CENTRE FOR SPORT, EXERCISE & OSTEOARTHRITIS RESEARCH VERSUS ARTHRITIS

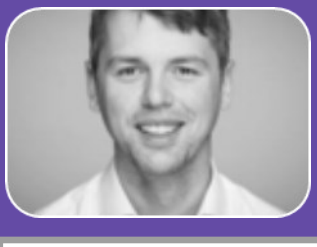
Translational Research for Long-Term Musculoskeletal Health

Conference Programme - 3rd November 2022

BAsem British Association of Sport & Exercise Medicine

Dr Kay Brennan
BASEM

Professor Nigel Arden
University of Oxford



Dr Stefan Kluzek
University of Nottingham

Professor Anthony Redmond
University of Leeds

Professor Paul Greenhaff
University of Nottingham

Professor Maria Stokes
University of Southampton

Professor Jonathan Folland
Loughborough University

Professor James Bilzon
University of Bath

Professor Ewa Roos
University of Southern Denmark

Dr Jackie Whittaker
University of British Columbia

Professor Cathy Bowen
University of Southampton

Dr Max Western
University of Bath

Dr Richard Stevenson
University of Bath

Jem Lawson
PPI Representative

Dr Mark Batt
Nottingham University Hospitals NHT Trust & University of Nottingham

09:45 - 10:00

Professor James Bilzon BSc MSc PhD FSSEMM, *University of Bath*

- **Professor of Human & Applied Physiology**
- **Director, Centre for Sport, Exercise & Osteoarthritis Research Versus Arthritis**
- **Director of the DisAbility Sport & Health (DASH) Research Group**
- **Director, Centre for Clinical Rehabilitation & Exercise Medicine (CREM)**
- **Co-Director, Centre for the Analysis of Motion, Entertainment Research & Applications (CAMERA)**

James joined the Department for Health at the University of Bath in 2008 following a 13-year career as a Human and Applied Physiologist in various Ministry of Defence (MOD) departments, including the Institute of Naval Medicine and the Headquarters Army Recruiting & Training Division (ARTD).

Following a 3-year period as Director of Studies for the MSc in Sport and Exercise Medicine, he became Head of Department for Health from 2011-2017. During this 6-year period, he presided over an ambitious growth plan, which resulted in a 3-fold increase in the number of staff and students in the Department. He also led the Department through the REF2014 exercise, finishing 5th in Sport and Exercise Science, where 90% of the Department's research was graded as world leading or internationally excellent.

James currently holds a number of external Honorary and Advisory appointments including Honorary Civilian Consultant Advisor (HCCA) in Sport & Exercise Science to the Ministry of Defence and Honorary Fellow of the Society of Sport & Exercise Medicine Malaysia (FSSEMM). He is also the British Association of Sport and Exercise Medicine's (BASEM) representative to the International Sports Medicine Federation (FIMS) Scientific Commission. He is Director of the National Centre for Sport, Exercise and Osteoarthritis Research Versus Arthritis.

James is currently Director of the DisAbility Sport & Health (DASH) Research Group, Director of the Centre for Clinical Rehabilitation & Exercise Medicine (CREM) and co-Director of the EPSRC Centre for the Analysis of Motion, Entertainment Research and Applications (CAMERA).

His research interests stem from a background in occupational exercise physiology and have become increasingly focused on exercise and rehabilitation science, including:

- ◊ exercise rehabilitation following traumatic injury
- ◊ exercise for the prevention of chronic disabling conditions
- ◊ the efficacy of healthcare, digital and assistive technologies in rehabilitation

He has now published over 100 peer-reviewed journal articles and secured >£10 million in research grant funding.

Dr Kay Brennan, *British Association of Sport and Exercise Medicine (BASEM) Chair of Education*

Kay has been a Sport and Exercise Medicine Specialist since 2016 and a GP since 2007. Her current portfolio career includes working for the MOD as the Senior Medical Officer and Clinical Lead at a Royal Marines Base in North Devon, a Strategic Clinical Advisor for NHS Devon Integrated Care System, a Postgraduate Lecturer at University of Exeter and Chair of Education on the board of trustee for BASEM.

