MSc Sport and Exercise Science (Biomechanics)
(At Levels 4, 5 and 6 a single module =15 credits and a double module =30 credits, core compulsory modules are indicated within the shaded boxes)

### YEAR 1 (Level 4) MODULES

<table>
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<tr>
<th>Sport and Exercise Science (Sport Performance)</th>
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<tbody>
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<td>Introduction to Sport &amp; Exercise Psychology 15 Credits</td>
<td>Introduction to Skill Acquisition 15 Credits</td>
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<td>Muscles and Movement – Anatomy in Motion 15 Credits</td>
<td>Muscles and Movement – Causes of Motion 15 Credits</td>
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<td>Questioning Sport, Exercise &amp; Health 15 Credits</td>
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### YEAR 2 (Level 5) – Choose Pathway

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<td>Sport and Exercise in Extreme Environments 15 Credits</td>
<td>Researching Sport, Exercise &amp; Health 15 credits</td>
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<td>Physiological Limitations to Performance 15 Credits</td>
<td>Developing and Monitoring Physical Performance 15 credits</td>
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<td>Cognitive Psychology for Sport Performance 15 Credits</td>
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<td>1 Option Stress, Coping and Emotions 15 Credits</td>
<td>1 Option The Outdoor Experience - Emotions and Wellbeing 15 credits</td>
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<td>Performance Analysis in Sport 15 Credits</td>
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<td>Critical Issues in Health Promotion, Lifestyle and Exercise 15 credits</td>
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### YEAR 3 (Level 6) – Choose MSc Sport and Exercise Science (Biomechanics)

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<tr>
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<tr>
<td>Research Project 30 Credits</td>
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<tr>
<td>Advanced Research in Sport and Exercise</td>
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<td>1-Option Entrepreneurial (Business Set-Up) 15 Credits</td>
<td>(Core) Contemporary Issues in Sport, Exercise and Health 15 Credits</td>
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<td>Nutrition for Sports Performance, Exercise and Health 15 Credits</td>
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<td>Occupational Performance and Health 15 Credits</td>
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### YEAR 4 (Level 7) – MSc Sport and Exercise Science (Biomechanics)

(20-credits per module excluding Research Dissertation which is worth 60 credits)

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<td>Biomechanical Instrumentation and Measurement</td>
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<td>2-Options</td>
<td>Exercise Referral Clinic 15 credits</td>
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YEAR 4 (Level 7) – MSc Sport and Exercise Science (Biomechanics)
(20-credits per module excluding Research Dissertation which is worth 60 credits)
Module Descriptors

Year One

Fundamentals of Human Physiology
This module will cover the fundamental principles of Human Physiology by examining how key systems such as the musculoskeletal system, the cardiovascular system, and the respiratory system affect human performance. Specific attention is paid to energy metabolism in the context of the exercising human across the breadth of the energy spectrum.

Introduction to Sport and Exercise Psychology
Sport and exercise contexts provide a fascinating and complex opportunity to investigate the psychology of human effect, cognition, and behaviour. This module aims to introduce you to diverse areas of psychology in the context of sport performance, exercise, and well-being that you will meet on your degree programme in years two and three.

Muscles and Movement - Anatomy in Motion
An introduction to the basic concepts of anatomy and biomechanics as they relate to human movement and performance in sport and exercise. You are shown how such concepts can be practically investigated and will illustrate the integrative nature of anatomy and biomechanics. Practical work considers the general principles of biomechanics related methodology, data analysis, and statistical analysis for practical investigations into the evaluation of sport and exercise.

Questioning Sport, Exercise and Health
This module will introduce study skills for higher education and help you discover the philosophical underpinnings of research in the sport and health sciences. You will also be introduced to a range of qualitative research methods.

Introduction to Applied Exercise Physiology
This module aims to develop an understanding of the application of scientific principles and techniques to evaluate human performance. Consideration will be given to the selection of an appropriate data collection environment (i.e. laboratory versus field) and the applicability across a range of activities that spans energy provision.

Introduction to Skill Acquisition
This module examines the psychological factors that affect the learning and performance of skills in sport. You are introduced to selected theories of motor learning and you will examine their strengths and weaknesses relative to real-world coaching. Research findings will be used to help you make the connections to your responsibilities as sports coaches.

Muscles and Movement - Causes of Motion
An introduction to the basic concepts of biomechanics as they relate to human movement and performance in sport and exercise. You are shown how the basic physical principles underpin performance in sport, and how such principles can be practically investigated. Practical work considers the general principles of biomechanics and related them to experimental methodology, data analysis, and statistical analysis for practical investigations into the evaluation of sport and exercise.
Evaluating Sport, Exercise and Health
The module aims to provide you with a foundation in quantitative study and research skills which will support and underpin your work in other sport, exercise, and health science modules.

Years Two and Three for Physical Activity for Health follow Year Three Sport Performance modules. Year Four follows Year Three Physical Activity for Health modules.

Year Two: Sport Performance

Core modules:
Sport and Exercise in Extreme Environments
This module aims to examine the physiological challenge of performing in extreme and hostile environments and to examine how the human can exercise, maintain homeostasis, and survive. It will explore the theoretical limits of human performance, looking to identify mechanisms of physiological acclimatisation and adaptation. You will be able to discuss how this knowledge may be used to increase sporting performance and maximise safety e.g. competitions such as The Everest Marathon and Marathon Des Sables.

Physiological Limitations to Performance
Athletic performances span from power and sprint activities lasting less than 10 seconds to endurance activities lasting many hours. The aim of this module is to more fully examine the metabolic, neuromuscular, neuroendocrine and cardiovascular systems of the human body to develop knowledge on the nature of limitations to performance across this intensity spectrum.

Cognitive Psychology for Sport Performance
Cognitive psychology is the study of the basic processes underpinning our interaction with the world. These processes include perception, attention, memory, and learning. Within the sporting domain, knowledge of cognitive psychology can promote efficient acquisition and effective performance of skill among athletes at all stages of skill development. This module critically examines the strengths and weaknesses of theory and research concerning the cognitive processes that underpin the acquisition and performance of skill.

Performance Psychology
An introduction to the key theories and concepts in performance psychology, examining theory and research into a range of factors (e.g. confidence, motivation, emotional regulation) that have been proposed to contribute to performance in sport and other achievement domains. The module content will seek to develop an understanding of the importance of these concepts for performance, their determinants, and how to change them.

Sports Injury and Prevention
This module aims to develop an awareness of potential injury situations and predisposing factors to injury in sport. Familiarity with types of sports injury and treatment procedures should aid in the prevention and effective treatment of injury in the workplace.

Researching Sport, Exercise, and Health
The module will provide you with practical skills of conducting research in the sport, exercise, and health environment, and you will further your research skills, including ethical considerations, research design, and methodology, analysis, and write-up.
Biomechanics in Sport and Exercise
The biomechanical principles underpinning performance in a range of sports will be considered in relation to practical performance of sport. The module content will include analysis methodologies and research, which has enhanced biomechanics knowledge of sports performance. The biomechanics analysis and evaluation of selected sport and exercise activities will be considered e.g. golf, football, tennis, high jump, long jump, javelin, discus, gymnastics, cycling, swimming.

Optional modules:
Stress, Coping, and Emotions
The challenging nature of the competitive environment presents sports performers with a multitude of stressors. While some performers are able to effectively cope with the challenges of overcoming these stressors, others are less successful. This module aims to examine a) the demands (i.e. stressors) of sport and how these are experienced by athletes, b) the appraisals and coping strategies employed by athletes when experiencing these stressors, and c) the subsequent emotional responses.

Developing and Monitoring Physical Performance
This module aims to provide you with the skills and knowledge to design interventions for improving both health and skills-related physical fitness. You will develop the ability to complete a health screening and needs analysis on clients and athletes, establish goals, select appropriate methods of individual physical performance assessments, and design interventions to improve physical performance. You also have the opportunity to obtain REPs (Register of Exercise Professionals) Level 2 Gym Instructors Award.

Performance Analysis in Sport
The analysis undertaken could relate to technical, tactical, and/or physical aspects of performance, although Performance Analysis can also be used to analyse various other facets of sport such as coach behaviour and coaching microstructure. The use of sports performance analysis is paramount in light of the limitations of human memory, such as the volume of event recall and subjectivity. The module aims to introduce you to the key concepts, skills, and techniques associated to performance analysis, and outline its place in the scientific support of individuals and teams.

Nutrition for the Prevention and Treatment of Disease
Eating a well-balanced diet, with adequate nutrients and appropriate calories is a fundamental requirement for long-term health. Malnutrition due both to under-eating or overeating and obesity is closely linked to increased illness and disease risk. This module aims to explore the relationship between nutrition, health, immunity, and disease, to evaluate government dietary guidelines, and review the current research in nutrition, digestion, and metabolism to investigate how they relate to the prevention and management of population health.

Year Three: Sport Performance

Core modules:
Research Project
You are encouraged to identify a research question appropriate to your degree pathway that is of interest and relevance to your studies. The investigation may be based within single or multiple disciplines. An appropriate approach to addressing the question is then determined through discussion with tutors in your chosen area.
Advanced Research in Sport and Exercise
This module extends the skills learned in Year Two, particularly in areas such as research methodology and quantitative analysis. The module accesses sections of the provision for MSc students and so begins to move you towards postgraduate level thinking. You will work alongside MSc students to access sections of work at the appropriate level. Assignments will reflect that the module is in Year Three but will take an applied approach to promote independent use and evaluation of research methods and statistics.

Biomechanical Techniques
This module aims to enable you to develop experimental skills that may be of relevance, not only in biomechanics but also in other scientific fields where the accuracy of measurement is important. The experimental skills gained will underpin research in biomechanics, and equip you with the skills required for a final year independent project in the area.

Advanced Biomechanics
This module aims to allow you to develop your conceptual biomechanics knowledge, knowledge of current practice, and independent practical skills. It gives the opportunity to follow interests within the field that may have been stimulated by either the third year biomechanics techniques module, or by areas you have come across in the course of your independent project work and which you would like to investigate further. It aims to develop your independence in the laboratory.

Planning and Monitoring of Training and Performance
A focus on planning and monitoring training of athletes and how a programme of physiological support can be used to enhance performance. You will engage in current literature identifying the physiological demands of the athletes chosen sport, key measures of physical fitness, and how we can enhance them. An athlete’s ability to focus on training to gain maximal physiological adaptations, and relax in competition can represent the difference in making the podium or winning major tournaments.

Contemporary Issues in Sport, Exercise, and Health
This module will explore a selection of contemporary issues that may have ethical and moral considerations, in relation to sport, exercise, and health. A range of topic areas will be presented to you with the expectations that you will challenge through a review of case-studies, expert knowledge, and recently published peer-reviewed research. You will be encouraged to express your judgements and reflect upon your knowledge and experiences.

Optional modules:
Entrepreneurial (Business Set-Up)
The module adopts a very practical focus. It concentrates upon the planning that needs to be undertaken prior to the start-up of a small business. From your perspective, the primary output of the module is to produce a persuasive business proposal. The main intention of the module is to allow you to draw on the toolkit of understanding that you have developed within your studies to date. As a consequence, you are required to independently manage your own progress in achieving the learning outcomes and preparing for the assessment.

Nutrition for Sports Performance, Exercise, and Health
Sports performance and the development of athletic ability relies on the individual being in peak health and having the correct nutrition support to fuel training adaptation and exercise performance. This module aims to examine the ways in which dietary intake influences energy metabolism, recovery of skeletal muscle after...
exercise, exercise performance, training adaptation, injury risk, and immunity. An important component of the module will be the study of the practical application of nutritional theory within the sporting arena.

**Occupational Health and Performance**
The module aims to provide you with an understanding of how evidenced-based practice can be used to improve health and performance in occupational settings such as the military, emergency services, and industry. Students taking this module will have followed core modules within their programme and they will learn how their existing knowledge relating to sports and exercise performers and clinical populations and new concepts can be used to enhance health and performance in occupational settings.

