

# **INTRODUCTION TO SPECIFIC TERMINOLOGIES OF BIOMECHANICS**

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# BIOMECHANICS

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“It is defined as the study which involves the application of laws of mechanics to animate human motion”

A biomechanical analysis evaluates the motion of a living organism and the effect of forces.

It is an umbrella term used to explain the use of mechanical principles which is an area of Physics which in turn explains the motion happening with the effect of force producing that motion.



# KINESIOLOGY

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“Kinesiology is defined as the scientific study of human movement can be an umbrella term used to describe any form of anatomical, physiological, psychological or mechanical human movement evaluation”

Kinesiology describes the content of a class in which human movement is evaluated by examination of its source and characteristics.

**HUMAN MOVEMENT ANALYSIS**

**BIOMECHANICS**

**KINESIOLOGY**

**KINEMATICS**

**KINETICS**

**FUNCTIONAL ANATOMY**

**LINEAR**

**ANGULAR**

**LINEAR**

**ANGULAR**

**POSITION  
VELOCITY  
ACCELERATION**

**POSITION  
VELOCITY  
ACCELERATION**

**FORCE**

**TORQUE**

# KINETICS

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**‘It is the area of biomechanics concerned with the forces producing motion or maintaining equilibrium’**

# KINEMATICS

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**Tells us the description only about the motion**

**Do not give us any understanding how or why motion is happening**

**Requires study of forces**

**Whether a body or body segment is in motion or at rest depends upon the forces exerted on the body.**



# FORCE

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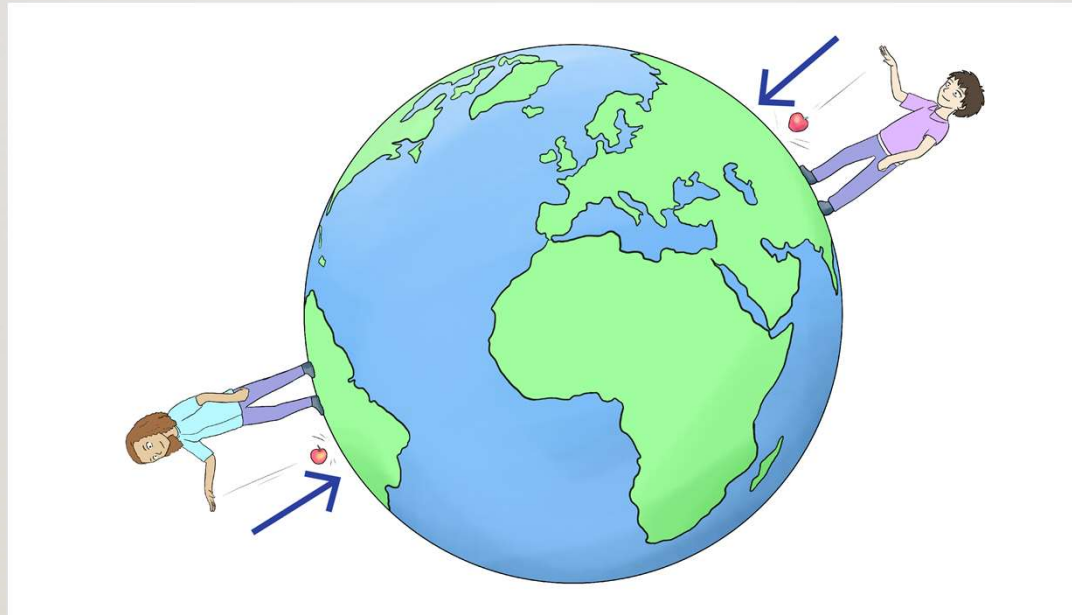
“Force is a push or pull exerted by one material, object or substance on another.”



# GRAVITY

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**“Gravity is the attraction of the mass of the earth for the mass of other objects and on earth”**

