### **School of Biomedical Sciences and Pharmacy**

### HUBS3510: Sports Science 4

Callaghan Semester 2 - 2023



# **OVERVIEW**

**Course Description** The focus of this course is the application of exercise science skills and knowledge to sports performance. Students will gain an understanding of pre-exercise screening, the physiological and biomechanical basis of sporting performance, exercise training program design, issues related to the use of ergogenic aids and drugs in sport, and specificity of fitness testing, as well as an introduction to sports science research and peer-reviewed literature. Students will develop skills for the assessment of sports-related physical fitness.

**Requisites** This course is only available to students who are active in one of the following programs: 12218, 12370 or 40107.

Assumed Knowledge HUBS2520 Sports Science 1

Contact Hours Callaghan Practical Laboratory Face to Face On Campus Practical for 2 Hours per Week for 12 Weeks

> Lecture Online recorded 3 hrs a week for 12 weeks

Tutorial

10

Face to Face On Campus 1 hour(s) per Week for 1 Week In term Assessment

Unit Weighting

Workload

Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

## CONTACTS

**Course Coordinator** 

Callaghan Dr Sarah Valkenborghs MSB305 (02) 40420819 Sarah.Valkenborghs@newcastle.edu.au Consultation: By appointment

**Teaching staff** 

Lecturer: Sarah Valkenborghs

Practical Tutor: Layne Flannery

Technical Officer: Carolyn Clark and Ashlee Cambourn







#### School Office

### School of Biomedical Sciences and Pharmacy

MS607 Medical Sciences Building Callaghan Biomedsci-Admin@newcastle.edu.au 02 492158679 or 49212058 8:30am-5pm (Mon-Fri)

## **SYLLABUS**

**Course Content** 

- Major topics include:
- Pre-exercise screening
- Needs analysis for sports performance
- The role of exercise testing
- Informed consent and liability
- Exercise training program design
- Types of sport related fitness
- Body structure and posture
- Body composition
- Flexibility
- Speed and agility
- Muscular strength, power and endurance
- Anaerobic power
- Aerobic fitness
- Resistance training
- Endurance training
- Sprint, agility and flexibility training
- Ergogenic aids
- Ergolytic substances
- Drug testing in sport
- Sports science literature searching
- Basics of data collection and interpretation

#### Course Learning Outcomes

- 1. Demonstrate knowledge of the role of pre-exercise screening
- 2. Explain the physiological basis of successful sports performance
- 3. Demonstrate an understanding of the basis of successful exercise training program design
- 4. Differentiate between exercise training programs for health, occupational fitness, rehabilitation and sports performance
- 5. Explain the role of fitness testing in sport and the application of the results to exercise training program design
- 6. Demonstrate skills in selecting and conducting physical fitness tests
- 7. Demonstrate skills in group cooperation to effectively carry out comprehensive exercise testing and interpretation
- 8. Demonstrate skills in locating, reviewing and applying the sports science literature
- 9. Examine the use of ergogenic aids for sports performance
- 10. Describe drugs used and abused in sport
- 11. Describe the ethical issues regarding the use of drugs in sport
- 12. Demonstrate knowledge of the drugs commonly used in sport and their effects

**Course Materials** 

### Suggested Text:

- Haff and Triplett - Essentials of Strength Training and Conditioning (4<sup>th</sup> edition)

### Suggested Text:

- McArdle, Katch and Katch - Exercise Physiology: Nutrition, Energy and Human Performance (8th Edition)



# ASSESSMENTS

This course has 4 assessments. Each assessment is described in more detail in the sections below.

|   | Assessment<br>Name    | Due Date  | Involvement | Weighting | Learning<br>Outcomes |
|---|-----------------------|---|-------------|-----------|----------------------|
| 1 | Written<br>Assignment | Assignment due 5pm Friday<br>18 <sup>th</sup> August  | Individual  | 20%       | 2, 6, 7, 8           |
| 2 | Mid Semester          | Week 8 - 11am Thursday 7 <sup>th</sup><br>September   | Individual  | 20%       | 1, 2, 3, 4, 5, 9, 10 |
| 3 | Written<br>Assignment | Assignment due 5pm Friday<br>13 <sup>th</sup> October | Individual  | 20%       | 2, 6, 7, 8           |
| 4 | Formal Exam           | End of semester exam period                           | Individual  | 40%       | 1-5, 9, 10, 11, 12   |

