THE PODIUM INSTITUTE
FOR SPORTS MEDICINE & TECHNOLOGY

Summary

Job title	Postdoctoral Research Assistant in Wearable Technologies for Sport Medicine
Division	Mathematical, Physical and Life Sciences Division
Department	Engineering Science
Location	Institute of Biomedical Engineering, Old Road Campus, Headington, Oxford, OX3 7DQ
Grade and salary	Grade 7: £38,674 - £46,913 per annum
Hours	Full time
Contract type	Fixed-term for 12 months, with possible extension for a further year, subject to funding
Reporting to	Professor Constantin Coussios OBE FREng FMed Sci, Director of the Podium Institute
Vacancy reference	179720

Research topic	Wearables technologies, medical devices and signal processing for sport safety
Principal Investigator / supervisor	Prof. Constantin Coussios
Project web site	https://thepodiuminstitute.ox.ac.uk/
Funding partner	The funds supporting this research project are provided by Podium Analytics, an NGO and registered charity that supports the Podium Institute for Sports Medicine and Technology at the University of Oxford

The role

We are seeking to appoint a highly motivated Postdoctoral Researcher, to work within the Podium Institute for Sports Medicine at the University of Oxford. Established in October 2022 the Podium Institute sits within the Institute of Biomedical Engineering (IBME) in the University's Department of Engineering Science. It constitutes a world-unique ecosystem within which to develop and validate new technologies for the diagnosis, prevention, and management of sport injuries, with emphasis on safety rather than performance in the community, youth (11-18 years of age) and women's sport.

You will work collaboratively across the Institute of Biomedical Engineering, the broader Department of Engineering Science and several biomedical and clinical departments across the University of Oxford. You will be part of an interdisciplinary team of engineering, medical, neuroscience, neuroimaging, computer vision and machine learning researchers with a common aim to develop the next generation of validated sensing, neuroimaging and biomarker technologies that can enable scalable, cost-effective, evidence-based sports injury prevention.

Reporting to the Institute Director, you will contribute to the healthy and vibrant research environment within The Podium Institute for Sports Medicine at the University of Oxford, by working closely and collaboratively with the four appointed APNTFs in Brain Health, Sports Technologies, AI for Sport and Technologies for mental health, and with the team of post-doctoral researchers, clinical fellows and doctoral students across the Institute. This will involve devising, coordinating, supervising and contributing to research projects of direct or tangential relevance to wearables and signal processing, including the work involved in the collaborations with project partners, guidance to students, and applying for further funding to extend the research.

Responsibilities

Specific Duties

You will be responsible for the design, execution and analysis of the wearable, diagnostic device and signal processing aspects of several world-first multi-modal studies seeking to assess and quantify the effect of repetitive head impacts on short-term and long-term neurological function, including in rugby and snow sports. This will involve

(i) Leadership, contribution and management of the submission of ethics applications or amendments and data protection assessments to enable acquisition, storage and processing of biomedical data within a framework compliant with the University's ethics and data protection policies, as well as one that is compatible with the expectations for generation of publications of the highest standard.

(ii) Direct data acquisition working with professional and amateur athletes using body-worn sensors such as smart mouthguards, positional trackers and flexible wearable sensors; This will involve frequent travel and remote working to attend matches, competitions and training events away from Oxford.

(iii) Data analysis using advanced signal processing techniques and machine learning tools to identify patterns of meaningful physiological change and enable their direct comparison to the outputs of neuroimaging, brain modelling and computer-vision-based assessments of traumatic brain injury and other types of sport injuries;

Additional Duties

- Manage own academic research and administrative activities. This involves small scale project management, to co-ordinate multiple aspects of work to meet deadlines
- Adapt existing and develop new scientific techniques and experimental protocols
- Test hypotheses and analyse scientific data from a variety of sources, reviewing and refining working hypotheses as appropriate

- Contribute ideas for new research projects
- Develop ideas for generating research income, and present detailed research proposals to senior researchers
- Collaborate in the preparation of scientific reports and journal articles and occasionally present papers and posters
- Use specialist scientific equipment in a laboratory environment
- Act as a source of information and advice to other members of the group on scientific protocols and experimental techniques
- Represent the research group at external meetings/seminars, either with other members of the group or alone
- Carry out collaborative projects with colleagues in partner institutions, and research groups
- The researcher may have the opportunity to undertake ad-hoc paid teaching (this includes lecturing, demonstrating, small-group teaching, tutoring of undergraduates and graduate students and supervision of masters projects in collaboration with principal investigators). Permission must be sought in advance for each opportunity.
- Any other duties appropriate with the role.

