

Revolutions

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'Fit for Life' resources coming soon.....

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 Loughborough
University

Peter Harrison Centre for Disability Sport

Directors Foreword by Dr. Vicky Tolfrey



The Peter Harrison Centre for Disability Sport (PHC) is one of the leading research centres in the UK with its research activities continuing to develop since the last newsletter. The research esteem of the members is externally recognised, with a number of accolades extending from invited research keynotes to key editorial positions and roles with professional and scientific bodies. Significant progress has been made in our three key research strands of Sport Science, Performance Health and Psycho-social Health and Well-being. The membership has grown and I welcome Dr. Patrick Wheeler (profile to appear in the next newsletter) to the School of Sport, Exercise and Health Science who will certainly add value to our future activities.

Since the last newsletter we have signed a Memorandum of Understanding with the English Institute of Sport with an agreed ambition to 'advance practice and understanding of Paralympic sports science with a view to enhancing Great Britain's future Paralympic medal prospects.' A recent partnership highlight was the delivery of

the UK High Performance Conference for Paralympic Sport Science and Sport Medicine (sponsored by the Peter Harrison Foundation, PHF) and also in collaboration with the British Paralympic Association, at St. Georges Park in May (Burton-upon-Trent). This provided delegates the opportunity to interact and discuss issues around 'The Road to Rio: Learning from London' (see pg 4). I look forward to seeing this collaborative approach grow further in the actions planned for the year ahead.

Our Coca-Cola foundation funded project 'Developing a Fit and Healthy Resource for People with a Disability: Rehabilitation to Sporting Performance and the Promotion of Physical Activity' is progressing well (see pgs 12-15). The research team have delivered a comprehensive programme of raising awareness. Efforts have centred on 3 primary modes of communication: a) community outreach activities b) knowledge translation practices and c) academic impact.

We continue to receive substantial core funding from the PHF which fully supports our activities and it gives me great pleasure to share the news that we have continued funding until 2018. Moreover, PHC team members congratulate Peter Harrison with his recent Knighthood in recognition of his philanthropic work. Thanks are also extended to Peter for inviting myself and Owen (my son), to watch Chelsea beat Arsenal 2-1 and for allowing us the opportunity to hold the Champions League 2012 trophy (see right).



In summary, the PHC remains committed to the University objectives of Excellence, Innovation and Regional Engagement, and will strive to further this aim through high quality and relevant research in the important domain of sport, exercise and health within the context of disability sport and physical activity. Our newsletter will give you a taste of the quality and breadth of research that is being undertaken at the PHC.

Visit from the Vice Chancellor by Katy Griggs



The PHC were delighted to have the Vice Chancellor of Loughborough University, Prof. Robert Allison, visit the lab and members of the PHC in March. We were able to show our facilities alongside demonstrating the lab testing we can offer at the centre. Our current research and future work was discussed in the field of disability sport with members from all three strands present to talk about the range of research topics we currently cover.



Prof. Robert Allison was impressed by our work and expressed that the centre has an 'international reputation for research that enhances the benefits to be gained through participation in disability sports at all levels. Through the generous support of the Peter Harrison Foundation, the centre's staff and research students make a unique contribution to Loughborough University's sport portfolio of which I am particularly proud.'

Front cover photo by Clare Pheseay and Jason Bully

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The PHC are pleased to announce that they have received an additional two years funding from the Peter Harrison Foundation and are now on a 5 year rolling contract with the Foundation. We would like to thank the Peter Harrison Foundation for their continued support of our work.

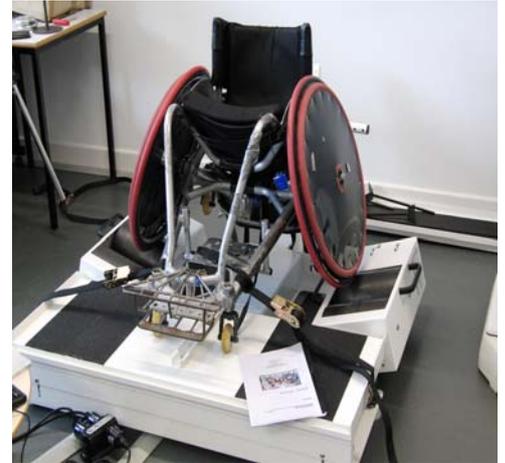


New Equipment by Dr. John Lenton

The PHC has recently purchased a new wheelchair ergometer, the VPHandisport – 25 from Medical Development in France. The new laboratory equipment is an exciting tool that has been produced to allow sports science support and research into wheelchair propulsion.

The ergometer is ready to use with any wheelchair; from daily life to basketball, racing, rugby and tennis chairs. Exploring the symmetry of propulsion will be crucial to our work and this equipment will allow us to investigate any imbalances (between left and right) for patients or athletes, which is an improvement on our former ergometer.

With this in mind, the PHC are looking forward to the visit of Riemer Vegter, a lecturer and PhD student from the faculty of Medical Sciences, Centre for Human Movement Sciences, University of Groningen. Riemer will be visiting in September for 3-4 weeks where he will be working closely with Dr's John Lenton Barry Mason and Vicky Tolfrey. The team will be looking to investigate the reliability and validity of the new wheelchair ergometer system with two separate hand-rim force wheels, the SmartWheel and Optipush. Riemer's area of expertise is in wheelchair propulsion and teaching of mathematics in human movement sciences / MatLab programming. His knowledge will be imperative in advancing our knowledge of the MatLab mathematical software program. The use of MatLab will be key to the future analysis of physiological, biomechanical and indoor tracking data as part of the PHC's research and sport science support services. The visit continues the PHC's close collaboration with the University of Groningen, in particular Prof. Lucas van der Woude and his excellent research team. Additionally during his visit Riemer will also get to experience and be part of the sports science support provided by the PHC by assisting with laboratory and field testing of the Great Britain Wheelchair Rugby Squad.



Buckingham Palace Visit by Dr. Barry Mason and Dr. Vicky Tolfrey



Olympians, Paralympians and celebrities mingled with guests invited from all over the UK at three Buckingham Palace garden parties hosted by the Queen (May-June). Dr. Vicky Tolfrey, Dr. Barry Mason and Dr. Christof Leicht attended in recognition for their roles at the Paralympic Games last summer.

Vicky who was accompanied by her husband Keith said that 'it was lovely to stroll around the beautiful garden. As well as seeing familiar colleagues from the Paralympics I also got a chance to chat with Denise Lewis.'

Dr. Mason, who fulfilled the role of performance analyst during the London Paralympic Games commented 'it was a fantastic day out to catch up with Paralympics GB staff who you worked with at the Games and to see how everyone has been getting on post Paralympics. The event was also very well attended which further emphasised how much work had gone into making the Games such a success.'



The PHC is now operating under three strands:

Sport Science

Performance Health

Psycho-Social Health and Well-being

Find updates on the three stands on pg 23

UK High Performance Conference for Paralympic Sport Science and Sport Medicine *by Katy Griggs*

The aim of the conference was to provide a world leading disability sport science, medicine and coaching conference, with a focus upon underpinning theory and applied practice and integration of science and medicine into coaching practice. The conference was hosted as a collaborative venture between the British Paralympic Association (BPA), the PHC, and the English Institute of Sport (EIS).



The theme 'The Road to Rio: Learning from London' set the purpose of the conference which was to engage with UK practitioners, coaches, programme directors and academic institutes to consider our global position coming out of London 2012. Undeniably London 2012 was the most successful Paralympic Games ever but one that saw ParalympicsGB slip to third on the medal table despite delivering more medals across more sports.

Evident within the conference programme were a number of targeted sessions highlighting significant risks to medal success; classification, injury and illness surveillance, infection management, psycho-social health and well-being of athletes as well as advances in personal care. Insights were provided into the development of transformational teams, successful talent identification (ID) programmes and the effective use of research and innovation.

The main topics were testimony to the progress in sports science and medicine and across the 2-day conference there were 4 keynotes and 8 symposia making up the bulk of the programme. Both the academic and practitioner related communities were invited to contribute to the event through an 'open-call' for scientific abstract submissions for free communication of poster style presentations. Ample networking opportunities were made available for all.

The conference provided the following:

- A forum that brought together relevant sport science, sport medicine and coaching practitioners across a range of disciplines and disability sports.
- An opportunity for delegates to share current practices, lessons learnt from London 2012 and address key issues across Paralympic sport.
- The identification of key areas for future development (timely with the new Rio 2016 agenda), initiatives and research.
- The only UK conference that is fully Paralympic orientated.
- An opportunity for practitioners working with Paralympic sports, whether employed directly by a sport, through the Institutional network or through individual interest, to get together and discuss topical disability sport issues.
- The promotion of an awareness through the thematic operations of the conference planning group to generate fruitful collaborative ventures.



