UNIT 10

BIOMECHANICS & SPORTS

Key Points :

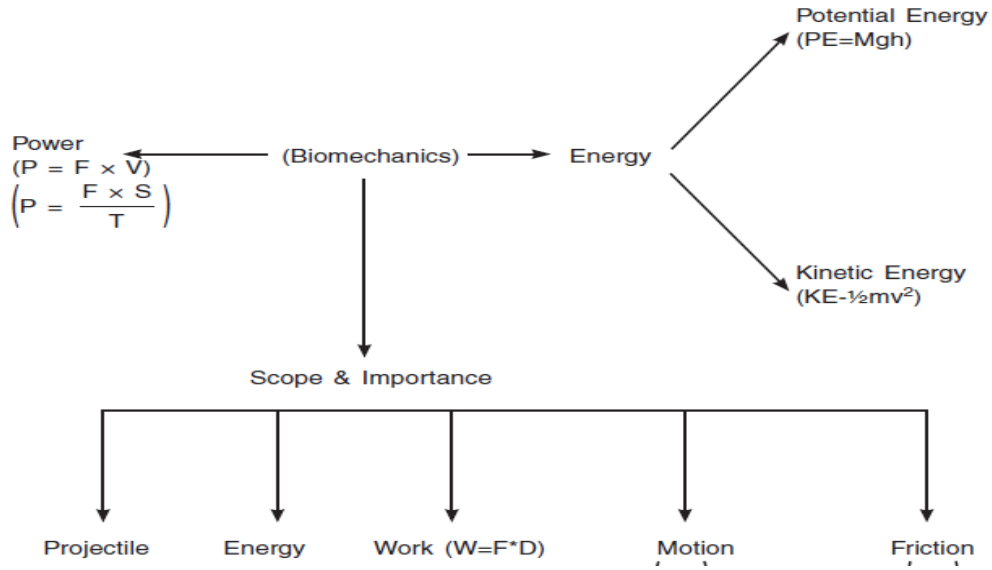
- **Projectile & factors affecting projectile trajectory**
- Angular & Linear movement
- Introduction to Work, Power & Energy
- **Friction**
- Mechanical Analysis-Walking & Running

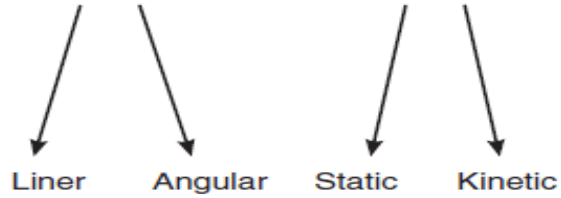
a. The differentiate between walking & running

10.1 Biomechanics

- "Biomechanics is the science concerned with the internal & external forces acting on a human body & effects produced by these forces".
- **Applications of Biomechanics in sports:-**
- Sports performance
- Injury preventions
- Rehabilitations
- Sports mastery
- **Scope of Biomechanics in sports:-**
- Designing of techniques
- Designing of equipments & facilities

BIOMECHANICS & SPORTS

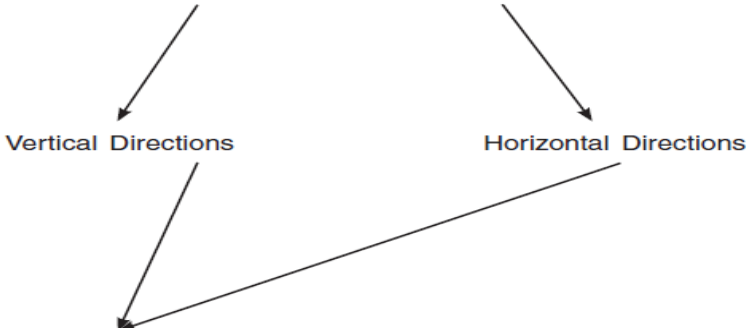




10.2A Factors affecting projectile trajectory

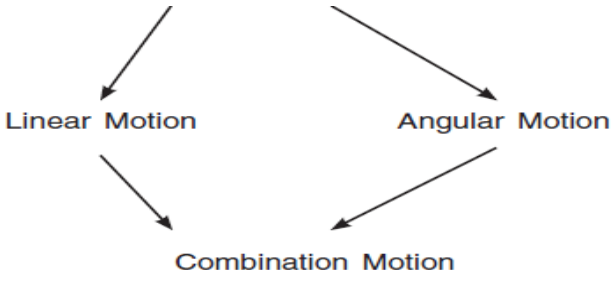
- Directions
- Angle
- Height
- Speed/velocity
- Air resistance
- Gravity
- Spin

B. Projectile & factors affecting Projectile Trajectory



- Speed of Release
- Angle of Release(Trajectory of Relax)
- Height of Release

10.3 Motion (Movement)



10.4 Introduction of Work, Power & Energy

10.5 Friction

- Type of Friction
- Coefficient of Friction
- Application of Friction in the field of sport

10.6A. Mechanical Analysis of walking

- Stance phase
- Heel strike
- Early flat foot
- Late flat foot-early heel rise
- **Heel rise**
- Toe off

Swing phase

10.6B. Running

- Stance phase
- Initial contact/float stage
- Absorption stage
- Mid-stance stage
- Propulsive stage

10.7 Differentiate-Running and Walking