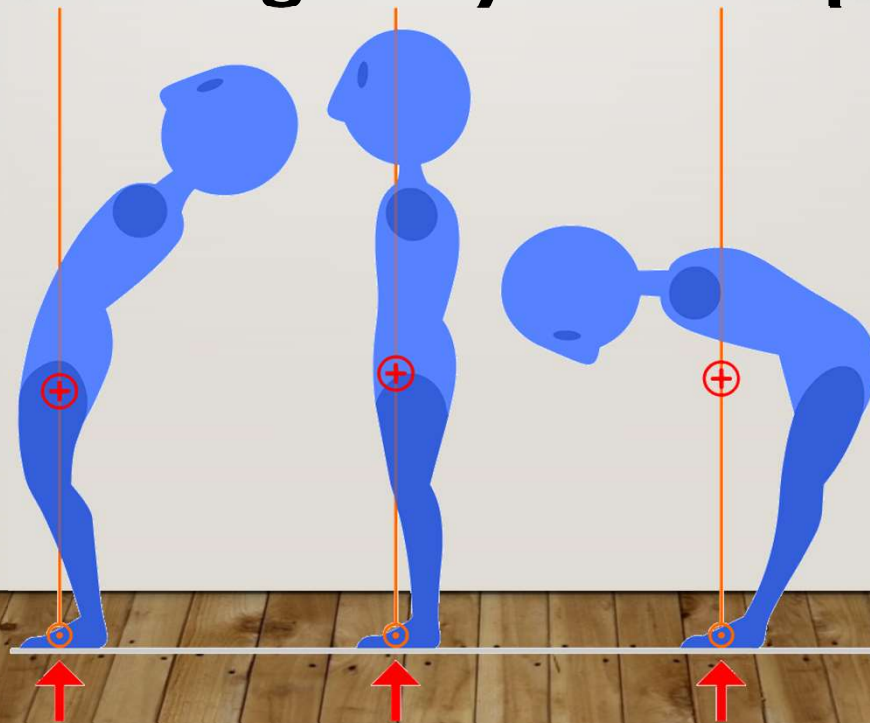




# CENTER OF GRAVITY

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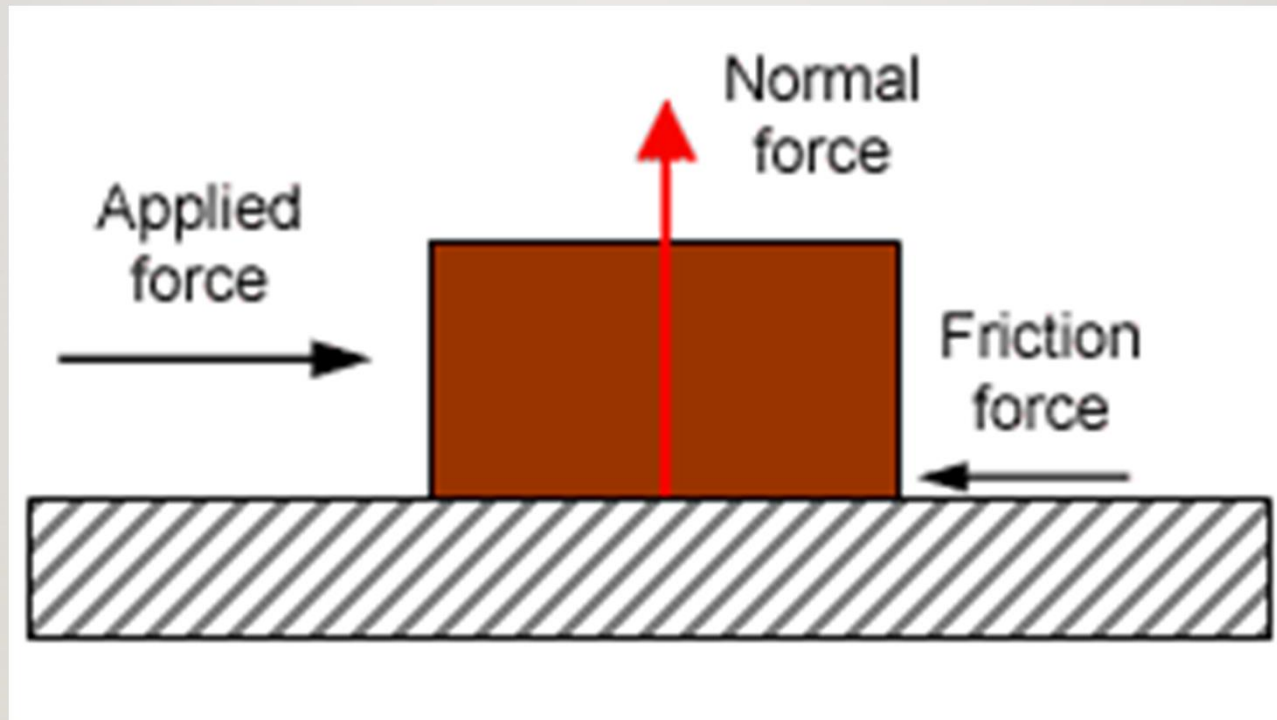
**“Centre of gravity is a hypothetical point at which all mass would appear to be concentrated and is the point at which the force of gravity would appear to act”**



