VCE Physical Education – Sports Science

Your Mission: Step into the role of a sports performance analyst. Your team will explore how the body's systems power elite athletes and use cutting-edge sports science technology to measure and interpret real performance data.

Pre-Visit Activity

Reaction Time Like a Pro	10 mins	**Watch:** *How to improve reaction times like a pro* Link: https://www.youtube.com/watch?v=0l4xEIJDEZc **Checkpoint prompts:** • Which body systems are involved in explosive sport performance? • What is the role of the muscular system in a vertical jump? • How do the cardiovascular + respiratory systems combine to deliver oxygen to muscles? • How might these systems differ in sprinters vs endurance athletes?
System Synergy Map	20 mins	**Task:** Create a simple **systems flow diagram** (paper, whiteboard, or Canva) showing: • Brain → nerves → muscles → movement. • Heart + lungs → blood → muscles → recovery. • Add a note on how fatigue affects each system. **Checkpoint:** Can you show at least one positive feedback loop (e.g., increased breathing rate → more oxygen delivery)?
Mini Experiment	15 mins	Pair up and test **reaction times** using a ruler drop OR an online tool (https://www.humanbenchmark.com/tests/reactiontime). Record 3 trials per student. **Discuss**: What factors (fatigue, focus, anticipation) might affect your scores?

Post-Visit Activity

Data Forensics		**Students receive anonymised Excel data from their workshop, including:** • Heart rate across the day • Timing gates (Box Drill, L Drill, 5-10-5) • Force decks (Countermovement Jump, IMTP) • Gym Aware RS (Peak/Mean Velocity) **Tasks:** • Create bar graphs comparing **reaction time by drill**. • Analyse **asymmetry** in jump results (left vs right leg). • Calculate **average velocities** for barbell lifts. **Checkpoint:** Which students show signs of imbalance, fatigue, or explosive strength?
Systems in Action	20 mins	**Discussion prompts:** • What does your reaction time data suggest about neuromuscular performance? • How could an athlete use asymmetry results to guide training/rehab? • Why are **force plates** more reliable than visual assessment? • What muscles drive a countermovement jump? • How do muscular and respiratory systems interact during repeated efforts?
Training Recommendations	20 mins	**Scenario:** A student's data shows **poor concentric velocity** + **high asymmetry**. **Task:** In pairs, write a 3-point **training prescription** for this athlete. Use terms like: • Strength-speed • Velocity zones • Movement patterns • Recovery strategies Teams share their recommendations in a 1-minute pitch.