



Exercise Science at Chichester

The University of Chichester has a long established track record of delivering high quality sport science support to athletes. A recent development is providing high quality 'exercise science' support to individuals who are suffering from chronic health conditions. It is well recognised that physical activity interventions are useful in both the prevention of and rehabilitation from degenerative diseases such as Type II diabetes mellitus and Coronary Heart Disease. The University now has 2 programmes established which provides exercise opportunities to recently diagnosed type II diabetic patients and cardiac patients who have completed hospital based cardiac rehabilitation.

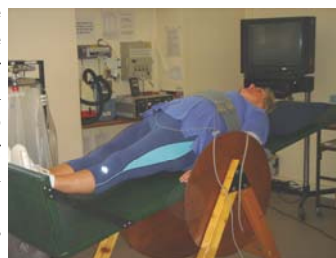
The diabetes programme runs with the support from St Richard's Hospital Diabetic Centre and was established with funds from the Knowledge Exchange programme. Following referral from St Richard's all patients receive a 'fitness' assessment, which includes a sub-maximal exercise tolerance test, resting blood pressure, body composition and other anthropometrical measures. In addition autonomic function is assessed prior to commencing the programme. Autonomic function is nearly always compromised in type II diabetic patients. Whilst autonomic function may be improved with medication there are as yet no long term studies which show a positive effect of exercise on this important measure. Hopefully research from this programme will further this knowledge base.

The cardiac rehabilitation programme runs with the support of St Richard's Hospital and has also been part funded from Knowledge Exchange monies. The participants in this programme contribute £1.50 per session which is used to pay for the exercise instructor and the purchase of new exercise equipment. The programme use University of Chichester facilities including the physiology laboratories, Sports Activity Research Centre and the Gym.



These programmes provide a vehicle for the management of chronic health conditions and make a small but probably significant impact on individual physical fitness. They also provide an opportunity for staff to engage in continued professional development and research and they provide valuable 'hands on' experience for students interested in exercise & health.

Research from the Programme: Since the programme commenced there has been one Masters research project completed investigating the relationship between autonomic function and fitness; and there are currently two undergraduate projects running, one investigating the effects of exercise on autonomic function and the other tracking changes in body composition. In addition, participants from the diabetes programme have been interviewed as part of a 13rd year undergraduate module which explores the history of exercise and physical activity in this population. Contact : John Kelly.



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Conference Activities

13th International Congress on Biochemistry of Exercise



Sport & dance students of KNSU at Seoul.

In October and November Roger Harris, Iain Kendrick, Chester Hill, Glenys Jones and James Ponte gave 4 joint presentations along with the Korea National Sport University (KNSU), South Korea, and the University of Physical Education and Sports II, Vietnam, at the 13th International Congress of Biochemistry of Exercise held in Seoul, on the effects of diet and training on muscle carnosine. The project, begun in Chichester, is receiving worldwide attention and has enabled the testing of the long held belief that

lactate formation (or more correctly intra-muscle cell pH decrease) really does limit performance in some types of whole body exercise. (This has never been proven before although it is widely taught.) Already elevation of muscle carnosine has been shown in 3 cycling studies (one in Chichester, one in Seoul and one in Oklahoma) to increase cycle performance and in two studies (one in Chichester, one in Tokyo) to delay fatigue during isometric exercise. An unexpected finding has been the increase in the ventilatory threshold observed in two cycle-ergometer studies with muscle carnosine elevation.



KNSU department of human physiology



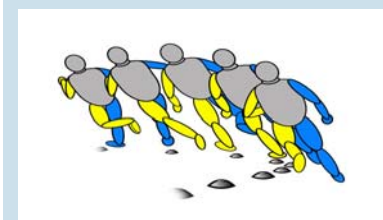
Chonbuk university track

This most probably reflects a slower release of hydrogen ions from muscle, delaying any pH mediated shift in the bicarbonate/carbonate equilibrium in blood. The International Congress was organised by Professor Chan Keun Kim of the KNSU in Seoul, who is visiting Professor at University of Chichester, and was assisted by Professor Hyo Jeung (Joanna) Kim also of the KNSU and visiting research fellow at University of Chichester. Following the meeting Roger Harris, Chang Keun Kim and others

presented seminars in the School of Sport and Exercise at Chonbuk University in Jeonju city and at the Korea National Sport University itself.

International Congress of Science and Football

Biomechanics staff member Dr Neal Smith recently presented some of his work at the VIth International Congress of Science and Football in Antalya, Turkey. Neal gave an oral presentation entitled "Body segment movement patterns for curved running in soccer players" at the congress of almost 500 delegates from all codes of football. The work investigated mechanisms for soccer players to maintain curved runs during the game by the generation of body lean, and detailed the differing contributions of the inside leg and outside leg of the curve, in addition to the role of the torso in generating a rotational moment about the centre of gravity. It is hoped the study will be published in the forthcoming book "Science and Football VI".



