

# **SNS COLLEGE OF PHYSIOTHERAPY COIMBATORE-35**

**COURSE NAME : BPT., Physiotherapy IV Year**  
**SUBJECT : Exercise Therapy II**  
**UNIT : II**  
**TOPIC : Goniometry**  
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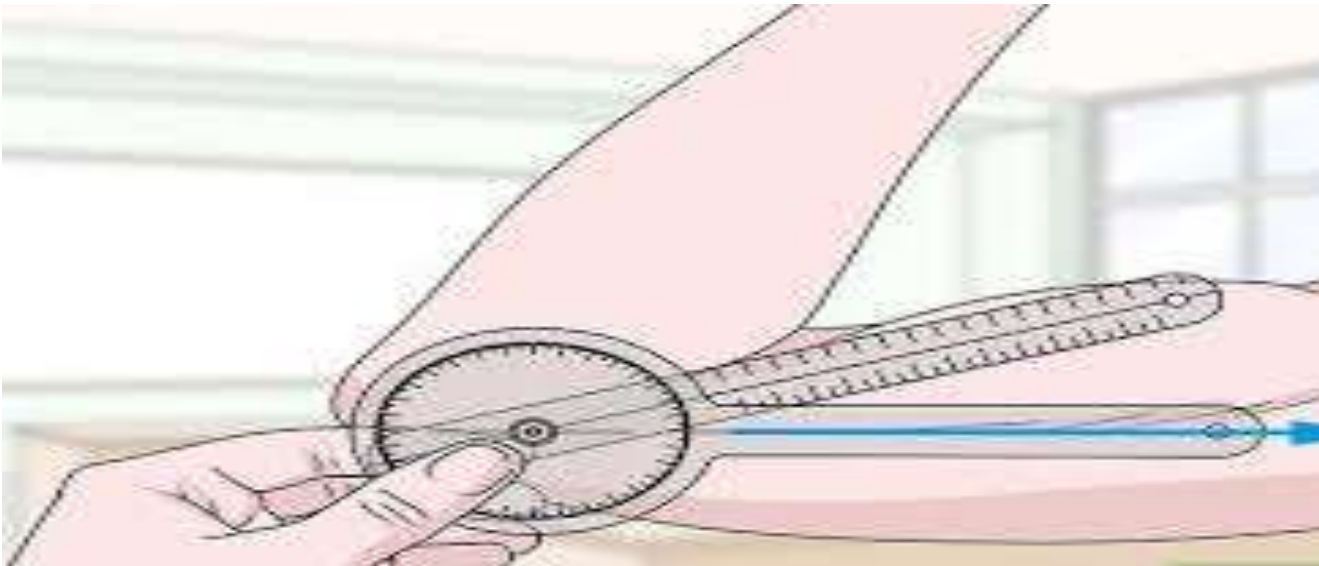
- Goniometry is a fundamental component of Exercise Therapy–II and forms the basis for assessment of joint range of motion (ROM) in physiotherapy practice. Accurate measurement of joint angles helps in diagnosis, treatment planning, monitoring progress, and documentation of patient outcomes.

## Definition of Goniometry

- Goniometry is the science and art of measuring joint angles formed by bones at a joint using a goniometer.

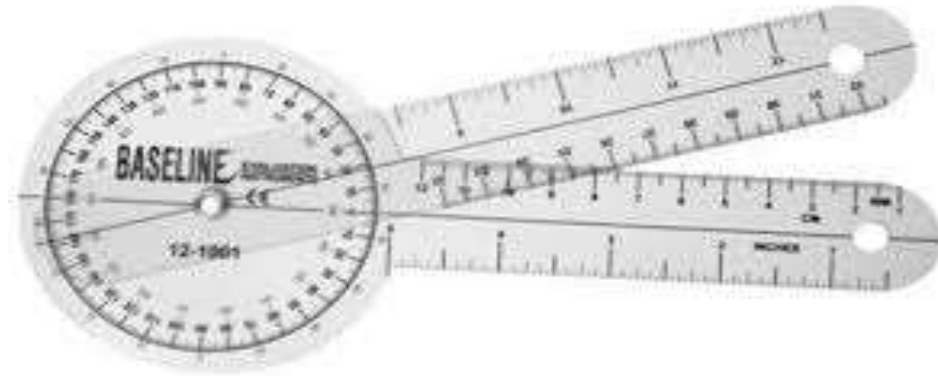


- To measure **active and passive range of motion**
- To identify **limitations, deformities, or hypermobility**
- To establish **baseline data** before treatment
- To evaluate **progress and effectiveness of physiotherapy interventions**
- To assist in **clinical decision making**
- To provide **objective documentation** for medico-legal purposes



