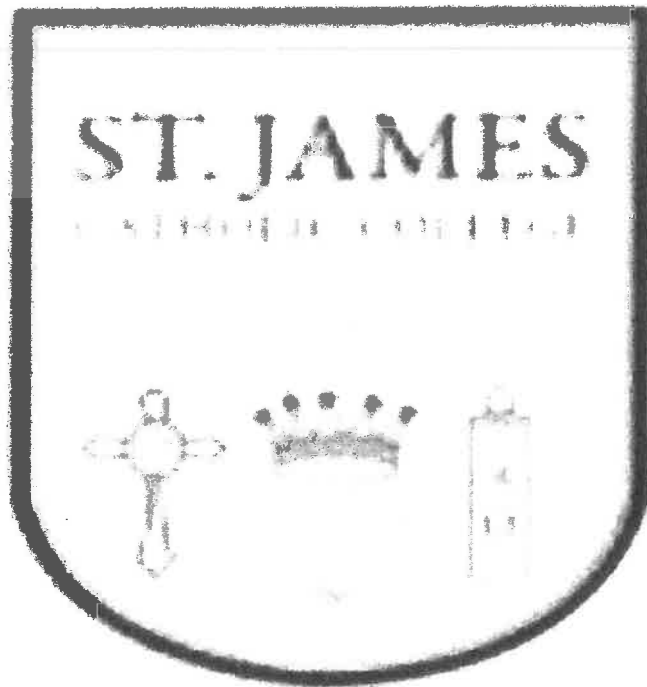


Taylor
2019



Sport Science

Course Information

Subject Description

Sport Science is run on a 2 period per week timetable.

This course is designed for students who wish to expand their skills and understanding in Sport Science through a theoretical and applied understanding of the factors which influence sporting performance. Sport Science encompasses the physiological, psychological and skills acquisition components of analyzing human performance. It is the study of athletes, how their bodies produce energy for physical activity, how they recover, the theory behind training programs and what it means physiologically to be fit. It looks at the motor skills and learning, the importance of reaction time and the study of biomechanics. Sport Science also involves studying the psychology of the athlete: how they can improve their performance through techniques such as setting goals, performance planning and being mindful of an athlete's mental focus to control anxiety levels.

Learning Outcomes

Through studying this course students will develop knowledge and skills that enables them to:

- Understand the theory of exercise physiology, skill acquisition, and sport psychology
- Understand how exercise physiology, skill acquisition, and sport psychology interrelate to influence sporting performance
- Develop analytical and interpretative skills to solve problems and process data presented to them or collected during research
- Undertake scientific research activities
- Identify, describe, recall, and comprehend facts, definitions, terminology and principles as they relate to various contexts through the study, observation of, and engagement in, physical activity
- Apply knowledge and understanding of exercise physiology, skill acquisition, and sport psychology to a variety of sporting contexts
- Be able to select, interpret, analyse and manipulate information from a variety of sources
- Identify solutions to problems in exercise physiology, skill acquisition, and sport psychology.

Strands

- 1 Sport Science understanding.
- 2 Analysis, interpretation and inquiry.

Course Content

Module 1: Exercise Physiology

- Anatomical terms
 - Anatomical position
 - Anatomical directions
 - Types of movement
- Skeletal
 - Names of major bones
 - The structure of bones
 - Functions of the skeleton
- Articular
 - Classification of joints
 - Function of joints
 - Anatomical location of different types of joints
- Muscular
 - Names of major muscles
 - Muscle contraction
 - Types of muscle contraction
 - Muscle fibre types
- Respiratory
 - Basic anatomy of lungs
 - Gases in the blood – oxygen and carbon dioxide
 - Gas exchange – diffusion
 - Basic role of myoglobin and mitochondria
 - Internal and external respiration
 - Lung volume and capacities
- Circulatory
 - Role of blood cells / haemoglobin
 - The heart: structure, function, arteries, veins, capillaries
 - Pulmonary and systemic circulation

- Blood flow
 - Blood pressure
- Energy and Energy Systems
 - Energy
 - ATP
 - Energy Systems – ATP – CP, Lactic and Aerobic
 - Energy continuum: Interplay of the different energy systems
 - Muscle fibre types: Slow (Type 1) and Fast (Type 2a and Type 2b)
- Oxygen delivery
 - Oxygen debt
 - Aerobic steady state
 - VO_2 and VO_2 Max
 - Lactate threshold (Lactate inflexion point, onset of blood lactate accumulation)
- Recovery
 - Physiological causes of fatigue, concept of rest days, overtraining
 - Role of O_2 transport system in recovery (EPOC) and O_2 debt
 - Nutritional replenishment
 - Delayed onset muscle soreness
- Effects of training
 - Acute responses (immediate effects) of exercise
 - Chronic cardiorespiratory adaptations (long term effects) of exercise
 - Chronic muscular adaptations of exercise

Module 2: Skill Acquisition

- Motor skills
 - Motor skills
 - Classifying motor skills
 - Fitts and Posner model for stages of learning
 - Factors affecting skill acquisition
- Movement analysis
 - Introduction to biomechanics
 - Kinematics: studies the description of motion
 - Kinetics: studies influences on the movement of a body

Module 3: Sport Psychology

- Motivation
 - Types of motivation
- Anxiety and arousal
 - Stress
 - Arousal

- Psychological strategies to enhance motivation and manage anxiety
 - Concentration
 - Mental rehearsal
 - Relaxation
 - Goal setting
 - Self-talk

Module 4: Resuscitation

- Techniques of CPR
- Modifications for infants and children
- Shock
- DRSABCD
- Defibrillation

Optional Topics:

Module 5: Investigative Study

This unit is designed to allow students to cover current issues that relate to sport in society and which are of particular interest to them. One (1) topic must be addressed.

- Drugs in sport
- Injuries in sport
- Clothing
- Technology in sport
- Sport as a career
- Community recreational services
- Sport for the elderly and / or disabled.

