

# AcuAngle<sup>®</sup> Inclinator Measurement Chart



Inclinometers and goniometers are devices used to measure range-of-motion. Range-of-motion can be measured from the neutral position to give a reading of flexion, extension, abduction, adduction, pronation, supination, dorsiflexion, plantarflexion, etc. or it can measure the entire range to yield a total range-of-motion of the joint in question.

The inclinometer is simple to use: place it near the joint to be measured; turn the dial until the scale reads zero; take the joint through its range; read the range-of-motion (in degrees) directly from the dial.

#### Measurement Tolerance

This device measures inches and centimeters with a tolerance of  $\pm 0.04$  inches ( $\pm 1$  millimeter) and degrees with a tolerance of  $\pm 1$  degree.

#### Disposal Method

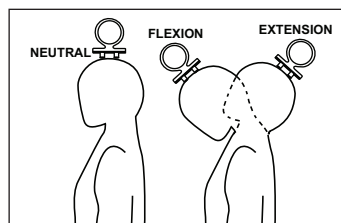
Dispose of item in accordance with the local/regional/national/international regulations.

#### WARNING:

- Verify calibration before each use
- Clean device between patients
- Zero device before measurement
- Apply consistent gentle pressure
- Store in protective case



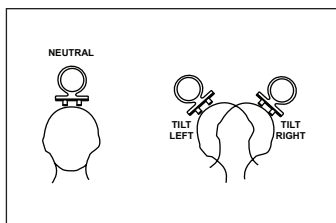
## NECK



### FLEXION & EXTENSION

- Put head in neutral position
- Place goniometer on top of head, set to zero
- Flex or extend neck
- Read result

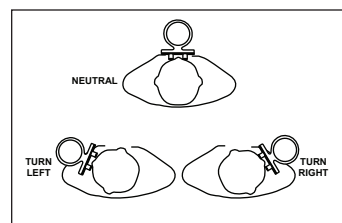
**Note:** Be careful of the goniometer slipping on hair



### LATERAL MOVEMENT

- Put head in neutral position
- Place goniometer on top of head, set to zero
- Abduct neck left and/or right
- Read result

**Note:** Be careful of the goniometer slipping on hair

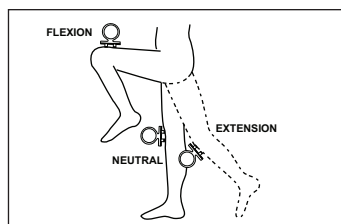


### ROTATION

- Lay subject supine, with head in neutral position
- Place goniometer on forehead, set to zero
- Rotate neck
- Read result

**Note:** Ensure both shoulders are in contact with the bed

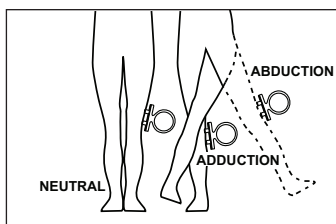
## HIP



### FLEXION & EXTENSION

- Stand subject upright, preferably supported
- Place goniometer on thigh, set to zero
- Flex or extend hip
- Read result

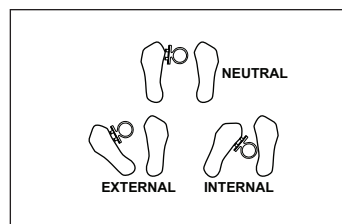
**Note:** A different result will be obtained with the knee in flexion due to pelvic tilt and lumbar flexion



### ABDUCTION & ADDUCTION

- Stand subject upright, feet apart (or lay them on their side)
- Place goniometer on thigh, set to zero
- Abduct or adduct hip with the body stabilized
- Read result

**Note:** Pelvic tilt may occur

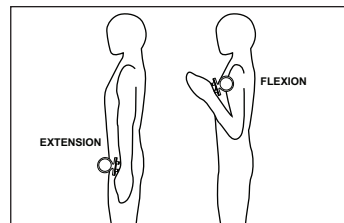


### ROTATION

- With the goniometer on its side, set to zero
- Lay subject supine with knee in full extension. Neutral position is found by drawing a line from between the big and second toes to the center of the heel. Using the goniometer rotate hip until zero
- Place goniometer on side of foot, set to zero
- Internally or externally rotate hip
- Read result