**Work Placement in Sport and Exercise**
An opportunity to complete a unit of directed study incorporating a work placement of 105 hours (3-weeks) in a sport and exercise environment. This placement can take place in a wide range of environments including sports clubs, schools, colleges, private companies, clinical settings, or within the community. The focus of the work placement should be relevant to your needs, the programme of study you are taking and career aspirations.

**Year Two: Physical Activity for Health**

**Core modules:**

**Researching Sport, Exercise, and Health**
The module will provide you with practical skills of conducting research in the sport, exercise, and health environment, and you will further your research skills, including ethical considerations, research design, and methodology, analysis, and write-up.

**Developing and Monitoring Physical Performance**
This module aims to provide you with the skills and knowledge to design interventions for improving both health and skills-related physical fitness. You will develop the ability to complete a health screening and needs analysis on clients and athletes, establish goals, select appropriate methods of individual physical performance assessments, and design interventions to improve physical performance. You also have the opportunity to obtain REPs (Register of Exercise Professionals) Level 2 Gym Instructors Award.

**Nutrition for the Prevention and Treatment of Disease**
This module will examine the combined effects of nutrition and physical activity on health with particular focus on prevalent diseases associated with these factors. Topics covered will include: dietary guidelines, dietary analysis, measurement of energy, macro- and micro-nutrient intake, digestion, absorption and metabolism; the role of micro-nutrients; nutrition and prevalent diseases; obesity; eating disorders; food allergies; under-nutrition and special populations e.g. diabetics.

**Clinical Biomechanics**
This module aims to build upon the core biomechanical principles underpinning the practical analysis of human movement. It will also consider the role of biomechanical analysis in sports therapy and the assessment of patients. It will serve to widen your knowledge base and show the integrative nature of the separate disciplines of therapy and biomechanics. It will also provide a firm basis for work at a higher level in the discipline of biomechanics.
Clinical Exercise Physiology
Explore the relationship of physical activity and sedentary behaviour with both the development and control of non-communicable diseases (NCD). You will examine the pathophysiology of NCDs, the physiological responses to physical activity, and methods to assess health and fitness for those individuals suffering from such disease states. You will explore the application and appraisal of exercise prescription guidelines for NCDs, with consideration of those that are serviced by exercise/GP referral schemes. If you have previously gained a Register of Exercise Professionals (REPs) Level 2 qualification e.g. gym instructors award you will have the opportunity to complete additional assessments to gain REPs Level 3 Exercise Referral.

Project Management
An introduction to the essential tools and methodologies for managing an effective sports project. The methodology used will be PRINCE2 to develop your own sports project. The content will include: Introduction to Project Management, Planning a Project, and Managing Successful Projects.

Psychology of Physical Activity and Health
This module will seek to provide you with a comprehensive understanding of the psychological theories applied to the contexts of physical activity and health and to evaluate the positive and negative psychological effects of participation in activities.

Optional modules:
The Outdoor Experience - Emotions and Wellbeing
The aim of the module is for you to explore the experience of being in the outdoors from an emotional and well-being perspective. The restorative and therapeutic benefits of immersive experience will be examined and these will include creative activities, understanding of place, and connectedness to the environment and others.

Stress, Coping, and Emotions
The challenging nature of the competitive environment presents sports performers with a multitude of stressors. While some performers are able to effectively cope with the challenges of overcoming these stressors, others are less successful. This module aims to examine a) the demands (i.e. stressors) of sport and how these are experienced by athletes, b) the appraisals and coping strategies employed by athletes when experiencing these stressors, and c) the subsequent emotional responses.

Reflection: Developing Your Teaching and Coaching
This module aims to provide an opportunity to select and develop specialist areas of interest. You will be required to develop skills in introspection, reflection, and reflective practice drawing upon theoretical concepts relating to pedagogy of sport and education. You will agree a suitable programme of work within a professional context of your choice which will involve you immersing yourselves in the culture and practices of this working environment.

Critical Issues in Health Promotion, Lifestyle, and Exercise
The module aims to provide you with a critical appreciation of the principles, theory and practice of health promotion in the UK. This will involve the application of the knowledge of sport, health and physical activity in the context of the wider social, cultural and environmental issues facing agents of health promotion.

Sports Injury and Prevention
This module aims to develop an awareness of potential injury situations and predisposing factors to injury in sport. Familiarity with types of sports injury and treatment procedures should aid in the prevention and effective treatment of injury in the workplace.
Year Three: Physical Activity for Health

Research Project
You are encouraged to identify a research question appropriate to your degree pathway that is of interest and relevance to your studies. The investigation may be based within single or multiple disciplines. An appropriate approach to addressing the question is then determined through discussion with tutors in your chosen area.

Advanced Research in Sport and Exercise
This module extends the skills learned in Year Two, particularly in areas such as research methodology and quantitative analysis. The module accesses sections of the provision for MSc students and so begins to move you towards postgraduate level thinking. You will work alongside MSc students to access sections of work at the appropriate level. Assignments will reflect that the module is in Year Three but will take an applied approach to promote independent use and evaluation of research methods and statistics.

Exercise Referral Clinic
This module aims to provide you with an opportunity to complete a unit of directed study incorporating experience in a practical-based setting, relevant to working with clinical populations. You will develop new knowledge and skills whilst in a practice-based setting, in addition to applying, consolidating, and reflecting on the learning gained in your prior modules. You will gain experience that enables you to develop, apply and reflect on the clinical practice of exercise within the health service including, but not limited to GP/Exercise Referral, cardiovascular rehabilitation, the Obesity 4 Tier approach, and to draw on, and review, the profession’s evidence-base for lifestyle modification.

Exercise and Physical Activity Interventions
Physical inactivity is recognised as a key predictor of a range of adverse health and social outcomes. Increasing activity levels in the general population is now a priority of the government, with increasing opportunities for physical activity professionals. The module applies health behaviour change theory and research to the promotion of physical activity in specialised populations, such as those with chronic health conditions or physical disabilities. It looks at different types of interventions, such as those targeting individuals, groups, and national campaigns.

Biomechanical Techniques
This module aims to enable you to develop experimental skills that may be of relevance, not only in biomechanics but also in other scientific fields where the accuracy of measurement is important. The experimental skills gained will underpin research in biomechanics, and equip you with the skills required for a final year independent project in the area.

Cardiovascular Rehabilitation
This module critically examines the process of rehabilitation as it pertains to cardiovascular disease. Detailed exploration of the aetiology of coronary heart disease (CHD), lifestyle management, and psychology of behaviour change in relation to lifestyle. The evidence-base for exercise and nutritional interventions will be critiqued within the framework of primary, secondary, and tertiary care alongside the skills required to compile multi-disciplinary interventions for secondary prevention.

Contemporary Issues in Sport, Exercise and Health
This module will explore a selection of contemporary issues that may have ethical and moral considerations, in relation to sport, exercise, and health. A range of topic areas will be presented to you with the expectations that
you will challenge through a review of case-studies, expert knowledge, and recently published peer-reviewed research. You will be encouraged to express your judgements and reflect upon your knowledge and experiences.

Year Four

Core modules:
Research Dissertation
The research project represents the culmination of the whole master’s route and is the final stage in assessment. It is designed to enable you to conduct and communicate independent research in an area of your choosing.

Biomechanical Instrumentation and Measurement
Measurement validity may be assured by adoption of appropriate equipment specifications, calibration procedures, experimental protocols and statements of applicability. The validity and applicability of the measurement will be determined by the size and form of the error. In order to avoid bad practices in a biomechanical measurement situation it is necessary for the scientist to have an understanding of the relative importance of the factors that influence good measurement practice. An awareness of alternative measurement parameters and systems should aid the matching of measurement systems to the task. Practical experience of data recording and interpretation is an essential precursor to biomechanics competency.

Optional modules:
Tissues Modelling and Assistive Devices
This module aims to introduce you to the functional limitations of human body tissue are derived from its mechanical properties. The human body construction is complex, and its form may be altered by function and training. Models of human body actions caused by neuromuscular controlled movements tend to be simplistic, though with increased research and computing power they are becoming more realistic. Advances have aided in the design of both active and passive assisting devices used in sport.

Ergonomics in Sport and Exercise
The science of ergonomics is applied in society to reduce human stress and aid performance. In society ergonomics development employs a wide range of biomechanical measurement and assessment techniques during the assessment and design process. In sport much engineering and manufacturing product development and availability is controlled by the existence of national standards of testing and certification. These standards are often derived using anthropometry and ergonomic research. An awareness and understanding of testing standards should help in the identification and provision of appropriate equipment for sport activity and centres.

Developing as an Applied Practitioner in Biomechanics
Measurement of performance in sport and exercise biomechanics requires specialised skills. Working with human participants also requires specialised knowledge of the constraints and provisions necessary to preserve and maintain human rights and well-being. In biomechanics it is also common for research, performance measurement, and technique analysis to occur at a temporary sporting venue. It is also necessary for the scientist to have appropriate support and protection if such applied work is to be carried out. Therefore, students wishing to apply their knowledge of biomechanics in the sport and exercise situation need to possess appropriate specialised skills.
# MSci Sport and Exercise Science (Physical Activity for Health)

(At Levels 4, 5 and 6 a single module = 15 credits and a double module = 30 credits, core compulsory modules are indicated within the shaded boxes)

## YEAR 1 (Level 4) MODULES

| Fundamentals of Human Physiology 15 Credits | Introduction to Applied Exercise Physiology 15 Credits |
| Introduction to Sport & Exercise Psychology 15 Credits | Introduction to Skill Acquisition 15 Credits |
| Muscles and Movement – Anatomy in Motion 15 Credits | Muscles and Movement – Causes of Motion 15 Credits |
| Questioning Sport, Exercise & Health 15 Credits | Evaluating Sport, Exercise & Health 15 Credits |

## YEAR 2 (Level 5) – Pathway

**Sport and Exercise Science (Physical Activity for Health)**

| Researching Sport, Exercise & Health 15 credits |
| Developing and Monitoring Physical Performance 15 credits |
| Nutrition for the Prevention and Treatment of Disease 15 credits |
| Clinical Biomechanics 15 credits |
| Clinical Exercise Physiology 15 credits |
| Project Management 15 credits |
| Psychology of Physical Activity and Health 15 credits |

1 option

- The Outdoor Experience - Emotions and Wellbeing 15 credits
- Stress, Coping and Emotion 15 credits
- Reflection: Developing Your Teaching and Coaching 15 credits
- Critical Issues in Health Promotion, Lifestyle and Exercise 15 credits
- Sports Injury and Prevention 15 credits

## YEAR 3 (Level 6) – Choose MSci Sport and Exercise Science (Physical Activity for Health)

| Research Project 30 credits |
| Advanced Research is Sport and Exercise 15 credits |
| Exercise Referral Clinic 15 credits |
| Exercise and Physical Activity Interventions 15 credits |
| Cardiovascular Rehabilitation 15 credits |
| (Core) Contemporary Issues in Sport, Exercise and Health 15 Credits |

1 Option

- Nutrition for Sports Performance, Exercise and Health 15 Credits
- Occupational Performance and Health 15 Credits
- Delivering Sport and Physical Activity in the Community 15 credits
- Psychology of Injury and Rehabilitation 15 credits

## YEAR 4 (Level 7) – MSci Sport and Exercise Science (Physical Activity for Health)

(20-credits per module excluding Research Dissertation which is worth 60 credits)

| Research Dissertation (Triplet Module S1 & S2) |
| Principles and Practice of Public Health and Physical Activity |
| Physical Activity in Public Health Interventions - Conceptualisation and Design |

1 Option

- Measurement in Physical Activity and Public Health |
- Project Planning and Management for Public Health
Module Descriptors

Year One

Fundamentals of Human Physiology
This module will cover the fundamental principles of Human Physiology by examining how key systems such as the musculoskeletal system, the cardiovascular system, and the respiratory system affect human performance. Specific attention is paid to energy metabolism in the context of the exercising human across the breadth of the energy spectrum.

