

Summary

Topic 4.1 Neuromuscular System

Subject	Year	Start date	Duration
Sports, exercise and health science	IB1	Week 1, November	2 weeks 4 hours

Course Part

Topic 4: Movement Analysis

Description

The human body is made up of bones, joints and muscles which allow it to perform a wide range of movements. Understanding how muscles contract and how they move the bones around the joints is critical to understanding sport and exercise. In this topic, students will understand how muscles contract and relax through the use of neurotransmitters and the breakdown of ATP. Students will also be able to explain how slow and fast-twitch fibre types differ in structure and function and what athletes would use each fibre more.

Inquiry & Purpose

Inquiry / Higher Order Questions

Type	Inquiry Questions
Content-based	How does the neuromuscular system work to enable muscles to move during sports and exercise?
Content-based	How are different types of muscle fibres suited to different athletes?

Curriculum

Aims

Acquire a body of knowledge, methods and techniques that characterize science and technology

Apply and use a body of knowledge, methods and techniques that characterize science and technology

Develop an ability to analyse, evaluate and synthesize scientific information

Develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities

Objectives

Demonstrate knowledge and understanding of

facts, concepts and terminology

communicating scientific information

Apply

facts, concepts and terminology

methods of communicating scientific information

Syllabus Content

Core

Topic 4: Movement analysis

4.1 Neuromuscular function

4.1.1 Label a diagram of a motor unit.

4.1.2 Explain the role of neurotransmitters in stimulating skeletal muscle contraction.

4.1.3 Explain how skeletal muscle contracts by the sliding filament theory.

4.1.4 Explain how slow and fast twitch fibre types differ in structure and function.

ATL Skills

Approaches to Learning



Thinking

- In this unit, we will

ask students to formulate a reasoned argument to support their opinion or conclusion

give students time to think through their answers before asking them for a response

ask open questions

set students a task which required higher-order thinking skills (such as analysis or evaluation)

build on a specific prior task



Communication

- In this unit, we will

ask students to explain their understanding of a text or idea to each other

construct a task around the use of different vocabulary and examples when speaking to different audiences

construct a task so that students practise their listening skills

assess or give feedback on speaking or writing concisely



Self-management

- In this unit, we will
 - set deadlines for students to meet
 - require students to revise and improve on work previously submitted
 - ask students to set their own learning goals
 - ask students to break down a larger task into specific steps
 - ask students to look for personal relevance in the subject matter
 - practise or discuss strategies to increase concentration
 - give students feedback on their approach to a task
 - model positive skills and behaviours such as being well organized and punctual
 - help students to learn from failures or mistakes
 - create an atmosphere where students do not think they have to get everything right first time
 - discuss planning and approaches to revision



Developing IB Learners

☆ Learner Profile



Inquirers



Knowledgeable



Thinkers



Communicators