Performance. Perfected.

Sports and Exercise Science

Lancaster University Medical School

2020 Entry
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The place
for you

Lancaster’s BSc in Sports and Exercise Science is one of the first in the UK to be delivered by a medical school. This is your chance to study sports and exercise science within an academically rigorous environment, and to combine scientific knowledge with professional practice.

Lancaster Medical School is recognised for its subject expertise, supportive community and satisfied students. We are justly proud of the community we have created within the Medical School and on the degree. As a team, we nurture talent to bring out the full potential of our students.

You will explore the science behind human performance in sports, exercise and health. The degree balances scientific focus with employability, so you will study anatomy, physiology, biomechanics and psychology alongside subjects such as nutrition, digital technologies in sports and exercise science, and data analysis.

Our students learn to take a holistic approach to athletic performance and exercise as a medicine for health, to explore sport and exercise science from all sides. You will be encouraged to consider the increasing prominence of exercise and physical activity as part of a healthy lifestyle, and to engage with current debates on public health and disease management.

One question we will always ask of you, whichever career you choose: what impact will you have in sport, exercise and health?
Ben Law (Bowland College) is studying for a BSc in Sports and Exercise Science. He came to Lancaster after three and a half years working as a personal trainer.

Why did you choose to study your degree?

Whilst I already have a certificate and experience in personal training, I found I lacked the academic knowledge and the research into why I’m training the way I’m training. I wanted to improve my knowledge and credibility, so that when I train an individual, I know exactly what they need and when they need it.

What was the appeal of the course at Lancaster Medical School?

You get the perspective of the medical side, which is very much associated with exercise, more so than sport, but we can apply the academic knowledge we acquire to both health and exercise. A lot of our studies that lean towards medicine are biological, and whilst we find those subjects challenging, we’ve found that it’s a topic that we do need to focus on. We have also studied public health and how health affects not just personal health or locational demographic health, but also, for example, in the workplace.

How does that benefit your studies?

Most students on the course are athletic or have a background in athletics, which is a nice common ground. We all came in with an idea of how we can affect an individual’s athleticism, but we’re all finding that it is changing our perspective of health itself and not just towards the athlete. This will take our experience deeper into associating that everybody needs assistance with health and activity, not just those that are already fit and healthy.

How would you describe the community on your degree?

What is nice is the small cohort of students, so we all turn towards each other for support. If we have any academic questions or concerns, the lecturers are all open to questions or any concerns we have. They want to make sure that we have the support and the help that we need.

What would be a career path for you from this degree?

Public health has been quite an eye-opener; it is something that many people do not realise is in such demand. I find myself opening up from life inside the gym as a personal trainer, so not just working with athletes but also helping those who want to be healthy, or energetic and active, to find a way to do it that is exciting for them. It could be working directly on diabetes or obesity, or just older age adults trying to get more active. It could even be towards the younger ages, the early ages of childhood.
You will be taught by Lancaster Medical School’s research-active academics with expertise in sports and exercise science, plus specialists ranging from bioscientists and clinicians, to sports nutritionists and public health experts.

**Worms in Space**

Dr Chris Gaffney works in the area of skeletal muscle metabolism (the chemistry of muscles that move us) and his research focuses on how changes in muscle are affected by spaceflight.

In December 2018, Chris launched worms into space from the NASA Kennedy Space Center in Florida, USA, on board SpaceX-16. It was part of the first UK-led research experiment to take place on board the International Space Station called the Molecular Muscle Experiment. The aim was to understand the molecular mechanisms of why astronauts lose muscle in space. Spaceflight is also considered a model of accelerated ageing, so this research will have important implications both for astronauts, and for the human ageing process on Earth.

**Mitigating Risk**

Dr Michelle Swainson works within the area of cardiovascular disease and her research focuses on how physical activity, fitness and obesity are linked to a person’s risk of having a heart attack.