She is committed to the delivery of physical activity teaching to all health and social care professionals, as well as supporting communities and individuals make movement a positive part of people's lives.

10:00 - 10:20

Professor Nigel Arden, *University of Oxford*

- **Professor in Rheumatic Diseases**
- **Deputy Director: Centre for Sport, Exercise & Osteoarthritis Research Versus Arthritis**
- **Civilian Rheumatology Advisor to the Royal Navy**

My research interests focus on the Epidemiology of Osteoarthritis and Osteoporosis. I am based in the Botnar Research Centre, at the University of Oxford with additional sessions at the MRC Lifecourse Epidemiology Unit at the University of Southampton

My programme has had several major strands:

(a) The descriptive Epidemiology of Osteoarthritis and lower limb Arthroplasty.

(b) The epidemiology of sport, exercise and injury with OA across the full spectrum of exercisers.

(c) Predictive modelling of osteoarthritis incidence and progression.

(d) Defining early osteoarthritis and its outcomes.

(e) Clinical trials in the management of common musculoskeletal conditions.

(f) The production of treatment guidelines for the management of osteoarthritis.

I have worked with OARSI and the FDA, and have written a white paper, to formally classify OA as a serious disease, which has been accepted. The first drug has now been licensed through this fast track process.

The second iteration of the Sports Centre will continue its ground-breaking research into the long term outcomes, both physical and quality of life, of sport participation. We will produce a new Sport QoL tool.

10:20 - 10:40

Dr Stefan Kluzek, *University of Nottingham/Nottingham University Hospitals NHS Trust*

- **Clinical Associate Professor in Sport and Exercise Medicine**
- **Deputy Director Centre for Sport, Exercise and Osteoarthritis Research Versus Arthritis**
- **Consultant in the NHS**
- **Senior Physician for the English Institute of Sport and the Olympic Sports**
- **BASEM Board Member**

I am a Sport and Exercise Medicine doctor with clinical and research interests in knee injuries, osteoarthritis and metabolic dysregulation. My research explores the role of inflammatory pathways in a development of knee osteoarthritis. I am particularly interested in identifying the mechanisms leading to early cardiovascular mortality in knee osteoarthritis.

As a medical student and junior doctor, I witnessed reduced mortality due to the development of evidence -based secondary prevention in cardiovascular medicine. This inspired my initial research focus on the role of stem cells in cardiac vascularisation and clinical research in cardiopulmonary exercise testing. It also stimulated interest in exercise medicine, population health and musculoskeletal medicine. Seven years ago, I entered higher specialist training in Sport and Exercise Medicine to combine my clinical and research interests.

In my MSc., I performed a large systematic review and meta-analysis of the effectiveness of physical activity interventions in patients with knee osteoarthritis. This made me realise that underlying mechanisms driving knee pain, disability and multiple co-morbidities required further investigation before I define any new interventions. During the second year of my MSc. programme, I developed my interest in the biomarkers associated with both synovial inflammation and metabolic dysregulation, with a view to developing research supporting the secondary prevention of knee osteoarthritis.

My DPhil fellowship was awarded by the Arthritis Research UK Centre of Excellence in Sport, Exercise and Osteoarthritis. My project “Markers of synovial inflammation in cohorts at risk of knee osteoarthritis” provided me with key epidemiological, statistical and laboratory skills. I designed and recruited to a new prospective study of individuals with recent knee injuries. During this work, I developed a new sonographic biomarker of synovial inflammation and tested several molecules previously associated with synovitis in the established knee osteoarthritis as potential risk factors for knee osteoarthritis incidence.

From 2016, a subsequent competitive Clinical Lectureship has allowed me to continue research alongside my clinical training. During this time, I have increased my independent work and developed local and international collaborations to support further research.

I strongly believe that tackling knee osteoarthritis will help us to reduce medical comorbidity in middle and older age - and this is the next big frontier of modern medicine after longevity has dramatically increased in the second half of the 20th century.