Nik Diaper (Head of Paralympic Sport Science and Sport Medicine, EIS) commented: 'The feedback from the delegates suggests that this year's conference was a great success and will add value to the Paralympic system as a whole. This is evidenced by the fact that 100% of delegates that responded would like to see this become a regular feature in the calendar. There are always improvements that can be made however, and I look forward to supporting the next conference along with my colleagues at the BPA and PHC.'



Thanks to the conference planning group: Georgina Sharples and Helen Steer (BPA), Vicky Tolfrey and Katy Griggs (PHC) and Nik Diaper (EIS).



IPC Vista conference by Paul Sindall, Terri Graham, James Rhodes and Dr. John Lenton

The International Paralympic Committee (IPC) VISTA conference took place on the 1st-4th May 2013, in Bonn, Germany, with invited speakers presenting original research findings relating to 'Equipment and Technology in Paralympic Sports'. A large contingent of PHC members attended the conference with Dr. Vicky Tolfrey invited to contribute towards the symposium 'Tricycles, handcycles and tandem cycling.'

It is widely accepted that equipment and technology play a leading role in performance outcomes, and particularly at the elite level, coaches and sports scientists are firmly committed to finding ways in which advancements and innovation in design may provide the 'edge' over competitors within their field. The conference opened with an insightful session from Prof. Brendon Burkett from the University of Sunshine Coast, Australia, who iterated the point that technology is both required and desired for Paralympic sports performers. As a result, there is a distinct lack of clarity over whether athletes are using technology to gain an advantage, or simply to enable participation. This was a theme that was discussed and challenged throughout the conference, as representatives from a variety of sports made attempts to understand what might be considered a 'fair' and an 'unfair' advantage.

Perspectives of PHC members in attendance

Paul Sindall: 'From my perspective, it is very useful to hear these discussions (mentioned above) and to listen to the thoughts of leading academics in the area. However, a strong emphasis needs to be placed on the generation of practical recommendations and the translation of scientific knowledge into practice, and the best presentations showed evidence that this was a strong motive behind their work. On the final day of the conference, Prof. Rory Cooper was presented with a special award (see photo) for his personal involvement in the advancement of technology, engineering and monitoring in wheelchair sports. Prof. Cooper has been a key collaborator within my own PhD research, offering valuable technical input and providing data-logging devices for the assessment of court-movement during wheelchair tennis. This award was very well deserved and we thank Prof. Cooper for his on-going assistance and his support of the PHC.'

Prof. Rory Cooper commented: 'It is a tremendous honour to be recognized by the IPC, and to have so many colleagues from around the world in attendance. This award recognizes the importance of international collaboration in sport, and I am pleased to work with great colleagues at the PHC to advance the mission of the Paralympics and the cause of all people with disabilities.'

Terri Graham: 'The conference was a rare and great opportunity to network with practitioners and researchers working on a diverse range of topics within the field of disability sport. A highlight for me was the keynote presentation on 'Products for grass roots development', which focused on the impact of low cost court sport wheelchairs in developing countries. I was privileged to present some preliminary findings from my 'Nutritional Supplement Habits and Perceptions of Athletes with a Disability' research. My presentation was well received and I was overwhelmed by the offers of support to help increase questionnaire response numbers from different nations.'

James Rhodes: 'I was grateful to have been given the opportunity to present my poster titled 'Assessing Wheelchair Locomotion Through the use of Gyroscope Technology.' Given that this conference was directly aimed at Paralympic researchers and practitioners, it provided me with the perfect platform to share and disseminate my research. I received a number of positive and interesting discussion points from a range of coaches, practitioners, and researchers outlining the attractive prospect of the gyroscope within various disciplines of Paralympic sport. Overall, the conference was a perfect opportunity to develop my own knowledge and it provided ideal networking opportunities with many of the world leaders within Paralympic sport.'



Sir Philip Craven, Prof. Yves Vanlandewijck and Prof. Rory Cooper



Dr. John Lenton: 'This was my first experience of an IPC conference whereby there was a large network of both practitioners and researchers/scientists working on a wide range of topics within the field of disability sport. I was attending the conference to present my final experimental study from my PhD entitled 'Hand-rim forces and gross mechanical efficiency in asynchronous and synchronous wheelchair propulsion: a comparison.' Overall, VISTA 2013 was a very enjoyable conference and offered me the perfect opportunity to further develop my knowledge in the area of disability sport but also interact with many old and new international colleagues. The dissemination of knowledge amongst everyone is the key to a strong future of disability sport and its progression.'

ECSS conference by Katy Griggs

The 18th annual congress of the European College of Sport Science (ECSS) took place in Barcelona on the 26th-29th June and was hosted by the National Institute of Physical Education of Catalonia (INEFC), located at the centre of the Olympic ring on Montjuic Hill.

This was my first ECSS conference and I was privileged to have been given an oral presentation for the Young Investigators Award. I was attending the conference to present the first study of my part-time PhD entitled 'Thermoregulatory responses of athletes with a spinal cord injury during intermittent wheelchair exercise in cool conditions.'

Over the four days I attended a number of different talks relating to thermal and exercise physiology. Of particular interest was an ASCM Exchange Symposium on Exercise Thermoregulation by Prof. George Havenith (Loughborough University) and Prof. Larry Kenney (Pennsylvania State University). This session definitely helped develop my thermal knowledge and thoughts on how research in the non-disabled population can potentially be applied to a spinal cord injured population.



In addition to the presentations, the INEFC provided spectacular entertainment for the opening and closing ceremonies. The opening ceremony showcased local performers and even included a human tower, which had to be seen to be believed!!

Overall, the conference was a great opportunity to develop my own knowledge whilst providing networking opportunities with other scientists from various disciplines. Next year the conference is being held in Amsterdam, 'Sport Science around the canals' and will have a bigger disability sport focus. Dr Vicky Tolfrey has been invited to contribute to the 2014 conference symposiums.



SSEHS Sports Taster Day by Katy Griggs

On the 26th June school children (14-18 years) from across Leicestershire took part in an interactive event at Loughborough University entitled 'Exploring Sport'. The event was hosted as part of National School Sport Week.

The PHC provided a wheelchair basketball taster session enabling students to try out a new sport. Other sport taster sessions provided by the University included sitting volleyball and rock-it ball. In addition to the practical sessions, students were able to attend workshops on psychology, physical activity and health, physiology, and elite sport.

Dr. Keith Tolfrey, PHC statistical adviser, commented 'By taking part in sessions in our laboratories and lecture theatres, having a tour round campus, and speaking to some of our current students, they got a real sense of what they can expect at a University, and what opportunities are available to them if they choose to study sport and health.'



Photo courtesy of Loughborough University photographers

Four members of the PHC visited the Lakeshore foundation (Alabama, USA), 22nd - 27th January, for the 2013 Demolition Derby Wheelchair Rugby tournament. Following a long lasting relationship with Dr Laurie Malone (Director of Research and Education at Lakeshore Foundation), Dr. Barry Mason, James Rhodes, Terri Graham and Dr. Anthony Papathomas were invited to attend the tournament with two main goals: to collect wheelchair rugby nutrition questionnaire responses and to explore the possibility of collecting 'player tracking' data at the Americas 2013 Wheelchair Rugby Championships.

Nutritional Supplement Habits and Perceptions of Athletes with a Disability

As part of her PhD, Terri is collecting information on nutritional supplement use by athletes with a disability. This work is being funded by the World Anti-Doping Agency (WADA). A 3-day tournament such as this was an opportune time to catch the players during their downtime in-between matches and ask them to complete the questionnaire online. The Lakeshore staff members, coaching teams and players were extremely helpful and enabled us to collect ~45 individual responses. Their responses will go a long way to helping us understand the current practices of wheelchair athletes, whether these habits differ between nationalities, and how educational resources on supplement use and anti-doping can be adapted to suit the population's needs.

Indoor Tracking System

Under the guidance of Dr. Vicky Tolfrey and Dr. Barry Mason, James Rhodes is investigating the demands of elite level wheelchair rugby using a novel Indoor Tracking System. The International Wheelchair Rugby Federation has approved this system to be used during the upcoming European and Americas 2013 International Wheelchair Rugby Tournaments. The Americas Championships are to be held at Lakeshore in October and the purpose of the current trip was two-fold: 1) to determine the suitability of the venue for housing the Indoor Tracking System and 2) to liaise with coaches and athletes who were likely to be involved in the tournament later this year. The trip was a real success given that the venue appeared more than capable of effectively housing the system. Also the feedback from the USA head coach (James Gumbert) and athletes were very positive. Thanks is given to the EPSRC Pathways to Impact, for the grant given to fund this trip.