Selection criteria

Essential selection criteria

- Hold or be near completion* of a PhD/DPhil in Biomedical, Electrical or Information Engineering or other relevant discipline
- Possess specialist knowledge and experience in data acquisition, signal processing and data analysis from wearable or non-wearable sensors and devices
- Be able and willing to travel away from Oxford in order to directly contribute to data acquisition in real-world sport environments including matches, competitions and training involving professional and amateur athletes, often at weekends.
- Have a strong publication and conference presentation record, and previous experience of contributing to publications and presentations
- Evidence excellent oral and written communication skills, including the ability to write for publication, present research proposals and results, and represent the research group at meetings.
- Have the ability to manage own academic research and associated activities
- Be able to contribute ideas for new research projects and research income generation

**please note that 'near completion' means that you must have submitted your PhD thesis.*

Desirable selection criteria

- Be able to start in post no later than September 2025 and ideally as early as July 2025
- Experience of independently managing a discrete area of a research project
- Experience of actively collaborating in the development of research articles for publication

Pre-employment screening

Standard checks

If you are offered the post, the offer will be subject to standard pre-employment checks. You will be asked to provide: proof of your right-to-work in the UK; proof of your identity; and (if we haven't done so already) we will contact the referees you have nominated. You will also be asked to complete a

health declaration so that you can tell us about any health conditions or disabilities for which you may need us to make appropriate adjustments.

Please read the candidate notes on the University's pre-employment screening procedures at: https://www.jobs.ox.ac.uk/pre-employment-checks

Hazard-specific / Safety-critical duties

This job includes hazards or safety-critical activities. If you are offered the post, you will be asked to complete a health questionnaire which will be assessed by our Occupational Health Service, and the offer of employment will be subject a successful outcome of this assessment.

The hazards or safety-critical duties involved are as follows:

- Lone Working
- Work in hot or cold environments
- Driving on University business
- Working with blood, human products and human tissues
- Work in clinical areas with direct contact with patients (NOT administrative roles)
- Travel outside of Europe or North America on University Business

About the University of Oxford

Welcome to the University of Oxford. We aim to lead the world in research and education for the benefit of society both in the UK and globally. Oxford's researchers engage with academic, commercial and cultural partners across the world to stimulate high-quality research and enable innovation through a broad range of social, policy and economic impacts.

We believe our strengths lie both in empowering individuals and teams to address fundamental questions of global significance, while providing all our staff with a welcoming and inclusive workplace that enables everyone to develop and do their best work. Recognising that diversity is our strength, vital for innovation and creativity, we aspire to build a truly diverse community which values and respects every individual's unique contribution.

While we have long traditions of scholarship, we are also forward-looking, creative and cutting-edge. Oxford is one of Europe's most entrepreneurial universities and we rank first in the UK for university spin-outs, and in recent years we have spun out 15-20 new companies every year. We are also recognised as leaders in support for social enterprise.

Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford.

For more information, please visit www.ox.ac.uk/about/organisation.

Podium Institute for Sports Medicine and Technology

The Podium Institute for Sports Medicine and Technology at the University of Oxford is a long-term partnership bringing together leaders across sport, science, academia, technology, and business. The initial work of the institute will focus on traumatic injuries such as concussion and serious musculoskeletal injuries, as well as sudden cardiac death and the psychological factors that lead to

injury. The institute sits within the Institute of Biomedical Engineering (IBME) in the University's Department of Engineering Science.

The Podium institute aims to shift the traditional emphasis of research into sports injury - which is predominantly adult-centric and based upon treatment – by concentrating on younger athletes, 11-18 years old, and focuses on prevention rather than cure. The institute will aim to develop new technologies to monitor and analyse the individual factors that currently lead to youth sports injuries, and offer practical solutions for safer sports practices, focusing on safety for lifelong health, rather than performance. A hallmark of the Institute is the development and validation of new technologies for sport injury detection and prevention and for lifelong health.

Institute of Biomedical Engineering

The Institute of Biomedical Engineering (IBME), a research institute of the Department of Engineering Science, is situated on the Old Road Campus in Headington (about a mile from the centre of Oxford), close to the Churchill Hospital, the Oxford Cancer Hospital and less than half a mile away from the John Radcliffe Hospitals and the Children's Hospital. The current Institute Director is Prof. Constantin Coussios FREng. Primary activities (and the central administration for the IBME) are based at the Old Road Campus Research Building, with activities in the Botnar Research Centre, Big Data Institute and on the Keble Road Triangle site of the Department of Engineering Science.

