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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.*** | Lever  Pivot  Effort  Load / weight  Mechanical 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? |
| **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 movement  Frontal plane  Anterior (front)  Posterior (back)  Abduction  Adduction  Transverse plane  Superior (upper)  Inferior (lower)  Rotational  Circumduction  Sagittal plane  Vertically  Flexion  Extension | * *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 |
| **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** | Axis  Axes of rotation  Frontal axis  Transverse axis  Longitudinal 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 |