During my MSc, fellowship, DPhil and lectureship, I demonstrated significant dedication towards discovery, creativity and innovation in the field of the knee injury and osteoarthritis, with the focus on early stratification by identifying individuals with a high-inflammatory response.

My clinical interests are in the fields of knee trauma, osteoarthritis, exercise medicine and musculoskeletal ultrasonography.

10:40 - 11:00

Professor Anthony Redmond PhD, MSc, FFPM RSCP (Glasg), FCPM, *University of Leeds*

- **Deputy Director Centre for Sport, Exercise and Osteoarthritis Research Versus Arthritis**
- **Professor of Clinical Biomechanics**
- **Head of the Section of Clinical Biomechanics and Physical Medicine**

Prof Redmond is a past Arthritis Research UK and NIHR research fellow and clinical academic and now leads a team of 18 researchers ranging from Professor through to research assistant level and from a range of clinical and non-clinical backgrounds.

He is well known for his work in biomechanical conditions, particularly in foot and ankle problems associated with the musculoskeletal diseases. One area of particular interest is the use of combinations of internal imaging, together with more traditional biomechanical modelling. In 2001 he established the FASTER foot and ankle programme in Leeds and latterly, a Joint Replacement Technologies group within the NIHR Leeds Biomedical Research Centre, working with surgeons, radiologists, AHPs and engineers to provide better joint replacements.

He has contributed to NICE guidelines, the RCGP training curriculum and a variety of policies, guidelines and standards and is an NIHR Senior Investigator. He is past chair of ARMA, and of the EULAR health professionals' standing committee and until 2021 was chair of the NIHR ICA panel for Clinical Lectureships and Senior Clinical Lectureships.

Prof Redmond has more than 120 peer reviewed papers and has contributed to more than a dozen of the leading texts in rheumatology and musculoskeletal medicine.

11:00 - 11:20

Professor Paul Greenhaff, BSc, PhD, *University of Nottingham*

- **Deputy Director Centre for Sport, Exercise and Osteoarthritis Research Versus Arthritis**
- **Deputy Director Medical Research Council (MRC)-Versus Arthritis Centre for Musculoskeletal Ageing Research**
- **Metabolism lead Musculoskeletal Disease theme Nottingham NIHR BRC**
- **Professor of Muscle Metabolism**

Paul Greenhaff is a member of the Division of Physiology, Pharmacology and Neuroscience in the School of Life Sciences, Faculty of Medicine and Health Sciences at the University of Nottingham (UoN).

Paul has an international research reputation centred on the dysregulation of muscle metabolism in ageing, immobilisation, inflammation and disease, and strategies (including exercise, nutrition and pharmacological interventions) to offset these effects. He has published >185 original full (non-review) scientific papers (H-index: 82), and >60 review articles and book chapters.

Paul has served as a member of the editorial board of a number of international physiology research journals (current editorial board membership: *Acta Physiologica*, *The Journal of Physiology* and the *Scandinavian Journal of Medicine and Science in Sports*). Paul's research leadership is exemplified by having supervised 37 PhD students to completion (1991-present; the majority of whom are employed in academic, industry, government, and NHS research organisations), and maintaining continuous research funding for nearly 30 years from government, charities and industry. He is a named inventor on several musculoskeletal related patents filed by UoN, has served on a number of expert 'think-tanks' and acted as an industry consultant on numerous occasions (sport and clinical nutrition, and exercise).

11:45 - 12:05

Professor Maria Stokes OBE PhD FCSP, *University of Southampton*

- **Deputy Director Centre for Sport, Exercise and Osteoarthritis Research Versus Research**
- **Professor of Musculoskeletal Rehabilitation**
- **Active Living for Health Research**

Maria's research career began two years after qualifying as a physiotherapist at the London Hospital, when she studied for her PhD in Neuromuscular Physiology in the Nuffield Department of Orthopaedic Surgery and Department of Zoology, University of Oxford. After a postdoctoral Research Fellowship in the Muscle Research Centre, Department of Medicine at the University of Liverpool, she spent four years as a Senior Lecturer in the Department of Physiotherapy, University of Queensland, Australia. She returned to the UK as Director of Research and Development at the Royal Hospital for Neuro-disability, Putney, London.

