Biomechanics of Footwear Design

Biomechanics staff Dr Neal Smith and Dr Mike Lauder teamed up with staff from Quintic Consultancy Ltd. led by ex-Chichester graduate Dr Paul Hurrion to perform biomechanics testing on a new development range of hiking boots for Hi-Tec footwear in the University of Chichester laboratory.

Hi-Tec are designing a new sole unit for their hiking footwear which they hope will offer greater cushioning and stability, and therefore comfort to the wearer. The team made comparison ground force measures of foot impact forces and generated propulsion forces during walking with hiking gear. Two different prototype shoes were investigated. Three dimensional reconstruction of the walking pattern, force platform measurements, and underfoot pressure profiles were collected simultaneously under close scrutiny from the team. Recommendations have been made to Hi-Tec, and the new-look boot should be on general release early in 2008.

The Crew Experience during High Speed Boat Transfers.

Over the summer the human performance scientists who are Chichester members of the High Speed Boat Project Team (Trevor Dobbins, Rosemary Dyson, Steve Myers, and Terry McMorris) completed a collaborative trial with US Navy researchers and UK Ministry of Defence (MOD).

The team monitored crew onboard two MOD Defence high speed marine craft during a circumnavigation of the British Isles. Measurements were taken of the levels of craft shock impacts with the sea passage by the US team. The Chichester team were responsible for assessment of the effect of the boat passage on the crew, which included heart rate measurement and a range of subjective questionnaires. The trial identified that the boat operators have an increased discomfort tolerance, which although useful for operating in rough sea conditions may lead to them being put at an increased risk of chronic musculoskeletal injury. Results of the study will be reported at the January 2008 meeting of the American, Australian, British, Canadian and Dutch Working Group on Human Performance at Sea being held at the Pacific 2008 International Maritime Conference, in Sydney. The team will also be presenting papers at the conference reporting on high speed boat trials carried out last winter with the Royal Marines in Scotland which investigated motion-induced fatigue, muscle damage, and suspension seat effectiveness with QinetiQ Ltd in a national collaboration.
Andrew Manley was awarded the runner-up prize for Best Oral Presentation at the 2007 PsyPAG Annual Conference held at London South Bank University in July. PsyPAG is the student section of the British Psychology Society and this annual event provides postgraduate students, from across the country and from all branches of psychology, with a platform for disseminating their research. Over 150 students presented or attended this year’s conference with 2 symposia dedicated to sport psychology.

Andrew’s presentation was titled “Expectancy formation within the coach-athlete relationship: Influential sources of information from the athlete’s perspective”.

This study, the first study of Andrew’s PhD, examined the informational cues that athletes deem influential when forming initial impressions and expectancies of a coach.

The results of the study revealed that athletes regard dynamic cues (e.g., body language, eye contact) and third party reports (e.g., reputation, coaching qualifications) as most influential during the formation of expectancies of a coach. Alternatively, static cues (e.g., gender, race/ethnicity) were perceived by athletes to have little impact on the predictions they make regarding a coach’s ability. Andrew was awarded with a £25 prize in respect of his achievement.

Additional information includes recent staff publications:


British Unequipped Power-lifting Champion
Postgraduate Iain Kendrick

On 2nd September Iain Kendrick from the School of Sport and Exercise Sciences at University of Chichester won the Unequipped Power-lifting Championships held in Birmingham. Iain is British Champion in the 90kg class. The event organised by the British Weight Lifters Association required Iain Kendrick to lift 220kg in the squat, 142.5kg in the bench-press and a mere (his words) 245kg in the dead-lift to give a total of 607.5kg. Iain is now setting his sights on the 2010 Commonwealth Games to be held in Dehli, India. Iain is a PhD student investigating the effects of diet and training on the carnosine content of muscle, under the supervision of Professor Roger Harris. Carnosine is made up of two amino acids and is important in buffering lactic acid released in muscle during high intensity exercise.

British Champion Iain Kendrick setting his sights on the 2010 Commonwealth games in Dehli.

European Congress of Sports Science
Young Investigator Award for Carnosine Research

Following the British Association of Sport and Exercise Sciences (BASES) award to PhD student Chester Hill, a second young researchers prize was won at this summers European Congress of Exercise and Sport Science (ECSS) for work on muscle carnosine. In this case by Andries Pottier from Belgium as a result of a joint study between the Universities of Ghent, and University of Chichester. Using the 3-tesla magnetic resonance machine in Ghent, carnosine was measured in both soleus and gastrocnemius muscles in the calf of healthy volunteers, without the need to take a muscle biopsy. For the carnosine project this represents a major breakthrough and at a practical level opens the way to biochemically testing elite athletes for their sprinting potential. Beta-alanine supplementation, pioneered at University of Chichester to increase muscle carnosine, was recently used by British cyclists in their most successful-ever world championships.

University of Ghent.
The 3-tesla magnetic resonance spectrometer at the which was used to measure non-invasively the carnosine content of two calf muscles in athletes in a joint study with the University of Chichester. With such a powerful magnet the photograph was taken from outside the laboratory.

Conference Attendance ....Stop Press...New Year Presentation

Psychologist Karen Davranche has just returned from Leuven, Belgium where she gave a presentation titled “Physical Exercise and Executive Function” of her interdisciplinary based research concerned with the effects of exercise on performance. Karen will be presenting her research during the University of Chichester Research and Development Seminar Programme in January 2008.
Carnoustie Open Winner Praises Sport Science Golf Technology and Chichester Graduate.

At the 136th Open Golf Championship at Carnoustie, Scotland the winner Padraig Harrington was generous in acknowledging the value of the application of new technology by University of Chichester graduate, Dr Paul Hurrion to his game performance. Paul began his undergraduate studies at University of Chichester in 1990 and after successfully gaining his BSc in 1993 he continued with postgraduate PhD study under the supervision of Biomechanist Dr Rosemary Dyson and the now Professor Emeritus of Sport Science Tudor Hale.

The development of Dr Paul Hurrion’s company Quintic (www.quintic.com) has resulted in its sport science products being used worldwide to record and analyse sport performance in coaching and competition applications. Paul is now a leading international Biomechanist and his advice has helped many Tour Professionals and Teaching Professionals to understand and modify their ‘putting’ action to the benefit of their own scores and/or their teaching abilities. Paul’s expertise in golf has been acknowledged with membership of the Advisory Board for Biomechanics at the elite Titleist Performance Institute (TPI) in San Diego, USA.

“If you take your putting seriously then a visit to the Quintic Putting laboratory is a must. Dr Paul Hurrion’s biomechanical and hi-tech approach to this “game within a game” is unique……

The use of the lab’s camera, computer and analysis software, together with Paul’s knowledge, will demonstrate to you things the human eye misses…”

Padraig Harrington