Michelle conducts exciting work around obesity measurement and preventive health assessments, and leads the cardiovascular risk part of the UK Rugby Health Study. The aim is to explore the health of retired rugby players. Despite years of competitive sport and training, upon retirement many players don’t follow a healthy lifestyle, significantly increasing their future health risks. This work hopes to inform current players and encourage teams to promote player welfare so they are well-equipped to maintain healthy and active futures.

**Muscle Performance**

Dr Theo Bampouras researches muscle performance in sporting and exercising populations as well as how functional ability is affected in older age.

Theo is currently involved with a project evaluating the effectiveness of a 12-week, home-based exercise programme on frail chronic kidney disease (CKD) patients. Although frailty is typically associated with weakness in older age, it is the combination of several conditions that make someone frail. Despite the impact of CKD on the individual and the NHS, not enough work has examined frailty in this population. The project is exploring the feasibility of frail CKD patients exercising at home, with the hope that their frailty status will not deteriorate and may even improve.
Your future career

Lancaster University is ranked 3rd in the UK and first in the North West for Graduate Prospects by The Times and Sunday Times Good University Guide 2019.

Sports and exercise science contribute 147,300 jobs to the UK workforce.*

For every £1 that students invest in their education in sports and exercise science yields £5.50 in higher future wages.*

A sports and exercise science graduate will earn £667,000 (not adjusted for inflation) more in earnings across their working life compared to if they had a Level 3 education (equivalent to A levels).*

A BSc (Hons) Sports and Exercise Science from Lancaster University will open doors to a career in the sports industry or beyond. It could lead to employment in the private and public sectors, including the NHS, local authorities, national sporting associations, sports governing bodies, education, professional sports clubs, public sports and recreation facilities, and the community.

Potential roles
- Exercise physiologist
- Sports biomechanist
- Sports psychologist
- Strength and conditioning coach
- Health promotion specialist
- Personal trainer
- Performance analyst
- Sports nutritionist

* Sport and Exercise Science Education. Impact on the UK Economy (2019).
What motivated you to study sports and exercise science?

Sports science has always been something I’ve been interested in, even from a little lad playing sport with my dad. My mum is a scientist, so combining the two was a big interest of mine. I always enjoyed sport and science at high school. Initially, I looked at physiotherapy, but I didn’t want to narrow my options too soon. I think going into sports science gives me a wider range of skills and their application.

Why did you choose Lancaster University?

I chose Lancaster because of the campus and the facilities they have within the Medical School. The tutors here were also very welcoming, and I think Lancaster is a very homely place to be. I also like the place, it’s a very green space and there are nice people here.

You mentioned the crossover between medicine and sports science, does it help you in your studies?

Yes definitely; I think it adds more challenge to what I’m doing, but within that challenge it increases your skills, like time-management, so that extra challenge adds a bit of diversity to what you’re doing. Being part of the Medical School offers a lot of practicality to your learning.

What has been the most useful experience that will help you in your future career?

The opportunity to use the new Human Performance Laboratory has been very helpful, it’s a lot of close-knit teaching. We’ve done presentations in there, we’ve done a lot of health-based things, we’ve taken blood-tests, we’ve had people on treadmills, on bikes, etc. It is the practical application of skills that will help me in the future, and within the course we get a lot of opportunity to have that practical application.

Where do you see yourself in the future?

Perhaps something with a scientific basis, such as cardiology. I like the health side of things more than the sports, but I think the use of sport is massive within health now with the challenge of obesity.

I like the idea of helping people, that’s my main priority. I want to do something where I can impact someone’s life and they remember you.

Stan Fleming (County College) dreamed of being a footballer as a young lad. Now he’s studying a BSc in Sports and Exercise Science and planning on making a difference.
Discover sports and exercise science

**Performance. Perfected.**
You will explore the science behind human performance in sports, exercise and health. Using our state-of-the-art equipment, you will gain the skills to capture and analyse physiological and biomechanical data to better understand human performance and activity. You will learn how to act to enhance performance and activity - whether for competition or disease management - and how to provide feedback to an athlete, a patient or member of the general public.