Introduction to Sport and Exercise Psychology
Sport and exercise contexts provide a fascinating and complex opportunity to investigate the psychology of human effect, cognition, and behaviour. This module aims to introduce you to diverse areas of psychology in the context of sport performance, exercise, and well-being that you will meet on your degree programme in years two and three.

Muscles and Movement - Anatomy in Motion
An introduction to the basic concepts of anatomy and biomechanics as they relate to human movement and performance in sport and exercise. You are shown how such concepts can be practically investigated and will illustrate the integrative nature of anatomy and biomechanics. Practical work considers the general principles of biomechanics related methodology, data analysis, and statistical analysis for practical investigations into the evaluation of sport and exercise.

Questioning Sport, Exercise and Health
This module will introduce study skills for higher education and help you discover the philosophical underpinnings of research in the sport and health sciences. You will also be introduced to a range of qualitative research methods.

Introduction to Applied Exercise Physiology
This module aims to develop an understanding of the application of scientific principles and techniques to evaluate human performance. Consideration will be given to the selection of an appropriate data collection environment (i.e. laboratory versus field) and the applicability across a range of activities that spans energy provision.

Introduction to Skill Acquisition
This module examines the psychological factors that affect the learning and performance of skills in sport. You are introduced to selected theories of motor learning and you will examine their strengths and weaknesses relative to real-world coaching. Research findings will be used to help you make the connections to your responsibilities as sports coaches.

Muscles and Movement - Causes of Motion
An introduction to the basic concepts of biomechanics as they relate to human movement and performance in sport and exercise. You are shown how the basic physical principles underpin performance in sport, and how such principles can be practically investigated. Practical work considers the general principles of biomechanics and related them to experimental methodology, data analysis, and statistical analysis for practical investigations into the evaluation of sport and exercise.
Evaluating Sport, Exercise and Health
The module aims to provide you with a foundation in quantitative study and research skills which will support and underpin your work in other sport, exercise, and health science modules.

Year Two
Core modules:

Researching Sport, Exercise, and Health
The module will provide you with practical skills of conducting research in the sport, exercise, and health environment, and you will further your research skills, including ethical considerations, research design, and methodology, analysis, and write-up.

Developing and Monitoring Physical Performance
This module aims to provide you with the skills and knowledge to design interventions for improving both health and skills-related physical fitness. You will develop the ability to complete a health screening and needs analysis on clients and athletes, establish goals, select appropriate methods of individual physical performance assessments, and design interventions to improve physical performance. You also have the opportunity to obtain REPs (Register of Exercise Professionals) Level 2 Gym Instructors Award.

Nutrition for the Prevention and Treatment of Disease
This module will examine the combined effects of nutrition and physical activity on health with particular focus on prevalent diseases associated with these factors. Topics covered will include: dietary guidelines, dietary analysis, measurement of energy, macro- and micro-nutrient intake, digestion, absorption and metabolism; the role of micro-nutrients; nutrition and prevalent diseases; obesity; eating disorders; food allergies; under-nutrition and special populations e.g. diabetics.

Clinical Biomechanics
This module aims to build upon the core biomechanical principles underpinning the practical analysis of human movement. It will also consider the role of biomechanical analysis in sports therapy and the assessment of patients. It will serve to widen your knowledge base and show the integrative nature of the separate disciplines of therapy and biomechanics. It will also provide a firm basis for work at a higher level in the discipline of biomechanics.

Clinical Exercise Physiology
Explore the relationship of physical activity and sedentary behaviour with both the development and control of non-communicable diseases (NCD). You will examine the pathophysiology of NCDs, the physiological responses to physical activity, and methods to assess health and fitness for those individuals suffering from such disease states. You will explore the application and appraisal of exercise prescription guidelines for NCDs, with consideration of those that are serviced by exercise/GP referral schemes. If you have previously gained a Register of Exercise Professionals (REPs) Level 2 qualification e.g. gym instructors award you will have the opportunity to complete additional assessments to gain REPs Level 3 Exercise Referral.

Project Management
An introduction to the essential tools and methodologies for managing an effective sports project. The methodology used will be PRINCE2 to develop your own sports project. The content will include: Introduction to Project Management, Planning a Project, and Managing Successful Projects.
Psychology of Physical Activity and Health
This module will seek to provide you with a comprehensive understanding of the psychological theories applied to the contexts of physical activity and health and to evaluate the positive and negative psychological effects of participation in activities.

Optional modules:
The Outdoor Experience - Emotions and Wellbeing
The aim of the module is for you to explore the experience of being in the outdoors from an emotional and well-being perspective. The restorative and therapeutic benefits of immersive experience will be examined and these will include creative activities, understanding of place, and connectedness to the environment and others.

Stress, Coping, and Emotions
The challenging nature of the competitive environment presents sports performers with a multitude of stressors. While some performers are able to effectively cope with the challenges of overcoming these stressors, others are less successful. This module aims to examine a) the demands (i.e. stressors) of sport and how these are experienced by athletes, b) the appraisals and coping strategies employed by athletes when experiencing these stressors, and c) the subsequent emotional responses.

Reflection: Developing Your Teaching and Coaching
This module aims to provide an opportunity to select and develop specialist areas of interest. You will be required to develop skills in introspection, reflection, and reflective practice drawing upon theoretical concepts relating to pedagogy of sport and education. You will agree a suitable programme of work within a professional context of your choice which will involve you immersing yourselves in the culture and practices of this working environment.

Critical Issues in Health Promotion, Lifestyle, and Exercise
The module aims to provide you with a critical appreciation of the principles, theory and practice of health promotion in the UK. This will involve the application of the knowledge of sport, health and physical activity in the context of the wider social, cultural and environmental issues facing agents of health promotion.

Sports Injury and Prevention
This module aims to develop an awareness of potential injury situations and predisposing factors to injury in sport. Familiarity with types of sports injury and treatment procedures should aid in the prevention and effective treatment of injury in the workplace.

Year Three
Core modules:
Research Project
You are encouraged to identify a research question appropriate to your degree pathway that is of interest and relevance to your studies. The investigation may be based within single or multiple disciplines. An appropriate approach to addressing the question is then determined through discussion with tutors in your chosen area.

Advanced Research in Sport and Exercise
This module extends the skills learned in Year Two, particularly in areas such as research methodology and quantitative analysis. The module accesses sections of the provision for MSc students and so begins to move you towards postgraduate level thinking. You will work alongside MSc students to access sections of work at the appropriate level. Assignments will reflect that the module is in Year Three but will take an applied approach to promote independent use and evaluation of research methods and statistics.
Exercise Referral Clinic
This module aims to provide you with an opportunity to complete a unit of directed study incorporating experience in a practice-based setting, relevant to working with clinical populations. You will develop new knowledge and skills whilst in a practice-based setting, in addition to applying, consolidating, and reflecting on the learning gained in your prior modules. You will gain experience that enables you to develop, apply and reflect on the clinical practice of exercise within the health service including, but not limited to GP/Exercise Referral, cardiovascular rehabilitation, the Obesity 4 Tier approach, and to draw on, and review, the profession’s evidence-base for lifestyle modification.

Exercise and Physical Activity Interventions
Physical inactivity is recognised as a key predictor of a range of adverse health and social outcomes. Increasing activity levels in the general population is now a priority of the government, with increasing opportunities for physical activity professionals. The module applies health behaviour change theory and research to the promotion of physical activity in specialised populations, such as those with chronic health conditions or physical disabilities. It looks at different types of interventions, such as those targeting individuals, groups, and national campaigns.

Biomechanical Techniques
This module aims to enable you to develop experimental skills that may be of relevance, not only in biomechanics but also in other scientific fields where the accuracy of measurement is important. The experimental skills gained will underpin research in biomechanics, and equip you with the skills required for a final year independent project in the area.

Cardiovascular Rehabilitation
This module critically examines the process of rehabilitation as it pertains to cardiovascular disease. Detailed exploration of the aetiology of coronary heart disease (CHD), lifestyle management, and psychology of behaviour change in relation to lifestyle. The evidence-base for exercise and nutritional interventions will be critiqued within the framework of primary, secondary, and tertiary care alongside the skills required to compile multi-disciplinary interventions for secondary prevention.

Contemporary Issues in Sport, Exercise and Health
This module will explore a selection of contemporary issues that may have ethical and moral considerations, in relation to sport, exercise, and health. A range of topic areas will be presented to you with the expectations that you will challenge through a review of case-studies, expert knowledge, and recently published peer-reviewed research. You will be encouraged to express your judgements and reflect upon your knowledge and experiences.

Optional modules:
Nutrition for Sports Performance, Exercise, and Health
Sports performance and the development of athletic ability relies on the individual being in peak health and having the correct nutrition support to fuel training adaptation and exercise performance. This module aims to examine the ways in which dietary intake influences energy metabolism, recovery of skeletal muscle after exercise, exercise performance, training adaptation, injury risk, and immunity. An important component of the module will be the study of the practical application of nutritional theory within the sporting arena.

Occupational Health and Performance
The module aims to provide you with an understanding of how evidenced-based practice can be used to improve health and performance in occupational settings such as the military, emergency services, and industry. Students taking this module will have followed core modules within their programme and they will learn how their existing
knowledge relating to sports and exercise performers and clinical populations and new concepts can be used to enhance health and performance in occupational settings.

**Delivering Sport and Physical Activity in the Community**
The module examines the importance of staging community sport events or projects in the context of modern sports development. It will give you the opportunity to understand, in part through practical engagement, the complexity of staging community sport events and the management and administrative processes associated with them.

**Psychology of Injury and Rehabilitation**
This module enables you to critically evaluate the psychological, social, and cultural factors in injury risk, theories of psychological responses to injury, and psychological, social, and cultural factors that impact recovery from injury and adherence to rehabilitation programmes. It will critically evaluate theory and research, and consider practical approaches to working with injured athletes to assist them with their response to and rehabilitation from injury experiences.

**Year Four**

**Core modules:**
**Research Dissertation**
The research project represents the culmination of the whole master's route and is the final stage in assessment. It is designed to enable you to conduct and communicate independent research in an area of your choosing.

**Principles and Practice of Public Health and Physical Activity**
An introduction to public health and to explore and establish the role that physical activity plays, or has the potential to play, in improvements to the health of the population. You will commence the module with a broad introduction to the subject matter of public health, physical activity and sedentary behaviour. You will develop an understanding and competence of basic epidemiological measures and gain an appreciation of the process of systematic review and meta-analyses and their interpretation. You will also explore a selection of contemporary areas of physical activity and sedentary behaviour research, such as data modelling, physical activity in green/blue space, and health economics.

**Physical Activity in Public Health Interventions - Conceptualisation and Design**
The aim of this module is to provide you with knowledge of the process of developing and designing an intervention to increase physical activity for public health. You will explore aspects of the development and design of public health interventions, such as needs assessment, intervention mapping and theoretical underpinning. You will also consider the range of data collection methods and experimental designs available to evaluate public health interventions, and how to select the most appropriate approach for a particular intervention.

**Optional modules:**
**Measurement in Physical Activity and Public Health**
Public health practitioners work in a variety of settings, geographical locations, populations and in medical arenas. This module aims to develop the knowledge base and practical skills associated with the physical activity and public health environment. An ability to select the most valid and reliable technique, protocol, piece of equipment or software is critical when assessing physical activity and sedentary time in the public health arena. This module will
adopt an evidence-based approach to identifying ‘best practice’ in terms of protocols and procedures when undertaking work in the area of physical activity, sedentary behaviour and public health.

