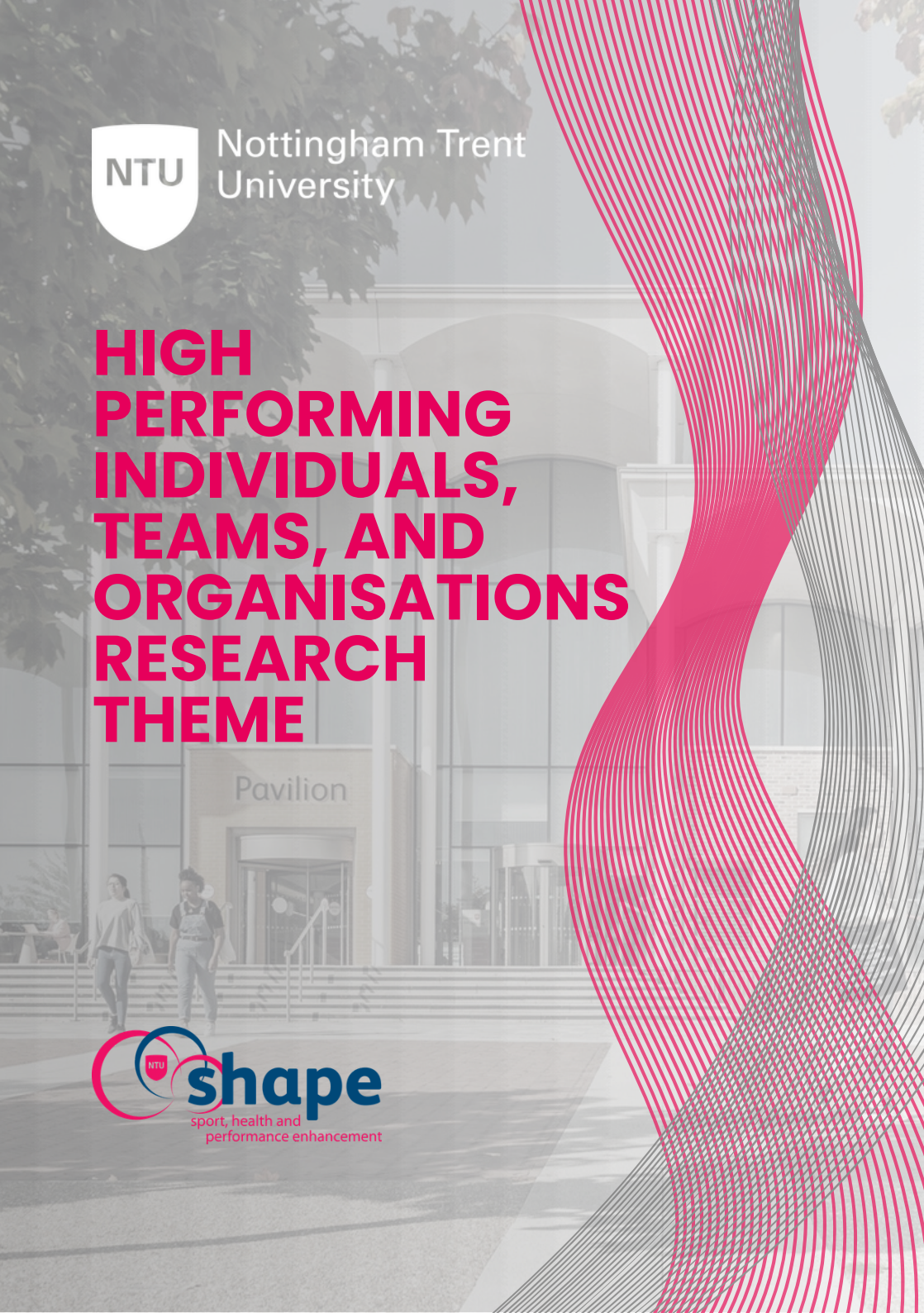
Nottingham Trent University

HIGH PERFORMING INDIVIDUALS, TEAMS, AND ORGANISATIONS RESEARCH THEME



shape
sport, health and performance enhancement

Thank you for your interest in our High Performing Individuals, Teams, and Organisations (HPITO) Research Theme. The following document will provide an overview of our research in this theme, our staff expertise, and the teams and organisations that we work with.