Indoor Tracking System – future plans *by Dr. Barry Mason*

Having recently performed some successful reliability and validity tests with the Indoor Tracking System, members of the PHC will be heading to 2 major international wheelchair rugby tournaments over the next few months. During August, Dr. Barry Mason and James Rhodes will be accompanied by Dr. Laurie Malone (Lakeshore Foundation, Alabama, USA) and Jen Bryant (BSc Student at the University of Bath) in Antwerp, Belgium to collect player tracking data during the European Wheelchair Rugby Championships. Later in October, Barry, James and Laurie will be joined by Dr. Vicky Tolfrey to collect more tracking data from the Americas Wheelchair Rugby Championships to be held at the Lakeshore Foundation, Alabama. Both these tournaments will include many of the world's highest ranked international teams, which we hope will provide more detailed information on the demands of wheelchair rugby. Thank you to UK Sport for funding this project and to Bertrand Perrat (Nottingham University) for technical assistance.

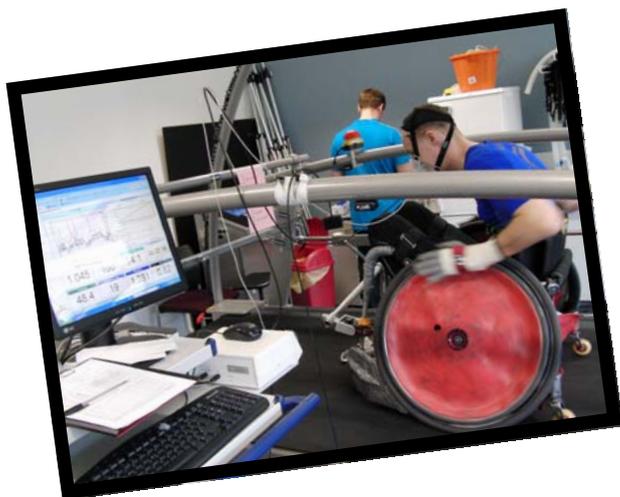
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- Watch out for the British Association of Sport and Exercise Sciences (BASES) Expert Statement (submitted in June 2013) on Assessment of Exercise Performance in Athletes with a Spinal Cord Injury. Produced by Dr. Vicky Goosey-Tolfrey FBASES, Dr. Christof Leicht, Dr. John Lenton, Nik Diaper and Dr. Barry Mason.
- Dr. Brett Smith has been invited onto the editorial board of the journal Disability and Society.
- Dr. Marie-Josée Perrier, an international team member of the PHC, recently gained a Social Sciences & Humanities Research Council of Canada grant to conduct narrative research on spinal cord injury and physical activity.
- Good luck to Richard Whitehead, an ambassador of the Coca-Cola Active Living grant, running 40 marathons in 40 days starting on the 13th August. To run with him, sign up at richardwhiteheadrunsbritain.com.

In addition to being heavily involved in research the PHC provides a sport science support service to a number of GB squads, whereby athletes have been able to benefit from testing procedures of the highest standard. The PHC continues to expand its portfolio of sports and in 2013 we have provided sport science support to wheelchair rugby, paratriathlon, skiing and sledge hockey, whilst looking forward to future work with goalball. Details of each squads progress this year are outlined below.

Wheelchair Rugby

by Katy Griggs and Tom Paulson



The start of 2013 has been an exciting period for the Great Britain Wheelchair Rugby (GBWR) squad. Lorraine Brown has been appointed as the new Performance Director with ex-GB player Paul Shaw taking the reigns as Head Coach. The team has also combined their elite and development squads to produce a nice balance of experienced faces and exciting new talent. The relationship between the PHC and GBWR has strengthened over the last 6 months with a number of PHC members contributing to sports science support during the squad's recent training cycle.

The whole squad attended the lab in May for fitness testing to provide a benchmark against which PHC members will track the squad's fitness over the coming seasons. The players also received an educational workshop from Terri Graham highlighting good nutritional practice to support their summer of intensified training and international competition. PHC members Dr. Barry Mason and James Rhodes have also attended a number of the squads training camps to

provide indoor tracking data (see pg 7 for more information) during game play. Alongside this Katy Griggs has been conducting some thermal monitoring work to identify players who may be at risk of high thermal strain during game play. Future work will be extended to look at effective cooling strategies the team could employ to help prevent this.

The team have a heavy competition schedule ahead of them following promising results at the Denmark Wheelchair Rugby Challenge and the Wheelchair Rugby Metro Cup, where they finished fourth and second, respectively. These tournaments are working towards the Europeans, taking place in Belgium in August.

We wish the squad the best of luck with their upcoming competitions and look forward to continuing our exciting and fruitful working relationship with GBWR.



Technical Advisory Group

A new Technical Advisory Group has been set-up reporting directly to the English Institute of Sport (EIS). The group is tasked with providing strategic challenge and scrutiny in relation to the technical development of the organisation.

Following a recruitment process we are pleased to announce that Dr. Vicky Tolfrey has been confirmed as one of the members alongside Prof. Clyde Williams, Dr. Ken Van Someren, Dr. Aki Salo, Prof. Mike Tipton and Prof. Ian Maynard. The group will be chaired by non executive board member Prof. Jo Doust and will meet four times a year. EIS representatives of the group include Dr. Steve Ingham, EIS Director of Technical Development (see right).



Sledge Hockey

by Katy Griggs



Photos courtesy of Red Geddes

In June, the Great Britain Sledge Hockey team came to the lab to conduct some benchmark fitness testing, including maximal arm crank testing. This was the first time the squad had attended the lab, and for many, the first time they had been involved in any laboratory based fitness tests. It wasn't just the athletes who gained a better understanding of their fitness levels but over the three days the Sport Science team also gained a greater knowledge of the sport.

In March, the squad attended an educational workshop delivered by Terri Graham and Dr. Vicky Tolfrey on nutritional strategies and jet lag prior to the Ice Sledge Hockey World Championships in Japan. The squad faced a number of tough matches in order to keep their Winter Paralympic qualification hopes alive but stood up to the challenge by claiming bronze.

The squad still have a few tough months ahead. To secure qualification the squad have to finish in the top three of the next international competition, which is scheduled to take place later this year.

We are looking forward to working with the squad in the future and wish them well with their journey to get to the Winter Paralympics in Sochi (March 2014).

John Neville (Director of the British Sledge Hockey Association) commented on the educational workshop, 'All the boys commented how they learned something even the ones who have been to Paralympics previously. We look forward to working with the PHC again.'

Disability Skiing

by Dr. John Lenton



The British Disabled Ski Team (BDST) represents the racing arm of Disability Snowsport UK - 'The Skier's & Boarder's Charity.' Team members are registered and annually licensed with the International Paralympic Committee (IPC), Alpine Skiing by DSUK under the delegated powers of Snowsport GB which is the National Paralympic Committee (NPC) member representing Alpine Skiing.

Having been introduced to skiing at the IPC VISTA 2013 conference in May we have since provided the BDST with physiological testing and nutritional support. The physiology testing was to determine the baseline fitness for the athletes before they began a structured training programme in the build-up to a 2 month training camp in New Zealand from the beginning of August 2013. The athletes returned to the lab in July (1 week prior to leaving for NZ) to follow up and assess their improvements. All of the athletes also received one to one nutritional support and advice from Jeanette Crosland which will be invaluable to them as Jeanette has a vast amount of experience working with Paralympic athletes. The squad have not received the combination of physiological support and nutrition previously. The ultimate goal for all the athletes is selection for the Winter Paralympics in Sochi 2014.

BPA Paralympic Preparation Advisory Group

The inaugural BPA Paralympic Preparation Advisory Group is a key multi agency advisory group, which was launched at Loughborough University on the 10th July. It is a three-way partnership between BPA, EIS and the Peter Harrison Foundation, providing strategic guidance around Games preparation strategies underpinning BPA and informing sport science and medicine interventions throughout the Rio Cycle. The primary project to be tackled by the group is the development of a Paralympic Preparation Profiling Tool. This tool will provide a live needs analysis against potential medal risk factors, enabling the facilitation of a solutions based approach in support of all Paralympic NGB's (athlete and staff) readiness to thrive in the Games environment. The group is comprised of members of the BPA Sport Directorate, EIS head of Paralympic Sport Science and Sport Medicine, BPA/EIS Chief Medical Officer, EIS/BPA lead Paralympic physiotherapist, and the Director of the PHC. A sport psychologist will be recruited to complete the core group.

