

SPORTS SCIENCE AND RESEARCH AT THE LONDON 2012 PARALYMPIC GAMES

The Paralympic Movement for athletes with impairments has changed dramatically over the last decade and with this, the importance of and interest in sport science has increased.

The IPC Sports Science Committee actively seeks interaction with the scientific community by formulating research questions relevant to the Paralympic Movement, and activates strategies to come to solutions. Providing opportunities for research at the Paralympic Games is one of these strategies. Research applications are received by the IPC no later than one year prior to the event, reviewed by the Sports Science Committee, the affected sport and the venue/competition management at the Games locations.

The IPC received an unprecedented number of research applications of investigators from various countries wanting to conduct studies of different nature at the occasion of the London 2012 Paralympic Games. The approved projects have been categorized in two groups:

1. Studies that will be conducted on-site during the London 2012 Paralympic Games
2. Studies that will be supported by the IPC by inviting London 2012 Paralympic Games athletes to participate in questionnaire type studies on various themes launched on the IPC web site.

Note that all studies meet applicable research ethical standards and methodological criteria compliant with the World Medical Declaration of Helsinki which is adopted by the IPC. Amongst these standards, we highlight that individual participation by research participants always is on a voluntary basis and as such, volunteer research participants can withdraw at any time without fear of retribution.

The IPC invites you to read through all the project descriptions and hopes you will consider participation. The principal investigators have the responsibility to report back to the IPC on their findings no later than six months after the Games, and the IPC in turn engages to ensure these findings are disseminated throughout the Paralympic Movement.

The IPC wants to thank you in advance for your interest and wishes you good luck during the Games.

1. Studies on-site during the London 2012 Paralympic Games

If you are interested in participating in one or more of the studies taking place in London, please read the brief description to each study as presented below. If you fit the inclusion criteria for a certain study that has your interest, the IPC suggests that you contact the principal investigator of the study in question.

Title	Abstract
	Principal Investigator
Autonomic cardiovascular function in spinal-cord injured athletes	<p>This proposal is a continuation of our long term research goal to examine autonomic function in Paralympic wheelchair athletes. This study will allow us to obtain insight into possible inherent disadvantages among elite athletes with spinal cord injury (SCI). These athletes are particularly vulnerable to unstable autonomic cardiovascular and temperature control, and unfortunately, these abnormalities are not accounted for in the current international Paralympic classification. Wheelchair athletes with SCI are asked to fill out a questionnaire and will have a “sit up” test performed during which heart rate and blood pressure will be monitored.</p> <p>Prof. Andrei Krassioukov, University of British Columbia, Canada. Email: krassioukov@icord.org</p>
Goalball game performance	<p>The aims of the study are to establish a game efficiency protocol for Goalball and to evaluate the game performance level of elite Goalball athletes with regard to team ranking, type of disability (blind, partially-blind) and other demographic and anthropometric characteristics (age, sport experience, training intensity, body mass, height, length of body in defense position, range of arms, fat mass, game position). The Goalball players will fill out a questionnaire, do a balance test and will be filmed during competition.</p> <p>Dr. Natalia Morgulec-Adamowicz, The Józef Pilsudski University of Physical Education in Warsaw, Poland. Email: Natalia.morgulec@awf.edu.pl</p>
Kinematic Analysis of Paralympic swimmers including drag tests	<p>The project aims to measure the amount of resistance swimmers with a disability experience when moving through the water (passive drag) and to see how this relates to classification. The research will also look at how a swimmer’s body shape and size influence the amount of resistance. This analysis will take place outside competition and involves towing the Paralympic swimmers through the water in their most streamlined position to measure the drag. Additionally, the project aims to identify individual performance parameters from video analysis of the competition of swimmers with physical disabilities or functional classification profiling, regarding key variables from individual distances and times, opposed to the traditional “pre-established distance method” used for the race analysis in swimming.</p>

