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**Knowledge Rich Curriculum Plan**

GCSE PE - Movement Analysis (Levers, planes of movement and axes of rotation)



| **Lesson/Learning Sequence**  | **Intended Knowledge:***Students will know that…* | **Tiered Vocabulary** | **Prior Knowledge:***In order to know this students, need to already know that…* | **Assessment**  |
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| **Lesson 1 - 1.1.c - lever systems** | * Know what makes up a lever system
	+ **Bones** act as **lever arms**
	+ **Joints act as pivots**
	+ **Muscles** provide the effort to move **loads (weight)**
	+ **Load (weight)** of the body parts that are moved - forces needed to lift, push or pull things

**Lever - *is a rigid structure, a length of a bone that turns about a pivot (joint) Lever can be used to increase the force of movement**** The three **classes of levers** and their use in physical activity / sport
* **1st class lever** - neck - heading a ball
* **2nd class lever** - ankle - high jump
* **3rd class lever** - elbow - bicep curl

**1, 2, 3 - F L E*** **Know the definition of mechanical advantage**
* **Mechanical advantage - *Some levers (1st and 2nd class) provide a mechanical advantage. This means that they allow you to move a large output load with a smaller effort.***
 | LeverPivotEffortLoad / weightMechanical advantage | * *Know the names of the main bones and muscle in the human body that allow movement to take place*
* *Know how muscle contraction causes movement at a joint (change of angle at a joint)*
 | * Targeted Questioning
* Active plenary
* Point to partner
* **Label the diagram** of lever systems
* **Application task** - which lever system?
* **Application task** - how does the golfer, baseballer gain mechanical advantage?
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| **Lesson 2 - 1.1.c - planes of movement and axes of rotation** | * Know the meaning of a **plane of movement**

**Plane of movement - imaginary lines running through the body that divide the body in three ways*** Know the location of planes of movement in the body and their application to physical activity and sport
	+ **FRONTAL PLANE** - runs **vertically** and divides the body into **anterior** (front) and **posterior** (back) - movements in this plane of **abduction and adduction - e.g. ‘jumping jack’ / breast stroke leg action**
	+ **TRANSVERSE PLANE** - divides the body into **upper** (superior) and **lower** (inferior) sections. Movements in this plane are **rotational - e.g. arm action cricket bowler (circumduction)**
	+ **SAGITTAL PLANE** - splits the body **vertically** into **left and right sides.** The movements of this plane are the **up and down** movements of **flexion and extension - e.g. leg action in running**
 | Plane of movementFrontal planeAnterior (front)Posterior (back)AbductionAdductionTransverse planeSuperior (upper)Inferior (lower)RotationalCircumductionSagittal planeVerticallyFlexionExtension | * *Know the definitions of the terms:* ***flexion, extension, rotation, abduction and adduction from joint action lesson (1.1.a)***
* ***Gymnastics*** *- practical unit (Y8) - discussing joint action (terms above) - introduce to terms (anterior/posterior)*
* ***Trampolining*** *- practical unit (Y9) - discussing rotation - speed of rotation - role of arms/legs being tight to body (speed up rotation) or wide from body (slow down rotation)*

***Athletics - (Y7-9)*** *- introduce to terms flexion and extension when teaching the names of muscle responsible for joint action when running/sprinting and teaching arm/leg action** ***bicep*** *- responsible for flexion at elbow*
* ***tricep*** *- responsible for extension at elbow*
* ***hamstrings***- responsible *for flexion at knee*
* ***quadriceps*** *- responsible for extension at knee*
 | * Pose pause pounce bounce
* Targeted questioning
* White boards Q&A
* Application task
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| **Lesson 3 - 1.1.c - axes of rotation** | * **Know the meaning of the term - axis**
* **Axis - is a straight line around which an object rotates.**
* Know the meaning **axes of rotation**
* **Axes of rotation - the centre around which something rotates**
* **Know the three axes of rotation**
* **FRONTAL - (Back to front) - e.g. cartwheel**
* **TRANSVERSE - (Side by side) - e.g. Somersault**
* **LONGITUDINAL - Top to bottom) - e.g. Pirouette in dance**
 | AxisAxes of rotationFrontal axisTransverse axisLongitudinal axis | * ***Trampolining*** *- practical unit (Y9) - discussing rotation - speed of rotation - role of arms/legs being tight to body (speed up rotation) or wide from body (slow down rotation)*
 | * White board Q&A
* Worksheet (SA/PA)
* Application task
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