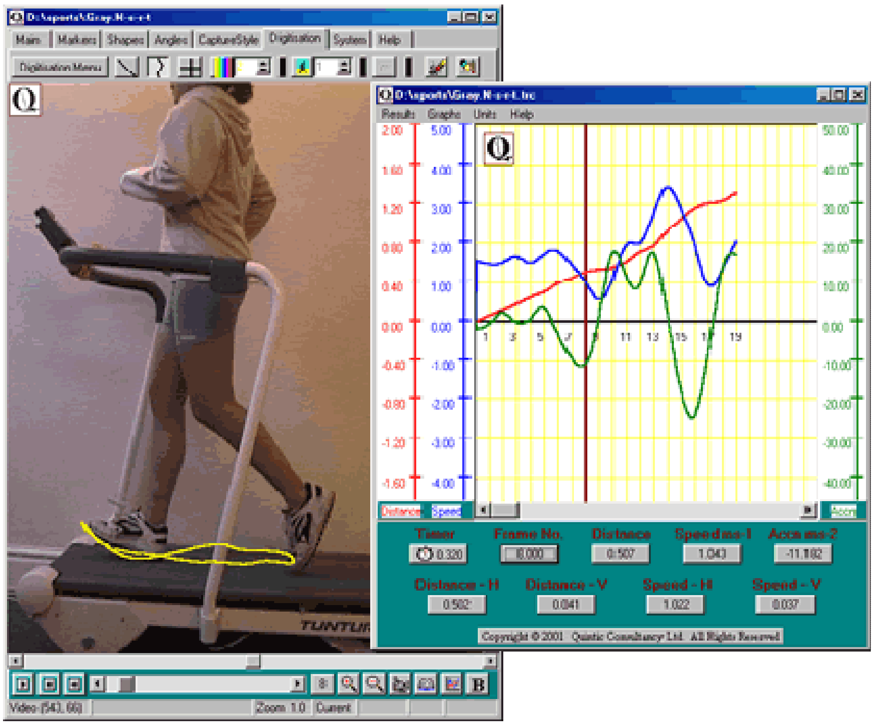
Podiatry

Examples of Quintic in Podiatry:

Presentation to The Society of Chiropodists and Podiatrists
Friday 24th May 2002

Presentation to The Society of Chiropodists and Podiatrists
Saturday 10th May 2001

Richard Callaghan D.Pod.M; S.R.Ch.



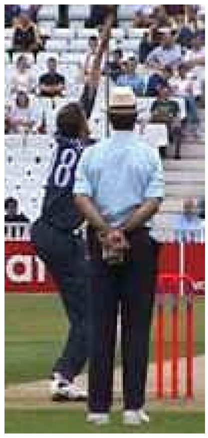
Quintic – The Digital Gait Analysis System for the Podiatrist
Richard M. Callaghan D.Pod.M., M.Ch.S., S.R.Ch. www.mediseek.co.uk/rmjc

"Paul Hurrion has developed a digital video system that can be easily adapted for the podiatrist and due to its portability could be moved between clinics or even taken onto the sports field. As a private practitioner of some 19 years standing, I had often longed for an affordable, simple to use video system that could produce instant images in a clinical situation. Paul Hurrion has a Sports Science degree and a PhD in Sports Biomechanics. Paul currently is the biomechanics consultant for The Centre for Sport and Excersice Science at Sheffield Hallam University.

A unique feature of the system is that once a video clip has been saved it can be downloaded onto a laptop, and run side by side with another video clip, synchronizing them together so that differences can be noted. Event markers can be saved, for example heel strike, toe off allowing the timing function to calculate differences in stride frequency. Angles can be measured from the horizontal or the perpendicular along with vertical and horizontal alignment guides. Taking this a step further, Paul has now modified the system to calculate speeds and accelerations of anatomical points of the body.

In the same way knee flexion and ankle joint dorsiflexion etc can be measured from a sagittal view. The system is proving invaluable in patient education; never before have my patients truly understood what an orthosis can do. I can now play back clips of before and after treatment so that they can see the resultant reduction in frontal plane motion of the foot or a slowing of knee rotation.

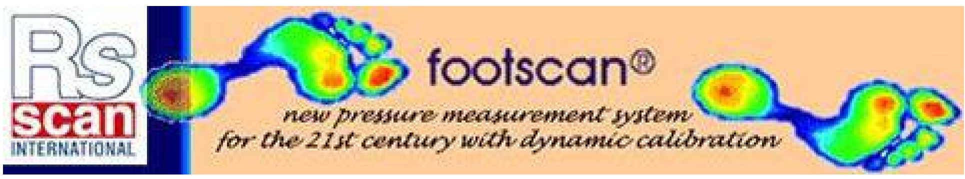
The use of the system in paediatrics has proved particularly beneficial: Parents are impressed to see the developmental changes between six monthly visits. It is very much more convincing to see the difference between the two images and measure them on screen than to try and explain that the genu valgum has reduced by 2cm! The child that won't co-operate or sit still can be filmed during their consultation and pertinent measurements can be taken in stance. It is also useful to record such features as internal and external rotation for future visual comparison.