**Professional**
The course content covered in year one allows you to complete an industry recognised gym instructor qualification and a personal trainer qualification from one of the UK’s leading providers of learning and education in the active leisure, wellbeing and fitness sector. This enables you to become a qualified fitness professional alongside your academic studies and gain experience of working with people in an exercise and fitness environment, boosting your employability.

**Connected**
You will benefit from Lancaster Medical School’s excellent connections with clinicians, practitioners, and professionals working in both the health and sports domain, whilst gaining experience of working with athletes and members of the wider community.

**Choice**
In your second year, you can begin to tailor your degree by choosing to study either Exercise Medicine (health performance) or Sports Medicine (athletic performance). Options in your third year allow you to continue with your chosen direction, or widen your studies by mixing optional modules.
Human Performance Laboratory

Our brand new Human Performance Laboratory gives you access to specialised sports facilities featuring cutting-edge technology used by today’s elite athletes. Using our state-of-the-art equipment, you will gain the skills to capture and analyse physiological and biomechanical data to better understand human performance and activity.
Strength and Conditioning Room

Our brand-new, purpose built Strength and Conditioning Room provides a workout space full of high specification conditioning equipment. You’ll have the opportunity to train, or train others to a high level of performance in year one module Exercise Prescription. You can utilise this high specification equipment, which includes a GHD bench, ski ergometers, Wattbikes, assault bikes, and Technogym skillmills, skillruns, skillbikes and skillrows to train participants whilst working towards your personal trainer qualification, which is integrated into the first year.

Life Science Laboratories

We have invested over £4 million in new life science laboratories. In your first year, you will use these to complete dissections as part of Fundamental Anatomy and during the practical elements of Molecules of Life and Cell Structure and Function.

Health Innovation

Lancaster University’s new Health Innovation Campus will be an international centre tackling the biggest challenge in healthcare today – helping people to live as long and as healthily as possible. We aim to create a world-class centre for innovation in health, transforming healthcare and changing practice internationally, nationally, and regionally – a ‘go to’ place for health innovation.
Sport at Lancaster

Whatever your sporting passion, you’re likely to be able to pursue it or try something new.

Sports Centre
- Climbing wall
- 100 station gym
- Badminton courts
- Swimming pool
- Personal trainers
- Squash courts

Outdoor
- Tennis courts
- Netball courts
- Multi-use games areas: for 5-a-side, basketball, etc.
- Floodlit synthetic grass pitches
- Rugby pitches
- Association Football pitches
- Crown bowling green

Discover
www.lancaster.ac.uk/sport
You won’t need to travel far from campus to get an adventure fix. The Lake District can be reached within an hour where you can hill run, canoe, windsurf, paddle-board, paraglide, horse ride, paint ball and much more. The Forest of Bowland is even closer with great walking and cycling routes.

Discover www.golakes.co.uk/ www.forestofbowland.com/

If you’re a keen cyclist, you can even cycle from Lancaster University to York via the Way of the Roses cross-country route.

Discover wayoftheroses.info/
The place to compete

As well as the opportunity to represent your university in British Universities and College Sport competitions, Lancaster offers the unique chance to compete for your college in our Carter Shield event.

Discover www.lancaster.ac.uk/colleges lancastersu.co.uk/sport-lancaster

You can also get involved in our annual ‘War of the Roses’, where Lancaster University challenges the University of York across more than 50 different events.

Discover roseslive.co.uk
First year student Joanna Wootton (Fylde College), took a year out before starting her BSc in Sports and Exercise Science. We asked her about settling into university life and balancing her studies with training.

How have you found the transition from sixth form?
I had a year out so I was coming from home to university; it was a bit of a leap getting used to doing everything for yourself. At sixth form you are helped more whereas at university you are a lot more independent. I enjoy the independence; it works for me.

What are the benefits of Lancaster being a campus university?
I wanted to live on campus in first year whilst I found my feet as it’s just one less thing to worry about. The campus makes you feel immediately a part of a community; you immediately relax which makes it less stressful. Moving to university is a quite daunting thing to do!