Television Viewing

Truth about Food

For those watching the "Truth about Food" series, look out for the programme on Thursday 15th February. This features some of the muscle carnosine research work undertaken by Professor Roger Harris's doctorate students Chester Hill and Glenys Jones at University of Chichester.

An interesting finding in recent months has been a 50% lower carnosine content in muscle of vegetarians compared to meat eating UK, Korean and Vietnamese students. On the other hand Australian students had almost 50% more again!

Recent Staff Publications

Buscombe R, Greenlees I, Holder T, Thelwell R, Rimmer M. (2006). Expectancy effects in tennis: The impact of opponents' pre-match non-verbal behaviour on male tennis players. *J. Sports Sciences*, 24, 1265-72.

Chantler PD, Goldspink DF, Clements RE, Sharp, L, Schlosshan D, Tan LB. (2006). Congestive heart failure: extent of cardiac functional changes due to aging and organ dysfunction. *Heart*, 92, 686-8.

Harris RC, Tallon MJ, Dunnett M, Boobis L, Coakley J, Kim HJ, Fallowfield JL, Hill CA, Sale C and Wise JA (2006) The absorption of orally supplied β -alanine and its effect on muscle carnosine synthesis in human vastus lateralis. *Amino Acids* 30: 279-289

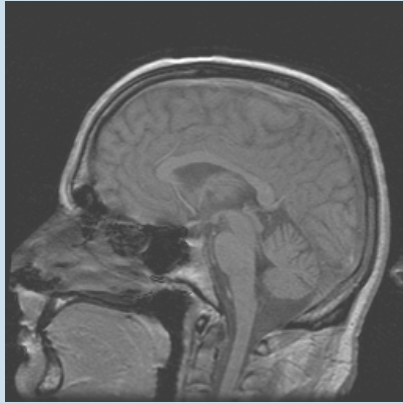
Hill CA, Harris RC, Kim HJ, Harris BD, Sale C, Boobis LH, Kim CK, Wise JA (2006) Influence of β -alanine supplementation on skeletal muscle carnosine concentrations and high intensity cycling capacity *Amino Acids* DOI 10.1007/s00726-006-0364-4

Smith, N., Dyson, R., Hale, T., Janaway, L. (2006). Contributions of the inside and outside leg to maintenance of curvilinear motion on a natural turf surface. *Gait & Posture*, 24, 453-458.

Stout JR, Cramer JT, Zoeller RF, Torok D, Costa P, Hoffman JR, Harris RC (2006) Effects of β -alanine supplementation on the onset of neuromuscular fatigue and ventilatory threshold in women. *Amino Acids* (DOI.1007/s00726-006-0474-z)

Tallon MJ, Harris R C, Maffulli N and Tarnopolsky M (2006) Carnosine, taurine and enzyme activities of human skeletal muscle fibres from elderly subjects with osteoarthritis and young moderately active subjects. *Biogerontology* DOI 10.1007/s10522-006-9038-6

Future Research planned to Examine Fluid Manipulation on Brain, Structure, Function and Psycho-physiological Performance.



MRI scan of human brain (side view)

Collaborative research between University of Chichester, Kings College London, Sheffield Hallam University and Sheffield General Hospital is one step closer following a recent meeting in London. At the meeting all parties agreed that the University of Chichester (Dr. Marcus Smith and Professor Terry McMorris) take the lead role in seeking funding opportunities and determining the research focus.

Preliminary investigations will focus on fluid manipulation and neuro-psychological / physiological performance. Changes in brain structures and volumes will also be determined using functional Magnetic Resonance Imaging (fMRI) techniques. Two research papers are currently being submitted to peer reviewed journals based on previous related research.

Undergraduate Wins National Psychology Dissertation Award



The Angry Golfer

University of Chichester is developing a distinguished reputation for producing award-winning research. In October, a student from the institution, Phil Birch, was awarded the 2006 Whiting Undergraduate Dissertation Prize for his final year project entitled "The impact of opponents' self-talk on the first impressions and outcome expectations of male golfers in match play".

The annual British Psychological Society's award has now been won by four students from University of Chichester in the seven year history of the award. Phil, 21, was invited to present his work in poster format at the 2007 British Psychological Society annual conference in York. In accepting the award, Phil was full of praise for his supervisor, Dr Iain Greenlees, who he acknowledged as a major contributor towards his recent success.

In the dissertation study, participants observed target golfer's exhibiting either positive, negative, or neutral self-talk in response to a tee shot. The results identified that while the self-talk of the target player appeared to have no impact on participants' confidence ratings, the target player exhibiting positive self-talk received more favourable first impression ratings. The findings suggest that observable self-talk may influence how an opponent is perceived, and therefore may have implications for a number of competitive sports.