	<p>Dr. Carl Payton (1) Dept. of Exercise & Sport Science, Manchester Metropolitan University of Cheshire, England and Prof. Dr. Javier Perez Tejero (2), Faculty of Physical Activity and Sport Sciences, Technical University Madrid, Spain.</p> <p>Email (1): C.Payton@mmu.ac.uk</p> <p>Email (2): j.perez@upm.es</p>
Kinematic analysis of long jump in Paralympic athletes	<p>The aim of this study is to analyze the technical and biomechanical abilities developed by the Paralympic athletes in triple jump and long jump events. Video recording during competitive events will provide data on the specific characteristics of each athlete (amputated, cerebral palsy, blind and those with movement difficulties) in order to give parameters to help to assess and improve the athletic activity.</p> <p>Dr. Josep María Padullés, Universidad de Barcelona, Spain. Email: jmpadu@gmail.com</p>
Experiences of sports volunteers at the 2012 Paralympics	<p>This study aims to explore volunteers' experiences during the 2012 Paralympics as previous studies have failed to consider volunteers' understandings of disability, disability sport and the 'disabled athlete'. A series of semi-structured qualitative interviews will offer an insight into volunteerism at the 2012 Paralympics by addressing research questions like: 1) What are volunteers' reasons for volunteering and what are their aspirations for volunteering at the event? 2) Do volunteers have a history of volunteering/previous experience of volunteering? 3) How is disability constructed during the training of volunteers for the 2012 Paralympic Games? 4) How do volunteers define disability in relation to discourses of disability?</p> <p>Ellie May, PhD student, Leeds Metropolitan University, Leeds, UK. Email: E.May@leedsmet.ac.uk</p>
Surveillance of sport injuries and illnesses in Paralympic athletes during the Paralympic Games	<p>The protection of the Paralympic athletes' health by preventing injuries is an important task for the IPC. Standardized surveillance of injuries provides not only important epidemiological information, but also directions for injury prevention and the opportunity for monitoring long-term changes in the frequency and circumstances of injury as well as illness. This is a follow-up of previous injury surveillance performed during the Paralympic Winter Games. Analysis of the injuries occurring in Paralympic athletes provide an indication of risk factors in sports that may be prevented by changes e.g. in equipment or regulations. The surveillance has been shown feasible and was well accepted by the team physicians. The present study is an expansion and will deal with the surveillance of both injury as well as illness in athletes during the Paralympic Summer Games. The objective is to provide a standard web based injury & illness surveillance system for future tournaments. The team physicians will report injury and/or illness on a daily basis using electronic report forms with standardized questions in</p>

	order to be able to ensure the comparability of results.
	Dr. Josep Oriol Martinez, c/o IPC, Medical & Scientific Department, Bonn, Germany. Email: pia.pitgrosheide@paralympic.org

Representatives of the IPC Sports Science Committee will monitor compliance with the agreed conditions by the principal investigators in London.

2. Questionnaire Studies at the London 2012 Paralympic Games

The below approved questionnaire studies cover a wide range of scientific disciplines. If you are interested in participating in one or more of these studies, and you think you fit the inclusion criteria for that project, you can click on the link which will automatically lead you to the home site of the Principal investigator where the questionnaires and consent forms can be found. Some questionnaires will be available in various languages. All collected information will be anonymous and participation is voluntary; you may withdraw from the study at any time.

Urine leakage during training and competition in female Paralympic athletes	A survey to gather information on how many female Paralympians have a problem with urine leakage during training and competition, how much it bothers them and how they cope with it. Urine leakage during sport is common in high class female athletes and may affect concentration and performance. Many female athletes are too embarrassed to seek help and either put up with it or may even retire from competition. The results of the short survey will indicate whether urine leakage is a problem for female Paralympians and how we might help future Paralympians. This UK study is provided by Chartered Physiotherapists Promoting Continence and The University of Hertfordshire.
	Participants: All female Paralympians over the age of 16
	Principal Investigator: Kay Crotty, School of Health and Emergency Professions, University of Hertfordshire, UK. Email: Kay@prphysio.co.uk
	<p>Link to the questionnaire in English: </p> <p>Enlace a la encuesta en español: </p> <p>Ссылка на анкету на арабском языке: </p> <p>ةيبرعلا ةغللاب نايبتسالال ىلع طبر: </p> <p>Lien vers le questionnaire en français: </p>
Evaluation of the sleep patterns and complaints in Paralympic athletes	The objective of this study will be to evaluate the quality of sleep of Paralympic athletes with spinal cord injury and visually impairment. Sleep is of crucial importance for the physical recovery of the athletes. Once exposed to conditions of stress in major competitions, the sleep pattern changes and may be of poor quality, thus undermining the performance of the athletes. Knowledge about this theme is important in order to be able to create strategies for the prevention of sleep complaints in major competitions.
	Participants: Both male and female athletes with Spinal Cord Injury of all levels

