BIOMECHANICS EXAM PREP QUESTIONS

INTRODUCTION INTO BIOMECHANICS

1. **Biomechanics** -Science concerned with internal and external forces and the effects these forces produce.
2. P.E. Teachers, Physiotherapists, Podiatrists, Fitness instructors, Sports trainers
3. **Quantitative Analysis** - Uses numbers to describe.
4. **Qualitative Analysis** - Uses non-numerical description either general or detailed.
5. **Kinematics** – study of the description of motion (spatial and temporal) (How?)
   Kinetics – study of the action of forces (Why?)
6. Major units metre **(m)** – length, second **(s)** – time, kilogram **(kg)** – mass, degrees Kelvin **(K)** - temperature
7. **Linear Motion** – motion in a straight line or curved line – also known as **Translation**
8. **Pure Linear Motion** - All parts of a body move the same distance, in the same direction, in the same time
   i. **Rectilinear** – straight line
   ii. **Curvilinear** – curved line
9. **Angular Motion** – Body moves in a circular path about an axis of rotation so that all body parts move through the same angle, in the same direction, in the same time. – also known as **Rotation**
10. **General Motion** - Most human mvt is a complex combination of linear & angular motion
11.
12. **Anatomical reference position** - standing erect, arms 'by' side, palms facing forward, feet slightly apart
13. It is used as a reference position for defining mvt terms
14. 3 imaginary cardinal planes bisect the body -
    i. **Sagittal:** Divides body into left and right
       1) **Sagittal plane mvt**: Forward – backward motion
          a. Eg: running or forward roll
    ii. **Frontal (coronal):** Divides body into front and back
       1) **Frontal plane mvt**: Side to side or lateral
          a. Eg: jumping jacks, cartwheel
    iii. **Transverse (horizontal):** Divides body into top and bottom
       1) **Transverse (horizontal):** Twisting motion
          a. Eg: gymnast, ice skater spinning
15. Anatomical Reference Axes
    i. **Mediolateral axis** - Perpendicular to sagittal plane
       1) e.g. Knee extension in kicking
    ii. **Anteroposterior axis** - Rotation in the frontal plane
       1) e.g. Merv Hughes side bends