Do you feel at home in Lancaster?
I do feel at home here. The people are so nice and taking part in sports, you immediately have a small group that you can get to know and make friends.

What is the best thing about campus?
I like how the facilities are all here; you can get pretty much get whatever you need on campus. I really like the library as well as it’s a nice, bright space to work.

Can you describe a typical day on your course?
We have quite a lot of contact hours because it is a science subject, but it is spread evenly throughout the day – we normally have a lecture followed by a practical session. I have training in the morning and the evening but it is still manageable. I get up, train, go to the gym, have lectures and work in the library until the practical session. Then I go home and work on my assignments.

What facilities are available for your degree and how do they help with your studies?
The new Human Performance Laboratory is great. I love it when we have a practical in there as it is equipment that I’ve never seen before, or I’ve seen but not been able to understand what it’s used for. It is just incredible that we get to use that level of technology in the first year. We use the sports hall a lot too because if it can be taught practically, they will teach us practically. We have also used anatomical models like the medical students, which has really helped my understanding of anatomy.

What sporting activities do you take part in?
I’m a rower and my training is quite intense as we train twice a day, six days a week. We use the sports centre for circuit training, weights training, going on the rowing machines every single day. I definitely make good use of the sports centre and we go down to the river to train as well.

How does studying fit alongside your training?
It has been an adjustment to work out how to balance that level of training with my studies. I’ve had a lot of support from the lecturers if I’m finding something hard to balance around my schedule. The lectures want to help you and they want you to do well, which has benefited me massively. It is difficult, but it is not impossible!

How do the course tutors help you to manage your timetable?
We have tutor meetings every few weeks, where you talk through how you are finding things. You discuss what you’re doing at the moment, your course schedule and working things around that. If there is something that is falling behind, I’m helped to find a way that’ll best suit me to get it done.

The place for the athlete
BSc (Hons) Sports and Exercise Science: Year One

In your first year, you will begin to explore the science behind human performance in sports, exercise and health through a broad range of core modules.

The modules allow you to complete an industry-recognised gym instructor qualification and a personal trainer qualification from one of the UK’s leading providers of learning and education in the active leisure, wellbeing and fitness sector.

Core modules

**Becoming a Sports and Exercise Scientist**
Learn about the role of sports and exercise science in public health, disease management, elite performance, and recreational sports and activities.

**Cell Structure and Function**
An introduction to the structure and function of prokaryotic and eukaryotic cells.

**Concepts in Sports and Exercise Psychology**
How does a tennis player fight back to win the match? Why do sprinters visualise a race? Examine theories of behaviour change along with motivation, visualisation and the effects of pressure on athletic performance.

**Digital Technologies in Sports and Exercise Science**
There’s been an explosion in the amount of data captured in sport and exercise. You’ll learn ways to capture biometric data, how reliable the data are and what can be done with it.

**Essentials of Sports and Exercise Physiology**
Get to grips with human physiology in the context of sports and exercise - how the human body works and responds to exercise and sporting activity.

**Experimental Design and Data Analysis**
An introduction to the basic principles of experimental research design. We familiarise you with the statistical analysis of quantitative data and how to report statistical results.

**Fundamental Anatomy**
The anatomical terminology and science behind the structure and function of the human body. Journey through the nervous, musculoskeletal, cardiovascular and respiratory systems, learning the detail of each as you go.

**Introduction to Nutrition**
Recognise the impact of foods and fluids on human biochemistry, and learn how to calculate energy requirements and understand how this differs across different activities and populations.

**Exercise Prescription**
Learn the theory and research surrounding exercise programming, training principles and techniques. Hone your skills in instruction, delivery, adaptability and progression of a programme.

**Molecules of Life**
Explore the chemistry of some of the most important molecules to life, including water, nucleic acids, carbohydrates, proteins and lipids.

**Principles of Biomechanics**
Gain a strong grounding in biomechanics – learn how and why the human body moves in the way it does, and how human movement alters in different sport and exercise activities.