Paratriathlon

by Alasdair Donaldson (Paralympic Talent & Development Manager, British Triathlon Federation)

The Great Britain Paratriathlon team came away from sun drenched Alanya, Turkey with six gold, four silver and two bronze medals from the ETU Paratriathlon European Championships. This was the first time that the British Triathlon Federation (BTF) had taken a fully supported team to the event, with all athletes funded as part of the programme. The team of 17 athletes and 5 guides were supported by five members of specific paratriathlon team support staff and another two who were shared with the Olympic team.

In advance of the event the athletes were given access to the heat chamber at SSEHS, Loughborough University run by the PHC and this proved invaluable to their preparations. They were able to work out their sweat rates and how their core body temperature responded to the heat expected in Alanya. Having access to the chamber not only prepared the athletes for what they were to expect, but also gave them the confidence to go in knowing that they had done everything they could to toe the line as fully prepared as they could be.

The team travelled out five days before the race and had a chance to acclimatise and familiarise themselves with the various aspects of the course. A 750 m sea swim was followed by a 19 km bike course, which took in six laps making for tight turns on cobbled streets and finally by a two lap 5 km run route with a substantial hill on each lap. Once the athletes had familiarised themselves with the course and had been through the race briefing they were the best prepared team at the event and were ready to compete.

Experienced team member Clare Cunningham (who was second in the Tri 4 category) said,

'We had a full support team dedicated to the paratriathletes, including transport so we could easily access the 50 m swimming pool 7 km away from our hotel and on race day we had absolutely everything we could ask for to help keep us cool whilst we waited to race. As athletes we have had to step up to the mark to be World Class and on this trip the support we received also stepped up to match the World Class expectation. I have no doubt that we were the best-prepared team at the event and this was reflected in the team's results.'

The athletes demonstrated their level of preparation with some fantastic performances to bring home their greatest haul to date from this event. The medallists came from a range of athletes, from Jane Egan (Tri 1), who won the event for the fourth straight year, to Phil Hogg (Tri 1), Sarah Pearson (Tri 3) and Dave Ellis (Tri 6b) who all came into the sport following a BTF Talent Identification weekend held this February. On top of this there were wins for Lauren Steadman (Tri 4), who held off the stern challenge of team mate and fellow former swimmer Clare Cunningham, and Melissa Reid who reversed the result over team mate Charlotte Ellis from last year's European Championships to win the Tri 6b category.

Some comments from the team were:

Steadman said, *'I definitely had to work hard for this. The swim is my strength and I had a good, smooth transition. On the bike I just wanted to keep distance between myself and everyone else. On the run I had jelly legs but I gave it my all.'*

Hogg was delighted with Tri1 gold in his first paratriathlon, *'It's emotional, I can only thank my coaches and my family and I can't thank them enough for getting me here. I was thinking on the third or fourth bike lap that I had a chance but I knew I had to keep on the gas and keep racing.'*

Egan, 42 from Glasgow said, *'I'm really pleased, it's nice to keep the title, I think I've had it since 2010. For the first time ever I think I had a really good swim!'*



Photo courtesy of Alasdair Donaldson

Case Studies

Phil Hogg (Tri 1)



Photo courtesy of British Triathlon

Phil Hogg attended the BTF talent identification weekend (ID) in February 2013 where he demonstrated an potential to succeed in paratriathlon. From a wheelchair racing background the final leg of the event was always going to be a real strength of his but he had demonstrated a great ability in swimming and his performance on the handbike showed that there was certainly potential for development towards world class performances across the board.

Phil came on to the England talent squad and was given a handbike to really take his training forward. Through the England talent programme Phil was linked to coach Steve Casson who worked hard to develop Phil's swimming further and in particular spent time developing his ability to swim in an open water environment for the first time. To compliment his training programme, Phil was tested regularly by the PHC who were able to track his progress on the handbike in particular, plus feedback where he was making performance gains and offer advice for further advancement in performance.

Additionally Phil (and Jimmy Goddard) undertook a rigorous session in the heat chamber in advance of the trip to Turkey. The temperature and humidity were set to the levels expected in Turkey and Phil's core body temperature and adaptation to the environment were closely monitored as he undertook a full effort race pace. Using the information from the test Phil was able to adapt his hydration strategy for the event and this formed part of the plan which allowed Phil to win the European's in what was his first ever paratriathlon competition. The Tri 1 category in which Phil competes is one of the most competitive in paratriathlon and his victory in this class was a big step forwards for British Triathlon as they look towards Rio.

'Having access to the facilities at the PHC allowed me to prepare fully for the race. The temperature for the race was 32 degrees, with high humidity, so I had to train to deal with those kinds of conditions. But, if I'm honest, I didn't really notice the heat on Sunday.'

David Ellis (Tri 6b)

Dave Ellis was another athlete who came into the sport at the BTF talent ID weekend in February 2013. Dave was previously a top level swimmer, having competed in the 2008 Beijing Paralympics, but made the choice to try his hand at paratriathlon as he was looking for a fresh challenge; it is one he has really thrived on to date.

'The paratriathlon community is great. It is different to swimming, with people being from different sporting backgrounds.'

For Dave, as a visually impaired athlete, he has had to learn to introduce running and cycling into his training and then adapt to doing all three aspects of the triathlon with a guide. BTF linked him up with Luke Watson, a Loughborough University student who had guided Ian Dawson to the World title in Auckland, New Zealand, in 2012. The link up has proved successful for both athlete and guide as Ellis triumphed over Dawson in Turkey.

As part of the England Talent programme Ellis has also been linked up to coaching provision and was given a chance to experience the heat of Turkey in the heat chamber, where he carried out a testing session, alongside the majority of the squad, and had his hydration levels closely monitored.

'I used the heat chamber at Loughborough to prepare me for the hot conditions and also had access to the equipment and the help of the coaches and medics.'

Phil and Dave both came 1st in the British Championships in Liverpool on Saturday 13th July and are now targeting the World Championships in London's Hyde Park on Friday 13th September as part of the ITU World Triathlon Grand Final.

Dr. Vicky Tolfrey's comments on the PHC's support to the paratriathlon squad:

'I am delighted that we have been invited to contribute to the process of supporting the paratriathlon team on their journey to Rio 2016. They are a new sport in 2016 and with the success to date the spotlight will be on them to produce medals in Rio. I hope that we can support this process via our reputation in disability sports research; i) by advancing their understanding of the physiological requirements of the event in relation to classification and ii) via our networking opportunities of scientists across the world via sharing of best practice.'

Prof. Javier Martinez Gramage from University Cardenal Herrera, Spain will be conducting research for the International Triathlon Union in September during the World Championships in London. Prof. Gramage will also visit the PHC during this time.



Prior to the Coca-Cola Advisory Board meeting, we took the opportunity to invite a number of colleagues from organisations such as Parasport, WheelPower, Loughborough University (Enterprise), ASPIRE and Coca-Cola to a Twilight Evening of presentations and dinner. The evening, hosted at Burleigh Court, Loughborough University aimed to showcase the variety of work produced by the PHC and the impact it has had on disability sport and recreation. Topics included 'Wheelchair propulsion: Translation from sport to rehabilitation,' 'Wheelchair tennis and physical activity,' 'The Blue Gym,' and 'Life with a spinal cord injury.' The presentations provoked some interesting conversations and hopefully gave attendees a better idea about what we do, how, and why. For a further chance to network, everyone was invited to join the PHC team for dinner to continue these conversations, discuss their own research and consider future opportunities for collaboration. We hope everyone enjoyed the evening as much as we did and went away having learnt something new about our team or our research.



Twilight Evening and Advisory Board *by Prof. Kathleen Martin-Ginis*

I had the pleasure of attending the Twilight Evening and the Coca Cola Advisory Board meeting on April 10th -11th. These events featured presentations by the PHC researchers. I learned about numerous innovations such as an indoor tracking system to measure wheelchair propulsion on the sports court and in rehabilitation; a study of the effects of exercise on immune cell function in people with SCI; and the lessons drawn from the life stories of people with SCI as they face challenges to becoming physically active. I was extremely impressed with both the quality and originality of the research as well as the level of collaboration and interdisciplinary engagement among the research team.

The study and advancement of disability sport and physical activity are complex and require expertise from across the sport sciences. Indeed, our greatest strides are made when experts collaborate across disciplines. The PHC researchers are doing just that. They are producing cutting-edge, internationally significant science by bringing together experts in sport and exercise physiology, nutrition and psychology. Furthermore, the team is wholly committed to rapidly translating and disseminating their research findings to the people who most need this information—athletes, coaches, and other members of the disability community. These efforts are commendable.

As a researcher who focuses on the study of physical activity among people with SCI, my two days at the PHC were invigorating. It is not often that I have the opportunity to engage with a roomful of scientists, students and community members who share my passion. I returned home, eager to share news of the PHC innovations and looking forward to further collaborations with my Loughborough colleagues.