## A. Universal Goniometer

- Most commonly used in clinical practice
- Made of plastic or metal
- Components: body, stationary arm, moving arm
- Sizes: 6-inch, 8-inch, 12-inch



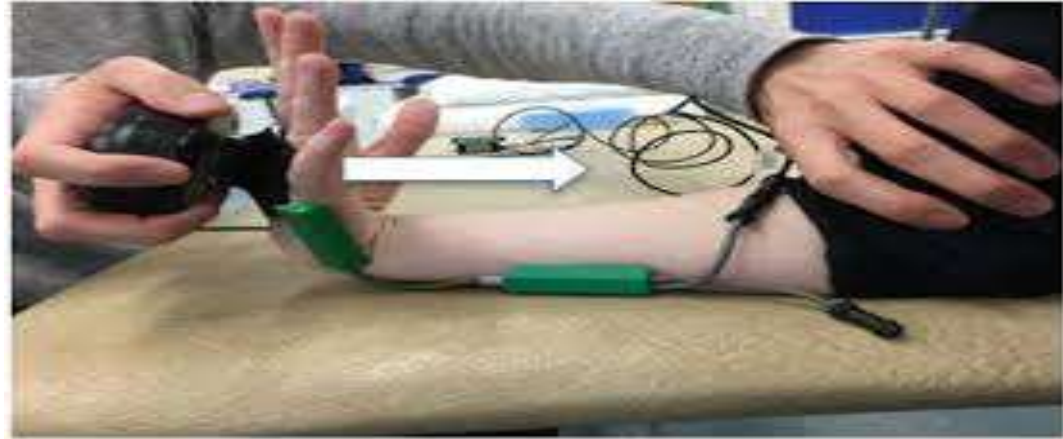
## B. Gravity Goniometer (Inclinometer)

- Measures joint motion using gravity
- Useful for spinal movements



### C. Electrogoniometer

- Electronic device
- Provides continuous measurement during movement
- Used mainly in research



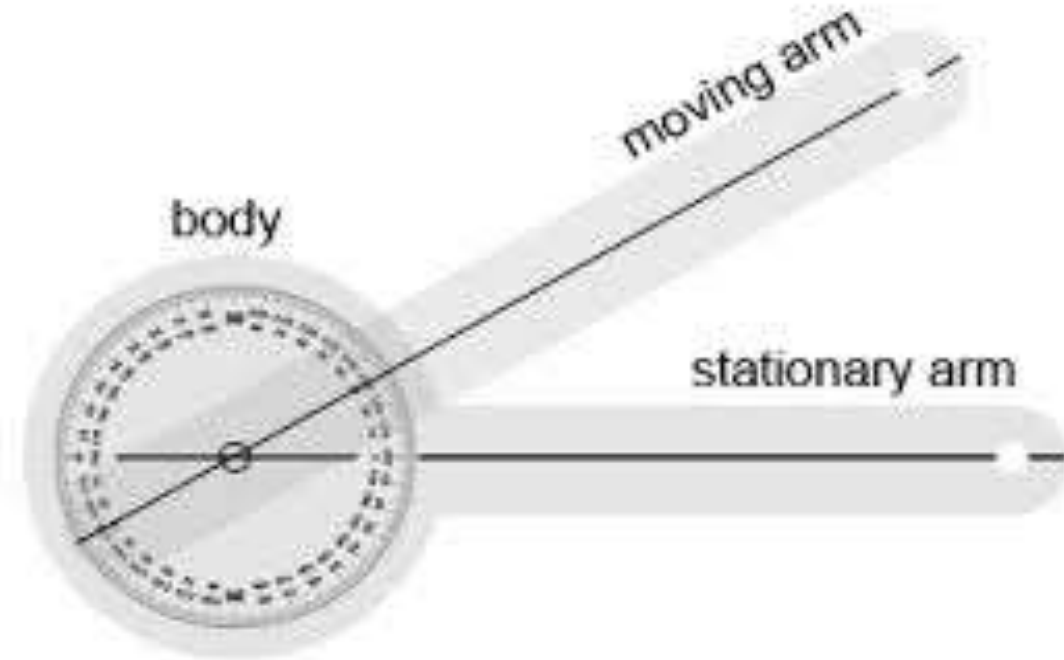
### D. Smartphone / Digital Goniometers

- Mobile applications
- Easy and quick measurements
- Reliability depends on examiner skill



# Parts of a Universal Goniometer

- **Fulcrum (Axis):** Center or pivot point
- **Stationary Arm:** Aligned with proximal body segment
- **Moving Arm:** Aligned with distal body segment
- **Body/Protractor:** Marked in degrees (0–180° or 0–360°)



