

# BIOS 3007 APPLIED BIOMECHANICS OF SPORT AND EXERCISE

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**Credit Points** 10

**Legacy Code** 400889

**Coordinator** Peter Clothier ([https://directory.westernsydney.edu.au/search/name/Peter Clothier/](https://directory.westernsydney.edu.au/search/name/Peter%20Clothier/))

**Description** To fully understand the science underlying the optimisation of human movement, students require a comprehensive working knowledge of Biomechanics. This subject represents a theoretical and applied study of selected topics in Biomechanics. It builds on the basic principles of Biomechanics that are presented in the subject Introduction to Biomechanics and applies this knowledge to the analysis of sporting and human exercise performance. To achieve this, advanced methods and concepts in the biomechanical analysis of human performance are identified and explored.

**School** Health Sciences

**Discipline** Biological Sciences, Not Elsewhere Classified.

**Student Contribution Band** HECS Band 2 10cp

Check your fees via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 3 subject

**Pre-requisite(s)** HLTH 2008

**Equivalent Subjects** BIOS 3006 - Applied Biomechanics of Exercise

## Restrictions

Students must be enrolled in program 4658 - Bachelor of Health Science (Sport and Exercise Science).

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. Describe and apply biomechanical principles to assess movement in the context of health, exercise, sport and/or activities of daily living in a variety of populations.
2. Articulate and synthesise factors governing efficient movement from a biomechanical perspective.
3. Utilise biomechanical measurement techniques to assess human movement, human interactions with equipment and the environment, and devise intervention strategies where appropriate.
4. Collect, process and present data common to biomechanical analyses using biomechanical equipment and software applications.
5. Identify and explain biomechanical factors associated with injury and injury prevention.
6. Describe and apply techniques to analyse gait using basic temporal, kinematic and kinetic measurement procedures.
7. Illustrate and explain muscle mechanics concepts that affect muscle performance.

## Subject Content

1. Qualitative analysis techniques: Mechanical analysis of movement and methods of observation for the assessment of performance / technique.
2. Dynamometry: Principles and applications of force measurement in biomechanics
3. Motion Analysis: Principles and applications in the use of video/ motion analysis in biomechanics.
4. Muscle mechanics: Theory, assessment and application of muscle mechanics principles in sport and exercise.
5. Gait analysis: Theory and application of gait analysis techniques in biomechanics.
6. The application of biomechanical principles to selected sports and exercise movements.
7. Ergonomics: Theoretical and practical applications of the Biomechanical analysis of workstations.
8. Electromyography: the collection and use of EMG data in biomechanics.