# FRICTION

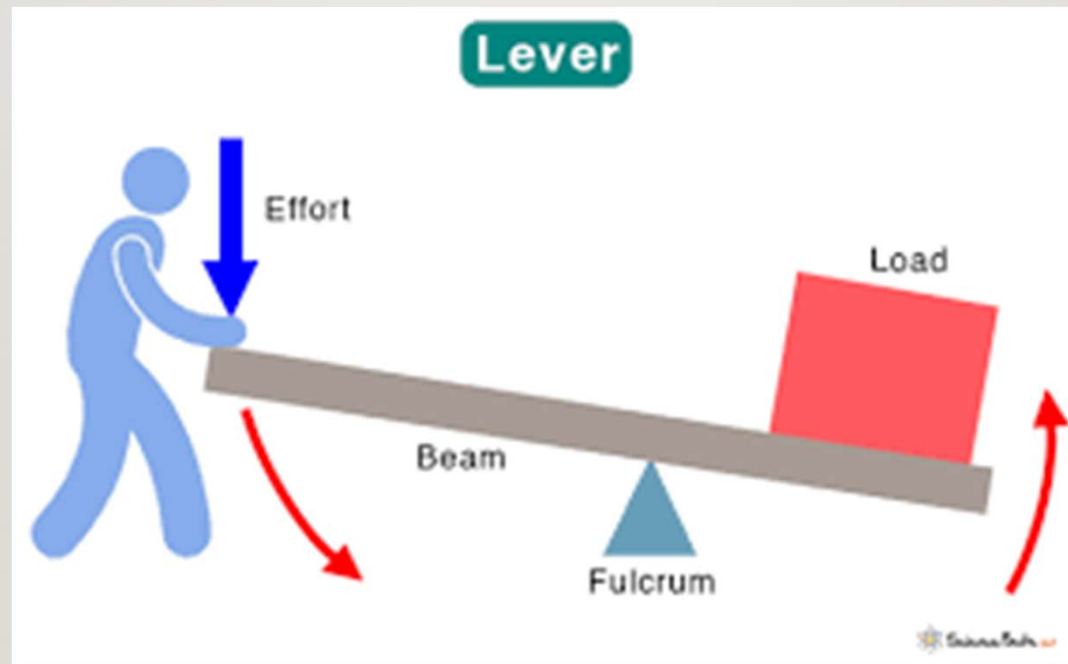
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The force of friction may exist whenever two objects contact”