- Patient must be **properly positioned**
- Joint should be **exposed**
- Correct **anatomical landmarks** must be identified
- Goniometer axis should coincide with **joint axis**
- Stationary arm aligned with **proximal segment**
- Moving arm follows the **distal segment**
- Motion should be performed **slowly and smoothly**
- Avoid **substitution or trick movements**



## A. Active Range of Motion (AROM)

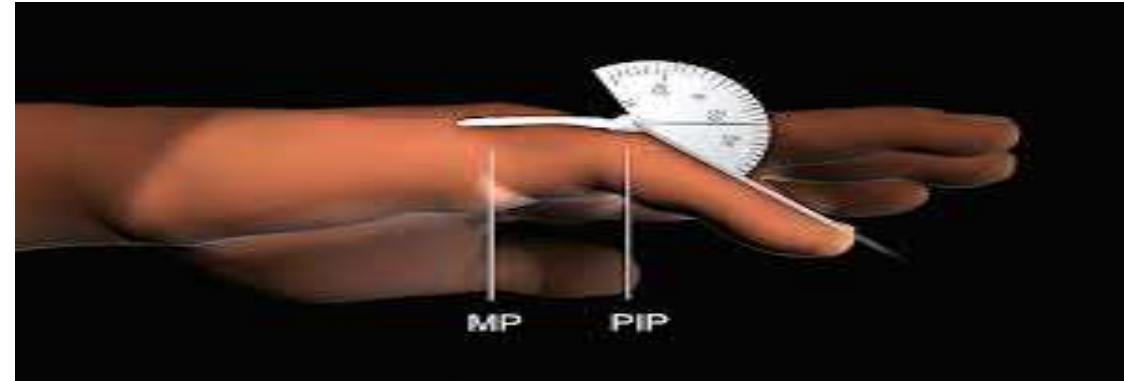
- Movement performed by patient
- Indicates muscle strength and joint integrity

## B. Passive Range of Motion (PROM)

- Movement performed by therapist
- Indicates joint capsule, ligament, and muscle flexibility

## C. Active-Assisted Range of Motion (AAROM)

- Combination of patient and therapist effort



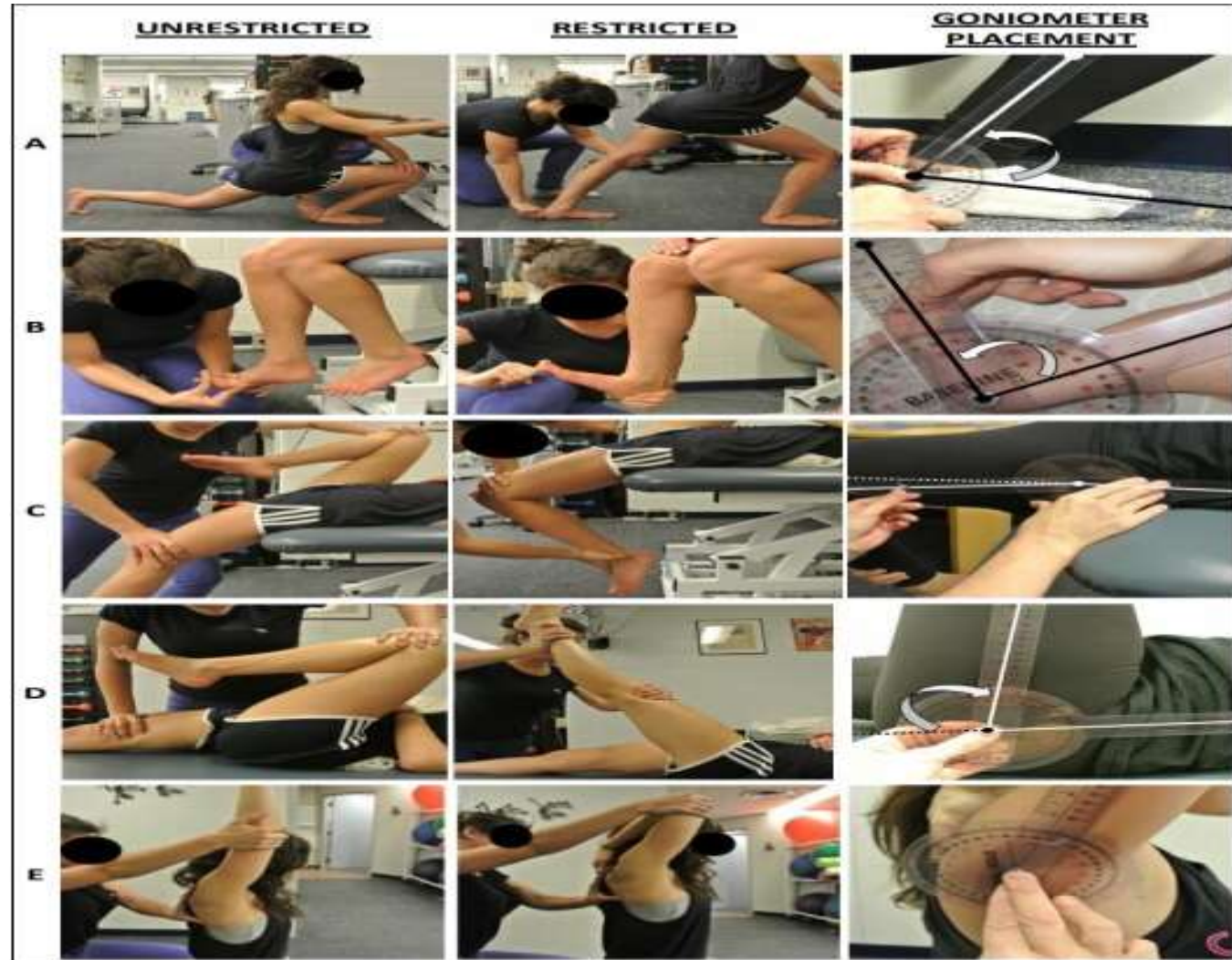
# Normal Range of Motion (ROM)