Members from all 3 strands of the PHC and Prof. Kathleen Martin-Ginis (4th from right).

Following the generous funding by the Higher Education Innovation Fund (HEIF) both Terri Graham and Dr. Anthony Papathomas were able to visit McMaster University (Hamilton, Canada) and the SCI Action Canada organisation. Our trip.....

Day 1: During a tour of the Physical Activity Centre for Excellence we were amazed by the number of individuals exercising in the gym during a senior's community session. We attended a departmental seminar by three kinesiology faculty members on the 'Collaborative aspects of the Auto Partnership Canada grant.' We were extremely impressed with the attendance by both students and top academic staff from a range of disciplines, of which we were told occurs on a weekly basis. This is a great example of sharing knowledge and working in an interdisciplinary manner.



We were then able to observe a MacWheeler exercise session. The MacWheeler Spinal Cord Injury (SCI) Rehabilitation Programme aims to help individuals with a SCI develop their strength and endurance by providing them with an exercise programme based on their individual needs. The facility has a wide range of accessible and adaptable exercise equipment to enable everyone to take part.

Our final meeting of the day was with Spero Ginis, SCI Action Canada's Knowledge Translation (KT) Specialist. Spero ran us through his role, the importance of KT and how the organisation is able to disseminate their research findings via their website (www.sciactioncanada.ca). This was great preparation for the KT course we were going to take on days 4/5!



Day 2: On our second day we met with a number of academic staff members to discuss their work and to learn more about some of the programmes in place at SCI Action Canada such as 'Get in Motion,' a free telephone-based physical activity counselling service for individuals with a SCI. Anthony was invited to present his work to the university's psychology group on 'Narrative analysis: The power of stories in SCI exercise promotion,' which received great feedback and stimulated some interesting discussions.

Day 3: We met with a number of other McMaster University academics prior to departing for Toronto where we were able to obtain tickets for a Toronto Raptors vs. Chicago Bulls basketball game. What an experience!

Days 4/5: We attended a 2 day Scientist Knowledge Translation Training (SKTT) course at The Hospital for Sick Kids. The course developed our understanding of what KT is, how it can be implemented and the impact it can have. We also covered topics such as 'Understanding partnerships and policy' and 'Communicating with the media.' We came away from the course with plenty of ideas about how to integrate this information into our daily work and enthused to do just that.

In the evening of day 5 Terri travelled to Brampton to attend a wheelchair basketball club training session to promote a nutritional supplement questionnaire.

Days 6/7: An opportunity to do some Toronto sightseeing and to catch up on our emails.

Day 8: The Variety Village is a facility which provides specialised programmes and services for individuals with a disability to enable them to be active (www.varietylvillage.ca). We were shown around by Stephen Bialowas (Canadian junior wheelchair basketball coach) who invited us to join a club basketball training session. Given that there were 3 London 2012 gold medallists playing, I think we were a little out of our depths! The opportunities for individuals of all levels and abilities were extensive and there was an inspiring and integrated community atmosphere to this facility which all organisations should aspire towards.



Day 9: We travelled to Alabama, USA. See pg 7 for more details.

A massive thank you must go to Prof. Kathleen Martin-Ginis, Prof. Amy Latimer-Cheung and all their colleagues at McMaster University and SCI Action Canada for their hospitality – you made us feel like VIP's.

Drawing on our newfound knowledge, we delivered a KT workshop to interested staff and students at Loughborough University in a Knowledge Translation lunchtime session. Attendees were from a range of departments all aiming to translate their research to audiences other than their academic colleagues. The session was a resounding success and the information was well received.

On Saturday 9th March the PHC made a debut appearance at Loughborough University's Family Community Day. The event is geared towards engaging people in the local community with all the excellent work that goes on across the University's many departments.



The vast majority of attendees to the event were young families with children under the age of 10, so our goal was to provide a task that was exciting and fun whilst also demonstrating what it is we do. We set a simple "spot the difference" task, asking the children to identify at least 5 differences between a basketball wheelchair and a rugby wheelchair. It worked better than we could have imagined; siblings and friends competed to spot the most differences and enthusiastic dads joined in exploring the intricacies of the wheelchairs. Most pleasing of all was that many children were prompted to ask "why" such differences exist – it is here where some real learning took place. We were able to elaborate on the different demands of the sport and inform on how each chair supported people with a physical disability.

On successfully completing the task, the reward was an obligatory lollypop and an opportunity to get into a chair for a wheel around. Of the two chairs, the mean and combative rugby wheelchair was the most popular and it was tough work ensuring each and every child had a fair turn! Watching the action it was obvious that much enjoyment was being had by all, to the point that one parent asked me where her non-disabled child could go to play a wheelchair sport. This is an important issue. A major barrier to wheelchair sport is that there are not

sufficient numbers to allow regular competition, particularly for very young disabled people. If wheelchair basketball or wheelchair rugby is seen as just another available sport option rather than exclusively a "disability sport," non-disabled children may be encouraged to participate too; duly increasing opportunities for disabled children.

To summarise, the 2013 Loughborough University Family Community Day was a great success. Educating young children on issues related to disability sport is an invaluable exercise. These children are at a stage in their lives when possible prejudices and stereotypes are unlikely to have formed. Now is the time to promote positive attitudes towards disability and our fun activities represent a small but significant step in the right direction. As such, the PHC will most definitely be appearing at the 2014 event. Come and visit us.

Dr. Vicky Tolfrey commented, 'the day was a success and a great way to demonstrate how science and engineering play such a crucial part in our everyday lives.'



ParalympicsGB SportsFest by Terri Graham



Following the success of the inaugural event in December 2012, the PHC was once again present at the second ParalympicsGB Sports Fest. This year the event was held at the English Institute of Sport Sheffield, 26-27th April 2013. Over 700 people attended the event and were able to try any number of the 22 Paralympic sports on offer. Hannah Cockroft (*athletics*), Will Bayley (*table tennis*), Jody Cundy (*cycling*) and Maddie Thompson (*wheelchair basketball*) were among a number of London 2012 Paralympians who were on hand to answer questions and sign autographs for budding athletes during the 'Meet the Medallists' sessions.

The PHC team spoke with many of the attendees regarding the centre's research and promoted the Fit & Healthy resource being developed as part of the Coca-Cola funded project. A number of individuals were excited by the opportunity to access resources that contained information specific to their disability. PHC staff members also tried some of the sports, with table tennis and boccia becoming two of the favourites.

The second Sports Fest was yet another sign that the Paralympic legacy lives on. Let's hope the event motivated many young people and adults to take up some form of physical activity or sport to help them stay fit and healthy. Who knows, it may even have inspired the next GB Paralympic medallist!



Practitioner insights

by Caroline Lander



Caroline is a full-time Paralympic Injury and Illness Surveillance Officer with the EIS. She studied at Loughborough University where she gained her BSc Hons in Sport and Exercise Science. Her undergraduate dissertation was entitled 'The effects of rear wheel camber on hand rim forces and mechanical efficiency during wheelchair propulsion,' which followed on from Dr. Barry Mason's PhD work. She is currently completing an MSc in Dance Science at TrinityLaban Conservatoire looking at the health, well-being, and injury incidence in dancers.



Injury and illness surveillance is becoming an increasingly recognisable element of sport medicine and science allowing mechanisms of injury and illness, along with the associated risk factors, to be identified. Importantly, these findings can lead to the development, implementation and assessment of injury and illness prevention strategies. With an injury or illness having the capability to withdraw an athlete from training or competition, any opportunity to oppose the risks is essential for athlete health.

Having recently started in the EIS role of Paralympic Injury and Illness Surveillance Officer, my primary role is to support Paralympic NGBs in monitoring injury and illness in order to identify risks to athlete health. Once risks have been identified, the next step is to work with the sport

practitioners to put in place interventions to manage these risks. Despite the growth of Paralympic sport, very little is known about the incidence of injuries or illnesses amongst athletes with impairments.

Two recent studies undertaken during the London 2012 Paralympic Games into injury incidence (Willick et al., 2013) and illness incidence (Schwellnus et al., 2013) of 3565 Paralympians are the first to provide an in-depth epidemiological insight into injury and illness incidence in Summer Paralympic sports. The findings showed that during London 2012 there was a similar proportion of incidences of injuries (10.9%) and illnesses (10.2%), injuries to the upper limbs were more common than injuries to the lower limbs, and that respiratory illnesses were the most commonly reported illness. Across all 160 countries that participated in the study, football 5-a-side, powerlifting, goalball and wheelchair fencing observed over 25% of their athletes receiving injuries, with road cycling, sailing, rowing and shooting observing less than 10%.