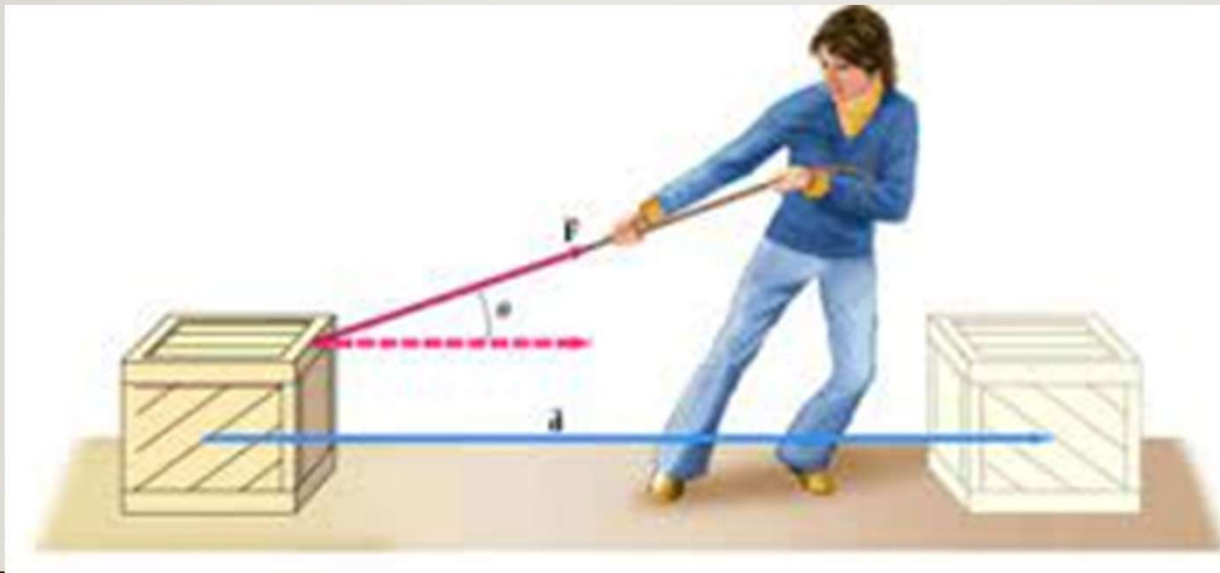
# LEVER

**“A lever is rigid bar which is capable of movement about a fixed point called a Fulcrum”**



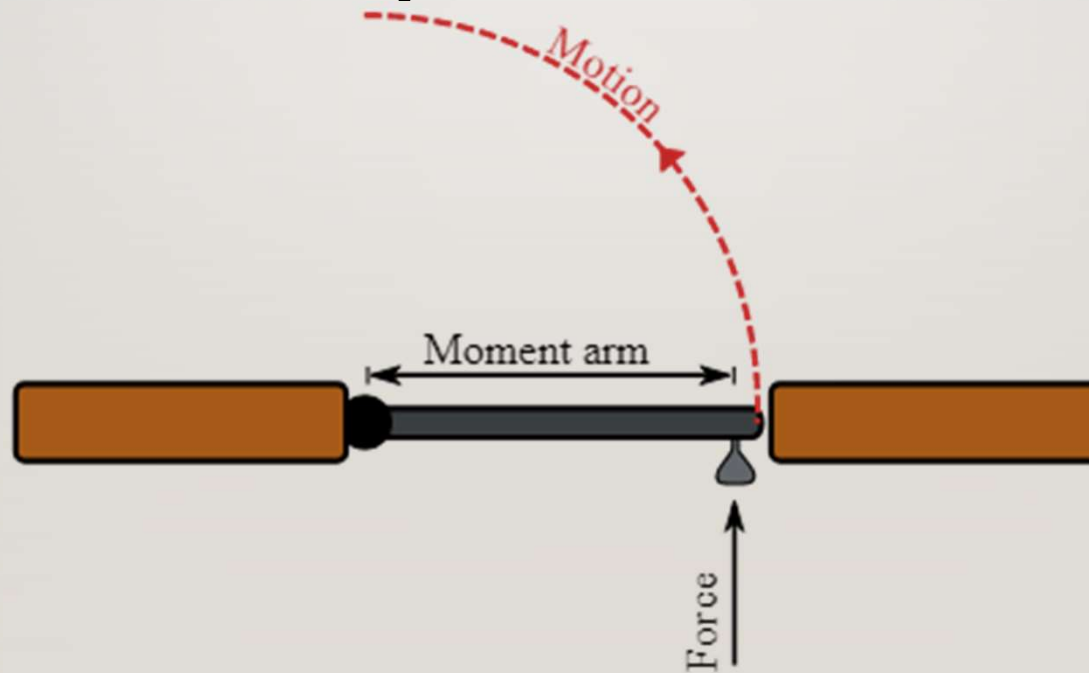
# WORK

**“Work is defined as the product of applied force and to the magnitude of displacement of the object to which force is applied”**