#### Late Submissions

The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

## Assessment 1 - Written Assignment - 1

| Assessment Type     | Written Assignment   |
|---------------------|--|
| Weighting           | 20%  |
| Due Date            | Assignment due Friday 18 <sup>th</sup> August at 5pm   |
| Submission Method   | Upload to Turnitin   |
| Assessment Criteria | Students will be required to submit an assignment based on fitness tests performed in class with regards to (a) interpretation relative to different sports and (b) conducting tests of this nature within a school environment. |
| Return Method       | Feedback via Turnitin  |
| Feedback Provided   | Feedback via Turnitin  |

## **Assessment 2 - Mid Semester**

| Assessment Type<br>Weighting | Intra-semester Test<br>20%   |
|------------------------------|--|
| Due Date                     | Week 8, 11am Thursday 7 <sup>th</sup> September VG01   |
| Submission Method            | In class   |
| Assessment Criteria          | This is a CLOSED BOOK examination and no notes are permitted. The format of this test will be multiple choice and short answer questions. All lecture and practical content is assessable. This test will assess all content up to and including week 6. |
| Return Method                | Not Returned   |
| Feedback Provided            | By arrangement with course coordinator.  |

### Assessment 3 - Written Assignment - 2

| Assessment Type<br>Weighting<br>Due Date | Written Assignment<br>20%<br>Assignment due Friday 13 <sup>th</sup> October at 5pm  |
|--|---|
| Assessment Criteria                      | Students will be required to submit an assignment based on fitness tests performed  |
|  | in class with regards to (a) interpretation relative to different sports and (b) conducting tests of this nature within a school environment. |
| Return Method                            | Feedback via Turnitin   |
| Feedback Provided                        | Feedback via Turnitin   |

## **Assessment 4 - Formal Exam**

| Assessment Type     | Formal Examination  |
|---------------------|---|
| Weighting           | 40%   |
| Submission Method   | Online Formal Exam  |
| Assessment Criteria | All course material will be assessed by the formal exam (i.e., the content of all lectures and practical sessions (Week 1-12). The format of the formal exam will be multiple choice, |
|                     | multiple answer, and short answer questions.  |



**Return Method Opportunity to** Reattempt

Not Returned Students WILL NOT be given the opportunity to reattempt this assessment.

# **ADDITIONAL INFORMATION**

**Grading Scheme** 

This course is graded as follows:

|                                 | Range of<br>Marks  | Grade   | Description   |  |  |
|---------------------------------|--|---|---|--|--|
|                                 | 85-100   | High Distinction<br>(HD)  | Outstanding standard indicating comprehensive knowledge and<br>understanding of the relevant materials; demonstration of an<br>outstanding level of academic ability; mastery of skills*; and<br>achievement of all assessment objectives.  |  |  |
|                                 | 75-84  | Distinction (D)   | Excellent standard indicating a very high level of knowledge and<br>understanding of the relevant materials; demonstration of a very high<br>level of academic ability; sound development of skills*; and<br>achievement of all assessment objectives.  |  |  |
|                                 | 65-74  | Credit (C)  | Very Good standard indicating a high level of knowledge and<br>understanding of the relevant materials; demonstration of a high level<br>of academic ability; reasonable development of skills*; and<br>achievement of all assessment objectives.   |  |  |
|                                 | 50-64  | Pass (P)  | Satisfactory standard indicating an adequate knowledge and<br>understanding of the relevant materials; demonstration of an adequate<br>level of academic ability; satisfactory development of skills*; and<br>achievement of most assessment objectives.  |  |  |
|                                 | 0-49   | Fail (FF)   | Failure to satisfactorily achieve assessment objectives or compulsory course requirements. A fail grade may also be awarded following disciplinary action.  |  |  |
|                                 | *Skills ar   | e those identifi  | ed for the purposes of assessment task(s).  |  |  |
| Attendance F                    | ull attendance<br>attendance/partic<br>ecording: QR co   | e is expecte<br>cipation will be<br>ode sign in).   | ed in all components of the course to pass.<br>recorded in the practical laboratory sessions (Method of   |  |  |
| Communication -<br>Methods -    | CANVAS Cou<br>announcemer<br>Email: Studer   | rse Site: Stude<br>nts on the CAN<br>nts will receive o   | ents will receive communications via the posting of content or VAS course site.<br>communications via their student email account.  |  |  |
| Course<br>Evaluation            | Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement. |   |   |  |  |
| Oral Interviews                 | As part of the<br>may be condu-<br>material subr<br>conducted in<br>cases where<br>own work the  | evaluation proc<br>ucted. The purp<br>nitted in respo<br>accordance wit<br>the oral examin<br>case will be de | tess of any assessment item in this course an oral examination<br>pose of the oral examination is to verify the authorship of the<br>nse to the assessment task. The oral examination will be<br>h the principles set out in the <u>Oral Examination Guidelines</u> . In<br>nation reveals the assessment item may not be the student's<br>alt with under the <u>Student Conduct Rule</u> . |  |  |
| Academic Misconduct             | All students a<br>standards rein<br>Academic Inte<br>in all loca<br>https://policies   | re required to r<br>nforce the impo<br>egrity policies a<br>ations. For<br>s.newcastle.edu                    | meet the academic integrity standards of the University. These ortance of integrity and honesty in an academic environment. apply to all students of the University in all modes of study and the Student Academic Integrity Policy, refer to J.au/document/view-current.php?id=35  |  |  |
| Adverse<br>Circumstances        | The University<br>allowable adv<br>Before applyin<br>Procedure ava<br><u>https://policies</u><br>All adverse o   | y acknowledge<br>erse circumstar<br>ng you must rei<br>ailable at:<br>s.newcastle.edu                         | s the right of students to seek consideration for the impact of<br>nees that may affect their performance in assessment item(s).<br>fer to the Adverse Circumstance Affecting Assessment Items<br><u>Lau/document/view-current.php?id=236</u><br>requests must be submitted via the online system.  |  |  |
| Important Policy<br>Information | The 'HELP fo<br>should be fam  | r Students' tab<br>hiliar with, inclue  | o in UoNline contains important information that all students ding various systems, policies and procedures.  |  |  |