**Professional Practice I**
Get an in-depth, inside view of the range of professions and professional activities within the sports and exercise sector.

**Public Health Challenges**
Engage with the public health challenges that directly relate to sport and exercise science, such as health inequalities, obesity, mental health and promoting healthy lifestyles.

We keep our degrees under constant review, and also regularly introduce new modules. In any academic year, the modules offered and course structure may differ slightly from that presented here.
BSc (Hons) Sports and Exercise Science:  
**Year Two**

In your second year, you begin to tailor your degree to your own interests or career aspirations by choosing to study an optional module in either Exercise Medicine (health performance) or Sports Medicine (athletic performance).

### Core modules

**Biomechanics II**  
Explore in more depth how muscle performance affects our day to day life, whether this is being able to walk to the shops or to achieve a personal best in a competition. You will learn how to assess performance in both laboratory and field settings, and how to interpret the data in a meaningful way.

**Current Debates in Sports and Exercise Science**  
Engage with current debates across sport and exercise science, including physiology, nutrition, psychology and biomechanics. You might debate athletic doping scandals or argue that some Paralympic athletes are advantaged by access to more advanced prosthetic technology.

**Physiology and Metabolism**  
Focus on the measurement and evaluation of physiological responses to exercise and related environments. You will delve deeper into energy systems and metabolic processes and find out more about the determinants of exercise performance, fatigue and recovery.

**Research Methods and Statistics**  
Gain the knowledge and skills necessary for research, including how to identify different types of data and how to select appropriate statistical tests. This valuable experience is essential for a successful career in sports science and is highly translational to alternative careers where statistical analysis is required.

**Sports and Exercise Psychology**  
Focus on the mental and emotional needs of athletes and participants. Explore the nature of performance sports stressors and approaches to their management, along with visualisation and mental rehearsal, and the connection to enhanced performance. Examine the role of the sports psychologist and the nature of effective athlete–psychologist relationships.

**Professional Practice II**  
We keep our degrees under constant review, and also regularly introduce new modules. In any academic year, the modules offered and course structure may differ slightly from that presented here.

### Optional modules

Choose either Exercise Medicine or Sports Medicine.

**Exercise Medicine**  
Apply exercise science and exercise prescription to health and medical conditions. With the growing public health challenge associated with physical inactivity, as well as the evidence of exercise as an effective prevention and treatment strategy, this module will equip you with the knowledge and skills to work towards a career in the health domain.

Learn about the role exercise plays in the prevention of risk factors associated with heart disease, as well as the use of exercise rehabilitation for those recovering from a cardiac event. Discover how exercise can delay issues with bone health, such as load-bearing activities for osteoporosis. Gain insights into the pathophysiology, medications and exercise prescription across a wide range of conditions. Develop an adapted physical activity programme and engage with real-life patients for exercise medicine.

**Sports Medicine**  
Develop your knowledge of the injuries and pathologies present within elite sport, and examine prevention and treatment strategies for these conditions. Assess sports injuries and how to monitor athletes who may be at risk through overtraining or other underlying pathologies. Examine the performance benefits, and long-term consequences, of ergogenic aids, and the growing use of therapeutic use exemptions (TUE’s) within sport.
In your third year, you will make a unique contribution to sports and exercise science research and undertake a research project on a topic of your choosing. You will also finalise your professional practice programme by delivering a sports and exercise science-based event.

Core modules will cover advanced concepts within sports and exercise science. You will choose two modules, from a choice of three, in the subjects of physiology, biomechanics and psychology.

You will also have the opportunity to select an optional module in areas such as maximising elite performance or optimising health outcomes. Other options include biomedical and life science subjects, such as medical genetics or the biology of ageing.

Research Project
A crucial part of your degree is your final year project, during which you'll have the opportunity to work with staff to undertake your own research project. You'll be guided in doing this, and you'll be able to apply all of the knowledge and skills you've developed. It will allow you to build on your research and time-management skills, as well as your presentation and team-working skills.