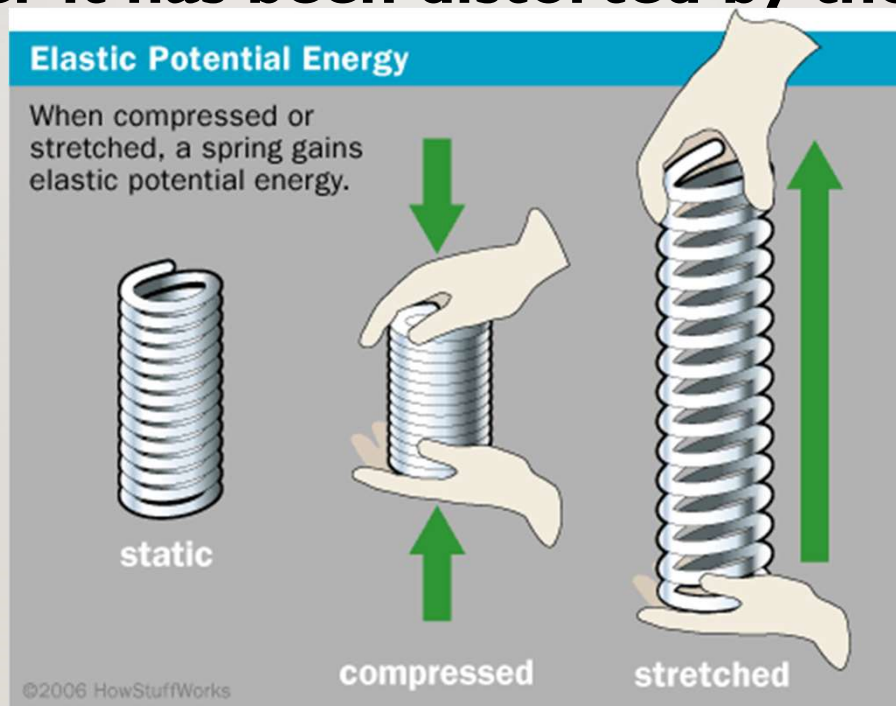
# TORQUE

“The ability of any force to cause rotation of the lever is known as Torque or moment of force”



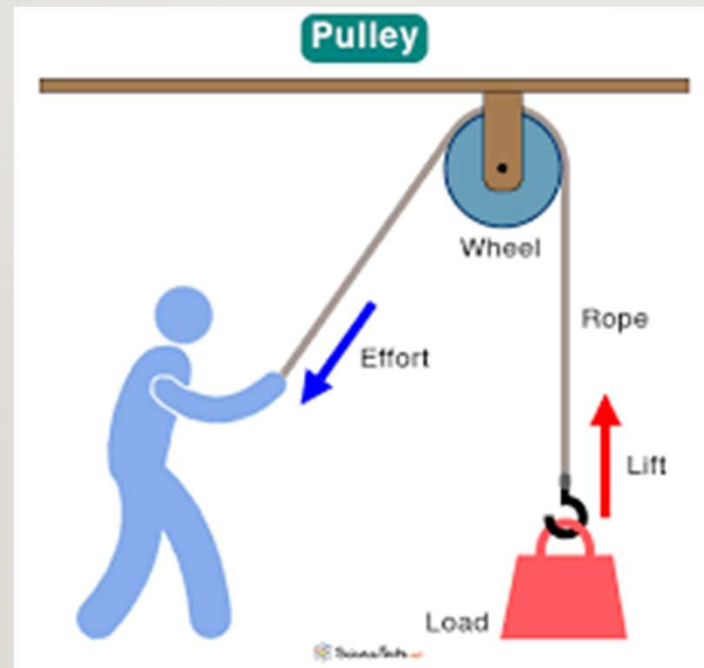
# ELASTICITY

“Elasticity is the property of a body which enables it to regain its original form after it has been distorted by the application of force”



# PULLEY

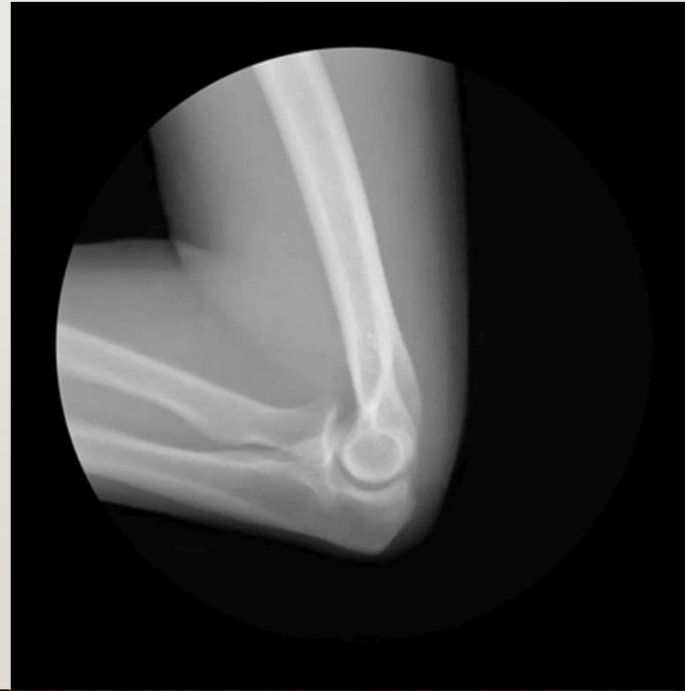
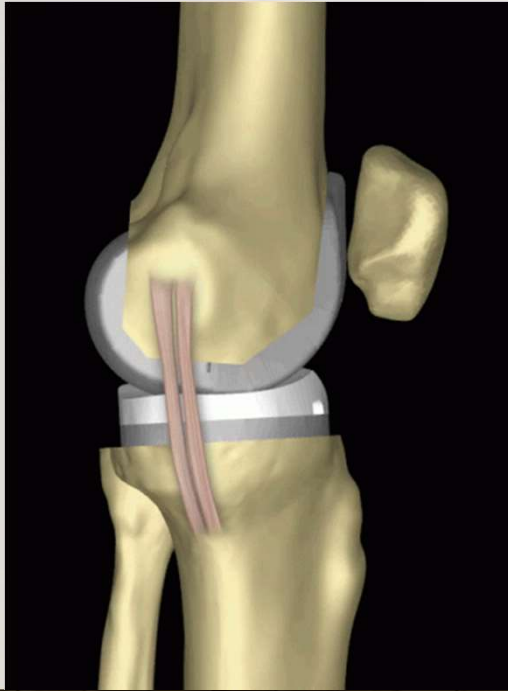
**“A pulley is a grooved wheel which is rotated about a fixed axis by a rope which passes round it”**



