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| **What will we be learning?*** **Biomechanics**
 | **Why this? Why now?** This unit is a compulsory for the A level course which will be examined through the H555/01 paper at the end of year 13. | **Key Words:**BalancedNet forceMomentumInertiaVelocityActionReactionFrictionWeightStreamliningFulcrumEffortLoadMechanical advantageAxis of rotationDragParabolicNon-parabolicLift forceMagnus effectHookSliceTop spinBack spin  |
| **What will we learn? Year 1****3.1 Biomechanical principles:****- Newtons laws of motion****- Calculating linear motion and net force****- The use of technology****3.2 Stability and lever systems** |
| **Year 2****9.1 Linear motion****9.2 Angular motion****9.3 Fluid mechanics and projectile motion** |
| **What opportunities are there for wider study?****Optional Booster sessions****Careers/degree courses*** Sports science
* Physiotherapy
* PE teacher
* Sports analysis
* Biomechanistic
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| **How will I be assessed?*** Everlearner set assignments/check points
* Topic tests
* End of unit tests
* Mock Exams
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**A level - Biomechanics**

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| **What will we learn?****3.1 Biomechanical principles*** Newtons 3 laws of motion & Links to sporting examples
* Calculations: Momentum, Velocity, acceleration, Force
* Force and its effects
* Net force
* Vertical forces
* Horizontal forces
* Freebody diagrams
* Limb Kinematics
* Force plates
* Wind tunnels
 | Newtons Laws of Motion - TeachPE.com |
| * 1. **Stability and lever systems**
* Factors affecting stability
* Lever systems
* Mechanical advantage of second-class lever system
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| * 1. **Linear motion**
* Measurements and calculations for Distance, Displacement, Speed, Velocity
* Measuring Acceleration/deceleration
* Interpreting graphs of linear motion and velocity time graphs
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| * 1. **Angular motion**
* Torque
* Axis of rotation
* Angular Velocity
* Moment of inertia
* Angular momentum
* Conservation of Angular momentum
 | Law of Conservation of Angular Momentum | Statement | nuclear-power.comLaw of Conservation of Angular Momentum | Statement | nuclear-power.com |
| * 1. **Fluid mechanics and projectile motion**
* How Drag and air resistance can impact performance
* Projectile release
* Projectile in flight
* Free body diagrams of projectiles in motion
* Bernoulli principle
* Spin and Magnus Force
 | 10 Ways to Reduce Frontal Drag in Swimming |