Maria joined the University of Southampton in 2004 where her research focuses on enabling physical activity for lifelong healthy ageing through finding safe and effective ways of being physically active and maintaining activity in the long-term. Studies aim to prevent injuries and illness in healthy people and help those living with long-term conditions to have an active lifestyle. Maria is an advocate of equality and diversity, particularly in supporting career development of health researchers.

Her research spans the age spectrum from adolescents to older people and the activity spectrum from elite sports to frail older people. More recently, her activities have extended to human space research, specifically optimising musculoskeletal health in astronauts during long periods of inactivity in space (monitoring muscle health and movement quality).

Her applied research is underpinned by studying neuromuscular physiological mechanisms of muscle weakness and fatigue, and biomechanical mechanisms of movement to inform development of exercise programmes for good movement quality. Understanding movement is vital for finding effective ways to protect joints during movement. A key part of the work involves developing assessment tools, and conducting reliability and validity studies, e.g. rehabilitative ultrasound imaging to measure muscle size; measurement of mechanical properties of muscle, using mechanomyography to assess muscle activity, Myoton technology to measure muscle stiffness and tone; assessment of movement quality. Developing adherence strategies for sustaining physical activity in later life is an important aspect of this research programme.

The interdisciplinary nature of Maria's work is enhanced by involvement in local infrastructure initiatives, including: Southampton NIHR Biomedical Research Centre; NIHR Wessex Applied Research Collaboration (where she co-leads the MOTH programme); the Institute for Life Sciences and a regional network, FortisNet, encompassing academic, clinical and industrial partnerships.

Maria is an advocate of equality, diversity and inclusion, particularly in supporting development of health researchers at early and mid-career levels.

12:05 - 12:25

Professor Jonathan Folland, ***Loughborough University***

- **Deputy Director Centre for Sport, Exercise and Osteoarthritis Research Versus Arthritis**
- **Professor of Neuromuscular Performance**

My research is focused on neuromuscular function/performance and the underlying physiology and biomechanics with a particular interest in exercise training to improve function and performance. This research considers the underpinning determinants of neuromuscular function/performance as well as how these factors adapt with exercise/physical training and contribute to improvements in function/ performance. This research encompasses healthy ageing, sports injury/rehabilitation and athletic performance.

The research on healthy ageing is considering the optimisation of resistance training and the targeted prescription of resistance training for specific functional outcomes. The first part of this work is to improve/ optimise explosive resistance training and then to secondly assess its efficacy and tolerability in relation to conventional resistance training.

My research has been published in a range of world leading physiology, sports science and sports medicine journals, with more than 100 journal articles to date. I am an Associate Editor for the ACSM's flagship journal *Medicine and Science in Sports and Exercise*, whilst being a Fellow of the American College of Sports Medicine and the Royal Society of Biology.

I have been on the academic staff at Loughborough University's School of Sport, Exercise & Health Sciences since 2004, including six years on the Senior Leadership team and as Director of Doctoral Programmes.

14:00 - 15:00

Professor Ewa Roos, PT PhD, *University of Southern Denmark*

A Professor of Musculoskeletal Function and Physiotherapy, Department of Sports Science and Clinical Biomechanics, Faculty of Health at the University of Southern Denmark.

Professor Roos has a passion for advancing the frontiers of knowledge to improve the quality of life of those with musculoskeletal disease and to improve health care delivery for these conditions. Her focus is on the prevention and treatment of knee injury and osteoarthritis. She has been able to both produce high -impact clinical research and translate that research into clinical tools that are easily and effectively implemented in hospitals, primary care clinics and even community settings in municipalities. She also served as an expert on clinical guideline committees for osteoarthritis, internationally and in the Nordic countries.