# JOINT

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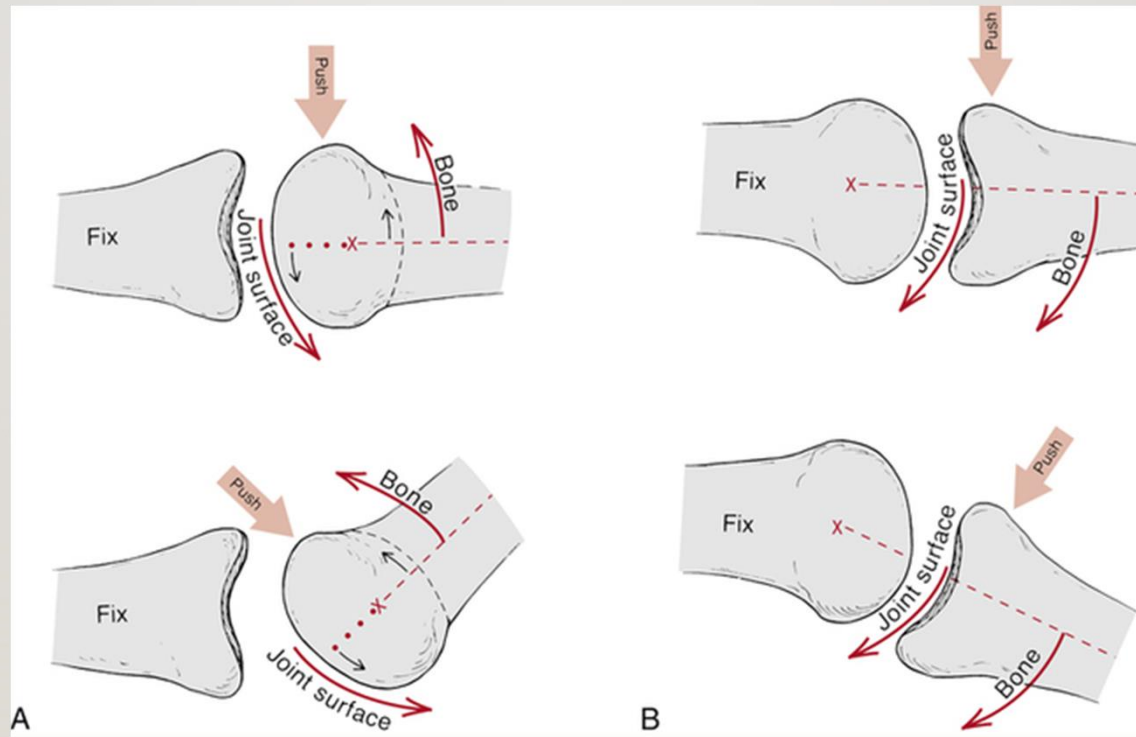
**“A joint is the site of junction or union between two or more bones made up of fibrous connective tissue and cartilage”**





# ARTHROKINEMATICS

“The term is used to refer movement of joint surfaces”



# OSTEOKINEMATICS

“It refers to the movement of bones rather than the movement of joint surfaces”