Our HPITO Research Theme sits within the Sport, Health and Performance Enhancement (SHAPE) Research Centre at Nottingham Trent University in the UK. We are based at our Clifton Campus, the 'Science hub' of the University. The campus houses our excellent laboratory and sporting facilities, that we use to underpin our cutting-edge research in this area.

If you are interested in finding out more, please do use the 'Contact Us' section at the end; we would be delighted to hear from you.

Mustafa

Dr Mustafa Sarkar
Theme Lead

High Performing Individuals, Teams, and Organisations Research Theme

The research focus of the High Performing Individuals, Teams, and Organisations theme aims to understand, support, and enhance the factors and practices that contribute towards the optimal preparation, performance, recovery, and health of individuals (e.g., athletes, coaches), teams, and organisations in organised and competitive environments. The multidisciplinary approach of the research spans a wide range of areas and methods with a particular focus on current issues and real-world application.

Our research has eight main specialism areas, as follows:

- Optimising Sporting Performance
- Injury and Health
- Environmental Performance
- Psychological Development and Mental Health
- Equipment Design and User Interaction
- Head Impacts and Brain Health
- Nutritional Innovations
- High Performance Cultures

Our Research

Our research addresses the following areas:

1. Optimising Sport Performance

Our work is focussed on understanding and improving factors limiting individual and team performance such as technique, tactical, mental, and physical variables.

Research Spotlight

Increasing joint strength by 5% in musculoskeletal simulations of 10 elite fast bowlers resulted in minimal improvements in ball release speed and did not consistently alter fast bowling movement patterns. Instead, bowlers subtly adapted their technique, reorganising how momentum was generated within the available time. These findings suggest that effective technique interventions must consider individual physical capacities and momentum generation strategies, highlighting the complex interaction between individual constraints and fast bowling movement.

Read the paper here

2. Injury and Health

Our work in injury and health is focused on reporting injury surveillance and factors that impact injury rates such as rule changes, workload, seasonal variations, and gender differences.

Research Spotlight

Across five seasons of English women's professional football, this study established key injury epidemiology benchmarks. Match injury incidence and time loss due to injury were substantially higher than in training, although training injury incidence declined by 28% over the study period. Hamstring injuries were the most common diagnosis, while anterior cruciate ligament injuries accounted for the greatest time loss. Injury patterns remained relatively stable across seasons.

Read the paper here

3. Environmental Performance

Environmental performance is focused on exploring strategies to understand and enhance performance in different sporting environments, such as acclimation and cooling in hot climates and altitude training; and non-sporting domains including business, education, law enforcement, and the military.

Read the paper here

Research Spotlight
Increasing body cooling through ice slurry ingestion and an ice collar during high-intensity intermittent cycling in the heat reduced body temperature and improved comfort and thermal sensation but did not improve sprint performance. Cognitive function changes were small and inconsistent. Overall, cooling may reduce physiological strain and improve comfort but may have limited effects on performance. These findings provide information on a practical combined cooling method that can be implemented in elite sport.

4. Psychological Development and Mental Health

Our work focusses on studying the development of individual, team, and organisational resilience, focusing on enriching mental health, enhancing coach and parent education, and improving academy release processes.

Research Spotlight
Our recent research examined the mental health of swimming coaches in the United Kingdom. Specifically, we explored the impact of workplace stressors and the satisfaction or thwarting of coaches' basic psychological needs on mental ill-health. High workload, poor work-life balance, isolation, lack of support, and the satisfaction or thwarting of basic psychological needs were key drivers for coaches' mental ill-health. Findings highlight the need for better mental health education, accessible support, and manageable workloads.

Read the paper here

5. Equipment Design and User Interaction

Our focus is on developing an understanding of the impact of equipment design on users' health and performance, such as footwear and prosthetic design.

Research Spotlight
This study tested whether carrying a rifle alters stride-to-stride gait variability during loaded walking. Seventeen soldiers completed treadmill trials at multiple speeds while carrying a standard military load, with and without a replica weapon. Linear and non-linear stride-time measures showed no effect of weapon carriage. These findings indicate that weapon handling does not influence stride-time variability during treadmill-based load carriage, and researchers may not need to include weapons in similar gait studies.

