

MODULE DESCRIPTOR

MODULE TITLE	BIOMECHANICS OF POSTURE AND INJURY IN SPORT		
MODULE CODE	XS3101 (L6)	CREDIT VALUE	20 / 10 ECTS
SCHOOL	SCHOOL OF SCIENCE		

MODULE AIMS

- (a) To develop knowledge and understanding of the general principles of injury mechanism and the role of sports techniques.
- (b) To investigate the mechanics of biomaterials involving the response to loading and material properties.
- (c) To appreciate the link between structure and function by investigating alignment, posture and the role of flexibility in the sporting context.
- (d) To appreciate the aetiology and biomechanical analysis of sports injury.

MODULE CONTENT

Posture/Alignment/Misalignment

Kinanthropometrical measurement techniques and observation of various joint range of movements, (ROM) flexibility and performance. Posture, alignment, misalignment and performance characteristics. Analysis of postural type (use of the Posture Grid)

Mechanics of Biomaterials

Biomechanics of soft tissues, elasticity, plasticity, viscoelasticity, hysteresis, Loading of structures, types of loading, axial/combined loading, effects of loading, Biological adaptations

Sport and Exercise injury

Introduction to sports injury, aetiology of injury. Types of injury, chronic and overuse. Possible preventative measures. Investigation of selected injuries. A choice will be made from various specific sports/exercises for example running injuries, involving types of shoes/ surfaces or tennis elbow or knee injuries. Kinetic and Kinematic Measurement techniques.

INTENDED LEARNING OUTCOMES

On successful completion of this module a student will be able to:

1. Identify, evaluate and discuss postural types and adaptations and various misalignment conditions.
2. Investigate and synthesise biomechanical principles and biomaterial adaptations in the development of injury in sport/exercise.
3. Investigate and evaluate the mechanical properties of biomaterials and their response to loading.
4. Investigate the aetiology of sports injury, applying biomechanical analysis and evaluation.
5. Perform practical tests, research issues and present findings using acquired knowledge and communications skills.

TEACHING METHODS

This is a single module, 20 credit course spread over 2 semesters. The module will be taught by a combination of lectures, practical sessions and seminar sessions. The module will be delivered using Active Lectures, Tutorials and Question and Answer sessions. Practical investigations and private study will also be an integral part of the module. The practical sessions will be laboratory based and will involve postural assessment using a Posture Grid and ROM measurements of joints. Force platform and motion analysis equipment will be used to explore alignment/misalignment and/or cause of injuries.

ASSESSMENT METHODS

This module is assessed through a Group poster from lab data (40%) and a report (60%).