



PHTY3001

Biomechanics of Human Movement

Session 1, Special circumstances, North Ryde 2021

Department of Health Professions

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Notice

As part of [Phase 3 of our return to campus plan](#), most units will now run tutorials, seminars and other small group activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face activities for your unit, please go to [timetable viewer](#). To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.

General Information

Unit convenor and teaching staff

Convenor

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Lecturer

Jodie Wills

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Lecturer

Daniel Glassbrook

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Credit points

10

Prerequisites

110cp at 1000 level or above including ((HLTH108 or ANAT1001) and ((HLTH109 or ANAT1002) or (MEDI203 or MEDI2100)))

Corequisites

Co-badged status

Unit description

This unit will cover the basic principles of biomechanics and apply these to the analysis of human movement and the musculoskeletal system. This unit will integrate your understanding of mechanics with functional anatomy through the study of biomechanics of human locomotion (in two dimensions) and gross motor functions through the use of kinematics, kinetics, muscle function, work, and power. The mechanics of tissues in the musculoskeletal system will also be introduced and discussed in the context of injuries and exercise prescription. The basis of methods for assessing movement, both quantitative and qualitative, will also be introduced enabling basic practical analysis of common movements to be performed. Learning activities include lectures and hands-on laboratories.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://students.mq.edu.au/important-dates>

Learning Outcomes

On successful completion of this unit, you will be able to:

- ULO1:** Explain key terminology and basic biomechanical principles as they apply to human movement
- ULO2:** Demonstrate, through explanation, an understanding of how changes of movement patterns and techniques will influence the load on human tissues during movement
- ULO3:** Describe the biomechanical characteristics of walking and running in healthy people
- ULO4:** Analyse and interpret biomechanical data characterising human movement
- ULO5:** Discuss the mechanical properties of bones, muscles, tendons and ligaments
- ULO6:** Describe practical ways to measure common movements in a clinical and/or workplace settings

General Assessment Information

General Assessment Information

Information concerning Macquarie University's assessment policy is available at <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/assessment>. Grade descriptors and other information concerning grading requirements are contained in Schedule 1 of the Macquarie University Assessment Policy.

To pass this unit, students must have:

- Made a serious attempt at all assessment tasks; **AND**
- Demonstrated sufficient evidence of achievement of the unit learning outcomes.

Further details for each assessment task will be available on iLearn, including marking rubrics.

All final grades in the Department of Health Professions are determined by the Faculty of Medicine and Health Sciences Assessment Committee, and are approved by the Faculty Board. They are not the sole responsibility of the Unit Convenor. Students will be awarded an Assessment Grade plus a Standardised Numerical Grade (SNG). The SNG is not necessarily a summation of the individual assessment components. The final grade and SNG that are awarded reflect the corresponding grade descriptor in Schedule 1 of the Assessment Policy.

Extensions for Assessment Tasks

Applications for assessment task extensions may be considered for short-term, unexpected, serious, and unavoidable circumstances affecting assessment. Applications must be submitted via www.ask.mq.edu.au. For further details please refer to the Special Considerations Policy available at <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

Late Submission of Work

All assignments which are officially received after the due date, and where no extension has been granted by the Unit Convenor, may incur a deduction of 5% of the overall assessment weighting for the first day, and 5% for each subsequent day, including the actual day on which the work is received. Assessments received 5 days or more beyond the due date, without an approved extension, will be awarded a maximum of 50% of the overall assessment marks. Weekends and public holidays are included. For example:

Due Date	Received	Days Late	Deduction	Raw Mark	Final Mark
Friday, 14th	Monday, 17th	3	15%	75%	60%

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Mid-Semester Quiz</u>	20%	No	Week 6
<u>Movement/Skill Analysis</u>	30%	No	Week 11
<u>Final exam</u>	50%	No	Central Exam Period

Mid-Semester Quiz

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 15 hours

Due: **Week 6**

Weighting: **20%**

Students will complete a quiz during a specified period.

