

## Summary

### Topic 2.1 Structure and function of the ventilatory system

| Subject                             | Year | Start date    | Duration        |
|-------------------------------------|------|---------------|-----------------|
| Sports, exercise and health science | IB1  | Week 4, March | 3 weeks 5 hours |

#### Course Part

Topic 2: Exercise Physiology

#### Description

During this unit students will develop knowledge and understanding on how the ventilatory system adapts to ensure homeostasis is maintained at rest and during exercise. Students will learn how the mechanics of breathing allow for more air to enter our lungs and how specific aspects of air diffuses across membranes to either be delivered to working muscles are breathed out into the atmosphere.

## Inquiry & Purpose

### Inquiry / Higher Order Questions

#### Type

#### Inquiry Questions

Content-based

How does the Ventilatory system work to ensure Homeostasis is maintained at rest and during exercise??

## Curriculum

### Aims

Appreciate scientific study and creativity within a global context through stimulating and challenging opportunities

Acquire 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

methodologies and techniques

communicating scientific information

### Apply

facts, concepts and terminology

methodologies and techniques

methods of communicating scientific information

### Syllabus Content

#### Core

Topic 2: Exercise physiology

2.1 Structure and function of the ventilatory system

2.1.1 List the principal structures of the ventilatory system.

2.1.2 Outline the functions of the conducting airways.

2.1.3 Define the terms pulmonary ventilation, total lung capacity (TLC), vital capacity (VC), tidal volume (TV), expiratory reserve volume (ERV), inspiratory reserve volume (IRV) and residual volume (RV).

2.1.4 Explain the mechanics of ventilation in the human lungs.

2.1.5 Describe nervous and chemical control of ventilation during exercise.

2.1.6 Outline the role of hemoglobin in oxygen transportation.

2.1.7 Explain the process of gaseous exchange at the alveoli.

## 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

reward a new personal understanding, solution or approach to an issue

ask open questions

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

build on a specific prior task

help students to make their thinking more visible (for example, by using a strategy such as a thinking routine)

require students to take an unfamiliar viewpoint into account when formulating arguments

ask questions that required the use of knowledge from a different subject from the one you are teaching

include a reflection activity

make a link to TOK



#### 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



Reflective