## Upper Limb

- Shoulder flexion: 0–180°
- Shoulder extension: 0–60°
- Shoulder abduction: 0–180°
- Elbow flexion: 0–150°
- Forearm supination: 0–90°
- Wrist flexion: 0–80°

## Lower Limb

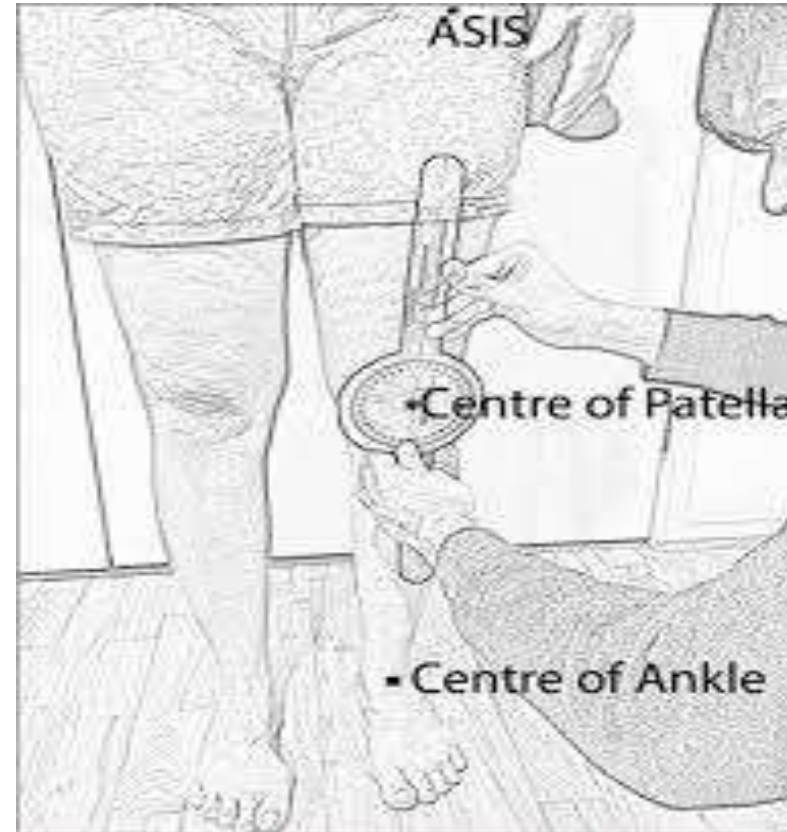
- Hip flexion: 0–120°
- Hip extension: 0–30°
- Knee flexion: 0–135°
- Ankle dorsiflexion: 0–20°
- Ankle plantar flexion: 0–50°



- Explain the procedure to the patient
- Position the patient correctly
- Identify and palpate bony landmarks
- Align goniometer correctly
- Ask patient to perform movement (AROM) or perform PROM
- Read measurement at end of range
- Record findings accurately



- Incorrect landmark identification
- Improper patient positioning
- Substitution movements
- Parallax error while reading scale
- Inconsistent measurement technique



- Orthopaedic conditions (fractures, arthritis)
- Neurological conditions (stroke, spinal cord injury)
- Sports injuries
- Post-operative rehabilitation
- Paediatric and geriatric assessment



- Acute inflammation
- Recent fractures
- Severe pain
- Post-surgical restrictions

## **References**

- Clarkson HM. Musculoskeletal Assessment: Joint Range of Motion and Manual Muscle Testing
- Norkin CC, White DJ. Measurement of Joint Motion: A Guide to Goniometry