Sport and Fitness Marketing and Planning Research

Following on from the success of the community impact research linked to the 'Phoenix Centre', London Borough of Sutton, we have now set up a research link with Crawley District Council Leisure Department to test public opinion and impacts on community participation and health of their new leisure facilities, the K2 complex. Co-ordinated through Nigel Sheehan, Head of Leisure Services, Year 2 Sport and Fitness Marketing Students will be interviewing users to ascertain usage levels, and changes in approach to lifestyle and health issues. This will feed back into pro-active community marketing initiatives being developed by the Council.

Stronger research links with Chichester District Council (CDC) have developed in recent years with the employment at CDC Cultural



Services department of graduates of the University, including their Leisure Manager, Jane Hotchkiss, Sports Development Manager, Sarah Peyman, Community Development Manager, Amy Roots, Sports Development Officer.

Within the undergraduate degree programme Year 3 students are regularly undertaking research projects within their work placement module, including, with Amy for example, analysing the impacts of

social partnership and participation initiatives linked to crime reduction, rived estates, and rural access issues.

David Lord, on behalf of the Local Strategic Partnership for Chichester, is analysing how partnership working does, and can increasingly in the future, deliver the objectives of the Chichester Community Strategy 'All Aboard' for cultural activities including sport. Close collaboration with the above team, is assisting stronger links with the University and raising its profile.

Contact Dr P. Green or David Lord.



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Editorial:-
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School of Sport, Exercise and Health Sciences Research and Development Seminars

Spring Semester 2007

Shoe Design and Landing Forces during Netball.

University of Chichester research has attracted attention from England Netball. Biomechanics Masters student Suzanne Gardner has a forthcoming article appearing in England Netball magazine in the next few months. Suzanne (who has represented England students at Netball) was approached by the editors to compile an article regarding her Masters dissertation on netball footwear. The work has direct relevance for players at all levels, and compared stability and cushioning properties of modern netball shoes using synchronised force platform and high-speed kinematic analysis during a variety of simulated netball movements. The study detailed the forces generated on landing after receiving different types of passes, and found that forces generated are up to four times body weight. The forces can increase to six times body weight when receiving high passes. These forces are more than double those experienced during running.



The study was supported by Asics (UK).

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| Wednesday 7th February 2007 | 12 p.m. Room LO3 |
| Effects of sole configuration on ground reaction force measured on natural turf during soccer specific actions. Dr Neal Smith, University of Chichester | |
| Wednesday 21st February 2007 | 12 p.m. Room H144 |
| On the theme of emotions in sport. Dr Mark Uphill. Canterbury Christchurch University, | |
| 28th February 2007 | 12 p.m. Room H144 |
| Masters Swimming: 'Chlorine Queens' and negotiations in the fast lane. Professor Chris Stevenson, New Brunswick University, Canada. | |
| Friday 2nd March 2007 | 2 p.m. Room Mitre Lecture Theatre. |
| On the theme of narrative approaches to research. Professor Andrew Sparkes, University of Exeter. | |
| Wednesday 7th March 2007 | 12 p.m. Room CH12 |
| Load carriage – The Soldier's Burden. Steve Myers, University of Chichester | |
| Wednesday 14th March 2007 | 12 p.m. Room LO3 |
| Effect of exercise and body mass on overall cardiac function. Dr Richard Clements, University of Chichester | |
| Wednesday 21st March 2007 | 12 p.m. Room CH12 |
| Reflexive Sports Development: (Im)proving the value of the sport development profession? Dr Marc Keech, University of Brighton. | |
| Wednesday 28th March 2007 | 12 p.m. Room CH12 |
| Biomechanics of soccer kicking. Dr Neal Smith, University of Chichester. | |
| Wednesday 18th April 2007 | 12 p.m. Room E124 |
| Working at a professional football club: Applications of flexibility and mobility training. Matthew Portas, University of Teesside and Middlesbrough Football Club. | |
| Friday 27th April 2007 | 1.30 p.m. Room Cloisters. |
| Nurturing the seed of competence in the barren soil of anxiety: Professional development in neophyte sport psychologists. Dr David Todd, University of Aberystwyth, Aberystwyth. | |

IT'S ALL GREEK!

The invited speaker list for the conference on Amino Acids and Proteins in Sport and Exercise being organised by Roger Harris in Kallithea, Chalkidiki, northern Greece in August 2007, has now been fixed. This will be posted on the conference web site during February along with a call for papers and posters. Speakers have been invited from the UK, US, Canada, Belgium, Holland, Greece, Sweden and Korea. Speakers from Chichester include Professor Roger Harris (naturally) and Professor Terry McMorris. It is hoped that this will become one of the major European sport and exercise meetings during 2007 with an opportunity to meet and network with scientists from Greece and the surrounding Balkan countries. Funding for the conference is being sought from the EU and from sport nutrition companies. The conference is being held at a coastal resort with the conference venue located next to the beach.