Project Planning and Management for Public Health
Project management has become increasingly an essential technique for managers in a variety of industries. What was once a technique only applied to large construction and engineering projects has become ubiquitous across all sectors of the economy to such an extent that many talk of the ‘projectification’ of society. In this module, the discipline of project management will be critically surveyed and you will apply project management techniques and concepts to plan a project in the area of public health.
# MSci Sport and Exercise Science (Physiology)

(At Levels 4, 5 and 6 a single module = 15 credits and a double module = 30 credits, core compulsory modules are indicated within the shaded boxes)

## YEAR 1 (Level 4) MODULES

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<td>Sport and Exercise in Extreme Environments 15 Credits</td>
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<td>Research Dissertation (Triple Module S1 &amp; S2)</td>
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Module Descriptors

Year One

Fundamentals of Human Physiology
This module will cover the fundamental principles of Human Physiology by examining how key systems such as the musculoskeletal system, the cardiovascular system, and the respiratory system affect human performance. Specific attention is paid to energy metabolism in the context of the exercising human across the breadth of the energy spectrum.

Introduction to Sport and Exercise Psychology
Sport and exercise contexts provide a fascinating and complex opportunity to investigate the psychology of human effect, cognition, and behaviour. This module aims to introduce you to diverse areas of psychology in the context of sport performance, exercise, and well-being that you will meet on your degree programme in years two and three.

Muscles and Movement - Anatomy in Motion
An introduction to the basic concepts of anatomy and biomechanics as they relate to human movement and performance in sport and exercise. You are shown how such concepts can be practically investigated and will illustrate the integrative nature of anatomy and biomechanics. Practical work considers the general principles of biomechanics related methodology, data analysis, and statistical analysis for practical investigations into the evaluation of sport and exercise.

Questioning Sport, Exercise and Health
This module will introduce study skills for higher education and help you discover the philosophical underpinnings of research in the sport and health sciences. You will also be introduced to a range of qualitative research methods.

Introduction to Applied Exercise Physiology
This module aims to develop an understanding of the application of scientific principles and techniques to evaluate human performance. Consideration will be given to the selection of an appropriate data collection environment (i.e. laboratory versus field) and the applicability across a range of activities that spans energy provision.

Introduction to Skill Acquisition
This module examines the psychological factors that affect the learning and performance of skills in sport. You are introduced to selected theories of motor learning and you will examine their strengths and weaknesses relative to real-world coaching. Research findings will be used to help you make the connections to your responsibilities as sports coaches.

Muscles and Movement - Causes of Motion
An introduction to the basic concepts of biomechanics as they relate to human movement and performance in sport and exercise. You are shown how the basic physical principles underpin performance in sport, and how such principles can be practically investigated. Practical work considers the general principles of biomechanics and related them to experimental methodology, data analysis, and statistical analysis for practical investigations into the evaluation of sport and exercise.
Evaluating Sport, Exercise and Health
The module aims to provide you with a foundation in quantitative study and research skills which will support and underpin your work in other sport, exercise, and health science modules.

*Years Two and Three for Physical Activity for Health follow Year Three Sport Performance modules. Year Four follows Year Three Physical Activity for Health modules.*

Year Two: Sport Performance

**Core modules:**

**Sport and Exercise in Extreme Environments**
This module aims to examine the physiological challenge of performing in extreme and hostile environments and to examine how the human can exercise, maintain homeostasis, and survive. It will explore the theoretical limits of human performance, looking to identify mechanisms of physiological acclimatisation and adaptation. You will be able to discuss how this knowledge may be used to increase sporting performance and maximise safety e.g. competitions such as The Everest Marathon and Marathon Des Sables.

**Physiological Limitations to Performance**
Athletic performances span from power and sprint activities lasting less than 10 seconds to endurance activities lasting many hours. The aim of this module is to more fully examine the metabolic, neuromuscular, neuroendocrine and cardiovascular systems of the human body to develop knowledge on the nature of limitations to performance across this intensity spectrum.

**Cognitive Psychology for Sport Performance**
Cognitive psychology is the study of the basic processes underpinning our interaction with the world. These processes include perception, attention, memory, and learning. Within the sporting domain, knowledge of cognitive psychology can promote efficient acquisition and effective performance of skill among athletes at all stages of skill development. This module critically examines the strengths and weaknesses of theory and research concerning the cognitive processes that underpin the acquisition and performance of skill.

**Performance Psychology**
An introduction to the key theories and concepts in performance psychology, examining theory and research into a range of factors (e.g. confidence, motivation, emotional regulation) that have been proposed to contribute to performance in sport and other achievement domains. The module content will seek to develop an understanding of the importance of these concepts for performance, their determinants, and how to change them.

**Sports Injury and Prevention**
This module aims to develop an awareness of potential injury situations and predisposing factors to injury in sport. Familiarity with types of sports injury and treatment procedures should aid in the prevention and effective treatment of injury in the workplace.

**Researching Sport, Exercise, and Health**
The module will provide you with practical skills of conducting research in the sport, exercise, and health environment, and you will further your research skills, including ethical considerations, research design, and methodology, analysis, and write-up.
**Biomechanics in Sport and Exercise**
The biomechanical principles underpinning performance in a range of sports will be considered in relation to practical performance of sport. The module content will include analysis methodologies and research, which has enhanced biomechanics knowledge of sport performance. The biomechanics分析 and evaluation of selected sport and exercise activities will be considered e.g. golf, football, tennis, high jump, long jump, javelin, discus, gymnastics, cycling, swimming.

**Optional modules:**
**Stress, Coping, and Emotions**
The challenging nature of the competitive environment presents sports performers with a multitude of stressors. While some performers are able to effectively cope with the challenges of overcoming these stressors, others are less successful. This module aims to examine a) the demands (i.e. stressors) of sport and how these are experienced by athletes, b) the appraisals and coping strategies employed by athletes when experiencing these stressors, and c) the subsequent emotional responses.

**Developing and Monitoring Physical Performance**
This module aims to provide you with the skills and knowledge to design interventions for improving both health and skills-related physical fitness. You will develop the ability to complete a health screening and needs analysis on clients and athletes, establish goals, select appropriate methods of individual physical performance assessments, and design interventions to improve physical performance. You also have the opportunity to obtain REPs (Register of Exercise Professionals) Level 2 Gym Instructors Award.

**Performance Analysis in Sport**
The analysis undertaken could relate to technical, tactical, and/or physical aspects of performance, although Performance Analysis can also be used to analyse various other facets of sport such as coach behaviour and coaching microstructure. The use of sports performance analysis is paramount in light of the limitations of human memory, such as the volume of event recall and subjectivity. The module aims to introduce you to the key concepts, skills, and techniques associated to performance analysis, and outline its place in the scientific support of individuals and teams.

**Nutrition for the Prevention and Treatment of Disease**
Eating a well-balanced diet, with adequate nutrients and appropriate calories is a fundamental requirement for long-term health. Malnutrition due both to under-eating or overeating and obesity is closely linked to increased illness and disease risk. This module aims to explore the relationship between nutrition, health, immunity, and disease, to evaluate government dietary guidelines, and review the current research in nutrition, digestion, and metabolism to investigate how they relate to the prevention and management of population health.

**Year Three: Sport Performance**

**Core modules:**
**Research Project**
You are encouraged to identify a research question appropriate to your degree pathway that is of interest and relevance to your studies. The investigation may be based within single or multiple disciplines. An appropriate approach to addressing the question is then determined through discussion with tutors in your chosen area.
Advanced Research in Sport and Exercise
This module extends the skills learned in Year Two, particularly in areas such as research methodology and quantitative analysis. The module accesses sections of the provision for MSc students and so begins to move you towards postgraduate level thinking. You will work alongside MSc students to access sections of work at the appropriate level. Assignments will reflect that the module is in Year Three but will take an applied approach to promote independent use and evaluation of research methods and statistics.

Planning and Monitoring of Training and Performance
A focus on planning and monitoring training of athletes and how a programme of physiological support can be used to enhance performance. You will engage in current literature identifying the physiological demands of the athletes chosen sport, key measures of physical fitness, and how we can enhance them. An athlete’s ability to focus on training to gain maximal physiological adaptations, and relax in competition can represent the difference in making the podium or winning major tournaments.

Contemporary Issues in Sport, Exercise, and Health
This module will explore a selection of contemporary issues that may have ethical and moral considerations, in relation to sport, exercise, and health. A range of topic areas will be presented to you with the expectations that you will challenge through a review of case-studies, expert knowledge, and recently published peer-reviewed research. You will be encouraged to express your judgements and reflect upon your knowledge and experiences.

Biomechanical Techniques
This module aims to enable you to develop experimental skills that may be of relevance, not only in biomechanics but also in other scientific fields where the accuracy of measurement is important. The experimental skills gained will underpin research in biomechanics, and equip you with the skills required for a final year independent project in the area.

Optional modules:
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Sports performance and the development of athletic ability relies on the individual being in peak health and having the correct nutrition support to fuel training adaptation and exercise performance. This module aims to examine the ways in which dietary intake influences energy metabolism, recovery of skeletal muscle after exercise, exercise performance, training adaptation, injury risk, and immunity. An important component of the module will be the study of the practical application of nutritional theory within the sporting arena.

Occupational Health and Performance
The module aims to provide you with an understanding of how evidenced-based practice can be used to improve health and performance in occupational settings such as the military, emergency services, and industry. Students taking this module will have followed core modules within their programme and they will learn how their existing knowledge relating to sports and exercise performers and clinical populations and new concepts can be used to enhance health and performance in occupational settings.

Work Placement in Sport and Exercise
An opportunity to complete a unit of directed study incorporating a work placement of 105 hours (3-weeks) in a sport and exercise environment. This placement can take place in a wide range of environments including sports clubs, schools, colleges, private companies, clinical settings, or within the community. The focus of the work placement should be relevant to your needs, the programme of study you are taking and career aspirations.
Year Two: Physical Activity for Health

Core modules:

Researching Sport, Exercise, and Health
The module will provide you with practical skills of conducting research in the sport, exercise, and health environment, and you will further your research skills, including ethical considerations, research design, and methodology, analysis, and write-up.

Developing and Monitoring Physical Performance
This module aims to provide you with the skills and knowledge to design interventions for improving both health and skills-related physical fitness. You will develop the ability to complete a health screening and needs analysis on clients and athletes, establish goals, select appropriate methods of individual physical performance assessments, and design interventions to improve physical performance. You also have the opportunity to obtain REPs (Register of Exercise Professionals) Level 2 Gym Instructors Award.

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This module will examine the combined effects of nutrition and physical activity on health with particular focus on prevalent diseases associated with these factors. Topics covered will include: dietary guidelines, dietary analysis, measurement of energy, macro- and micro-nutrient intake, digestion, absorption and metabolism; the role of micro-nutrients; nutrition and prevalent diseases; obesity; eating disorders; food allergies; under-nutrition and special populations e.g. diabetics.

Clinical Biomechanics
This module aims to build upon the core biomechanical principles underpinning the practical analysis of human movement. It will also consider the role of biomechanical analysis in sports therapy and the assessment of patients. It will serve to widen your knowledge base and show the integrative nature of the separate disciplines of therapy and biomechanics. It will also provide a firm basis for work at a higher level in the discipline of biomechanics.

Clinical Exercise Physiology
Explore the relationship of physical activity and sedentary behaviour with both the development and control of non-communicable diseases (NCD). You will examine the pathophysiology of NCDs, the physiological responses to physical activity, and methods to assess health and fitness for those individuals suffering from such disease states. You will explore the application and appraisal of exercise prescription guidelines for NCDs, with consideration of those that are serviced by exercise/GP referral schemes. If you have previously gained a Register of Exercise Professionals (REPs) Level 2 qualification e.g. gym instructors award you will have the opportunity to complete additional assessments to gain REPs Level 3 Exercise Referral.