The large range of incidence proportions across sports, the varying disabilities, classifications and small athlete cohorts are just some of the challenges we face in setting up an effective injury and illness surveillance system. However, the scope to make a positive change towards athlete health and well-being is vast. The ability to provide sports with meaningful longitudinal data will enable individual and specific interventions that focus on the major risk factors to be implemented within the sport. The aim is to reduce the number of injuries and illnesses that affect the squad each season and increase the number of days each athlete is healthy, able to fully train and compete at the highest level.

Stop Press

- On 1st July, Dr. Lettie Bishop was appointed as associated editor for submissions in immunology and inflammation for Medicine and Science in Sports and Exercise.
- Congratulations to Bromakin Wheelchairs celebrating their 30th anniversary on 12th July. Peter Carruthers, founder of Bromakin Wheelchairs, has been a great supporter of the work at Loughborough University; Prof's Clyde Williams and Ian Campbell and the PHC.
- Collaborators, Prof. Kathleen Martin-Ginis from McMaster University and Prof. Lucas van der Woude from the University of Groningen have been awarded the title of Visiting Professors in the School of Sport, Exercise and Health Sciences at Loughborough University.



Nick is currently Medical Director of The Sussex Centre for Sport and Exercise Medicine at the University of Brighton. He was Medical Officer with the GB Team at the Paralympic Games in Atlanta, Nagano and Sydney and joined the International Paralympic Medical Commission in 2000. During London 2012, he worked as a sports physician in the Polyclinic in the Olympic Village and was Chief Medical Officer to ParalympicsGB.

What is your experience of being Chief Medical Officer at London 2012 for ParalympicsGB?

Being Chief Medical Officer (CMO) for Paralympics at the London 2012 Games was a fantastic and unique experience. It allowed me to use my 20 years experience in Paralympic sport to bring together the largest medical team, in the best medical facilities, for the largest ever British Paralympic team. However, it was a lot more than delivering services at the Games; it was three years of intensive preparation and planning. With good preparation you can minimise the healthcare impact on athletes and staff during Games time. For example, we achieved very low infection rates compared to other countries by using a variety of strategies to prevent, detect and control infection. We are there to help athletes achieve their goals and the many hours the medical staff and the core team worked were a big part of that success.

What challenges have you faced at the Paralympics over the years?

When I first became involved with the BPA in 1992 we were a very small group of practitioners who met together on a voluntary basis to learn and develop our skills. At that time there was no funding for practitioners so all our attendance at events was voluntary and there was little time to really put many preventive measures in place. This started to change as lottery funding became available and this has gradually progressed to a time when we have practitioners employed by sports and working longitudinally to ensure athletes are best prepared and healthy. One of the challenges for the BPA has been managing this transition from 'amateur' to professional in some of our Paralympic sports.

As part of the IPC sports injury surveillance team, what changes have you seen made by sports following the results of this research?

I started the first IPC sports injury survey at the 2002 Winter Games as part of the IPC Medical Committee and we have managed to repeat this in all subsequent Winter Games. Initially this was something that I started because I felt it was worthwhile and a missing important element but there was no support financially within the IPC other than the goodwill of the CMO, Michael Riding, and the Polyclinic doctor, Stuart Willick. That first injury survey identified a number of lower limb fractures in sledge hockey which we could attribute directly to the protective equipment worn and differences in sled height. We presented this data to the Ice Hockey Federation technical committee who made changes in the regulations and since that time we have seen a dramatic reduction in lower limb injury. The success of this injury prevention strategy led the IPC to consider expanding this to the Summer Games. London 2012 was the first Summer Games at which we have been able to perform injury and illness surveillance and we collated data on nearly 50,000 athlete days of participation. This initial Summer Games survey will help set the sport specific research strategy for the future and we have three publications in British Journal of Sports Medicine to date with more to follow. I feel that a major achievement is to have injury and illness surveillance embedded as a core component of Games time function for the IPC.

What has been your toughest and your most enjoyable role to date?

My toughest role was probably in Atlanta in 1996 where facilities for staff and athletes in the village were cramped and the dining hall was up a big hill meaning some tired athletes missed meals. The medical team was small with few staff working within sports and so compared to today's medical team numbers we were massively overworked.

Although London was a fantastic experience it was very stressful as CMO too. For me personally, the Sydney Games in 2000 was the most enjoyable. I was working with the swim team who were a fantastic group of committed athletes and the medical team worked well within the team to deliver a fantastic performance all round. There is something special about Sydney as a city and the fact that my family made it out to see the Games and the closing ceremony was very special.

How is it best to ensure that academics/researchers that are working with Paralympic sports ensure athletes are provided with the best advice/guidance and technology?

The BPA brought together the leading practitioners in the UK to form the Science and Medicine Support Group in 2002 and this group directed strategy for research and implementation on issues such as acclimatisation, jet lag, pre-cooling and pollution for example. Funding for sports has moved on with the UK Sport strategy but there is no co-ordinated group looking at these issues in the same way which is a big shame. We have to appreciate that each sport has a different funding model and level of expertise, and many Paralympic sports cannot, or do not, prioritise some of these issues. The work of the PHC has picked up some of these strands of research but we are still relatively young in terms of science and medicine knowledge in Paralympic sports. The annual scientific meetings held previously started again this year in May and gave a forum for discussion and dissemination of information but there is no particular academic lead across these issues currently. Possibly one of the new national centres for Sport and Exercise Medicine will pick up the baton but as yet there is no specific remit for Paralympic sport.

What is your advice to practitioners/clinicians/researchers working in Paralympic sport?

Firstly you have to enjoy the sport itself. Nothing is more energy draining than spending hours watching and researching something that does not stimulate you. Once you have decided this, the beauty of Paralympic sport is that the research field is relatively new and limited so you have so much opportunity. For researchers try and answer the specific needs of the sport rather than just an area that interests you. To have engagement from the sport it needs to have a performance impact. For my first ten years I worked in a voluntary capacity because I enjoyed it and I think sometimes these days people won't commit the time voluntarily to get the experience. By showing willingness and commitment you will build stronger bonds for longer term engagement. I'm still going after 21 years and have really appreciated the friends, colleagues and experiences that I have made over that time.



International relations - Japan by Dr. Christof Leicht and Dr. Vicky Tolfrey



Dr. Christof Leicht: In February, I was invited to Tokyo, Japan, to present at the conference 'The 8th International Sport Sciences Symposium on Active Life.' Students and staff from Waseda University gave me a very warm welcome and an introduction to Japanese culture including raw fish in all shapes. I also visited a Japanese research group led by Prof. Fumihiro Tajima at Wakayama University to discuss future projects. Following my time off travelling around Asia I have returned to Japan for a 2-month period over the summer (June-August) collaborating on a study that is investigating the effects of hot water immersion on the immune response of persons with tetraplegia. The trip is the start of a collaborative partnership with our colleagues in Japan (with Dr.'s Bishop and Tolfrey) and a full account of this research collaboration will appear in the winter newsletter.

Dr. Vicky Tolfrey: I have just returned from a very busy week long trip to visit Christof whilst he was out in Japan. This was my first time to Japan and based on how kind all the people were that I met, it will not be my last! I was kindly met by Emiko Yamasaki at the airport and she accompanied me to my hotel via a transfer between airports and an internal flight. I met with Prof. Fumihiro Tajima (seen to the right with Christof and myself) and his colleagues and presented my work in the field of Paralympic Sport Science support twice over the course of my stay. Luckily it was not all work with two parties (led by Dr.'s Nishimura and Nakamura) laid on for me to meet with medical students and I also had a wonderful trip to the Empire Palace with Dr.'s Kakita and Umemoto. Over the next year I hope to help Prof. Tajima plan a mini symposium in the field of Sports Medicine and persons with a spinal cord injury.



The FREE (Football Research in an Enlarged Europe) project, funded by the European Commission's Seventh Framework Programme for Research, is an international collaborative study involving universities across Europe. As part of this study, Dr.s Jo Welford, Brett Smith and Borja Garcia from Loughborough University are researching the experiences of disabled people as supporters of football (football fans).



Photo highlights blocked view by photographer who refused to move. Photo courtesy of Barbara Merrell.

Excellent research is being undertaken, both in the PHC and elsewhere, to try and gain a better understanding of how disabled people can benefit from participating in sport and physical activity, and how their participation can be encouraged, enhanced, and be as beneficial as possible. But what about disabled people who follow sport, as fans? Very little is known about how disabled supporters experience sport, what difficulties they face, and the potential benefits this kind of sports participation can have to their health and well-being.

