Module Definition Form (MDF)

Module code: MOD005691	**Version:** 6 **Date Amended:** 20/May/2026

1. Module Title
Integrative Cardiorespiratory Assessment in Performance and Clinical Practice

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
Pre-requisites:	None		
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

Aerobic physiology underpins both optimal athletic performance and the delivery of effective clinical exercise interventions. In this module, you'll take an integrative approach to understanding aerobic function by examining the physiological, analytical and methodological principles that guide assessment across both sport and clinical environments.

You'll develop the ability to critically evaluate and apply evidence-based methods for profiling aerobic endurance. Core concepts include the assessment of maximal aerobic power (VO_2max) and the exploration of aerobic capacity through markers such as the lactate and gas exchange thresholds. Emphasis is placed on understanding validity, reliability and the practical constraints associated with test selection in diverse populations.

The module examines the role of movement economy and submaximal oxygen consumption as diagnostic indicators and introduces the concept of velocity at VO_2max (vVO_2max) as a unifying performance metric. You'll also investigate oxygen uptake kinetics and the physiological dynamics that govern transitions between exercise intensity domains. Within this context, the critical power model and the W′ parameter are presented as integrative tools for quantifying tolerance and performance across both athletic and clinical settings.

Clinical skills and diagnostic techniques form a key component of the module. You'll engage with cardiopulmonary exercise testing (CPET), ECG interpretation, thoracic impedance cardiography and respiratory flow-volume loops to understand their relevance in clinical assessment, disease monitoring, and performance analysis. Laboratory-based learning will be used to develop technical competence, data handling skills and professional practice.
Throughout the module, you'll work with live briefs that demonstrate how aerobic assessment principles are applied by ARU graduates in real-world settings, from elite sport to healthcare. By the end of the module, you'll have built a comprehensive understanding of aerobic physiology and developed transferable analytical, technological and practical skills relevant to careers in sport science support, clinical exercise physiology and health performance assessment.

6b. Outline Content

- Transferable laboratory skills and competencies using industry (Chartered Association of Sport & Exercise Sciences) CASES guidelines
- Cardiorespiratory assessment: ECG's heart rate variability, spirometry, CPET, haemodynamics
- Maximal aerobic power (VO2max)
- Aerobic capacity: Lactate and gas exchange thresholds
- Sub-maximal responses: Economy, oxygen uptake kinetics
- Exercise domains: Critical power, respiratory compensation point, maximal lactate steady state

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

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	Apply physiological principles of integrative cardiorespiratory physiology and assessment in the context of clinical athletic populations
2	Knowledge and Understanding	Evaluate the specificity, validity and reliability of assessment protocols
3	Intellectual, practical, affective and transferrable skills	Interpret appropriate integrative cardiorespiratory physiology data for both clinical and athlete populations
4	Intellectual, practical, affective and transferrable skills	Undertake an integrative cardiorespiratory physiological assessment safely and effectively

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2026/7	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	Details of duration, frequency and other comments: 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

The assessment for some modules includes a presentation (see below for details on how this particular module is assessed). We recognise that presenting, especially to a large group, can cause significant anxiety or distress for some students. If this may affect you, please contact your Module Leader or the Disability and Neurodiversity Service as early as possible. We will work with you to consider appropriate reasonable adjustments. Depending on your individual needs, these might include, for example, presenting to a smaller group or presenting only to a member of academic staff.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Practical	1-3	60 (%)	Fine Grade	30 (%)

Individual Viva Voce, of 15 minutes where two topics will be discussed using skills and competency portfolio developed during practical classes and seminars.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	2,4	40 (%)	Fine Grade	30 (%)

Practical assessing all the key elements of a laboratory assessment of cardiopulmonary health, using industry led approaches.

Assessment components for Element 011

Component No.	Assessment Title	Submission Method	Weighting (%)	Components needed for Mark Calculation?
011/1	Group-based Cardiopulmonary Laboratory Assessment Protocol.	Canvas	25 (%)	All
011/2	Group Based Practical Exam	Scheduled Activity: Timetabled assessment task	75 (%)	

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]