Project Management
An introduction to the essential tools and methodologies for managing an effective sports project. The methodology used will be PRINCE2 to develop your own sports project. The content will include: Introduction to Project Management, Planning a Project, and Managing Successful Projects.

Psychology of Physical Activity and Health
This module will seek to provide you with a comprehensive understanding of the psychological theories applied to the contexts of physical activity and health and to evaluate the positive and negative psychological effects of participation in activities.
Optional modules:

The Outdoor Experience - Emotions and Wellbeing
The aim of the module is for you to explore the experience of being in the outdoors from an emotional and well-being perspective. The restorative and therapeutic benefits of immersive experience will be examined and these will include creative activities, understanding of place, and connectedness to the environment and others.

Stress, Coping, and Emotions
The challenging nature of the competitive environment presents sports performers with a multitude of stressors. While some performers are able to effectively cope with the challenges of overcoming these stressors, others are less successful. This module aims to examine a) the demands (i.e. stressors) of sport and how these are experienced by athletes, b) the appraisals and coping strategies employed by athletes when experiencing these stressors, and c) the subsequent emotional responses.

Reflection: Developing Your Teaching and Coaching
This module aims to provide an opportunity to select and develop specialist areas of interest. You will be required to develop skills in introspection, reflection, and reflective practice drawing upon theoretical concepts relating to pedagogy of sport and education. You will agree a suitable programme of work within a professional context of your choice which will involve you immersing yourselves in the culture and practices of this working environment.

Critical Issues in Health Promotion, Lifestyle, and Exercise
The module aims to provide you with a critical appreciation of the principles, theory and practice of health promotion in the UK. This will involve the application of the knowledge of sport, health and physical activity in the context of the wider social, cultural and environmental issues facing agents of health promotion.

Sports Injury and Prevention
This module aims to develop an awareness of potential injury situations and predisposing factors to injury in sport. Familiarity with types of sports injury and treatment procedures should aid in the prevention and effective treatment of injury in the workplace.

Year Three: Physical Activity for Health

Core modules:

Research Project
You are encouraged to identify a research question appropriate to your degree pathway that is of interest and relevance to your studies. The investigation may be based within single or multiple disciplines. An appropriate approach to addressing the question is then determined through discussion with tutors in your chosen area.

Advanced Research in Sport and Exercise
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Exercise Referral Clinic
This module aims to provide you with an opportunity to complete a unit of directed study incorporating experience in a practical-based setting, relevant to working with clinical populations. You will develop new knowledge and skills whilst in a practice-based setting, in addition to applying, consolidating, and reflecting on the learning gained in your prior modules. You will gain experience that enables you to develop, apply and reflect on the clinical practice of exercise within the health service including, but not limited to GP/Exercise Referral, cardiovascular rehabilitation, the Obesity 4 Tier approach, and to draw on, and review, the profession’s evidence-base for lifestyle modification.

Exercise and Physical Activity Interventions
Physical inactivity is recognised as a key predictor of a range of adverse health and social outcomes. Increasing activity levels in the general population is now a priority of the government, with increasing opportunities for physical activity professionals. The module applies health behaviour change theory and research to the promotion of physical activity in specialised populations, such as those with chronic health conditions or physical disabilities. It looks at different types of interventions, such as those targeting individuals, groups, and national campaigns.

Biomechanical Techniques
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Cardiovascular Rehabilitation
This module critically examines the process of rehabilitation as it pertains to cardiovascular disease. Detailed exploration of the aetiology of coronary heart disease (CHD), lifestyle management, and psychology of behaviour change in relation to lifestyle. The evidence-base for exercise and nutritional interventions will be critiqued within the framework of primary, secondary, and tertiary care alongside the skills required to compile multi-disciplinary interventions for secondary prevention.

Contemporary Issues in Sport, Exercise and Health
This module will explore a selection of contemporary issues that may have ethical and moral considerations, in relation to sport, exercise, and health. A range of topic areas will be presented to you with the expectations that you will challenge through a review of case-studies, expert knowledge, and recently published peer-reviewed research. You will be encouraged to express your judgements and reflect upon your knowledge and experiences.

Optional modules:
Nutrition for Sports Performance, Exercise, and Health
Sports performance and the development of athletic ability relies on the individual being in peak health and having the correct nutrition support to fuel training adaptation and exercise performance. This module aims to examine the ways in which dietary intake influences energy metabolism, recovery of skeletal muscle after exercise, exercise performance, training adaptation, injury risk, and immunity.

Occupational Health and Performance
The module aims to provide you with an understanding of how evidenced-based practice can be used to improve health and performance in occupational settings such as the military, emergency services, and industry. Students taking this module will have followed core modules within their programme and they will learn how their existing
knowledge relating to sports and exercise performers and clinical populations and new concepts can be used to enhance health and performance in occupational settings.

**Work Placement in Sport and Exercise**
An opportunity to complete a unit of directed study incorporating a work placement of 105 hours (3-weeks) in a sport and exercise environment. This placement can take place in a wide range of environments including sports clubs, schools, colleges, private companies, clinical settings, or within the community. The focus of the work placement should be relevant to your needs, the programme of study you are taking and career aspirations.

**Year Four**

**Core modules:**

**Research Dissertation**
The research project represents the culmination of the whole master’s route and is the final stage in assessment. It is designed to enable you to conduct and communicate independent research in an area of your choosing.

**Applied Techniques in Physiology and Nutrition**
An ability to select the most appropriate technique, protocol, piece of equipment or software is critical when assessing human performance from either a physiology or nutrition perspective. The module will adopt an evidence-based approach to identifying ‘best practice’ in terms of protocols and procedures when undertaking work with clients from a different athletic ability, gender and age.

**Optional modules:**

**Whole Body Metabolism: Measurement and Application in Exercise Physiology**
Energy metabolism refers to a series of chemical processes that transform energy substrates into biologically “useable” energy in the form of adenosine triphosphate (ATP). The role of energy metabolism is fundamental to an understanding of energetic balance within any activity involving an increased ATP turnover e.g. sport and exercise. This module will examine the application of whole-body metabolism to a variety of contexts within sport and exercise physiology ranging from elite sporting performance to clinical settings.

**Professional Skills in Sport and Exercise Physiology and Nutrition**
This module aims to develop the knowledge base associated with applied physiological and nutritional support in a range of different environments including, exercise testing, physiological and dietary measurement, food safety and hygiene and UK Anti-Doping (UKAD) considerations. It will address the interplay between external physical challenges associated with different environments; internal physiological and metabolic challenges associated with gender, training status, and various states of disease-impaired or compromised function such as musculoskeletal injuries.

**Muscle Physiology for Sport, Exercise and Nutrition**
An understanding of the role of skeletal muscles for whole-body physiological functioning exercise is essential when examining the impact of nutrition and physical training for sports for performance. This module aims to develop critical knowledge of muscle function and energy demands, the use of carbohydrate, lipids and proteins as energy sources, the metabolic pathways, the nature of metabolic limitations in skeletal muscles during exercise, the role of nutrition and ergogenic aids (e.g. polyphenols, carbohydrates, beta-alanine, creatine) for optimal function of skeletal
muscles during exercise, the role of proteins for muscle mass, and the relationships between nutritional interventions, signalling pathways and training adaptations in skeletal muscle.

<table>
<thead>
<tr>
<th>MSci Sport and Exercise Science (Psychology)</th>
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<tr>
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**YEAR 1 (Level 4) MODULES**
- Fundamentals of Human Physiology 15 Credits
- Introduction to Applied Exercise Physiology 15 Credits
- Introduction to Skill Acquisition 15 Credits
- Muscles and Movement – Anatomy in Motion 15 Credits
- Muscles and Movement – Causes of Motion 15 Credits
- Questioning Sport, Exercise & Health 15 Credits
- Evaluating Sport, Exercise & Health 15 Credits

**YEAR 2 (Level 5) – Choose Pathway**

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<th>Sport and Exercise Science (Sport Performance)</th>
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<tr>
<td>Stress, Coping and Emotions 15 Credits</td>
<td>The Outdoor Experience - Emotions and Wellbeing 15 credits</td>
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**YEAR 3 (Level 6) – Choose MSci Sport and Exercise Science (Psychology)**

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<td>Planning and Monitoring of Training and Performance 15 Credits</td>
<td>Exercise Referral Clinic 15 credits</td>
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<td>Contemporary Issues in Sport, Exercise and Health 15 Credits</td>
<td>Exercise and Physical Activity Interventions 15 credits</td>
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<td>Biomechanical Techniques 15 Credits</td>
<td>Cardiovascular Rehabilitation 15 credits</td>
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<td>Applied Sport Psychology 1: Delivering Mental Strategies 15 Credits</td>
<td>(Core) Contemporary Issues in Sport, Exercise and Health 15 Credits</td>
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<tr>
<td>Applied Sport Psychology 2: Professional Practice 15 Credits</td>
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<td>Group Dynamics in Sport 15 Credits</td>
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**YEAR 4 (Level 7) – MSci Sport and Exercise Science (Psychology)**

(20 credits per module excluding Research Dissertation which is worth 60 credits)

<table>
<thead>
<tr>
<th>Research Dissertation (Triple Module S1 &amp; S2)</th>
<th>Performance Psychology</th>
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<tr>
<td>Professional Practice in Sport and Exercise Psychology</td>
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<tr>
<td>1 option</td>
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</tr>
<tr>
<td>Cognitive Processes in Sport</td>
<td>Enhancing Physical Activity Participation &amp; Wellbeing</td>
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</table>
Module descriptors

Year One

Fundamentals of Human Physiology
This module will cover the fundamental principles of Human Physiology by examining how key systems such as the musculoskeletal system, the cardiovascular system, and the respiratory system affect human performance. Specific attention is paid to energy metabolism in the context of the exercising human across the breadth of the energy spectrum.

Introduction to Sport and Exercise Psychology
Sport and exercise contexts provide a fascinating and complex opportunity to investigate the psychology of human effect, cognition, and behaviour. This module aims to introduce you to diverse areas of psychology in the context of sport performance, exercise, and well-being that you will meet on your degree programme in years two and three.

Muscles and Movement - Anatomy in Motion
An introduction to the basic concepts of anatomy and biomechanics as they relate to human movement and performance in sport and exercise. You are shown how such concepts can be practically investigated and will illustrate the integrative nature of anatomy and biomechanics. Practical work considers the general principles of biomechanics related methodology, data analysis, and statistical analysis for practical investigations into the evaluation of sport and exercise.

Questioning Sport, Exercise and Health
This module will introduce study skills for higher education and help you discover the philosophical underpinnings of research in the sport and health sciences. You will also be introduced to a range of qualitative research methods.

Introduction to Applied Exercise Physiology
This module aims to develop an understanding of the application of scientific principles and techniques to evaluate human performance. Consideration will be given to the selection of an appropriate data collection environment (i.e. laboratory versus field) and the applicability across a range of activities that spans energy provision.

Introduction to Skill Acquisition
This module examines the psychological factors that affect the learning and performance of skills in sport. You are introduced to selected theories of motor learning and you will examine their strengths and weaknesses relative to real-world coaching. Research findings will be used to help you make the connections to your responsibilities as sports coaches.

Muscles and Movement - Causes of Motion
An introduction to the basic concepts of biomechanics as they relate to human movement and performance in sport and exercise. You are shown how the basic physical principles underpin performance in sport, and how such principles can be practically investigated. Practical work considers the general principles of biomechanics and related them to experimental methodology, data analysis, and statistical analysis for practical investigations into the evaluation of sport and exercise.
Evaluating Sport, Exercise and Health
The module aims to provide you with a foundation in quantitative study and research skills which will support and underpin your work in other sport, exercise, and health science modules.