We are interested in numerous issues, including: What impact does being a fan have on their health and well-being? What barriers are there to being a fan? How can football clubs and organisations enhance disabled people's experience of football? As well as Supporters Direct and the Football Supporters Federation, CAFE (Centre for Access to Football in Europe) and LPF (Level Playing Field) are partners in the study – both organisations promote better access to football (and other sports), and provide information for disabled fans.

For the past two months, eight disabled supporters from different clubs across England have been recording their experiences and thoughts through taking photos and keeping audio or written diaries. They were asked to think about a number of areas, such as who they share their football experiences with, what football means to them, and their own involvement in football. Most were active members of their clubs' Disabled Supporters Association and all attended football matches regularly. The eight supporters have a range of disabilities, with a mix of wheelchair users and ambulant fans. The project hopes to help fill a gap in our knowledge of how disabled people experience sport, as well as report findings to CAFE, LPF and other organisations involved in sports governance.

neurokinex by Toni Williams

neurokinex is a new activity-based rehabilitation centre for people with neurological conditions. Activity-based rehabilitation is an individualised exercise programme which is devised from a combination of neurological rehabilitation and exercise physiology. Every client at neurokinex has a specific exercise programme designed to maximise their physiological and neurological potential. At the same time, through regular exercise, the centre focuses on improving health and well-being with the aim to enhance quality of life. The majority of the clients at neurokinex have acquired a spinal cord injury (SCI). Some people are choosing to start exercising years after acquiring their injury, whereas others have gone into activity-based rehabilitation straight out of hospital.

A lot is known about the benefits and barriers to being physically active in SCI communities, however, little is known about the long term benefits of an activity-based rehabilitation programme. The aim of my research is to explore people's quality of life and well-being as they move through the activity-based rehabilitation programme at neurokinex. The research will not only focus on the immediate benefits of exercise, but the subsequent impact on everyday life. This does not lie with the clients alone. My research will also involve exploring the relationships that clients have with their trainers, and how this relationship impacts upon the experience of being at neurokinex.

My role as a researcher involves spending time at neurokinex to immerse myself in the culture and collect observational data. Furthermore I will be interviewing clients and staff over the course of a year to develop a more detailed understanding of the process of activity-based rehabilitation. Understanding people's experiences of activity-based rehabilitation will further inform future programmes to impact upon the wider spinal injured community.

For more information visit: <http://www.neurokinex.org/>



Photos courtesy of David Roberts (First Presence)

Emma is working in conjunction with the International Tennis Federation (ITF) in conducting the first formal evaluation of the “Wheelchair Tennis Silver Fund (WTSF)” as part of her Masters thesis. The Silver Fund is an initiative whose aim is to establish long term wheelchair tennis programmes in developing countries, providing disabled children and adults the opportunity to undertake an active lifestyle. Her recent trip to Turkey to interview players, coaches and officials at an official ITF event has changed her perception of disability, cultural stereotypes and the true power of sport.

Day 1

After a 4 ½ hour flight, we arrived at the hotel around midnight. Although difficult to see the full complex in the dark, I knew I would enjoy my time here – especially as I was assigned the double room while my supervisor, Dr. Anthony Papatthomas, only had a single room; I had no complaints! Going to bed that night I had no idea of the incredible week that lay ahead.

Day 2



As Anthony and I had arrived in the middle of a tournament, there were few players available to interview so we decided to explore. After our exploration, we headed to the tennis courts to watch some of the matches. Within minutes, the comradeship and friendship between the players was obvious. Talking to Greek representatives we were joined by some Turkish players. Romanians and Moroccans were discussing doubles tactics and players were supporting their friends from other countries in their matches. Although we'd only been at the resort a short time, already the impact of wheelchair tennis on an individual's social life was evident.

Also, after talking to some of the British representatives it emerged that the total prize fund for this tournament (a ranking tournament with professional athletes) was \$2000 in total, for everyone. Considering the winner was to win about \$600, just about covering cost of travel, it really highlighted the dedication and passion these athletes have for their sport.

Day 3

To increase the 'ethnographic experience' (immersing yourself in the culture), Anthony and I spent the evenings getting to know the players off court and in the process meeting some amazing people with incredible stories to tell. The evening the first tournament finished, we went along to the hotel disco with a large party of Moroccan, Greek, Romanian, Iranian and Turkish players. Here, the accessibility issue raised its ugly head. To get to the disco there were about 20 stairs and no ramp, so the guys in wheelchairs had to be carried down. There was more to notice when we got down there; mainly the stares of the other guests. However, as soon as we hit the dance floor stares of shock turned to smiles as non-disabled guests and disabled athletes danced the night away together.

Day 4

It was now a two day break between the first tournament and the second one, so I was optimistic about getting some really good interviews. As the majority of the players and coaches spoke only Turkish, I agreed to help the tournament coordinator in the morning in return for her expert translation in the afternoon. She really was the definition of 'Superwoman.' In the sweltering Turkish sun we sorted wheelchair equipment, found wheelchairs, built wheelchairs, fixed wheelchairs, found racquets, sorted out courts, directed players to courts, bought more equipment, and this was in the morning! I was exhausted! After a quick lunch she said, 'Right shall we get started?'...is this woman on Duracell or something?! I wanted a nap!

The morning had given me some first-hand experience of the challenges and difficulties of running a development tournament, but also showed me that ANYTHING is possible. 'No we can't' is not an option and this message was echoed in the interviews we conducted with players: 'Now I can do this,' 'I am worth something now,' 'It's hard but worth it.' All of this, as I saw in the morning, is true. Development is hard but it's worth it. It's also a place where the word 'can't' does not exist.





Day 5

This day was my birthday and I really could not have wished for a better one. We got several more interviews done with fascinating people. Having found out it was my birthday, Anthony asked many of the players to come to dinner with us. That night I celebrated my 23rd year with Brits, Greeks, Romanians, Turks, Yemeni, Russians and Moroccans. If that wasn't enough, I also got a cake and had happy birthday sung to me in 6 different languages. After this, of course, it was disco time again. This day really highlighted the friendships that are born playing wheelchair tennis.

Day 6

Another hectic but memorable day. Interviews today showed another side of wheelchair tennis. Yes, recurring themes were there; it improves confidence, social life, acceptance of disability and betters a person's life, however it's not an easy sport. It takes a lot of dedication, hard work and courage on behalf of the player and not everyone can do it. Furthermore, the selflessness of coaches and officials was also discussed. All coaches are volunteers, dedicating time and effort for no financial reward; their motivation is seeing their players do well and seeing a positive change in their life.

The second tournament starts tomorrow and the big story was that players from Yemen would be taking part. None of Team Yemen had ever been out of their own country before now. After my interviews (and another morning of hands on development experience), I popped over to the court to see how they were getting on in only their 2nd coaching session; little did I know I would end up taking it! An emergency called the coach away so I was left with these 8 guys who spoke no English. It turned out the most challenging thing wasn't the language, keeping score or keeping them focused, it was keeping them off court! These guys may never have had the opportunity to travel, experience a new culture, meet new people or even experience a flight without the WTSP.

Day 7

A few more interviews done and more incredible stories shared. This morning, I was interviewing Iranian players. I was a little apprehensive due to the constant media portrayal that females are less respected in that culture. I needn't have worried; more gracious, humble, respectful, people you couldn't hope to meet.

The development tournament was underway and you saw how much it meant to the Yemen players. Playing against Moroccans they were severely mismatched, not that you could tell from their supporters. Every single Yemen player turned out to watch the other with chants of 'Yemen! Yemen! Yemen!' Pride in themselves, pride in representing their country; this is what wheelchair tennis is about.

Day 8

Having done all our interviews it was sadly time to leave but I had learned so much in this short space of time.

Wheelchair tennis has done incredible things for these people to the point that one participant said - 'it has given me back my life.' Through the week I saw that it takes incredible strength of character and determination from players, coaches and officials to make this happen. Players attested it's success to coaches, coaches to players and officials, officials to coaches and players; each group was quick to praise the other. These people are the reason for the success of the WTSP and why it betters people's lives on court and, more importantly, off it. As one of our participants said - 'wheelchair tennis is more than tennis.'

This week seemed to last a lifetime but also go by in the blink of an eye. In total, 24 interviews were conducted across the 7 days producing just over 21 hours of data to be transcribed and analysed. On top of this, hours of participatory observation as well as some ethnographic experience, helped enhance understanding and appreciation of the wheelchair tennis lifestyle. Throughout all this data one particularly important message has emerged; wheelchair tennis enriches the lives of its players in so many ways and it is indeed much more than just tennis.



