

Associate Professor in Sport and Exercise Medicine

- **Deputy Director Centre for Sport, Exercise and Osteoarthritis Research Versus Arthritis**

Centre Partner Institution – University of Nottingham/Nottingham University Hospitals NHS Trust



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.