*Years Two and Three for Physical Activity for Health follow Year Three Sport Performance modules. Year Four follows Year Three Physical Activity for Health modules.*

Year Two: Sport Performance

Core modules:

**Sport and Exercise in Extreme Environments**
This module aims to examine the physiological challenge of performing in extreme and hostile environments and to examine how the human can exercise, maintain homeostasis, and survive. It will explore the theoretical limits of human performance, looking to identify mechanisms of physiological acclimatisation and adaptation. You will be able to discuss how this knowledge may be used to increase sporting performance and maximise safety e.g. competitions such as The Everest Marathon and Marathon Des Sables.

**Physiological Limitations to Performance**
Athletic performances span from power and sprint activities lasting less than 10 seconds to endurance activities lasting many hours. The aim of this module is to more fully examine the metabolic, neuromuscular, neuroendocrine and cardiovascular systems of the human body to develop knowledge on the nature of limitations to performance across this intensity spectrum.

**Cognitive Psychology for Sport Performance**
Cognitive psychology is the study of the basic processes underpinning our interaction with the world. These processes include perception, attention, memory, and learning. Within the sporting domain, knowledge of cognitive psychology can promote efficient acquisition and effective performance of skill among athletes at all stages of skill development. This module critically examines the strengths and weaknesses of theory and research concerning the cognitive processes that underpin the acquisition and performance of skill.

**Performance Psychology**
An introduction to the key theories and concepts in performance psychology, examining theory and research into a range of factors (e.g. confidence, motivation, emotional regulation) that have been proposed to contribute to performance in sport and other achievement domains. The module content will seek to develop an understanding of the importance of these concepts for performance, their determinants, and how to change them.

**Sports Injury and Prevention**
This module aims to develop an awareness of potential injury situations and predisposing factors to injury in sport. Familiarity with types of sports injury and treatment procedures should aid in the prevention and effective treatment of injury in the workplace.

Researching Sport, Exercise, and Health
The module will provide you with practical skills of conducting research in the sport, exercise, and health environment, and you will further your research skills, including ethical considerations, research design, and methodology, analysis, and write-up.
Biomechanics in Sport and Exercise
The biomechanical principles underpinning performance in a range of sports will be considered in relation to practical performance of sport. The module content will include analysis methodologies and research, which has enhanced biomechanics knowledge of sports performance. The biomechanics analysis and evaluation of selected sport and exercise activities will be considered e.g. golf, football, tennis, high jump, long jump, javelin, discus, gymnastics, cycling, swimming.

Optional modules:
Stress, Coping, and Emotions
The challenging nature of the competitive environment presents sports performers with a multitude of stressors. While some performers are able to effectively cope with the challenges of overcoming these stressors, others are less successful. This module aims to examine a) the demands (i.e. stressors) of sport and how these are experienced by athletes, b) the appraisals and coping strategies employed by athletes when experiencing these stressors, and c) the subsequent emotional responses.

Performance Analysis in Sport
The analysis undertaken could relate to technical, tactical, and/or physical aspects of performance, although Performance Analysis can also be used to analyse various other facets of sport such as coach behaviour and coaching microstructure. The use of sports performance analysis is paramount in light of the limitations of human memory, such as the volume of event recall and subjectivity. The module aims to introduce you to the key concepts, skills, and techniques associated to performance analysis, and outline its place in the scientific support of individuals and teams.

Nutrition for the Prevention and Treatment of Disease
Eating a well-balanced diet, with adequate nutrients and appropriate calories is a fundamental requirement for long-term health. Malnutrition due both to under-eating or overeating and obesity is closely linked to increased illness and disease risk. This module aims to explore the relationship between nutrition, health, immunity, and disease, to evaluate government dietary guidelines, and review the current research in nutrition, digestion, and metabolism to investigate how they relate to the prevention and management of population health.

Psychology of Physical Activity and Health
This module will seek to provide you with a comprehensive understanding of the psychological theories applied to the contexts of physical activity and health and to evaluate the positive and negative psychological effects of participation in activities.

Year Three: Sport Performance

Core modules:
Research Project
You are encouraged to identify a research question appropriate to your degree pathway that is of interest and relevance to your studies. The investigation may be based within single or multiple disciplines. An appropriate approach to addressing the question is then determined through discussion with tutors in your chosen area.

Advanced Research in Sport and Exercise
This module extends the skills learned in Year Two, particularly in areas such as research methodology and quantitative analysis. The module accesses sections of the provision for MSc students and so begins to move you towards postgraduate level thinking. You will work alongside MSc students to access sections of work at the
appropiate level. Assignments will reflect that the module is in Year Three but will take an applied approach to promote independent use and evaluation of research methods and statistics.

Planning and Monitoring of Training and Performance
A focus on planning and monitoring training of athletes and how a programme of physiological support can be used to enhance performance. You will engage in current literature identifying the physiological demands of the athletes chosen sport, key measures of physical fitness, and how we can enhance them. An athlete’s ability to focus on training to gain maximal physiological adaptations, and relax in competition can represent the difference in making the podium or winning major tournaments.

Contemporary Issues in Sport, Exercise, and Health
This module will explore a selection of contemporary issues that may have ethical and moral considerations, in relation to sport, exercise, and health. A range of topic areas will be presented to you with the expectations that you will challenge through a review of case-studies, expert knowledge, and recently published peer-reviewed research. You will be encouraged to express your judgements and reflect upon your knowledge and experiences.

Biomechanical Techniques
This module aims to enable you to develop experimental skills that may be of relevance, not only in biomechanics but also in other scientific fields where the accuracy of measurement is important. The experimental skills gained will underpin research in biomechanics, and equip you with the skills required for a final year independent project in the area.

Applied Sport Psychology 1: Delivering Mental Strategies
Traditionally, sport psychologists have advocated the use of numerous mental training strategies that are purported to enhance the cognitive, affective, and behavioural states of the performers that they work with. These might include imagery, goal-setting, relaxation techniques, and pre-performance routines; and advanced strategies such as Rational Emotive Behavioural Therapy (REBT) and hypnosis. The aims of this module are to provide you with an understanding of the efficacy of these strategies, to provide opportunities to deliver these mental strategies and to reflect on the delivery of these strategies.

Optional modules:
Applied Sport Psychology 2: Professional Practice
The ‘soft’ skills required by a sport and exercise psychologist are imperative to effectiveness as a practitioner. The aim of the module is to examine the nature of applied sport psychology practice and discuss and critique how sport psychologists work with clients in relation to initial assessment, case formulation, intervention planning, and delivery, monitoring, and evaluation.

Group Dynamics in Sport
This module aims to examine and evaluate current knowledge of sport group productivity and functioning and evaluates current practice in developing and increasing the effectiveness of group functioning. It is important to have an understanding of group dynamics due to the potential impact that groups can have on an individual’s performance, life satisfaction and psychological well-being.
Year Two: Physical Activity for Health

Core modules:

Researching Sport, Exercise, and Health
The module will provide you with practical skills of conducting research in the sport, exercise, and health environment, and you will further your research skills, including ethical considerations, research design, and methodology, analysis, and write-up.

Developing and Monitoring Physical Performance
This module aims to provide you with the skills and knowledge to design interventions for improving both health and skills-related physical fitness. You will develop the ability to complete a health screening and needs analysis on clients and athletes, establish goals, select appropriate methods of individual physical performance assessments, and design interventions to improve physical performance. You also have the opportunity to obtain REPs (Register of Exercise Professionals) Level 2 Gym Instructors Award.

Nutrition for the Prevention and Treatment of Disease
This module will examine the combined effects of nutrition and physical activity on health with particular focus on prevalent diseases associated with these factors. Topics covered will include: dietary guidelines, dietary analysis, measurement of energy, macro- and micro-nutrient intake, digestion, absorption and metabolism; the role of micro-nutrients; nutrition and prevalent diseases; obesity; eating disorders; food allergies; under-nutrition and special populations e.g. diabetics.

Clinical Biomechanics
This module aims to build upon the core biomechanical principles underpinning the practical analysis of human movement. It will also consider the role of biomechanical analysis in sports therapy and the assessment of patients. It will serve to widen your knowledge base and show the integrative nature of the separate disciplines of therapy and biomechanics. It will also provide a firm basis for work at a higher level in the discipline of biomechanics.

Clinical Exercise Physiology
Explore the relationship of physical activity and sedentary behaviour with both the development and control of non-communicable diseases (NCD). You will examine the pathophysiology of NCDs, the physiological responses to physical activity, and methods to assess health and fitness for those individuals suffering from such disease states. You will explore the application and appraisal of exercise prescription guidelines for NCDs, with consideration of those that are serviced by exercise/GP referral schemes. If you have previously gained a Register of Exercise Professionals (REPs) Level 2 qualification e.g. gym instructors award you will have the opportunity to complete additional assessments to gain REPs Level 3 Exercise Referral.

Project Management
An introduction to the essential tools and methodologies for managing an effective sports project. The methodology used will be PRINCE2 to develop your own sports project. The content will include: Introduction to Project Management, Planning a Project, and Managing Successful Projects.

Psychology of Physical Activity and Health
This module will seek to provide you with a comprehensive understanding of the psychological theories applied to the contexts of physical activity and health and to evaluate the positive and negative psychological effects of participation in activities.

Optional modules:

**The Outdoor Experience - Emotions and Wellbeing**
The aim of the module is for you to explore the experience of being in the outdoors from an emotional and well-being perspective. The restorative and therapeutic benefits of immersive experience will be examined and these will include creative activities, understanding of place, and connectedness to the environment and others.

**Stress, Coping, and Emotions**
The challenging nature of the competitive environment presents sports performers with a multitude of stressors. While some performers are able to effectively cope with the challenges of overcoming these stressors, others are less successful. This module aims to examine a) the demands (i.e. stressors) of sport and how these are experienced by athletes, b) the appraisals and coping strategies employed by athletes when experiencing these stressors, and c) the subsequent emotional responses.

**Reflection: Developing Your Teaching and Coaching**
This module aims to provide an opportunity to select and develop specialist areas of interest. You will be required to develop skills in introspection, reflection, and reflective practice drawing upon theoretical concepts relating to pedagogy of sport and education. You will agree a suitable programme of work within a professional context of your choice which will involve you immersing yourselves in the culture and practices of this working environment.

**Critical Issues in Health Promotion, Lifestyle, and Exercise**
The module aims to provide you with a critical appreciation of the principles, theory and practice of health promotion in the UK. This will involve the application of the knowledge of sport, health and physical activity in the context of the wider social, cultural and environmental issues facing agents of health promotion.

**Sports Injury and Prevention**
This module aims to develop an awareness of potential injury situations and predisposing factors to injury in sport. Familiarity with types of sports injury and treatment procedures should aid in the prevention and effective treatment of injury in the workplace.

**Year Three: Physical Activity for Health**

Core modules:

**Research Project**
You are encouraged to identify a research question appropriate to your degree pathway that is of interest and relevance to your studies. The investigation may be based within single or multiple disciplines. An appropriate approach to addressing the question is then determined through discussion with tutors in your chosen area.

**Advanced Research in Sport and Exercise**
This module extends the skills learned in Year Two, particularly in areas such as research methodology and quantitative analysis. The module accesses sections of the provision for MSc students and so begins to move you towards postgraduate level thinking. You will work alongside MSc students to access sections of work at the appropriate level. Assignments will reflect that the module is in Year Three but will take an applied approach to promote independent use and evaluation of research methods and statistics.
Exercise Referral Clinic
This module aims to provide you with an opportunity to complete a unit of directed study incorporating experience in a practical-based setting, relevant to working with clinical populations. You will develop new knowledge and skills whilst in a practice-based setting, in addition to applying, consolidating, and reflecting on the learning gained in your prior modules. You will gain experience that enables you to develop, apply and reflect on the clinical practice of exercise within the health service including, but not limited to GP/ Exercise Referral, cardiovascular rehabilitation, the Obesity 4 Tier approach, and to draw on, and review, the profession’s evidence-base for lifestyle modification.