Sport Science

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Book chapters

- Goosey-Tolfrey, V.L. and Diaper, N. (2012, *in press*). *The Thermoregulatory Challenges faced by the Wheelchair athlete in Beijing 2008*. In Godfrey, R., Whyte, G., Lane, A. and Loosemore M. *Applied Sports Science and Medicine: Case Studies from Practice*. Leeds: Human Kinetics.
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- Goosey-Tolfrey, V.L., Price, M.J and Krempien, J. (2013, *in press*). *Spinal Cord Injured Athletes*. In. Broad, E. (Editor). *Sports Nutrition for Athletes with a Disability*. London: Taylor & Francis.

Performance Health

Journal articles

- Paulson, T.W., Goosey-Tolfrey, V.L., Lenton, J.P., Leicht, C.A and Bishop, N.C. (2013). Spinal cord injury level and the circulating cytokine response to strenuous exercise. *Medicine and Science in Sports and Exercise*. [Epub ahead of print].
- Paulson, T., Bishop, N., Eston, R. and Goosey-Tolfrey, V.L. (2013). Differentiated perceived exertion and wheelchair exercise in novice able-bodied users. *Archives of Physical Medicine and Rehabilitation*. [Epub ahead of print].
- Leicht, C.A., Goosey-Tolfrey, V.L. and Bishop, N.C. (2013). Spinal cord injury: Known and possible influences on the immune response to exercise. *Exercise Immunology Review*. 19.146-165.
- Gleeson, M. and Bishop N. C. (2013). URTI in athletes: Are mucosal immunity and cytokine responses key risk factors? *Exercise and Sports Science Reviews*, 41(3): 148-153.

Book chapters

- Gleeson, M, Bishop, N.C. and Walsh, N.P. (Editors) 'Exercise Immunology.' Abingdon:Routledge.

Psycho-Social Health and Well-Being

Journal articles

- Mundle, R. and Smith, B. (2013). *Hospital chaplains and embodied listening: Engaging with stories and the body in health care settings*. *Illness, Crisis and Loss*, 21(2), 95-108.
- Smith, B. (2013). *Disability, sport, and men's narratives of health: A qualitative study*. *Health Psychology*, 32(1), 110-119.

Books

- Smith, B. (2013). (Ed). *Paralympics and disabled sport*. London: Routledge.
- Sparkes, A. and Smith, B. (2013). *Qualitative research in sport, exercise & health sciences. From process to product*. London: Routledge.

Book chapters

- Sparkes, A. C. and Smith, B. (2013). Spinal cord injury, sport, and the narrative possibilities of posttraumatic growth. In N. Warren and L. Manderson (Eds), *Reframing disability and quality of life: A global perspective* (pp. 129-143). NY: Springer.
- Smith, B. and Papatomas, A. (2013). *Disability sport*. In. J. Swain, C. Barnes and C. Thomas (Eds). *Disabling Barriers, Enabling Environments (3rd Ed)* (pp. 222-228). London: Sage.
- Robertson, S. and Smith, B. (2013). *Men and disability*. In. J. Swain, C. Barnes and C. Thomas (Eds). *Disabling Barriers, Enabling Environments (3rd Ed)* (pp. 78-84). London: Sage.

We are pleased to announce that two PHC members have been promoted to Reader in the School of Sport, Exercise and Health Sciences; Dr. Brett Smith (Reader in Qualitative Health Research) and Dr. Keith Tolfrey (Reader in Paediatric Exercise Physiology).

Sport Science by Dr. Vicky Tolfrey

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Well it's the anniversary of London 2012, with things moving forward in preparation for Sochi 2014 and Rio 2016 we welcome new squads and athletes to our laboratory. This year, so far the Sport Science strand have provided consultancy to disability skiing, sledge hockey, paratriathlon, wheelchair tennis and we have a more formal relationship with wheelchair rugby which enables us to appoint a Research Assistant to join our team. James Rhodes and Dr. Barry Mason have been networking overseas and working with Nottingham University/UK Sport to finalise the indoor player tracking system for data collection in Belgium and the USA which should provide us with a fantastic opportunity of understanding the demands of competitive wheelchair rugby game play. Terri Graham has done a tremendous job with compiling the 'Fit for Life' resources whilst at the same time finalising the WADA nutritional supplement questionnaire, whilst Katy Griggs has just returned from presenting the findings of her first study at ECSS in Barcelona. With the delivery of our new wheelchair ergometer Dr. John Lenton is looking forward to welcoming Riemer Vegter (University of Groningen) in September to help validate and investigate the reliability of the system compared with other measures of wheelchair propulsion power output. Paul Sindall is approaching the final stages of his PhD and Tom Paulson whom is also associated to the Performance Health Strand is well on his way to submitting his PhD next month.



Congratulations to all team members and the recent staff promotions to Readership of Dr.'s Brett Smith and Keith Tolfrey.

Performance Health by Dr. Lettie Bishop

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The Performance Health Strand has had a busy 4 months since we became a distinct theme within the PHC in February. Our research continues to complement the work of both the Sport Science and Psycho-social Health and Well-being strands. Christof Leicht enjoyed an informative and rewarding visit to Japan earlier in the year (see pg 18). He returned to Japan until August working alongside Dr. Fumihito Tajima and his team at the Department of Rehabilitation Medicine at Wakayama Medical University investigating the effect of exercise on immune function in SCI. Christof's review of the research in this area (co-authored by Lettie and Vicky) is due to be published in *Exercise Immunology Review* this summer. In between trips, Christof joined Lettie to speak about his research as part of a session looking at strategies to minimise infections in Paralympic athletes at the UK High Performance Conference for Paralympic Sport Science and Sport Medicine (see pg 4) where Tom Paulson also presented some of his work looking at the use of RPE as a tool to self-regulate exercise intensity in SCI. Tom is within touching distance of submitting his PhD thesis and has recently published work showing that the response to exercise of markers for cardiovascular disease risk depends on spinal injury level. The paper was published in *Medicine and Science in Sports and Exercise* and has received praise from several experts in the area. He will also be travelling to Australia in September to represent the Health Performance Strand and the PHC at the Meeting of the International Society of Exercise Immunology, where he will be presenting some of his work investigating the effects of functional electrical stimulation (FES) on markers of cardiovascular disease risk after exercise.

Psycho-Social Health and Well-Being by Dr. Brett Smith

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The Psycho-Social Health and Well-being team has had another enjoyable, rich and fruitful 6 months. Our knowledge of disability, sport and physical activity was expanded by having Prof Kathleen Martin-Ginis and Jenn Thomasone from McMaster University in Canada visit us. Congratulations to Marie-Josée Perrier who, under the supervision of Prof. Amy Latimer-Cheung at Queens University, was recently awarded her PhD. Marie-Josée conducted research here for 3 months and continues to be an integral part of our team whilst undertaking post-doctoral studies at McMaster University. Our connection with Canadian friends has recently also grown to include Andrea Bunton. Following her PhD at the University of British Columbia, Andrea will be joining our team in January 2014. She was awarded a highly prestigious Social Sciences & Humanities Research Council of Canada grant to work within the PHC for one year. Through the application of innovative qualitative methods, her research will focus on the Paralympic legacy and how (if at all) disabled youth were/are inspired by the Paralympic Games. Finally, thank you to Dr. Anthony Papatomas, Dr. Jo Welford, Nick Caddick, Toni Williams, Melanie Best (formerly Preece), Joanna Kirkby, and Emma Richardson. Individually and collectively they have not only raised the national and international profile of the PHC through high quality research publications, grant awards, invited talks, and sustained interaction with the disability community and user groups, they have also been tremendously dedicated, hard working, and collegiate.



Please follow us on Twitter: @PHC_Lboro



Get Involved in a New Study: Eating Behaviours and Body Image Issues in Disability Sport

Dr. Anthony Papathomas is leading an exciting new study that will explore the eating behaviours and body image concerns of athletes competing in disability sport. Competitive sport has long been considered a risk-factor for unhealthy eating behaviours with many top athletes reporting dangerous habits. Huge media attention, as well as the pressure to be 'thin to win,' means many athletes are very body conscious. This study will look to explore whether athletes in disability sport are also affected.

You are eligible to take part if you are a Paralympian or you compete regularly in a disability sport. Participation in the study is 100% anonymous and answers are confidential.

Contact Anthony for further details (a.papathomas@lboro.ac.uk) or simply go direct to the online questionnaire and get started!

The English version of the questionnaire can be found here:

<https://www.survey.lboro.ac.uk/eat/>.

The Spanish version of the questionnaire can be found here:

https://www.survey.lboro.ac.uk/eat_spanish/.



Produced by Katy Griggs and Dr. Vicky Tolfrey

Thanks to all the contributors

We hope you enjoy learning about the Centre and find the links to the website and other resources useful. If you have any feedback or would like to contact the Centre please email: phc@lboro.ac.uk or contact the PHC Director at V.L.Tolfrey@lboro.ac.uk

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