Dr. Jackie Whittaker, *University of British Columbia & Research Scientist at Arthritis Research Canada in Vancouver, Canada*

Dr. Jackie Whittaker is an Associate Professor in the Department of Physical Therapy, at the University of British Columbia, and Research Scientist at Arthritis Research Canada in Vancouver, Canada.

She holds a Michael Smith Foundation for Health Research Scholar Award and Arthritis Society's STARS Career Development Award. As a recognized clinical specialist in musculoskeletal rehabilitation and clinical epidemiologist, her research takes a lifespan approach to preventing osteoarthritis, with a particular emphasis on the post-traumatic knee osteoarthritis. This includes reducing the burden of sport-related knee injuries by improving our understanding of the long-term consequences of knee injuries, and developing and evaluating exercise-based interventions to promote knee health. Central to her research is an integrated knowledge translation approach, involving patients, health professionals and other stakeholders throughout the research-to-practice continuum.

15:10 - 15:30

Professor Catherine Bowen PhD CSci FCPodM FFPM RCPS(Glasg), *University of Southampton*

- **Professor in Podiatry**
- **NIHR ARC Wessex Academic Career Development Lead**
- **NIHR Senior Investigator**
- **Head of the School of Health Sciences Active Living Research Group**

Catherine's research focusses on optimisation of foot and ankle health for active living through which she integrates education and workforce capacity building. Catherine completed her PhD on the developments of musculoskeletal ultrasound imaging techniques applied to the foot and ankle in 2009. She was the first to identify ultrasound imaging as an additional skill that could be used reliably by podiatrists, particularly those working in musculoskeletal health. Since then, Catherine has pioneered and driven the clinical uptake of ultrasound imaging now used worldwide to expand expertise in foot and ankle musculoskeletal services.

Catherine has amassed extensive experience in leading strategic multi-professional and interdisciplinary research teams with a core focus on investigation of musculoskeletal foot and ankle pathology to produce clinically useful optimal models for management of foot health needs. In 2020 Catherine was appointed Adjunct Professor within the School of Clinical Sciences, Faculty of Health and Environmental Sciences, Auckland University of Technology, New Zealand and Adjunct Professor within the Faculty of Health at the Queensland University of Technology, Australia to further develop the global reach and significance of the collaborative work.

Throughout her career, Catherine has championed the development of allied health and nurse research clinical academic careers through leadership of national internship schemes, NIHR MRes, PhD and post-doctoral awards. In recognition of her work, Catherine received a National Institute for Health Senior Investigator award (2022) and a career development research fellowship (2015-2019), a prestigious meritorious award from the UK Royal College of Podiatry (2014) and became the first podiatrist to receive a Chartered Scientist Award (2014). Catherine has been elected to a number of prestigious positions including as a Fellow of the Higher Education Academy; a Fellow of the College of Podiatry and a Fellow of the Faculty of Podiatric Medicine Royal College of Physicians and Surgeons of Glasgow. In 2019, Catherine was appointed Editor in Chief to the Journal of Foot and Ankle Research and Chair of the OARSI Foot and Ankle OA consortium/discussion group.

15:30—15:50

Dr Max Western, *University of Bath*

Dr Max Western is a Behavioural Scientist whose research focusses on the ways to use digital technologies for supporting health behaviour change. In particular, Dr Western has experience in developing, optimising and evaluating the effectiveness of interventions aimed at supporting lifestyle behaviours such as physical activity and exercise as a means to prevent poor physical and mental health. Dr Western also researches the equality of benefit of digital interventions and the psychological processes that can help bridge the digital divide between people of high and low socioeconomic status.

15:50 - 16:10

Dr Richard Stevenson BSc MSc PGDip PhD, *University of Bath*

After graduating from Cardiff Metropolitan University in 2001 with a BSc and MSc in Sport & Exercise

Science, Rich started his career as a research physiologist in phase 1 clinical research. He then moved to an applied setting as an exercise physiologist in the Fire & Rescue Services working as part of a multidisciplinary occupational health team to ensure the health, safety and wellbeing of firefighters in South Wales for 15 years. During this time Rich led a programme of research into the National fitness standards for firefighters (which formed the basis of his PhD at the University of Bath).