Exercise and Physical Activity Interventions
Physical inactivity is recognised as a key predictor of a range of adverse health and social outcomes. Increasing activity levels in the general population is now a priority of the government, with increasing opportunities for physical activity professionals. The module applies health behaviour change theory and research to the promotion of physical activity in specialised populations, such as those with chronic health conditions or physical disabilities. It looks at different types of interventions, such as those targeting individuals, groups, and national campaigns.

Cardiovascular Rehabilitation
This module critically examines the process of rehabilitation as it pertains to cardiovascular disease. Detailed exploration of the aetiology of coronary heart disease (CHD), lifestyle management, and psychology of behaviour change in relation to lifestyle. The evidence-base for exercise and nutritional interventions will be critiqued within the framework of primary, secondary, and tertiary care alongside the skills required to compile multi-disciplinary interventions for secondary prevention.

Contemporary Issues in Sport, Exercise and Health
This module will explore a selection of contemporary issues that may have ethical and moral considerations, in relation to sport, exercise, and health. A range of topic areas will be presented to you with the expectations that you will challenge through a review of case-studies, expert knowledge, and recently published peer-reviewed research. You will be encouraged to express your judgements and reflect upon your knowledge and experiences.

Optional modules:
Applied Sport Psychology 1: Delivering Mental Strategies
Traditionally, sport psychologists have advocated the use of numerous mental training strategies that are purported to enhance the cognitive, affective, and behavioural states of the performers that they work with. These might include imagery, goal-setting, relaxation techniques, and pre-performance routines; and advanced strategies such as Rational Emotive Behavioural Therapy (REBT) and hypnosis. The aims of this module are to provide you with an understanding of the efficacy of these strategies, to provide opportunities to deliver these mental strategies and to reflect on the delivery of these strategies.

Psychology of Injury and Rehabilitation
This module enables you to critically evaluate the psychological, social, and cultural factors in injury risk, theories of psychological responses to injury, and psychological, social, and cultural factors that impact recovery from injury and adherence to rehabilitation programmes. It will critically evaluate theory and research, and consider practical approaches to working with injured athletes to assist them with their response to and rehabilitation from injury experiences.
Year Four

Core modules:
Research Dissertation
The research project represents the culmination of the whole master's route and is the final stage in assessment. It is designed to enable you to conduct and communicate independent research in an area of your choosing.

Advanced Performance Psychology
This module will explore the causes and consequences of key psychological constructs that have been implicated as determinants of sporting performance. The module will seek to examine and critically evaluate current theoretical and research issues in sport psychology and will attempt to apply these issues to the work of sport psychologists.

Professional Practice in Sport and Exercise Psychology
This module aims to develop your understanding of the practice process and 'effective practice', and of a range of ethical and practice issues that might impact on this. It also aims to begin to develop some of the requisite practice skills and competencies for working as an applied sport and exercise psychologist.

Optional modules:
Social Processes in Sport
This module begins by examining key social processes (e.g., leadership, identity, group roles) that impact on performance in sport. Specifically, social psychology theory and research are examined and applied to evaluate and explain the impact such social processes have on performance. As the module develops, we examine psychosocial phenomena in the career of the developing athlete that may undermine this performance narrative.

Cognitive Processes in Sport
This module aims to provide you with an understanding of cognitive processes underpinning learning and performance within both individual and team sports. Developing and demonstrating expertise can be proposed to be underpinned by important cognitive processes, such as perception, memory, appraisal, imagery and anxiety control. This module attempts to identify the key cognitive factors responsible for the development and demonstration of expertise, and to explore the scope for the coach and the learner to enhance learning and performance through a better understanding of such processes.

Enhancing Physical Activity Participation and Wellbeing
The aim of the module will be to further knowledge of health behaviour change in the context of exercise and physical activity. You will explore aspects of physical activity behaviour change that enable positive psychological and physical well-being outcomes for individuals. You will appreciate the range of psychosocial barriers and facilitators that can result in positive or maladaptive affective responses, cognitions, and behaviours.
**MSci Sport and Exercise Science (Strength and Conditioning)**

(At Levels 4, 5 and 6 a single module =15 credits and a double module =30 credits, core compulsory modules are indicated within the shaded boxes)

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### YEAR 2 (Level 5) – Choose Pathway

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**1 Option**

- Psychology of Physical Activity and Health 15 credits
- Developing and Monitoring Physical Performance 15 credits
- Nutrition for the Prevention and Treatment of Disease 15 credits

### YEAR 3 (Level 6) – Choose MSci Sport and Exercise Science (Strength and Conditioning)

**Research Project 30 credits**

**Advanced Research in Sport and Exercise**

**Planning and Monitoring of Training and Performance 15 credits**

**Contemporary Issues in Sport, Exercise and Health 15 credits**

**Biomechanical Techniques 15 credits**

**Applied Sport Psychology 1: Delivering Mental Strategies 15 credits**

**1 Option**

- Entrepreneurial – (Business Set-Up) 15 credits
- Nutrition for Sports Performance, Exercise and Health 15 credits
- Work Placement in Sport and Exercise 15 credits
- Group Dynamics in Sport 15 credits

### YEAR 4 (Level 7) – MSci Sport and Exercise Science (Strength and Conditioning)

(20-credits per module excluding Research Dissertation which is worth 60 credits)

**Research Dissertation (Triple ModuleS1 & S2)**

**Planning, Programming and Application**

**Strength and Conditioning Theory and Practice**

**Applied Measurement Techniques**
Module descriptors

Year One

**Fundamentals of Human Physiology**
This module will cover the fundamental principles of Human Physiology by examining how key systems such as the musculoskeletal system, the cardiovascular system, and the respiratory system affect human performance. Specific attention is paid to energy metabolism in the context of the exercising human across the breadth of the energy spectrum.

**Introduction to Sport and Exercise Psychology**
Sport and exercise contexts provide a fascinating and complex opportunity to investigate the psychology of human effect, cognition, and behaviour. This module aims to introduce you to diverse areas of psychology in the context of sport performance, exercise, and well-being that you will meet on your degree programme in years two and three.

**Muscles and Movement - Anatomy in Motion**
An introduction to the basic concepts of anatomy and biomechanics as they relate to human movement and performance in sport and exercise. You are shown how such concepts can be practically investigated and will illustrate the integrative nature of anatomy and biomechanics. Practical work considers the general principles of biomechanics related methodology, data analysis, and statistical analysis for practical investigations into the evaluation of sport and exercise.

**Questioning Sport, Exercise and Health**
This module will introduce study skills for higher education and help you discover the philosophical underpinnings of research in the sport and health sciences. You will also be introduced to a range of qualitative research methods.

**Introduction to Applied Exercise Physiology**
This module aims to develop an understanding of the application of scientific principles and techniques to evaluate human performance. Consideration will be given to the selection of an appropriate data collection environment (i.e. laboratory versus field) and the applicability across a range of activities that spans energy provision.

**Introduction to Skill Acquisition**
This module examines the psychological factors that affect the learning and performance of skills in sport. You are introduced to selected theories of motor learning and you will examine their strengths and weaknesses relative to real-world coaching. Research findings will be used to help you make the connections to your responsibilities as sports coaches.

**Muscles and Movement - Causes of Motion**
An introduction to the basic concepts of biomechanics as they relate to human movement and performance in sport and exercise. You are shown how the basic physical principles underpin performance in sport, and how such principles can be practically investigated. Practical work considers the general principles of biomechanics and related them to experimental methodology, data analysis, and statistical analysis for practical investigations into the evaluation of sport and exercise.
Evaluating Sport, Exercise and Health
The module aims to provide you with a foundation in quantitative study and research skills which will support and underpin your work in other sport, exercise, and health science modules.

**Years Two and Three for Physical Activity for Health follow Year Three Sport Performance modules. Year Four follows Year Three Physical Activity for Health modules.**

**Year Two: Sport Performance**

**Core modules:**

**Sport and Exercise in Extreme Environments**
This module aims to examine the physiological challenge of performing in extreme and hostile environments and to examine how the human can exercise, maintain homeostasis, and survive. It will explore the theoretical limits of human performance, looking to identify mechanisms of physiological acclimatisation and adaptation. You will be able to discuss how this knowledge may be used to increase sporting performance and maximise safety e.g. competitions such as The Everest Marathon and Marathon Des Sables.

**Physiological Limitations to Performance**
Athletic performances span from power and sprint activities lasting less than 10 seconds to endurance activities lasting many hours. The aim of this module is to more fully examine the metabolic, neuromuscular, neuroendocrine and cardiovascular systems of the human body to develop knowledge on the nature of limitations to performance across this intensity spectrum.

**Cognitive Psychology for Sport Performance**
Cognitive psychology is the study of the basic processes underpinning our interaction with the world. These processes include perception, attention, memory, and learning. Within the sporting domain, knowledge of cognitive psychology can promote efficient acquisition and effective performance of skill among athletes at all stages of skill development. This module critically examines the strengths and weaknesses of theory and research concerning the cognitive processes that underpin the acquisition and performance of skill.

**Performance Psychology**
An introduction to the key theories and concepts in performance psychology, examining theory and research into a range of factors (e.g. confidence, motivation, emotional regulation) that have been proposed to contribute to performance in sport and other achievement domains. The module content will seek to develop an understanding of the importance of these concepts for performance, their determinants, and how to change them.

**Sports Injury and Prevention**
This module aims to develop an awareness of potential injury situations and predisposing factors to injury in sport. Familiarity with types of sports injury and treatment procedures should aid in the prevention and effective treatment of injury in the workplace.

**Biomechanics in Sport and Exercise**
The biomechanical principles underpinning performance in a range of sports will be considered in relation to practical performance of sport. The module content will include analysis methodologies and research, which has enhanced biomechanics knowledge of sports performance. The biomechanics analysis and evaluation of selected sport and exercise activities will be considered e.g. golf, football, tennis, high jump, long jump, javelin, discus, gymnastics, cycling, swimming.
Researching Sport, Exercise, and Health
The module will provide you with practical skills of conducting research in the sport, exercise, and health environment, and you will further your research skills, including ethical considerations, research design, and methodology, analysis, and write-up.

Optional modules:
Psychology of Physical Activity and Health
This module will seek to provide you with a comprehensive understanding of the psychological theories applied to the contexts of physical activity and health and to evaluate the positive and negative psychological effects of participation in activities.

Performance Analysis in Sport
The analysis undertaken could relate to technical, tactical, and/or physical aspects of performance, although Performance Analysis can also be used to analyse various other facets of sport such as coach behaviour and coaching microstructure. The use of sports performance analysis is paramount in light of the limitations of human memory, such as the volume of event recall and subjectivity. The module aims to introduce you to the key concepts, skills, and techniques associated to performance analysis, and outline its place in the scientific support of individuals and teams.

Developing and Monitoring Physical Performance
This module aims to provide you with the skills and knowledge to design interventions for improving both health and skills-related physical fitness. You will develop the ability to complete a health screening and needs analysis on clients and athletes, establish goals, select appropriate methods of individual physical performance assessments, and design interventions to improve physical performance. You also have the opportunity to obtain REPs (Register of Exercise Professionals) Level 2 Gym Instructors Award.

Nutrition for the Prevention and Treatment of Disease
Eating a well-balanced diet, with adequate nutrients and appropriate calories is a fundamental requirement for long-term health. Malnutrition due both to under-eating or overeating and obesity is closely linked to increased illness and disease risk. This module aims to explore the relationship between nutrition, health, immunity, and disease, to evaluate government dietary guidelines, and review the current research in nutrition, digestion, and metabolism to investigate how they relate to the prevention and management of population health.

Year Three: Sport Performance

Core modules:
Research Project
You are encouraged to identify a research question appropriate to your degree pathway that is of interest and relevance to your studies. The investigation may be based within single or multiple disciplines. An appropriate approach to addressing the question is then determined through discussion with tutors in your chosen area.