The IBME offers a world-class and vibrant venue for biomedical engineering research and postgraduate research training where engineers and clinicians work together on addressing unmet needs in the prevention, early diagnosis and treatment of major diseases and conditions. The Institute's core mission is to develop novel medical devices, healthcare technologies, and systems capable of delivering substantial healthcare benefit, and to translate new engineering technologies into clinical practice. The Institute won a Queen's Anniversary Prize for its healthcare technology innovation activities in 2015. Oxford biomedical engineering has a sustained track record of translational research and healthcare technology commercialisation which goes back to the 1960s but has been particularly prolific in the last two decades. The Oxfordshire region's life sciences and healthcare innovation system is also recognised as one of the most dynamic in Europe, and provides opportunities for academic-business collaborations, industrial-funded research collaborations, as well as a destination for university research innovations and a trained skilled workforce.

Within the IBME there are currently six research clusters: Biomedical Image Analysis, Neurotechnology & Brain Therapies, Biomedical Signal Processing, Modelling and Instrumentation, Non-invasive Therapy and Drug Delivery, Biomaterials and Regenerative Medicine & Biomechanics. In addition, we strive to provide a supportive environment for independent early career researchers which include Royal Academy of Engineering Research Fellows as well as Junior Research Fellows.

More information about the Institute and its research programmes may be found at www.ibme.ox.ac.uk.

Engineering Science Department

Engineering teaching and research takes place at Oxford in a unified Department of Engineering Science whose academic staff are committed to a common engineering foundation as well as to advanced work in their own specialties, which include most branches of the subject. We have especially strong links with computer science, materials science, medicine and also the Saïd Business School. The Department employs 120 academic staff (this number includes 13 statutory professors appointed in the main branches of the discipline, and 25 full professors); in addition, there are nine visiting professors. There is an experienced team of teaching support staff, professional services and administrative staff and technicians. The Department has well-equipped laboratories and workshops, which together with

offices, lecture theatres, library and other facilities have a net floor area of about 25,000 square metres.

The Department is ranked fifth in the world, and the top European University, in the 2023 *Times Higher Education World University Rankings* for Engineering & Technology. Further information about the Department is available at www.eng.ox.ac.uk.

Teaching

We aim to admit 170-180 undergraduates per year to take a 4-year course leading to the MEng degree in Engineering Science. The course is accredited at MEng level by the major engineering institutions. The syllabus has a common core extending through the first two years. Specialist options are introduced in the third year, and the fourth year includes further specialist material and a major project.

Research

Research in the Department is particularly strong. We have approximately 600 research students and about 250 postdoctoral researchers. Direct funding of research grants and contracts, from a variety of sources, amounts to an annual turnover of approximately £70m.

The results of the seven-yearly UK-wide assessment of university research, REF2021, published on 12th May 2022, demonstrate that the University of Oxford made the highest volume of world-leading research submissions. The Department of Engineering Science had 71% of submissions which met the requirements for the highest grading of 4*(research that is world-leading in terms of originality, significance, and rigour).
Research activities fall into 8 broad headings, though there is much overlapping in practice: Information Engineering (Robotics, Computer Vision and Machine Learning); Control; Thermofluids; Materials and Mechanics; Civil and Offshore; Electrical and Optoelectronic; Chemical and Process; and Biomedical.

The Department of Engineering Science holds a bronze Athena Swan award to recognise advancement of gender equality: representation, progression and success for all.

The Mathematical, Physical, and Life Sciences Division

The Mathematical, Physical, and Life Sciences (MPLS) Division is one of the four academic divisions of the University. In the results of the six-yearly UK-wide assessment of university research, REF2014, the MPLS division received the highest overall grade point average (GPA) and the highest GPA for outputs. We received the highest proportion of 4* outputs, and the highest proportion of 4* activity overall. More than 50 per cent of MPLS activity was assessed as world leading.

The MPLS Division's 10 departments and 3 interdisciplinary units span the full spectrum of the mathematical, computational, physical, engineering and life sciences, and undertake both fundamental research and cutting-edge applied work. Our research addresses major societal and technological challenges and is increasingly focused on key interdisciplinary issues. MPLS is proud to be the home of some of the most creative and innovative scientific thinkers and leaders working in academe. We have a strong tradition of attracting and nurturing the very best early career researchers who regularly secure prestigious fellowships

We have around 6,000 students and play a major role in training the next generation of leading scientists. Oxford's international reputation for excellence in teaching is reflected in its position at the top of the major league tables and subject assessments.

MPLS is dedicated to bringing the wonder and potential of science to the attention of audiences far beyond the world of academia. We have a strong commitment to supporting public engagement in

science through initiatives including the Oxford Sparks portal (http://www.oxfordsparks.net/) and a large variety of outreach activities. We also endeavour to bring the potential of our scientific efforts forward for practical and beneficial application to the real world and our desire is to link our best scientific minds with industry and public policy makers.

For more information about the MPLS division, please visit: http://www.mpls.ox.ac.uk/

How to apply

Applications are made through our online recruitment portal. Information about how to apply is available on our Jobs website https://www.jobs.ox.ac.uk/how-to-apply.