As a podiatrist to Warwickshire County Cricket Club for seven seasons it has always been a case of waiting until a player is injured before intervening. The image on the right shows a single frame that captured Allan Richardson's potential for injury on the right foot (back foot contact) and he has since worn orthoses as a preventative measure. The software has been continually modified in the last six months and it is now possible to calibrate the system so that distances, speed and acceleration can be measured either of an end object such as a cricket ball or in the image above, anatomical landmarks such as the left hallux. A results table can also be drawn up and gives a numerical representation frame by frame which can be transposed into Microsoft Excel for research purposes.

There is also the ability to capture one, six, or twelve frames and print them to supplement patient notes or produce player profiles etc. Still pictures can be saved on floppy discs or video clips on CD ROM. These can be mailed or taken by patients to other interested health care professionals or coaches who are involved with the patient management. In this limited space it has only been possible to highlight the main features of the system, like many products it is essential to see the equipment working to realise the full potential. If you require further information or a demonstration please contact myself, Richard Callaghan at 596 Warwick Road, Solihull, West Midlands, B91 1AD, UK. or email me at: feet@callaghans596.freeserve.co.uk

Combine Quintic with RSscan International footscan® software



www.rsscan.com

RSscan INTERNATIONAL's products are applied in the fields of orthopedics, shoe manufacturing, sports medicine, rehabilitation, physiotherapy, podiatry, chiropody and biomechanics.

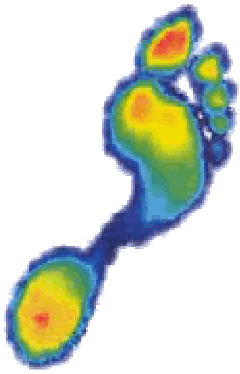
Why use pressure distribution in sport movement analysis?

- film or video analysis provides additional Information on velocities and accelerations of body parts – combine RSscan and Quintic for instant biomechanical feedback.

- footscan® plates offer information on the interaction between sportsperson and the ground measured upto 500 times a second (500Hz).
- shift of body weight is represented by the path that the center of pressure follows.
- footscan® plate and insole measurements offer a clear view of the pressure distribution underneath the foot : a movie made up of consecutive 3D-images is displayed.
- advanced analysis with pressure or force-time curves of the whole foot or parts of it.
- footscan® insoles offer information on the interaction between the foot on one hand and shoe and supporting surface on the other hand.

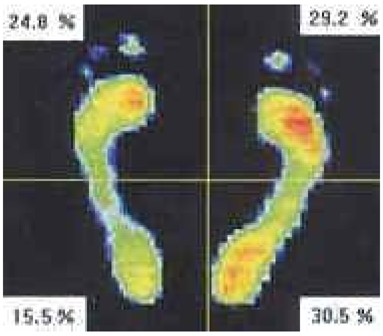
Measuring a foot by footscan® plates will give you information about the pressure underneath the barefoot or shoe while performing a sport skill. footscan® plates are available at a length of up to 2.5m. This means that a person can just sprint freely without the need to target the platform.

footscan® insoles can be used for more sport skills than footscan® plates: pressures exerted during bicycling, skating, skiing, golf swing etc. can be measured. On the 1, 2 and 2.5m footscan® plates, subjects can take more than one step. Two consecutive steps can be recorded in one measurement. The software is multistep: two consecutive steps can be analyzed simultaneously. The pressure-time curves help to analyze different techniques or shoes.



- pressure distribution from heel strike to toe off.
- pressure time curves for the whole foot software takes some spots as a standard, which you can adjust.
- force time curves for the whole foot software takes some areas as a standard, which you can adjust.
- Scientific gives you shear indication, rate of load of pressures.

3D-option which includes a box to which a force platform, for example AMTI or KISTLER, can be connected. The 3D-option includes a box to which another measuring device, like EMG, video, infrared motion capturing, force platform can be connected, making synchronization feasible.



- The polymer sensors measure 5 mm to 7 mm
- A resolution of almost 4 sensors per cm2
- Insoles: depending on shoe size: approx. 350 sensors per sole
- Plates: in the smallest plate (50 cm length): 4096 sensors

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