

Liverpool John Moores University

Title: CLINICAL MOVEMENT ANALYSIS
Status: Definitive
Code: **7116SPOSCI** (125833)
Version Start Date: 01-08-2021

Owning School/Faculty: Sport and Exercise Sciences
Teaching School/Faculty: Sport and Exercise Sciences

Team	Leader
Gabor Barton	Y

Academic Level: FHEQ7
Credit Value: 20
Total Delivered Hours: 24
Total Learning Hours: 200
Private Study: 176

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	12
Practical	12

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	Normal gait report (durations given per student)	50	
Report	AS2	Pathological gait report (durations given per student)	38	
Presentation	AS3	Oral defence of report (durations given per student)	12	

Aims

This module aims to provide the conceptual and practical knowledge base that develops and extends your understanding of clinical movement analysis. The students will learn how to interpret gait analysis results in a clinical context through exposure to the current literature, specialised methods, and clinical case studies.

They will also be exposed to the latest research developments in the unique area of virtual rehabilitation.

Learning Outcomes

After completing the module the student should be able to:

- 1 Analyse and integrate the advanced concepts related to the theory and practice of clinical movement analysis
- 2 Produce and be able to interpret the results of a gait analysis report
- 3 Critically appraise the current literature in the methodological and applied aspects of clinical movement analysis

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Normal gait report	1	3
Pathological gait report	2	3
Oral defence of report	2	3

Outline Syllabus

The module content includes:

*Introduction to clinical movement analysis
Problem based learning - advanced use of gait analysis software
Theory of normal gait
Physical examination
The role of gait analysis in cerebral palsy
Site visit to Alder Hey Hospital's Gait Laboratory
Abnormal gait
Introduction to virtual rehabilitation
Movement re-training applications of virtual rehabilitation
Effects of visual influences on gait*

Learning Activities

Attend lectures and demonstrations, complete prescribed reading, experimental laboratory assignments and coursework tasks. A highlight of the module is to observe a gait reporting sessions at Alder Hey Children's Hospital.

The acquired skills include the methodological aspects, comprehension of the latest research advances as well as the role of gait analysis in clinical decision making. We share the latest developments in virtual rehabilitation with a focus on the latest research and how this unique application can impact clinical practice.

We will cover basic concepts in the beginning and then progress towards a higher level of complexity. Your existing knowledge of measurement techniques and data reduction techniques will be refreshed first. This knowledge will be applied in the understanding of normal gait. You will then be exposed to the interpretation of genuine biomechanical data gathered while testing individuals with a variety of movement problems. One of the most challenging parts will be an engagement in the process of clinical decision making informed by biomechanical results. Finally you will gain insight into the theory of virtual rehabilitation through examples from our own research.

Initially funded by LJMU and set-up in 2018 using internship students from LJMU computing, students build a cloud-based repository of gait data which can be interrogated using a custom built software interface. This database will grow and be used by students in subsequent years.

Notes

This module provides an opportunity to focus onto the clinical use of gait analysis. Aspects of the advanced methodology and the clinical decision making process will be visited.

Our world-class Biomechanics laboratories house cutting edge equipment waiting for you to use them. Optoelectronic cameras enable 3D movement capture, force and pressure platforms give information about global and local loads, virtual reality (CAREN system) provides interaction in real time. See our Biomechanics section on the RISES website for staff research which feeds into your studies. A long track record of academic staff in gait analysis and virtual rehabilitation ensures that students gain insight into both the theoretical and practical aspects of these important applications of biomechanics. The existing links and ongoing collaboration with the North West Movement Analysis Centre at Alder Hey Children's NHS Foundation Trust provide access to clinical case presentations and invited speakers.