Your application will be judged solely on the basis of how you demonstrate that you meet the selection criteria stated in the job description.

As part of your application you will be asked to provide details of two referees and indicate whether we can contact them now.

You will be asked to upload a CV and a supporting statement. The supporting statement must explain how you meet each of the selection criteria for the post using examples of your skills and experience. This may include experience gained in employment, education, or during career breaks (such as time out to care for dependants)

Please upload all documents **as PDF files** with your name and the document type in the filename.

All applications must be received by **midday** UK time on the closing date stated in the online advertisement.

Information for priority candidates

A priority candidate is a University employee who is seeking redeployment because they have been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing department(s).

If you are a priority candidate, please ensure that you attach your redeployment letter to your application (or email it to the contact address on the advert if the application form used for the vacancy does not allow attachments).

If you need help

Application FAQs, including technical troubleshooting advice is available at:
https://staff.web.ox.ac.uk/recruitment-support-faqs

Non-technical questions about this job should be addressed to the recruiting department directly:
recruitment@eng.ox.ac.uk

To return to the online application at any stage, please go to: www.recruit.ox.ac.uk.

Please note that you will receive an automated email from our online recruitment portal to confirm receipt of your application. **Please check your spam/junk mail** if you do not receive this email.

Important information for candidates

Data Privacy

Please note that any personal data submitted to the University as part of the job application process will be processed in accordance with the GDPR and related UK data protection legislation. For further information, please see the University's Privacy Notice for Job Applicants at:

https://compliance.admin.ox.ac.uk/job-applicant-privacy-policy. The University's Policy on Data Protection is available at: https://compliance.admin.ox.ac.uk/data-protection-policy.

The University's policy on retirement

The University operates an Employer Justified Retirement Age (EJRA) for very senior research posts at **grade RSIV/D35 and clinical equivalents E62 and E82**, which with effect from 1 October 2023 will be 30 September before the 70th birthday. The justification for this is explained at: https://hr.admin.ox.ac.uk/the-ejra.

For **existing** employees on these grades, any employment beyond the retirement age is subject to approval through the procedures: https://hr.admin.ox.ac.uk/the-ejra.

There is no normal or fixed age at which staff in posts at other grades have to retire. Staff at these grades may elect to retire in accordance with the rules of the applicable pension scheme, as may be amended from time to time.

Equality of opportunity

Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. No applicant or member of staff shall be discriminated against because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.

Benefits of working at the University

Employee benefits

University employees enjoy 38 days' paid holiday, generous pension schemes, travel discounts, and a variety of professional development opportunities. Our range of other employee benefits and discounts also includes free entry to the Botanic Gardens and University colleges, and discounts at University museums. See https://hr.admin.ox.ac.uk/staff-benefits

University Club and sports facilities

Membership of the University Club is free for all University staff. The University Club offers social, sporting, and hospitality facilities. Staff can also use the University Sports Centre on Iffley Road at discounted rates, including a fitness centre, powerlifting room, and swimming pool. See www.club.ox.ac.uk and https://www.sport.ox.ac.uk/.

Information for staff new to Oxford

If you are relocating to Oxfordshire from overseas or elsewhere in the UK, the University's Welcome Service website includes practical information about settling in the area, including advice on relocation, accommodation, and local schools. See https://welcome.ox.ac.uk/

There is also a visa loan scheme to cover the costs of UK visa applications for staff and their dependents. See https://staffimmigration.admin.ox.ac.uk/visa-loan-scheme

Family-friendly benefits

With one of the most generous family leave schemes in the Higher Education sector, and a range of flexible working options, Oxford aims to be a family-friendly employer. We also subscribe to the Work+Family Space, a service that provides practical advice and support for employees who have caring responsibilities. The service offers a free telephone advice line, and the ability to book emergency back-up care for children, adult dependents and elderly relatives. See https://hr.admin.ox.ac.uk/my-family-care

The University has excellent childcare services, including five University nurseries as well as University-supported places at many other private nurseries.

For full details, including how to apply and the costs, see https://childcare.admin.ox.ac.uk/

Disabled staff

We are committed to supporting members of staff with disabilities or long-term health conditions. For further details, including information about how to make contact, in confidence, with the University's Staff Disability Advisor, see https://edu.admin.ox.ac.uk/disability-support

Staff networks

The University has a number of staff networks including the Oxford Research Staff Society, BME staff network, LGBT+ staff network and a disabled staff network. You can find more information at https://edu.admin.ox.ac.uk/networks

The University of Oxford Newcomers' Club

The University of Oxford Newcomers' Club is an organisation run by volunteers that aims to assist the partners of new staff settle into Oxford, and provides them with an opportunity to meet people and make connections in the local area. See www.newcomers.ox.ac.uk.