YEAR 10 PEAK PERFORMANCE: SCIENCE AND TRAINING

Thinking about VCE Physical Education? We strongly encourage you to select our new, year-long subject: Peak Performance: Science & Training. Designed to give you the ultimate head start, this comprehensive course covers all the foundational knowledge required for VCE success by **combining three core areas: Sports Science, Biomechanics, and Lifestyle Fitness**. Completing this full-year subject ensures you won't miss any crucial building blocks.
If you aren't quite ready to commit to a full year, or aren't sure about VCE PE yet, that is completely fine! You can still choose Sports Science or Lifestyle Fitness as semester-long electives. Please note: Biomechanics in Sport is now exclusive to the year-long Peak Performance course and is no longer offered as a standalone semester unit.

Semester 1

In Unit 1, students will learn about the systems of the human body and examine how they work together to produce movement. Through practical activities, they will explore the major components of the musculoskeletal, cardiovascular, and respiratory systems and their contributions and interactions during physical activity. Students will explore the human body in motion by examining the intersection between motor skill development, participation, and performance. Alongside these physiological concepts, students will investigate theories of skill acquisition to analyse how human movement is mastered, refined, and executed. Through participation in a range of practical laboratory activities, students will collect and evaluate data to demonstrate how the correct application of these concepts can lead to enhanced athletic performance.

AREA OF STUDY

Musculoskeletal System

- The musculoskeletal system working to produce movement in physical activity: bones of the human body, major muscles and muscle structure, classification of joints and joint action.
- Characteristics and functions of muscle fibres, fibre arrangement and type
- Types of muscular contraction (isotonic, isometric and isokinetic), agonists, antagonists and stabilisers and the concept of reciprocal inhibition
- Conduct practical experiments to collect and analyse data on the body's acute physiological responses to exercise.
- Acute responses that occur due to exercise.

Outcome: Use of correct anatomical terminology to identify bones, muscles, joints and joint actions used in human movement • Performance, observation and analysis of a variety of movements used in physical activity • Use of correct terminology to identify muscle fibre types and muscular contractions, including reciprocal inhibition. Identification and explanation of acute responses to exercise.

Cardiorespiratory System

- Cardiovascular and respiratory systems, including the structure and function of the heart and lungs, mechanics of breathing, gaseous exchange, blood vessels, blood flow around the body at rest and during exercise
- Acute responses that occur in these systems upon commencing exercise.
- Conduct practical experiments to collect and analyse data on the body's acutephysiological responses to exercise.

Outcome: Use of correct anatomical terminology to identify key components of these systems. Identification and explanation of acute responses to exercise. Discussion of the role of oxygen at the beginning, during and after exercise.

Movement Skills & Development

- Movement skills and the stages of learning. The interrelationship between skill development, including participation and performance.
- The types of feedback provided to improve performance.
- Types of coaching to enhance performance.

Outcome: Classification and analysis of movement skills and identify stages of learning. Analysing individual, task and environmental factors that influence skill development, as well as the impact on participation and performance. Analysing the role of coaching approaches and feedback in performance.

Semester 2

In Unit 2, students will explore the human body in motion by examining the intersection of exercise physiology, biomechanics, skill analysis, and fitness programming. Students will develop an understanding of the anaerobic and aerobic energy pathways, the components of fitness training principles and methods. Using this knowledge, students will design, adhere to, and evaluate their own personalized training programs tailored to specific fitness needs. Throughout the course, students will participate in a wide variety of practical physical activities and laboratory exercises to collect data to optimize both performance and fitness. Continuing from Unit 1, students will adopt a coaching approach; using individual skill and activity analysis practicals to analyse movement techniques, refine skills, and improve athletic outcomes. Beyond elite performance, students will investigate the profound benefits of fitness and good health on both individuals and communities. By engaging with a range of recreational activities relevant to their local area, they will explore the barriers and opportunities that influence lifelong physical activity participation.

AREA OF STUDY

Fitness

- Design, implement, and evaluate specific training programs for themselves and others, considering an activity analysis and fitness testing.
- Investigate the evolving role of sport and recreation in Australian culture, while critiquing the contextual factors and behaviors that impact community health, safety, and lifelong participation.

Outcome: Perform and refine via a QMA, challenging skills • Provide feedback in order to enhance performance situations • Develop, implement and evaluate a training program • Develop, implement and refine strategies that demonstrate leadership and collaboration skills when working in groups or teams.

Energy Systems

- Identify the main contributing energy systems used in various sports and physical activities, exploring how intensity and duration dictate whether movement is powered aerobically or anaerobically.

Outcome: Identification of the main contributing energy pathway for a variety of activities, determined by the intensity and duration of the activity • Collection, analysis and reporting on primary data in determining energy system contributions in activities.

Biomechanical Movements

- Biomechanical principles that analyse human movement, including linear concepts, Newton's three laws of linear motion and projectile motion. Qualitative movement analysis (QMA) for athletic performance.

Outcome : Apply biomechanical principles to analyse and optimise athletic performance. They will be able to use these concepts to provide targeted feedback, enhance movement efficiency, and prevent injury.