**Year 11 ATAR PES Study Guide – Biomechanics**

|  |  |  |  |
| --- | --- | --- | --- |
| **TOPIC/ SUBHEADING** | **Pages in book** | **Have I studied this?** | **Do I have questions?** |
| LINEAR MOTION   * Rectilinear & Curvilinear * Distance * Displacement * Speed * Velocity * Acceleration (positive & negative) | 121 - 122 |  |  |
| ANGULAR MOTION   * Internal & External Axes of Rotation * Medial, Longitudinal & Horizontal Axis’ * Angular Distance * Angular Displacement * Angular Speed * Angular Velocity * Angular Acceleration | 131 - 133 |  |  |
| GENERAL MOTION | 133 |  |  |
| CLASSES OF LEVERS   * Axis * Resistance * Force | 142 - 145 |  |  |
| EQUILIBRIUM, BALANCE & STABILITY   * Balance (Equilibrium) * Stability: Static & Dynamic * Centre of Gravity (COG) (Centre of Mass) * Base of Support * Factors affecting balance & stability (Slides) | 145 - 148 |  |  |
| LINEAR KINETICS - NEWTONS LAWS   * First Law of inertia * Second Law of acceleration - Impulse-Momentum Relationship * Third Law of action-reaction | 134 - 140 |  |  |
| PROJECTILE MOTION   * Factors that affect range of projectiles: Velocity of release/Angle of release/Height of release * Gravity, Air Resistance, Spin | 123 - 130 |  |  |

efinition of the following terms: ▪ linear motion ▪ angular motion ▪ general motion ▪ projectile motion • a

pplication of linear motion to sport in relation to: ▪ speed ▪ velocity ▪ acceleration

• application of projectile motion to sport in relation to:

▪ optimal projection ▪ parabolic trajectory ▪ release of projectiles o angle o velocity o height

• definition of the principle of balance and how it applies to sport in relation to: ▪ base of support ▪ height of centre of gravity ▪ line of centre of gravity ▪ mass ▪ static balance ▪ dynamic balance

• definition of Newton’s First, Second and Third Laws of Motion, and how they apply to sporting contexts • definition of the three classes of levers ▪ axis (fulcrum) ▪ resistance (load) ▪ force (effort)