	<p>or visual disabilities participating in the London Paralympics Games 2012</p> <p>Principal Investigator: Dr. Marco Tulio De Mello, University of São Paulo, Brazil. Email: tmello@demello.net.br</p> <p>Link: http://www.cepesquisaonline.net.br</p>
Investigating the status of wheelchair skills and upper body complaints/injuries in ambulant wheelchair athletes	<p>To participate in wheelchair sports, optimal training is a necessity, while overuse injuries must be prevented among others by adequately developing wheelchair skills. The present study will therefore investigate the status of wheelchair skills and upper body injury prevalence in elite ambulant wheelchair athletes at the Paralympics with the use of questionnaires. The information derived from this study will help determine which specific injuries ambulant wheelchair athletes are experiencing in relation to their technical ability and training background. It is intended that the results will help to develop more comprehensive skills training programs so that injury risk can be minimized in this athlete group, and performance can be optimized.</p> <p>Participants: All ambulant athletes (non-spinal cord injury) above 18 years of age competing in a wheelchair sports event at the Paralympic Games in London.</p> <p>Principal Investigator: Dr. Florentina Hettinga, Center for Human Movement Sciences, University Medical Center Groningen, The Netherlands. Email: f.j.hettinga@med.umcg.nl</p> <p>Links:</p> <p>English: http://surveys.med.rug.nl/limesurvey/index.php?sid=45967&lang=en</p> <p>Dutch: http://surveys.med.rug.nl/limesurvey/index.php?sid=45967&lang=nl</p> <p>German: http://surveys.med.rug.nl/limesurvey/index.php?sid=45967&lang=de</p> <p>French: http://surveys.med.rug.nl/limesurvey/index.php?sid=45967&lang=fr</p> <p>Italian: http://surveys.med.rug.nl/limesurvey/index.php?sid=45967&lang=it</p> <p>Chinese: http://surveys.med.rug.nl/limesurvey/index.php?sid=45967&lang=zh-Hans</p>
Sources of stress, coping and preparations related to participation in London Paralympics	<p>Participating in important sport competitions can in many ways be a stressful experience and may affect performance. This study is to learn more about sources of stress, coping with stress and specific preparations related to important competitions in Paralympic sport. We want in particular to learn more from some of the best disability sport athletes how they prepare for stress and how they experience stress as well as what resources they have access to during the preparations to cope with stress related to Paralympic competition. What causes stress and how it is dealt with can give important information and the experiences will help other athletes to hopefully improve their preparations.</p> <p>Participants: all athletes participating in the Paralympic Games</p> <p>Principal Investigator: Prof. Marit Sørensen, the Norwegian School of Sport Sciences, Oslo, Norway. Email: marit.sorensen@nih.no</p> <p>Link: https://response.questback.com/nih/stresslondon/</p>
Barriers and facilitators of	<p>Few people with a disability regularly participate in sports. We are interested in why people with a disability participate in sports. This research, called</p>

