Module Definition Form (MDF)

Module code: MOD005692	**Version:** 4 **Date Amended:** 02/Jul/2024

1. Module Title
Physiological Profiling for Strength and Power

2a. Module Leader
Dan Gordon

2b. School
School of Psychology, Sport and Sensory Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
5

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions

Type	Module Code	Module Name	Condition
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	BSc (Hons) Sport and Exercise Science, BSc (Hons) Strength and Conditioning, BSc (Hons) Sports and Exercise Therapy		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

The production of force and power across a range of motions and in conjunction with body dimensions are crucial in both everyday living and athletic performance. Accordingly this module will study the process of profiling the generation of force during short-term (anaerobic) conditions from both a performance and health-based perspective. The philosophy behind the module is the notion of validity and reliability in both test selection and execution. To this end the module will explore the means of assessing anaerobic (metabolic) power through such means as Wingate cycle tests, jump tests and Mararia stair tests, while anaerobic capacity will evaluated in the context of accumulated oxygen deficit, constant load trials and as well as lactate and critical power models. The determination of strength will address measures of isometric, isotonic and isoinertial force production using conventional 'gym-based' approaches to more clinically relevant measures such as the reactive strength index. These will be compared to the laboratory controlled assessment of strength (torque) using isokinetic dynamometery. Assessment of agility which brings together the neurological and metabolic aspects of force generation will be considered in the context of both physical and special certainty and measures will be critiqued for their relevance. Body composition will be considered through the use of skinfold assessment and callipers through to hydro-densiometry. Flexibility and the determination of the range of motion (ROM) will be evaluated in the context of indirect measures such as sit-and-reach through to more direct approaches using flexometers and goiniometers.

This module will help to develop a series of transferable skills including practical (laboratory) techniques and skills relevant to general employment including report writing, data collection, handling and presentation and will be of particular interest to individuals wishing to apply their exercise physiology knowledge and work within a Sports Science Support environment both with athletes and clinical populations. The context for the journey within this module will be established using a series of live briefs showcasing how these concepts and transferable skills are utilised by graduates of ARU in the workplace.

6b. Outline Content

• Validity and reliability

• Anaerobic power: cycle based tests, stair-based tests, running-based tests and jump tests

• Anaerobic capacity: Accumulated oxygen deficit tests, constant load tests, lactate-based tests

• Strength: 1-Repetition maximum, isometric measures, isotonic approaches, isoinertial tests, isokinetic dynamometry

• Flexibility: Leighton flexometer, goniometry, indirect measures, Sit-and-Reach

• Body composition: skinfold thickness, hydrostatic weighing, DEXA

6c. Key Texts/Literature

The reading list to support this module is available at: https://readinglists.aru.ac.uk/

6d. Specialist Learning Resources

Cambridge Centre for Sport and Exercise Sciences

Technician support

7. Learning Outcomes (threshold standards)		
No.	**Type**	**On successful completion of this module the student will be expected to be able to:**
1	Knowledge and Understanding	Demonstrate an applied understanding of the physiological principles of neuromuscular profiling and assessment
2	Knowledge and Understanding	Evaluate the assessment protocols in respect of specificity, validity and reliability
3	Intellectual, practical, affective and transferrable skills	Interpret appropriate neuromuscular-based physiological data
4	Intellectual, practical, affective and transferrable skills	Execute practical activities evidencing a safe and effective working practice when undertaking a physiological assessment

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2025/6	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	**Hours**	**Learning Outcomes**	**Details of Duration, frequency and other comments**
Lectures	24	1-4	Lectures 2 hours per week
Other teacher managed learning	24	3-4	Laboratory-based practical's 1 hour per week, group-based tutorials 1 hour per week
Student managed learning	102	1-3	Completion of weekly readings, tasks and preparation for assessments
TOTAL:	150		

9. Assessment for the above Module Occurrence					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
010	Coursework	1-3	50 (%)	Fine Grade	30 (%)
Written laboratory report using data collected from practical sessions of (2000 words equivalent)					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Practical	2,4	50 (%)	Fine Grade	30 (%)
Weekly in-class MCQ (7 questions) based on a single peer-reviewed article pertinent to the weekly theme plus data from previous weeks practical. 1000 word equivalent					

Assessment components for Element 011			
Component No.	**Assessment Title**	**Submission Method**	**Components needed for Mark Calculation?**
011/1	MCQ Paper 1	Scheduled Activity: Timetabled assessment task	Best 7 out of 10. All components used in calculation are equally weighted
011/2	MCQ Paper 2	Scheduled Activity: Timetabled assessment task	
011/3	MCQ Paper 3	Scheduled Activity: Timetabled assessment task	
011/4	MCQ Paper 4	Scheduled Activity: Timetabled assessment task	
011/5	MCQ Paper 5	Scheduled Activity: Timetabled assessment task	
011/6	MCQ Paper 6	Scheduled Activity: Timetabled assessment task	
011/7	MCQ Paper 7	Scheduled Activity: Timetabled assessment task	
011/8	MCQ Paper 8	Scheduled Activity: Timetabled assessment task	
011/9	MCQ Paper 9	Scheduled Activity: Timetabled assessment task	
011/10	MCQ Paper 10	Scheduled Activity: Timetabled assessment task	

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:
(a) achieve the qualifying mark for each element of fine graded assessment as specified above
(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]