You may find yourself analysing warm-up strategies to prevent injury, developing effective training and nutritional approaches for high-performing athletes, or assessing the effects of exercise for weight loss in obese people.

You will be taught by Lancaster Medical School’s research-active academics with expertise in sports and exercise science, plus specialists ranging from bioscientists and clinicians, to sports nutritionists and public health experts. Guest speakers will also contribute.

A broad range of assessment methods will be used throughout the degree. In your first year, your knowledge and skills will be assessed by online weekly tests, often multiple-choice, which will help you to spot any gaps in your learning and to feel good about the knowledge that you have already secured.

Written assignments might include the production of a dietary analysis report or a critical review. You will also participate in online forums, group presentations and debates where you will present your side of the argument with a partner. Traditional written exams are also used to test knowledge.

In your third and final year, you will make a unique contribution to sports and exercise science research and undertake a research project on a topic of your choosing. You will also finalise your professional practice programme by delivering a sports and exercise science-based event.

We keep our degrees under constant review, and also regularly introduce new modules. In any academic year, the modules offered and course structure may differ slightly from that presented here.
BSc (Hons) Sports and Exercise Science:  
Entry requirements for 2020 entry

A level: AAB

Required Subjects: A level grade B in one science from the following: Applied Science, Biology, Chemistry, Further Mathematics, Life and Health Sciences, Mathematics, Physical Education, Physics, Psychology, Sports Science.

International Baccalaureate: 35 points overall with 16 points from the best 3 Higher Level subjects, including one science subject at Higher Level grade 6

BTEC: Distinction, Distinction, Distinction in Sport or Sport and Exercise Science

GCSE: Mathematics grade B or 5, English Language grade C or 4

IELTS: 6.5 overall with at least 6.0 in each component. For other English language qualifications we accept, please see our website: www.lancaster.ac.uk/study/international-students

Other Qualifications
We welcome applications from students with a range of alternative UK and international qualifications, including combinations of qualification. Further guidance on admission to the University, including other qualifications that we accept, frequently asked questions and information on applying, can be found on our general admissions webpages: www.lancaster.ac.uk/study/undergraduate/admissions

Contact us
Lancaster Medical School  
Lancaster University  
Lancaster  
LA1 4YW

www.lancaster.ac.uk/medicine
Email: medicine@lancaster.ac.uk  
Phone: +44 (0) 1524 592 028

Open Days
The best way to get a feel for life on campus is to come along to one of our open days. Explore our 560-acre campus. Learn about our colleges. Meet staff and students from the Medical School. Grab lunch or a drink on campus. Spending a day with us is the perfect way to build a picture of what it would be like to study here.

We have four open days throughout the year
Saturday 29th June 2019  
Saturday 13th July 2019  
Saturday 7th September 2019  
Saturday 14th September 2019

For more information and tour booking details, visit: www.lancaster.ac.uk/visitus
Email: visitus@lancaster.ac.uk  
Phone: +44 (0)1524 593 724

Welcome Centre and Campus Tours
Our Welcome Centre is the perfect first port of call on any visit to the campus. We offer a range of student-led tours throughout the year, introducing you to our campus and facilities, from social hotspots to the library and – on some tours – the accommodation.

We’re open to the public all year round, so you can have a look around or pop into the centre for a brew with one of our student ambassadors whenever you please.

Virtual Tours
You don’t have to leave home to see our stunning campus, thanks to our virtual tour. From a range of videos to a series of 360-degree panoramas, we have everything you need to see and hear what it’s like here at Lancaster.

Disclaimer
The University makes all reasonable efforts to ensure that the information in this prospectus is correct at the time of printing (June 2019). Please see www.lancaster.ac.uk/compliance/legalnotice for further information.

Terms and conditions
For our terms and conditions, please see www.lancaster.ac.uk/terms

Photography
Thanks to the Sports Centre and Lancaster University Student’s Union for use of their photography.

Come and meet us