrect resolution or framerate of video, if there are too many people in the scene or poor lighting conditions. In certain cases videos may not be able to be processed.

If there are any exceptions that are unable to be resolved an email will be sent explaining the issue and why the exception was created.

The Motion-IQ team will be on hand and can be contacted by sending an email to info@vuemotion.com

IS MOTION-IQ THE SAME AS THE SPEED WORKS OFFER?

Motion-IQ is a partnership between ALTIS and VueMotion. Speed Works uses the VueMotion technology to inform their reports, but the data they measure, and the reports they produce are different than those of Motion-IQ.

HOW CAN I BE SURE I CAN TRUST THE VALIDITY AND THE ACCURACY OF THE DATA?

With any technology that is being used to assess an athlete, the accuracy, reliability and repeatability are essential to ensure we are making the right decisions as coaches. The supporting VueMotion technology is continuously undergoing rigorous.testing, as the machine learning algorithms are assessing 10s of thousands of athletes from around the globe.

In addition, VueMotion have partnered with the Australian Catholic University (SPRINT) Sports Performance, Recovery, Injury and new Technologies Research Center, managed by Dr Grant Duthie. To date, the technology has gone

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through validation processes against laser, VICON, and the OptoGate system. The team will continue to work with Industry experts in research to further improve the technology as the system and video capabilities improve over time.

I DON'T REALLY UNDERSTAND THE DATA ... WHAT DO I DO WITH THE NUMBERS?

You can check out our overview of all of the biomechanical variables here, where it defines them, and gives you some insight into what they mean. In addition, we are currently finalizing a free Introduction to Biomechanics Course for you, so that even if you don't have experience in sprint biomechanics, you will feel comfortable understanding and applying the data

I ALREADY USE TIMING GATES, HIGH-SPEED VIDEO, AND KINOGRAMS. WHAT DOES MOTION-IQ ADD THAT I DON'T ALREADY GET?

Timing gates will give you times [often not very accurately], kinograms will give you insight into the shapes an athlete creates in space, and high speed video gives you insight into their patterns of movement. None of these, however, give you full objective data of HOW they sprint.

Motion-IQ gives you everything that all of these provides [but with more accuracy] AND also provides all the most-important sprint-based metrics — the big 5: step length, step frequency, ground contact time, time, and velocity.

WHAT IF I BUY MULTIPLE REPORTS, AND I DECIDE I DON'T WANT TO USE THEM AFTER I TRY IT OUT?

No problem – as with all ALTIS products, if you don't like it, you can receive a full refund.

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WHY DON'T I SEE 'FLIGHT TIME' ON THE SPIDER-GRAPH OF THE UPRIGHT REPORT? SHOULDN'T THIS BE A 'BIG 6', INSTEAD OF A 'BIG 5'?

In each of the big 5, there is a clear 'best' marker: i.e. faster velocity is better than slower velocity, faster ground contact time is better than slower ground contact time, greater step length is better than lesser step length, and greater step frequency is greater than lesser step frequency. Flight time, however, cannot be judged that way.

Flight time is one of those metrics that abides by the 'Goldilocks Effect' — there is a 'just right' flight time that is highly individual for each athlete: more could be better, but it could also be worse. So for this reason, we have chosen not to enter it into our ranked metrics.

I NOTICED THAT THE KINOGRAM DOESN'T HAVE THE 'STRIKE' FRAME, AND INSTEAD HAS THE 'MID-SWING' FRAME. WHY IS THIS?

We have found over the last five years that the 'strike' frame is the least-important, the most' variable', and is overly difficult to capture. Mid-swing, on the other hand, gives coaches a good idea of the height of the swing-leg as it crosses the stance leg. This may be used as an effective coaching instruction.

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DOES IT MATTER WHAT SURFACE MY ATHLETES ARE RUNNING ON? SIMILARLY, DO THEY NEED TO BE WEARING SPIKES WHEN I RECORD THEIR SPRINTS FOR MOTION IQ?

No – it doesn't matter which surface you test on. However, we suggest that you test on the surface, and in the footwear that you play your sport in. In the comparison chart on the downloadable report, you will see that athletes will be compared within their group [e.g. the team they play on], everyone in the world – regardless of sport, footwear, and surface, as well as within their individual cohort – which will be controlled for surface and footwear. This is important, as surface and footwear do affect the biomechanical data.

DO THE ATHLETES NEED TO BE RUNNING IN A STRAIGHT LINE? DOES MOTION IQ HAVE THE ABILITY TO ASSESS SHUTTLE RUNS OR RUNS ON CURVES?

Yes – the initial Motion-IQ test is a straight line, linear sprint – either acceleration of 10 yards, 10m 20 yards, or 20m, or a fly of the same distances. We are currently working on deceleration, change of direction and curvilinear tests.

CAN I JUST USE THE REPORT TO TIME A BIG GROUP OF ATHLETES THROUGH VIDEO? HOW ACCURATE IS THE TIMING FUNCTION OF THE MOTION IQ REPORT?

The timing function has been validated to a very high level of accuracy – and indeed if all you needed from Motion-IQ was an accurate timing system, it does have the capability to provide this – very quickly and effectively. However, at the moment, this is not a separate product.

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MY ATHLETES JUST WANT A KINOGRAM OF THEMSELVES RUNNING? DO I STILL HAVE TO PAY FOR THE FULL REPORT?

One of the best parts of Motion-IQ is its ability to produce a kinogram automatically, eliminating the need for you to build your own. As it is with the separate timing system, we are also working on potentially separating the kinogram from the remainder of the report. This is not currently available, however.

DO I RECEIVE A DISCOUNT FOR PURCHASING A LARGE VOLUME OF MOTION IQ REPORTS?

Yes! We have a tiered pricing structure, where the more reports you purchase, the cheaper they are. If you are interested in purchasing more than 100 reports, please contact us, and we will be happy to discuss a discounted rate.

DO YOU HAVE ANY PROCESSES IN PLACE TO DEAL WITH DATA SECURITY AND PRIVACY?

Motion-IQ is a video and data management platform powered by VueMotion. The platform is hosted on a secure AWS [Amazon Web Services] cloud infrastructure service, with the highest levels of security, multi factor identification and management and global data centers to ensure sovereignty of data.

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