

## MODULE SPECIFICATION FORM

Module Title: <b>Assessment of Sport and Exercise Physiology</b>	Level: <b>5</b>	Credit Value: <b>20</b>
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Module code: (if known) <b>SPT503</b>	Cost Centre: <b>GASP</b>	JACS2 code*: <b>C600</b>
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Semester(s) in which to be offered:	1 and 2	With effect from: Sept 2011
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Existing/New: <b>New</b>	Title of module being replaced (if any): <b>None</b>
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Originating Academic area:	Sport and Exercise Sciences	Module Leader:	Dr Tim Donovan
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Module duration (contact hours/directed/ directed private study):	40/60/100	Status: core	BSc (Hons) Sport and Exercise Sciences; BSc (Hons) Sport Coaching
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Percentage taught by Subjects other than originating Subject (please name other Subjects):	<b>None</b>
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Programme(s) in which to be offered:	Pre-requisites per programme (between levels):	Co-requisites per programme (within a level):
BSc (Hons) Sport and Exercise Sciences; BSc (Hons) Sport Coaching	None	None

#### Module Aims:

This module aims to:

1. Explore techniques used to monitor physiological variables, and the principles behind the development of standard test protocols.
2. Ensure that students have practical experience of laboratory equipment and techniques and are fully aware of the safety issues relating to physiological monitoring and prescription of training.
3. Examine, quantify and analyse the body's acute response to sport and exercise and chronic adaptation to training, with reference to the various systems of the body (e.g. cardiovascular, respiratory, metabolic, musculo-skeletal and energy systems).
4. Demonstrate how physiological knowledge can be used to assess fitness, thereby enhancing physiological performance and improve health.
5. Expose students to the practical application of testing protocols in a professional environment and examine the issues associated with their implementation.

#### Expected Learning Outcomes

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

Knowledge and Understanding:

1. Analyse, calculate and evaluate physiological test data.
2. Describe and evaluate the reliability and / or validity of the methods and techniques to monitor and investigate physiological variables.
3. Evaluate physiological variables in an applied setting.
4. Demonstrate an ability to work competently and professionally in an applied sport and exercise environment.

Transferable/Key Skills and other attributes:

Working independently, working in groups, report writing, practical and laboratory skills, and the use of C & IT.

Assessment: please indicate the type(s) of assessment (e.g. examination, oral, coursework, project) and the weighting of each (%). ***Details of indicative assessment tasks must be included.***

**Lab report:** Students are given physiological test data and details of the experimental methodology. They will use appropriate methods to analyse the data, calculate the variables and evaluate the results; using their findings to and evaluate the validity/reliability of the methodology/results. This could include: A comparison and evaluation of two different tests to predict VO<sub>2</sub>max or an evaluation of the validity and suitability of a test to predict VO<sub>2</sub>max. This assessment meets 1 and 2.

**Practical:** Students are required to work in small groups to evaluate a variety of physiological and anthropometric variables in an applied setting; demonstrating an understanding of professional requirements when working in an applied sport and exercise environment. This could include flexibility, strength, endurance, body composition and speed. This assessment meets learning outcomes 3 and 4.

Assessment	Learning Outcomes to be met	Type of assessment	Weighting	Duration (if exam)	Word count or equivalent if appropriate
1	1 and 2	Lab Report	50%		2000 words
2	3 and 4	Practical	50%		45 mins (approx.)

#### Learning and Teaching Strategies:

This module will be taught through a series of lead lectures, supported by practicals.

#### Syllabus outline:

- Acute response to sport and exercise and chronic adaptation to training.
- Methods of assessing human body composition; including the use of skin-fold techniques for the prediction of body fat.
- VO<sub>2</sub>max: definitions, determinants, influencing factors, endurance performance, uses; normative values; on-line gas analyses during treadmill ergometry; use of standard protocol/procedures; determination of respiratory breakpoints. Theory and practice of predictive tests to measure VO<sub>2</sub>max.
- Determination of the relationships between heart rate, perceived exertion (RPE and CR10) and power output.
- The lactate threshold – blood sampling techniques and analysis; lactate performance test to ascertain a lactate threshold; production and fate of lactate; causes, uses, limitations; nomenclature, methods of detection; Conconi field test.
- The physiology of maximal intensity exercise; introduction to Wingate Anaerobic Test procedures and other methods in assessing maximal intensity exercise; issues in assessing maximal intensity exercise.
- The physiologist in an applied environment: Theory to practice – in a sport and exercise setting.
- Data analysis and report writing

#### **Bibliography**

(please submit in Harvard referencing format)

##### **Essential reading:**

ACSM (2005). *Guidelines for Exercise Testing and Prescription*. Baltimore: Williams and Wilkins.

Åstrand, P-O., Rodahl, K., Dahl, HA., and Strømme, SB. (2003). *Textbook of Work Physiology*. Champaign, Ill: Human Kinetics.

##### **Other indicative reading:**

Eston, R. and Reilly, T. (Ed.) (2009). *Kinanthropometry and Exercise Physiology Laboratory Manual: Tests, Procedures and Data*. London: E.& F.N. Spon.

Gore, C. J. (2000). *Physiological Tests for Elite Athletes*. Champaign, IL: Human Kinetics.

Heyward, V.H. (2002). *Advanced Fitness Assessment & Exercise Prescription*. 3rd Edition. Champaign, IL: Human Kinetics.

Jeukendrup, A., and Gleeson, M. (2004). *Sport Nutrition*. Champaign, Ill: Human Kinetics.

Kreider, R.B., Fry, A.C. & O'Toole, M.L. (Ed.) (1998). *Overtraining in Sport*. Human Kinetics.

MacDougall, J.D., Wenger, H.A. and Green, H.J. (Eds.). (1991). *Physiological Testing of the High-Performance Athlete*. Canadian Association, Champaign, IL: Human Kinetics.

McArdle, W. D. Katch, F. I. and Katch, V. L. (2007) *Exercise Physiology: Energy, Nutrition & Human Performance*. Philadelphia: Williams and Wilkins.

Maud, P.J. and Foster, C. (Ed.). (2006). *Physiological Assessment of Human Fitness*. Champaign, IL: Human Kinetics.

Sharkey, B.J. (2002). *Fitness and Health*. (5<sup>th</sup> Edition). Champaign, IL: Human Kinetics.

Wilmore, J.H. and Costill, D.L. (1993). *Training for Sport and Activity: The Physiological Basis of the Conditioning Process*. 3<sup>rd</sup> Edition. Champaign, IL : Human Kinetics Publishers.

Wilmore, and Costill, DL. (2004). *Physiology of Sport and Exercise*. Champaign, Ill: Human Kinetics.