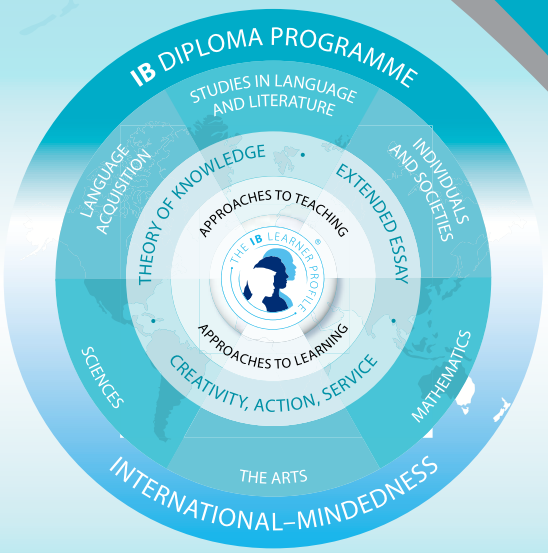
International Baccalaureate Diploma Programme Subject Brief

Sciences:

Sports, exercise and health science – Standard level

First assessments 2014 – Last assessments 2020

The IB Diploma Programme (DP) is a rigorous, academically challenging and balanced programme of education designed to prepare students aged 16 to 19 for success at university and life beyond. The DP aims to encourage students to be knowledgeable, inquiring, caring and compassionate, and to develop intercultural understanding, open-mindedness and the attitudes necessary to respect and evaluate a range of viewpoints.



To ensure both breadth and depth of knowledge and understanding, students must choose at least one subject from five groups: 1) their best language, 2) additional language(s), 3) social sciences, 4) experimental sciences, and 5) mathematics. Students may choose either an arts subject from group 6, or a second subject from groups 1 to 5. At least three and not more than four subjects are taken at higher level (240 recommended teaching hours), while the remaining are taken at standard level (150 recommended teaching hours). In addition, three core elements—the extended essay, theory of knowledge and creativity, action, service—are compulsory and central to the philosophy of the programme.

These IB DP subject briefs illustrate four key course components.

I. Course description and aims
II. Curriculum model overview
III. Assessment model
IV. Sample questions

I. Course description and aims

The IB DP course in sports, exercise and health science standard level (SL) involves the study of the science that underpins physical performance. The course incorporates the traditional disciplines of anatomy and physiology, biomechanics, psychology and nutrition. Students cover a range of topics and carry out practical (experimental) investigations in both laboratory and field settings. This provides an opportunity to acquire the knowledge and understanding necessary to apply scientific principles and critically analyse human performance. Where relevant, the course will address issues of international dimensions and ethics by considering sport, exercise and health relative to the individual in a global context.

The aims of the sports, exercise and health science SL course are to:

- provide stimulating and challenging opportunities for scientific study and creativity within a global context
- provide a body of knowledge, methods and techniques that characterize science and technology
- enable students to 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
- engender an awareness of the need for, and the value of, effective collaboration and communication during scientific activities
- develop experimental and investigative scientific skills
- develop and apply the students' information and communication technology skills in the study of science
- raise awareness of the moral, ethical, social, economic and environmental implications of using science and technology
- develop an appreciation of the possibilities and limitations associated with science and scientists
- encourage an understanding of the relationships between scientific disciplines and the overarching nature of the scientific method.

II. Curriculum model overview

Component	Recommended teaching hours
Core	**80**
Topic 1: Anatomy • The skeletal system • The muscular system	7
Topic 2: Exercise physiology • Structure and function of the ventilatory system • Structure and function of the cardiovascular system	17
Topic 3: Energy systems • Nutrition • Carbohydrate and fat metabolism • Nutrition and energy systems	13
Topic 4: Movement analysis • Neuromuscular function • Joint and movement type • Fundamentals of biomechanics	15
Topic 5: Skill in sport • The characteristic and classification of skill • Information processing • Principles of skill learning	15
Topic 6: Measurement and evaluation of human performance • Statistical analysis • Study design • Components of fitness • Principles of training programme design	13

Option	**30**
Students are required to study any two of four options.	
A. Optimizing physiological performance	15
B. Psychology of sport	15
C. Physical activity and health	15
D. Nutrition for sport, exercise and health	15
Internal assessment	**40**

III. Assessment model

Demonstrate an understanding of:

- scientific facts and concepts
- scientific methods and techniques
- scientific terminology
- methods of presenting scientific information.

Apply and use:

- scientific facts and concepts
- scientific methods and techniques
- scientific terminology to communicate effectively
- •appropriate methods to present scientific information.

Construct, analyse and evaluate:

- hypotheses, research questions and predictions
- scientific methods and techniques
- scientific explanations.

Demonstrate the personal skills of cooperation, perseverance and responsibility appropriate for effective scientific investigation and problem solving.
Demonstrate the manipulative skills necessary to carry out scientific investigations with precision and safety.

Assessment at a glance

Type of assessment	Format of assessment	Time (hours)	Weighting of final grade (%)
External		3	76
Paper 1	30 multiple-choice questions on the core syllabus.	.75	20
Paper 2	A: Students answer one data-based question and several short-answer questions on the core. B: Students answer one of three extended-response question on the core.	1.25	32
Paper 3	Several short-answer questions (all compulsory) in each of the two options studied.	1	24
Internal		40	24
Investigations	A mixture of short- and long-term investigations.	30	
Group 4 project	Interdisciplinary project. Assessed for personal skills only.	10	

IV. Sample questions

1. At rest, the arterio-venous oxygen difference is approximately 5 mL of oxygen per 100 mL (dL) of blood. What happens to this figure when someone participates in moderately intense exercise?
2. Outline the general characteristics that are common to muscle tissue.
3. Caffeine is one nutritional ergogenic aid that may be used by athletes during competition.
   - Identify two other nutritional ergogenic aids.
   - Discuss the possible contributions of caffeine to an athlete's training and competition performance.
   - Define the term glycemic index.
   - Explain the relevance of GI with regard to the performance of endurance athletes during and after competition.