Advanced Research in Sport and Exercise
This module extends the skills learned in Year Two, particularly in areas such as research methodology and quantitative analysis. The module accesses sections of the provision for MSc students and so begins to move you towards postgraduate level thinking. You will work alongside MSc students to access sections of work at the
Planning and Monitoring of Training and Performance
A focus on planning and monitoring training of athletes and how a programme of physiological support can be used to enhance performance. You will engage in current literature identifying the physiological demands of the athletes chosen sport, key measures of physical fitness, and how we can enhance them. An athlete's ability to focus on training to gain maximal physiological adaptations, and relax in competition can represent the difference in making the podium or winning major tournaments.

Contemporary Issues in Sport, Exercise, and Health
This module will explore a selection of contemporary issues that may have ethical and moral considerations, in relation to sport, exercise, and health. A range of topic areas will be presented to you with the expectations that you will challenge through a review of case-studies, expert knowledge, and recently published peer-reviewed research. You will be encouraged to express your judgements and reflect upon your knowledge and experiences.

Biomechanical Techniques
This module aims to enable you to develop experimental skills that may be of relevance, not only in biomechanics but also in other scientific fields where the accuracy of measurement is important. The experimental skills gained will underpin research in biomechanics, and equip you with the skills required for a final year independent project in the area.

Applied Sport Psychology 1: Delivering Mental Strategies
Traditionally, sport psychologists have advocated the use of numerous mental training strategies that are purported to enhance the cognitive, affective, and behavioural states of the performers that they work with. These might include imagery, goal-setting, relaxation techniques, and pre-performance routines; and advanced strategies such as Rational Emotive Behavioural Therapy (REBT) and hypnosis. The aims of this module are to provide you with an understanding of the efficacy of these strategies, to provide opportunities to deliver these mental strategies and to reflect on the delivery of these strategies.

Optional modules:
Entrepreneurial (Business Set-Up)
The module adopts a very practical focus. It concentrates upon the planning that needs to be undertaken prior to the start-up of a small business. From your perspective, the primary output of the module is to produce a persuasive business proposal. The main intention of the module is to allow you to draw on the toolkit of understanding that you have developed within your studies to date. As a consequence, you are required to independently manage your own progress in achieving the learning outcomes and preparing for the assessment.

Nutrition for Sports Performance, Exercise, and Health
Sports performance and the development of athletic ability relies on the individual being in peak health and having the correct nutrition support to fuel training adaptation and exercise performance. This module aims to examine the ways in which dietary intake influences energy metabolism, recovery of skeletal muscle after exercise, exercise performance, training adaptation, injury risk, and immunity. An important component of the module will be the study of the practical application of nutritional theory within the sporting arena.
Occupational Health and Performance
The module aims to provide you with an understanding of how evidenced-based practice can be used to improve health and performance in occupational settings such as the military, emergency services, and industry. Students taking this module will have followed core modules within their programme and they will learn how their existing knowledge relating to sports and exercise performers and clinical populations and new concepts can be used to enhance health and performance in occupational settings.

Work Placement in Sport and Exercise
An opportunity to complete a unit of directed study incorporating a work placement of 105 hours (3-weeks) in a sport and exercise environment. This placement can take place in a wide range of environments including sports clubs, schools, colleges, private companies, clinical settings, or within the community. The focus of the work placement should be relevant to your needs, the programme of study you are taking and career aspirations.

Group Dynamics in Sport
This module aims to examine and evaluate current knowledge of sport group productivity and functioning and evaluates current practice in developing and increasing the effectiveness of group functioning. It is important to have an understanding of group dynamics due to the potential impact that groups can have on an individual’s performance, life satisfaction and psychological well-being.

Year Two: Physical Activity for Health

Core modules:

Reasearching Sport, Exercise, and Health
The module will provide you with practical skills of conducting research in the sport, exercise, and health environment, and you will further your research skills, including ethical considerations, research design, and methodology, analysis, and write-up.

Developing and Monitoring Physical Performance
This module aims to provide you with the skills and knowledge to design interventions for improving both health and skills-related physical fitness. You will develop the ability to complete a health screening and needs analysis on clients and athletes, establish goals, select appropriate methods of individual physical performance assessments, and design interventions to improve physical performance. You also have the opportunity to obtain REPs (Register of Exercise Professionals) Level 2 Gym Instructors Award.

Nutrition for the Prevention and Treatment of Disease
This module will examine the combined effects of nutrition and physical activity on health with particular focus on prevalent diseases associated with these factors. Topics covered will include; dietary guidelines, dietary analysis, measurement of energy, macro- and micro-nutrient intake, digestion, absorption and metabolism; the role of micro-nutrients; nutrition and prevalent diseases; obesity; eating disorders; food allergies; under-nutrition and special populations e.g. diabetics.

Clinical Biomechanics
This module aims to build upon the core biomechanical principles underpinning the practical analysis of human movement. It will also consider the role of biomechanical analysis in sports therapy and the assessment of patients. It will serve to widen your knowledge base and show the integrative nature of the separate disciplines of
therapy and biomechanics. It will also provide a firm basis for work at a higher level in the discipline of biomechanics.

**Clinical Exercise Physiology**
Explore the relationship of physical activity and sedentary behaviour with both the development and control of non-communicable diseases (NCD). You will examine the pathophysiology of NCDs, the physiological responses to physical activity, and methods to assess health and fitness for those individuals suffering from such disease states. You will explore the application and appraisal of exercise prescription guidelines for NCDs, with consideration of those that are serviced by exercise/GP referral schemes. If you have previously gained a Register of Exercise Professionals (REPs) Level 2 qualification e.g. gym instructors award you will have the opportunity to complete additional assessments to gain REPs Level 3 Exercise Referral.

**Project Management**
An introduction to the essential tools and methodologies for managing an effective sports project. The methodology used will be PRINCE2 to develop your own sports project. The content will include: Introduction to Project Management, Planning a Project, and Managing Successful Projects.

**Psychology of Physical Activity and Health**
This module will seek to provide you with a comprehensive understanding of the psychological theories applied to the contexts of physical activity and health and to evaluate the positive and negative psychological effects of participation in activities.

**Optional modules:**
*The Outdoor Experience - Emotions and Wellbeing*
The aim of the module is for you to explore the experience of being in the outdoors from an emotional and wellbeing perspective. The restorative and therapeutic benefits of immersive experience will be examined and these will include creative activities, understanding of place, and connectedness to the environment and others.

*Stress, Coping, and Emotions*
The challenging nature of the competitive environment presents sports performers with a multitude of stressors. While some performers are able to effectively cope with the challenges of overcoming these stressors, others are less successful. This module aims to examine a) the demands (i.e. stressors) of sport and how these are experienced by athletes, b) the appraisals and coping strategies employed by athletes when experiencing these stressors, and c) the subsequent emotional responses.

**Reflection: Developing Your Teaching and Coaching**
This module aims to provide an opportunity to select and develop specialist areas of interest. You will be required to develop skills in introspection, reflection, and reflective practice drawing upon theoretical concepts relating to pedagogy of sport and education. You will agree a suitable programme of work within a professional context of your choice which will involve you immersing yourselves in the culture and practices of this working environment.

**Critical Issues in Health Promotion, Lifestyle, and Exercise**
The module aims to provide you with a critical appreciation of the principles, theory and practice of health promotion in the UK. This will involve the application of the knowledge of sport, health and physical activity in the context of the wider social, cultural and environmental issues facing agents of health promotion.

**Sports Injury and Prevention**
This module aims to develop an awareness of potential injury situations and predisposing factors to injury in sport. Familiarity with types of sports injury and treatment procedures should aid in the prevention and effective treatment of injury in the workplace.
Year Three: Physical Activity for Health

Core modules:

Research Project
You are encouraged to identify a research question appropriate to your degree pathway that is of interest and relevance to your studies. The investigation may be based within single or multiple disciplines. An appropriate approach to addressing the question is then determined through discussion with tutors in your chosen area.

Advanced Research in Sport and Exercise
This module extends the skills learned in Year Two, particularly in areas such as research methodology and quantitative analysis. The module accesses sections of the provision for MSc students and so begins to move you towards postgraduate level thinking. You will work alongside MSc students to access sections of work at the appropriate level. Assignments will reflect that the module is in Year Three but will take an applied approach to promote independent use and evaluation of research methods and statistics.

Exercise Referral Clinic
This module aims to provide you with an opportunity to complete a unit of directed study incorporating experience in a practical-based setting, relevant to working with clinical populations. You will develop new knowledge and skills whilst in a practice-based setting, in addition to applying, consolidating, and reflecting on the learning gained in your prior modules. You will gain experience that enables you to develop, apply and reflect on the clinical practice of exercise within the health service including, but not limited to GP/Exercise Referral, cardiovascular rehabilitation, the Obesity 4 Tier approach, and to draw on, and review, the profession’s evidence-base for lifestyle modification.

Exercise and Physical Activity Interventions
Physical inactivity is recognised as a key predictor of a range of adverse health and social outcomes. Increasing activity levels in the general population is now a priority of the government, with increasing opportunities for physical activity professionals. The module applies health behaviour change theory and research to the promotion of physical activity in specialised populations, such as those with chronic health conditions or physical disabilities. It looks at different types of interventions, such as those targeting individuals, groups, and national campaigns.

Biomechanical Techniques
This module aims to enable you to develop experimental skills that may be of relevance, not only in biomechanics but also in other scientific fields where the accuracy of measurement is important. The experimental skills gained will underpin research in biomechanics, and equip you with the skills required for a final year independent project in the area.

Cardiovascular Rehabilitation
This module critically examines the process of rehabilitation as it pertains to cardiovascular disease. Detailed exploration of the aetiology of coronary heart disease (CHD), lifestyle management, and psychology of behaviour change in relation to lifestyle. The evidence-base for exercise and nutritional interventions will be critiqued within the framework of primary, secondary, and tertiary care alongside the skills required to compile multi-disciplinary interventions for secondary prevention.

Contemporary Issues in Sport, Exercise and Health
This module will explore a selection of contemporary issues that may have ethical and moral considerations, in relation to sport, exercise, and health. A range of topic areas will be presented to you with the expectations that
you will challenge through a review of case-studies, expert knowledge, and recently published peer-reviewed research. You will be encouraged to express your judgements and reflect upon your knowledge and experiences.

Year Four

Core modules:

Research Dissertation

The research project represents the culmination of the whole master's route and is the final stage in assessment. It is designed to enable you to conduct and communicate independent research in an area of your choosing.

Planning, Programming and Application

Successful strength and conditioning relies on a sound comprehension of the principles governing programme design, planning and application. Therefore, the emphasis of this module is to develop a robust theoretical understanding, practical skills and competencies that will make you an effective strength and conditioning practitioner. Taught sessions will be strongly aligned with the competency base of the examinations required for UKSCA (United Kingdom Strength and Conditioning Association) accreditation. Further, an ability to demonstrate practical skills to address the unique challenges that emerging strength and conditioning practitioners may expect to face is critical.

Strength and Conditioning Theory and Practice

The strength and conditioning process is underpinned by the fundamentals of sport and exercise science. The ability of a system to adapt to training-based stimulus relies on a physiological response to biomechanical demand. The effectiveness of this demand is often dependent on efficient transference of correct and safe movement technique, whether strength or conditioning. Therefore, strength and conditioning practitioners should have sound and applied insight into applied human physiology and biomechanics and the aim of this module is to provide this.

Applied Measurement Techniques

Performance measurement is a critical part of the strength and conditioning process and requires specialised skills. Working with human subjects also requires specialised knowledge of the constraints and provisions necessary to preserve and maintain human rights and wellbeing. It is also common for research, performance measurement, and technique analysis associated with the strength and conditioning process to occur at a temporary sporting venue. Therefore, students wishing to apply their knowledge of performance measurement in strength and conditioning need to possess appropriate specialised skills.