## COURSE SCHEDULE

### Recorded Lectures

2 hr: Mostly fitness testing and exercise program design 1 hr: Mostly ergogenic aids and doping in sport NOTE: *The order and title of lectures may change to improve learning.* 

### **Practical Laboratory**

1 x 2 hr session HPE206 (weeks 1-12) NOTE: The order of the practical sessions is not fixed; they may vary with the weather and other factors such as the availability of the COLA and Forum for some sessions.

| Week | Date                       | Day    | Time    | Venue   | Торіс   | Staff |  |
|------|----------------------------|--------|---------|---|---|-------|--|
| 1    | Recorded                   |        |         |   | Introduction and Overview   | SV    |  |
|      |                            |        |         |   | Pre-Exercise Screening and Risk Evaluation                                    | -     |  |
|      |                            |        |         |   | Introduction to Ergogenic Aids: Integrity of Sport and                        |       |  |
|      |                            |        |         |   | Brief History of Drugs in Sport   |       |  |
|      | 19 Jul                     | vved   | 10-12pm | HPE206  | Practical: Introduction and Pre-Exercise Screening                            | LF    |  |
| 2    | Recorde                    | d      |         |   | Evaluating Abilities and Performance: Considerations                          | SV    |  |
|      |                            |        |         |   | for Exercise Testing and Training   | -     |  |
|      |                            |        |         |   |   | _     |  |
|      | 00 1.1                     |        | 40.40   |   | Drug Testing Procedures   |       |  |
|      | 26 Jui                     | vved   | 10-12pm | COLA 2  | Practical: Strength and Muscle Endurance Tests                                | LF    |  |
| 3    | Recorde                    | d      |         |   | Strength and Power – Importance for Sport and                                 | SV    |  |
|      |                            |        |         |   | Considerations for Assessment   | -     |  |
|      |                            |        |         |   |   |       |  |
|      |                            |        |         |   | S0. Non-approved substances and S1. Anabolic Agents                           |       |  |
|      | 2 Aug                      | Wed    | 10-12pm | HPE206/<br>COLA 2   | Practical: Aerobic and Anaerobic Fitness Tests                                | LF    |  |
| 4    | Recorde                    | d      |         |   | Anaerobic Fitness – Importance for Sport and                                  | SV    |  |
|      |                            |        |         |   | Considerations for Assessment   | _     |  |
|      |                            |        |         |   | I raining to Improve the Anaerobic Energy System                              | _     |  |
|      |                            |        |         |   | substances  |       |  |
|      | 9 Aug                      | Wed    | 10-12pm | HPE206  | Practical: Anaerobic Tests  | LF    |  |
| 5    | Recorde                    | d      |         |   | Aerobic Fitness – Importance for Sport and                                    | SV    |  |
|      |                            |        |         |   | Considerations for Assessment   | _     |  |
|      |                            |        |         |   | Aerobic and Endurance Conditioning  | _     |  |
|      |                            |        |         |   | S3. Beta-2-agonists and S4. Hormone and Metabolic                             |       |  |
|      | 16 Aug Wod 10 12pm HBE206/ |        | HDE206/ | Modulators<br>Practical: Speed Tests & Sprinting Calculations | IF  |       |  |
|      | TO Aug                     | COLA 2 |         | COLA 2  |   |       |  |
|      | 18 Aug                     | Fri    | 5pm     | Online  | Assignment 1 due at 5pm   |       |  |
| 6    | Recorde                    | d      |         |   | Speed and Agility – Importance for Sport and<br>Considerations for Assessment | SV    |  |
|      |                            |        |         |   | Training to Improve Speed and Agility   |       |  |
|      |                            |        |         |   | S5. Diuretics and Masking Agents, and M1-M3<br>Methods                        |       |  |
|      | 23 Aug                     | Wed    | 10-12pm | HPE206/<br>COLA 2   | Practical: Agility Tests  | LF    |  |
| 7    | 7 Recorded                 |        |         |   | Mobility/Flexibility Impacts on Sport and Assessment                          | SV    |  |
|      |                            |        |         |   | Strategies to Improve Mobility/Flexibility                                    |       |  |
|      |                            |        |         |   | S6. Stimulants  |       |  |
|      | 30 Aug                     | Wed    | 10-12pm | HPE206  | Practical: Flexibility and Balance Tests                                      | LF    |  |
|      |                            |        |         | I   |   | 1     |  |