On successful completion you will be able to:

- Explain key terminology and basic biomechanical principles as they apply to human movement
- Demonstrate, through explanation, an understanding of how changes of movement patterns and techniques will influence the load on human tissues during movement
- Describe the biomechanical characteristics of walking and running in healthy people
- Analyse and interpret biomechanical data characterising human movement
- Discuss the mechanical properties of bones, muscles, tendons and ligaments
- Describe practical ways to measure common movements in a clinical and/or workplace settings

Movement/Skill Analysis

Assessment Type ¹: Report

Indicative Time on Task ²: 25 hours

Due: **Week 11**

Weighting: **30%**

Written group report with group and individual components (Movement Analysis)

On successful completion you will be able to:

- Demonstrate, through explanation, an understanding of how changes of movement patterns and techniques will influence the load on human tissues during movement
- Discuss the mechanical properties of bones, muscles, tendons and ligaments
- Describe practical ways to measure common movements in a clinical and/or workplace settings

Final exam

Assessment Type ¹: Examination

Indicative Time on Task ²: 25 hours

Due: **Central Exam Period**

Weighting: **50%**

Invigilated exam held during central exam period

On successful completion you will be able to:

- Explain key terminology and basic biomechanical principles as they apply to human movement
- Demonstrate, through explanation, an understanding of how changes of movement patterns and techniques will influence the load on human tissues during movement
- Describe the biomechanical characteristics of walking and running in healthy people
- Analyse and interpret biomechanical data characterising human movement
- Describe practical ways to measure common movements in a clinical and/or workplace settings

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Learning Skills Unit](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Unit Organisation

This is a ten credit point unit run over a 13 week session. There are lectures and tutorials/laboratories. Further information is available via the online Learning Management System (LMS) iLearn <http://ilearn.mq.edu.au>

Assumed knowledge

This unit builds on your learning in the previous undergraduate units particularly in the area of Anatomy; In particular, (HLTH108/9, ANAT1001/2) or (BIOL247, BIOL2220).

Teaching and Learning Strategy

This unit will be a blend of online and face to face learning activities consisting of lectures, tutorials, and laboratories. iLearn will have the detailed schedule of activities.

Attendance

In the Faculty of Medicine, Health, and Human Sciences professionalism is a key capability embedded in all our programs. As part of developing professionalism, Faculty of Medicine, Health, and Human Sciences students are expected to attend all small group interactive sessions including tutorials, clinical, and laboratory practical sessions. In most cases lectures are recorded; however, lecture recordings cannot be guaranteed and some discussion or content may not be available for viewing via the recording system.

All lectures and tutorials are scheduled in your individual timetable. The timetable for classes can be found on the University web site at: <http://www.timetables.mq.edu.au/>. You may make a request to your tutor to attend a different tutorial on a one-off basis for extenuating circumstances. Please note these may change throughout the semester and changes will be communicated through iLearn.

Failure to attend any learning and teaching activities, including lectures and tutorials, may impact your final results. It is the responsibility of the student to contact their tutor or the unit convenor by email to inform tutors if they are going to be absent.

Textbooks

The following textbook will be used in the teaching of this unit and the library hold an online copy of it:

Sports biomechanics: the basics: optimising human performance / Anthony J.

Blazevich, 2nd ed., A & C Black Publishers: London

Additionally the following two texts will be used to a lesser extent; the library also holds an online version:

Fundamentals of Biomechanics / Duane Knudson, 2nd ed., Springer US: Boston, MA

The Comprehensive Textbook of Clinical Biomechanics / Jim Richards, 2nd ed., Elsevier

An interactive laboratory manual is available for purchase. Further details are provided on iLearn.

Readings

Readings may be referred to throughout the semester and a reference to these will be provided as needed.

Technology and equipment

On-campus

Teaching rooms are equipped with state of art audio-visual and ICT equipment including iPads, internet connection, high quality video cameras and multiple LCD screens.

Off-campus

To study optimally when off campus you will need to have access to a reliable internet connection to retrieve unit information & at times to submit assessment tasks via iLearn.

Unit Schedule

This schedule is subject to change. Any changes will be communicated via iLearn.

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Enquiry Service

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

Equity Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

Changes from Previous Offering

For this offering face-to-face tutorials will be added as a supplement to on-line lectures and other on-line learning activities.

Changes since First Published

Date	Description
18/01/2021	Update staff details