

## Exercise Metabolism

### Module Information

2022.01, Approved

#### Summary Information

Module Code	7143SPOSCI
Formal Module Title	Exercise Metabolism
Owning School	Sport and Exercise Sciences
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

#### Teaching Responsibility

LJMU Schools involved in Delivery
Sport and Exercise Sciences

#### Learning Methods

Learning Method Type	Hours
Lecture	24
Practical	48

#### Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks

#### Aims and Outcomes

Aims	This module aims to increase students' understanding of the regulation of the metabolic processes by which energy is stored and metabolised during subsequent exercise as well as examining the molecular mechanisms underpinning muscle adaptation to training and disuse. Specific attention will be placed upon the effects of nutrition on modulating the above processes. Additionally, students will be introduced to a range of physiological tests and laboratory techniques that sports scientists may use to assist with nutritional interventions for elite athletes and interpret research papers, respectively.
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**After completing the module the student should be able to:**

### Learning Outcomes

Code	Number	Description
MLO1	1	Critically evaluate the regulatory steps in the metabolic pathways of carbohydrate, lipid and amino acid metabolism
MLO2	2	Critically evaluate the regulatory mechanisms underpinning energy production during endurance and high-intensity exercise and the influence of training and nutritional status on modulating these responses
MLO3	3	Critically evaluate the molecular mechanisms underpinning muscle adaptation to endurance and resistance exercise training

### Module Content

Outline Syllabus	Week 1 Overview of Exercise Metabolism Week 2 Carbohydrate Metabolism Week 3 Lipid Metabolism Week 4 Amino Acid Metabolism Week 5 Nutrient Effects on Exercise Metabolism Week 6 Training Effects on Exercise Metabolism Week 7 Endurance Exercise Metabolism Week 8 High-Intensity Exercise Metabolism Week 9 Molecular Exercise Metabolism Week 10 Molecular Mechanisms of Endurance Training Adaptation Week 11 Molecular Mechanisms of Strength Training Adaptation Week 12 Molecular Mechanisms of Concurrent Training Adaptation
Module Overview	
Additional Information	This module aims to increase the students understanding of the regulation of the metabolic processes by which muscles are provided with energy during exercise as well as examining the molecular mechanisms underpinning muscle adaptation to training. Prior to intervention with nutritional strategies, it is essential to understand how muscle metabolises and stores fuel. Special attention will be given to carbohydrate and fat metabolism and the influence of exercise intensity, duration, training status and nutrient availability on the regulation of energy metabolism will also be studied. Students will also undertake a series of laboratory practicals that are considered essential to the field of exercise physiology and metabolism e.g. VO <sub>2</sub> max, lactate threshold, FatMAX, indirect calorimetry etc

### Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Laboratory practical & report	50	0	MLO1
Centralised Exam	Short answer exam	50	2	MLO1, MLO2, MLO3

### Module Contacts

**Module Leader**

Contact Name	Applies to all offerings	Offerings
James Morton	Yes	N/A

**Partner Module Team**

Contact Name	Applies to all offerings	Offerings
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