| 8  | Recorded |     |          |                   | Body Structure and Composition – Importance for Sports Performance                          | SV |  |
|--|----------|-----|----------|-------------------|---|----|--|
|  |          |     |          |                   | Assessment of Body Structure and Posture – Links to Sports Performance                      |    |  |
|  |          |     |          |                   | S7. Narcotics, S8. Cannabinoids and S9.<br>Glucocorticoids                                  |    |  |
|  | 6 Sep    | Wed | 10-12pm  | HPE206            | Practical: Coordination and Reaction Time Tests   | LF |  |
|  | 7 Sept   | Thu | 11-12pm  | VG01              | Mid Semester Exam   | SV |  |
| 9  | Recorde  | d   | 1        | 1                 | Anatomy of Sports Injuries: Links to Body Structure,<br>Flexibility and Impulse             | SV |  |
|  |          |     |          |                   | Injury Prevention and Performance Optimisation:<br>Monitoring Fatigue and Managing Recovery |    |  |
|  |          |     |          |                   | Sports Nutrition  |    |  |
|  | 13 Sep   | Wed | 10-12pm  | HPE206            | Practical: Body Structure and Composition 1   | LF |  |
| 10   | Recorde  | d   |          |                   | Energy Expenditure  | SV |  |
|  |          |     |          |                   | Energy Balance  |    |  |
|  | 20 Sep   | Wed | 10-12pm  | HPE206            | Sports Supplements<br>Practical: Body Structure and Composition 2                           | IF |  |
|  | 20.000   | wea | 10 12011 |                   |   | LI |  |
|  |          |     | RE       | CESS BREAK        | SEPTEMBER 25 <sup>th</sup> – OCTOBER 6 <sup>th</sup>  |    |  |
| 11   | Recorde  | ed  |          |                   | Exercise for Children and Youth Populations   | SV |  |
|  |          |     |          |                   | Children in Sport – Medical Considerations for Safe<br>Exercise                             |    |  |
|  |          |     | 1        |                   | Other Ergogenic Aids (Mechanical Doping)  |    |  |
|  | 11 Oct   | Wed | 10-12pm  | HPE206/<br>COLA 2 | Practical: Energy Expenditure and Sports Nutrition  | LF |  |
|  | 13 Oct   | Fri | 5pm      | Online            | Assignment 2 due at 5pm   |    |  |
| 12   | Recorde  | ed  |          |                   | Bringing it All Together – Concluding Thoughts on   | SV |  |
|  |          |     |          |                   | Physical Assessments and Development  |    |  |
|  |          |     |          |                   | Sport   |    |  |
|  |          |     |          |                   | Bringing it All Together – Ergogenic Aids and Ethical Issues in Sport                       |    |  |
|  | 18 Oct   | Wed | 10-12pm  | HPE206/           | Practical: Design and Development of Fitness Testing  | LF |  |
|  |          |     |          | COLA 2            | and Training Programs   |    |  |
| Exam Period NOVEMBER 30 <sup>cr</sup> October – November 10 <sup>cr</sup>    |          |     |          |                   |   |    |  |
| Rescheduled exam period 11 <sup>th</sup> December- 15 <sup>th</sup> December |          |     |          |                   |   |    |  |

Please note that all students are expected to be available during BOTH formal and rescheduled exam periods. In the event that you have an approved rescheduled exam, this will be held in the rescheduled exam period. If you have made plans to travel or work during that period, you will not be offered another opportunity to sit the examination.

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