After completing his PhD in 2018, Rich moved to the University of Bath as a post-doctoral researcher where he has been focusing on investigating digital solutions to help manage a range of health conditions.

16:10—16:30

Jem Lawson, BSc BPhil, *PPI Representative*

Jem started his professional life as a PE teacher in 1970 and has always enjoyed taking part in a wide variety of sport. He has competed at varying levels in football, rugby, hockey, cricket, tennis, squash, real tennis, volleyball, track & field, cycle racing, swimming and boxing. Jem has concentrated on triathlon since the mid-eighties and he has done most things within the sport. He's represented GB as an age-grouper at World and European Championships. He has coached individuals and been a club coach and he has been an official for many years, from local club events to National Championships and European and World Cup events in winter and summer; he is currently a National Technical Official. Jem has managed England teams in Home Nations' triathlon and duathlon championships. Throughout, Jem has remained a competitor. In 2016 he was British Open Water Swimming Champion in the 65 to 69 age -group. In 2019, having advanced into the 70 to 74 age-group, he was 6th in the European Age Group Sprint Triathlon Championships and 26th in the World Age Group Sprint Triathlon Championships.

Jem became involved in sports' administration and governance on leaving the teaching profession in 2000, and was Chair of the Triathlon England Management Board 2007 – 2014 and a director of the British Triathlon Federation also during that time. Between 2009 and 2011 Jem was Secretary General of the European Triathlon Union, and was Secretary General of the Association of Commonwealth Triathlon from 2014 to 2017. Having served the maximum two terms with Triathlon England/British Triathlon, Jem was appointed as Chair of British Wrestling in 2015. He relinquished this post in September 2020.

Jem became involved in the Centre for Sport, Exercise and Osteoarthritis and soon became involved with Patient and Public Involvement. He was appointed to the Research Strategy Board in 2013 and has played a full part in setting strategy and monitoring developments. He has contributed to a number of published research papers as co-author.

16:45 - 17:00

Dr Mark Batt BSc MB BChir MRCGP DM FACSM FRCP FFSEM, *Nottingham University Hospitals NHT Trust & University of Nottingham*

- **Former Director - Centre for Sport, Exercise and Osteoarthritis Research Versus Arthritis**
- **Consultant / Honorary Professor in Sport and Exercise Medicine**

Dr Mark Batt was a Consultant in Sport and Exercise Medicine at The Centre for Sports Medicine, Nottingham University Hospitals NHS Trust. He is an Honorary Professor at The University of Nottingham. He currently is a Consultant in Sports Medicine at The Spire Nottingham hospital. He was a Fellow at The NHS Institute for Innovation & Improvement.

He graduated from Cambridge University Medical School in 1984 and trained in Family Medicine. He obtained a Diploma in Sports Medicine from the University of London in 1991 and completed a fellowship in Sports Medicine at the University of California, Davis (UCD) in 1993. The next two years were spent as a faculty member in Family Medicine at UCD and as a team physician at the University of California, Berkeley.

Since 1995, he was in Nottingham as a Consultant/Senior Lecturer in Sport and Exercise Medicine at the Nottingham University Hospitals: appointed Special Professor in 2004. He served for 2½ years as clinical director for Trauma and Orthopaedics. He is the NUH-Active programme director - a workplace health and wellness programme based at Nottingham University Hospitals NHS Trust.

He served as a consultant for The England and Wales Cricket Board, The Rugby Football League, British Gymnastics, The English Institute of Sport, The Wimbledon Tennis Championships, ATP and the WTA.

Dr Batt is Past-President of the Faculty of Sport & Exercise Medicine and past Chairman of the Specialist Advisory Committee in SEM. He chaired the work-group which produced the successful case for SEM as a specialty of medicine (2005).

He was Director of the Centre for Sport, Exercise and Osteoarthritis Research Versus Arthritis: a consortium of Nottingham, Oxford, Southampton, Bath, Loughborough, and Leeds Universities investigating the relationship between acute and overuse injury and subsequent Osteoarthritis.