<p>sports in Paralympic athletes, participating in the Paralympic Games</p>	<p>BestSport, is in collaboration with the National Paralympic Committee (NPC) of the Netherlands and the International Paralympic Committee (IPC). We would like to know what the main barriers and facilitators of sports participation amongst Paralympic athletes are. How is the organization of your coaching staff set up and how do you combine work or education with elite sport? Finally, we would like to know how Paralympic sports are generally organized in your country.</p> <p>Participants: Athletes above 18 years of age representing Australia, Canada, Hong Kong, Ireland, Kenya, New Zealand, Malaysia, South Africa, United Kingdom or Brazil.</p> <p>Principal Investigator: Eva Jaarsma, MSc, Department of Rehabilitation Medicine, Center for Rehabilitation, University Medical Center Groningen, The Netherlands. Email: e.a.jaarsma@umcg.nl</p> <p>Links: English version: www.unipark.de/uc/Paralympics/ Brazilian version: www.unipark.de/uc/Brasil/ Malay version: www.unipark.de/uc/Malaysia/</p>
<p>An international comparison of sporting prosthetics in use at the 2012 Paralympic Games</p>	<p>Prosthetic users are among the highest profile athletes competing at the Paralympic Games. However, there is a lack of evidence relating to the most appropriate methods of provision of sports prostheses. Competitors from different countries access a range of sports by a variety of means. The aim of this research is to conduct an online survey to facilitate data collection of sporting prosthetic demographics and provision to allow comparison within and between competing nations. The survey will provide a useful indication of competitor numbers in each classification of event across all sports and examine current trends across recruitment into specific disciplines with prosthesis user classes. The survey aims to gather information about types and quality of prostheses used by competitors from various countries. Results will reflect international variations in sports prosthesis provision, whether an integrated approach exists for national teams, or barriers exist in some areas. Outcomes will provide benchmarking to help understand demographics in competing nations.</p> <p>Participants: prosthetic limb wearer between 16-45 years of age competing at the London Games.</p> <p>Principal Investigator: Dr. Anthony McGarry, the National Centre for Prosthetics and Orthotics, Curran Building, University of Strathclyde, Glasgow, UK. Email: anthony.mcgarry@strath.ac.uk</p> <p>Link: Please follow the link that most closely reflects your language or that of your translator</p> <p>Arabic: http://www.surveymonkey.com/s/HPBMJHQ Chinese: www.surveymonkey.com/s/HPTPTD6 English: www.surveymonkey.com/s/GWHL2ZZ French: http://www.surveymonkey.com/s/HPJ2KY7 German:</p>

	www.surveymonkey.com/s/HHV2TYV Italian: www.surveymonkey.com/s/HBGDGPJ Portuguese: www.surveymonkey.com/s/HP5DLWB Russian: www.surveymonkey.com/s/P2V5VRK Spanish: www.surveymonkey.com/s/P2KVBKM
An Investigation of Paralympians' Experiences of Injury	This project will allow us to learn more about experiences of injury and highlight areas where efforts can be made to lessen this risk within sport. Specifically, it will investigate whether needs are being addressed when it comes to the provision of medical services.
	Participants: English, Spanish, French or Portuguese-speaking individuals competing in any Paralympic sport during the London 2012 Paralympic Games.
	Principal Investigator: Dr. P. David Howe, Peter Harrison Centre for Disability Sport, Loughborough University, Loughborough, UK. Email: P.D.Howe@lboro.ac.uk
	Please email: P.D.Howe@lboro.ac.uk
Nutritional supplement habits and perceptions of elite Paralympic Athletes	The nutritional needs of Paralympic athletes may differ from those of their Olympic counterparts and yet it is an area which has rarely been investigated. The aim of this research is therefore to determine what (prevalence and type) and how (frequency and dosage) Paralympic athletes are using nutritional supplements. In addition, the results will determine whether usage is influenced by gender, age, sporting event, disability class, sporting experience and nationality. Participants will be asked a series of questions as part of an anonymous online questionnaire regarding their chosen sport discipline and classification, age, height, weight, nationality and their nutritional supplement habits and (anti-) doping knowledge.
	Participants: all athletes above 18 years of age competing at an elite Paralympic level are invited to complete the survey questionnaire.
	Principal Investigator: Miss Terri Graham, The Peter Harrison Centre for Disability Sport, Loughborough University, UK. Email: t.s.graham@lboro.ac.uk
	Links: English:- https://www.survey.lboro.ac.uk/supplementation German:- https://www.survey.lboro.ac.uk/fragebogen/ French:- https://www.survey.lboro.ac.uk/supplementsnutritionnels Spanish:- https://www.survey.lboro.ac.uk/suplementos/

In addition, a project by Josep Solves Almela, Spanish Paralympic Committee, Spanish Government called: "The Portrayal of the Paralympic Games in the Spanish Media" will take place. The main objective of the project is to analyze how the Spanish media reflect the Paralympic Games in London. The research will examine the values associated with disability and sports in general and will make a comparison with the attention that Spanish media give to those values during the 2012 London Olympic and Paralympic Games with the major objective of determining the qualitative differences between them. This will be complemented by a study of the communications environment within which the material has been produced. In social terms, the results will offer a

set of measures that could be taken to risks of social exclusion that may ensue from the stereotyping of disability and people with disability. (Email: jsolves@uch.ceu.es)