

Module specification

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Module Code	SPT707
Module Title	Strength Training Exercise Physiology Principles
Level	7
Credit value	20
Faculty	FSLS
HECoS Code	100098
Cost Code	GASP
Pre-requisite module	N/A

Programmes in which module to be offered

Programme title	Core/Optional/Standalone
MSc Strength & Conditioning	CORE
MSc Sport & Exercise Sciences (Sport Performance Science)	CORE

Breakdown of module hours

Learning and teaching hours	10 hrs
Placement tutor support hours	0 hrs
Supervised learning hours e.g. practical classes, workshops	11 hrs
Project supervision hours	0 hrs
Active learning and teaching hours total	21 hrs
Placement hours	0 hrs
Guided independent study hours	179 hrs
Module duration (Total hours)	200 hrs

Module aims

- Develop students' understanding of the physiological principles underpinning strength and conditioning practices, fostering a critical appreciation of their role in performance enhancement.
- Enable students to link specific physiological mechanisms with various training solutions, ensuring evidence-based application in S&C programming.
- Encourage critical analysis of how different training modalities influence physiological adaptations, equipping students with the ability to evaluate their effectiveness.
- Expose students to a range of physiological testing protocols, enhancing their ability to assess and monitor athletic performance.

- Deepen students' knowledge of exercise physiology, supporting their ability to apply theoretical concepts to practical S&C scenarios.
- Empower students to use physiological principles in designing evidence-based strength and conditioning interventions and programmes tailored to specific performance goals.

Module Learning Outcomes

At the end of this module, students will be able to:

1	Demonstrate an advanced understanding of the acute physiological response to different exercise modalities.
2	Demonstrate an advanced understanding of the chronic physiological response to different exercise modalities.
3	Critically analyse the impact of exercise on various physiological systems in the context of S&C training.
4	Apply appropriate advanced S&C intervention(s) based on underpinning physiological rationale.
5	Critically evaluate and synthesise exercise physiology principles to justify evidence-based strength and conditioning interventions that target specific physiological adaptations for enhanced athletic performance/
6	Present informative scientific data in an appropriate manor.

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment task the student will *The assessment for this module is made of two parts:*

Assessment 1: Poster Presentation

The student will be required to create a scientific poster highlighting any acute physiological responses caused by S&C support aimed at immediately preparing the athlete(s) for training or competition.

The poster must include information on the following:

- Objective physiological data relating to pre and post intervention assessments
- Detailed explanation and rationale for the intervention(s)
- Conclusion and evaluation

Assessment 2: Literature Review (1500 words) and Intervention Evaluation (500 words)

Students will develop a focused literature review on the chronic physiological adaptations related to the overloading the intervention utilised in assessment 1. The written review requires students to:

- Critically evaluate relevant research studies
- Analyse findings related to the chosen topic
- Relate concepts from literature to the initial topic and athletic population

Based on their understanding the student will also be required to summarise any potential issues with adopting this training intervention long term and justify any manipulation of training variables.

Assessment number	Learning Outcomes to be met	Type of assessment	Duration/Word Count	Weighting (%)	Alternative assessment, if applicable
1	1, 5, 6	Poster Presentation	10 minutes/1000 words	50	N/A
2	2, 3, 4	Literature Review	2000	50	N/A

Derogations

N/A

Learning and Teaching Strategies

This module uses a range of strategies to engage students and promote active learning. Interactive lectures, seminars, case studies and presentations will equip students with core physiological knowledge and its application to S&C. Problem-solving activities and online resources will solidify understanding and allow for self-assessment. Practical's and links to current real-world practice maintain a bridge from theory to applied evidence-based science, preparing students for successful careers in Strength and Conditioning.

Welsh Elements

The programmes will be delivered through the medium of English. Students are entitled to submit assessments in the medium of Welsh. If students wish to converse in Welsh, they will be assigned a Welsh speaking personal tutor. Support can also be made available for Welsh language students via Coleg Cymraeg Cenedlaethol where students can present their research at their conferences through the Welsh Language. Students will be sign posted to relevant opportunities via the VLE and MS Teams page.

Indicative Syllabus Outline

- Acute and Chronic adaptations to training including; Skeletal muscle physiology, cardiovascular and energy system response
- Training specificity and physiological response to varied stimulus (speed, power, strength, endurance)

- Analysis of case study and applied athlete data
- Exploring different strategies for optimising acute and chronic training response
- Presentation preparation and delivery
- Scientific writing (literature review)

Indicative Bibliography:

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads

McArdle, W. D., Katch, F. I., and Katch, V. L. (2023), *Exercise physiology: Nutrition, energy, and human performance*. Philadelphia, PA: Lippincott Williams & Wilkins.

Other indicative reading

Baechle, T.R. and Earle, R.W. (eds.) (2015), *Essentials of Strength Training and Conditioning*. 4th edition. Champaign, IL: Human Kinetics.

Bompa, T.O. and Haff, G.G. (2018), *Periodization: Theory and Methodology of Training*. 6th edition. Champaign, IL: Human Kinetics.

Plowman, S., and Smith, D. (2017), *Exercise Physiology for Health, Fitness, and Performance*. 5th edition. Philadelphia: Wolters Kluwer.

Wilmore, J. H., and Costill, D. L. (2021), *Physiology of sport and exercise*. Champaign, IL: Human Kinetics.

Zatsiorsky, V.M. and Kraemer, W.J., (2020), *Science and Practice of Strength Training*. 3rd edition. Champaign, IL: Human Kinetics.

Administrative Information

For office use only	
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