Read the paper here

6. Head Impacts and Brain Health

Head impacts and brain health is focused on addressing issues regarding concussion and non-concussion management and brain injury prevention focussing on technological interventions, pathology exploration, cultural processes, and documenting individual's experiences.

Read the paper here

Research Spotlight
Football players performed 20 simulated corner kick headers in controlled laboratory conditions using a ball projectile machine. Following the headers we found that electrical inhibition from brain to muscle increased alongside worse memory recall - these recovered within 24 hours. Following this, all UK football governing bodies have banned heading in children and restricted practice heading to no more than 10 headers within a week.

7. Nutritional Innovations

Our research centres on the impact of nutritional interventions to improve health and performance, including the effects of dietary biotics and the gut microbiome on health and performance in athletes, and the effects of turmeric supplementation on post-exercise recovery.

Research Spotlight
For the first time, this study demonstrates that a dietary prebiotic targeting the gut microbiome can reduce the duration and severity of upper respiratory and gastrointestinal symptoms in elite rugby union players. Prebiotic supplementation also increased the secretion rate of salivary IgA. These findings can inform practice suggesting that seasonal prebiotic use has the potential to modulate immune function and reduce illness in athletes, which may improve a player's availability to train and compete.

Read the paper here

8. High Performance Cultures

Our research is focused on investigating high performance culture and its effect on the performance, health, and practice, of athletes and support staff, including investigating long-term psychological effects of performance-driven focusses, and the relationship between athletes and medical staff.

Read the paper here

Research Spotlight
This paper reviews research on medical care in sport and proposes four main types of support: affiliated, transient, independent and pseudo. It shows that athletes often prioritise performance over health, leading to mistrust of formal medical staff and reliance on alternative or informal advice. The study highlights gaps in knowledge, especially around athletes' experiences, online health information, and non-Western contexts, calling for further research.

Our Members

The High Performing Individuals, Teams, and Organisations Research theme is led by Dr Mustafa Sarkar, and comprises academic staff, postdoctoral research associates and fellows, and a vibrant community of PhD students.

Mustafa Sarkar

Caroline Sunderland

Jon Wheat

Gavin Weedon

Philippa Jobling

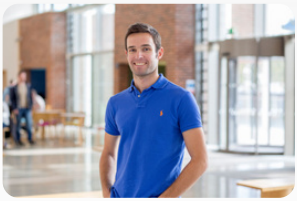
Nathan Cobb

Ella McLoughlin

Christopher Matthews

Ian Varley

Paul Felton



Steve Faulkner

Samuel Giles

Neil Williams

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Pete Holmes

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Chris Saward

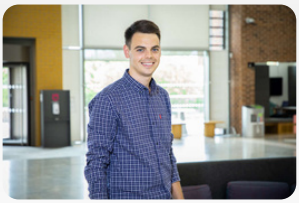
Chris Harwood

Julie Johnston

Noel Kinrade

Rachel Malcolm

Katy Griggs



Jack Ashby

Angus Hunter

Ben Ashdown

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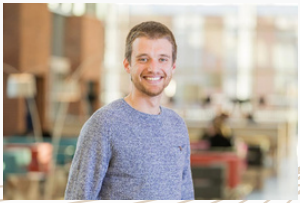

Simon Cooper

To see more details of our research team, please see our website.

See our consultancy services here.

Several of our staff are accredited practitioners with organisations such as the Chartered Association of Sport and Exercise Sciences (CASES) and the Health and Care Professions Council (HCPC). Via our NTU Sports Analysis and Performance Service, we offer sport science-related services, providing those in the sport industry a personalised and tailored range of testing and consultancy services to help professional athletes achieve their goals.

Teams and Organisations We Work With

Our research is conducted with, and/or funded by, national and international teams, national and international governing bodies and organisations, charities, and industry:

The Olympic Studies Centre

Contact us

We would love to hear from:

- High performing teams and organisations in sport and non-sport domains (e.g., business, education, law enforcement, and the military) who would like to find out more, take part in our research, and/or work with us
- Academics who are interested in collaborating with us
- Funding bodies who would like to support us
- High performing teams and organisations using our research to underpin and inform their activities
- Students interested in undertaking postgraduate research study

If you would like to know more about our work in High Performing Individuals, Teams, and Organisation, please contact our Theme Lead, Dr Mustafa Sarkar: Mustafa.Sarkar@ntu.ac.uk

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