**Note:** There is no rotation of the fully extended knee unless severe joint laxity is present

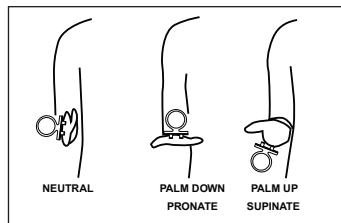
## ELBOW



### FLEXION & EXTENSION

- Put elbow and shoulder at neutral position at zero degrees of extension
- Place goniometer on forearm, set to zero
- Flex elbow
- Read result

**Note:** Stabilize shoulder and upper arm to prevent error

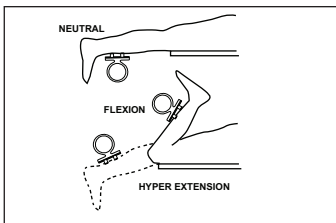


### ROTATION

- Put shoulder at neutral position, elbow at 90° flexion, thumb facing upward
- Place goniometer on the back of the hand, set to zero
- Pronate or supinate elbow
- Read result from inner or outer dial

**Note:** Twisting of the hand may indicate greater range-of-motion

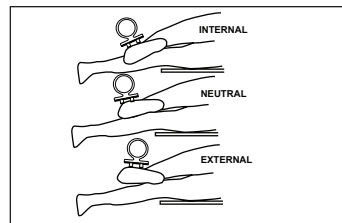
## KNEE



### FLEXION & EXTENSION

- Lay subject prone, knee over edge of the bed
- Place goniometer on shin, set to zero
- Flex or hyperextend knee
- Read result

**Note:** Test can be performed with subject standing and hip stabilized

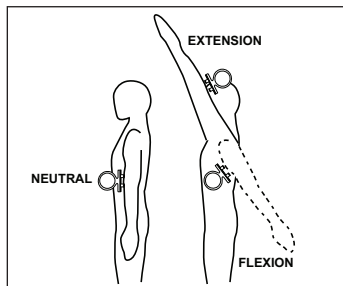


### ROTATION

- Lay subject on side, knee at 90° flexion, rotationally neutral
- Place goniometer on side of foot, set to zero
- Internally or externally rotate knee
- Read result

**Note:** It is very difficult to determine neutral position, so it is more useful to quote total-range-of motion

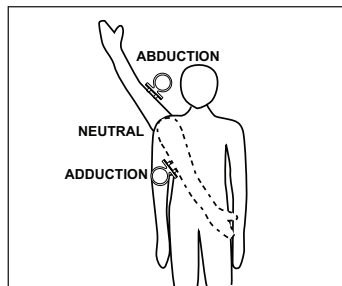
## SHOULDER



### FLEXION & EXTENSION

- Place goniometer on upper arm, set to zero
- Flex or extend shoulder
- Read result

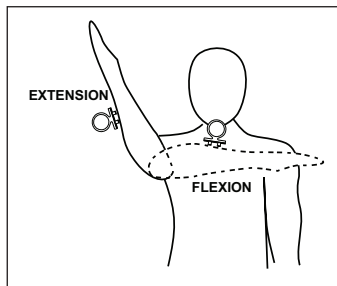
**Note:** Do not allow the subject to twist



### ABDUCTION & ADDUCTION

- Put shoulder into neutral position
- Place goniometer on upper arm, set to zero
- Abduct or adduct shoulder
- Read result

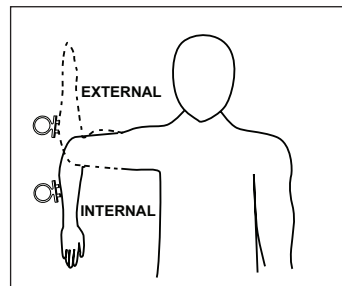
**Note:** Do not allow the subject's body to twist



### ROTATION OF FLEXED SHOULDER

- Put shoulder at 90° flexion, elbow at 90° flexion, forearm and upper arm horizontal
- Place goniometer on forearm, set to zero
- Internally or externally rotate shoulder
- Read result from inner or outer dial

**Note:** Keep subject's arm horizontal

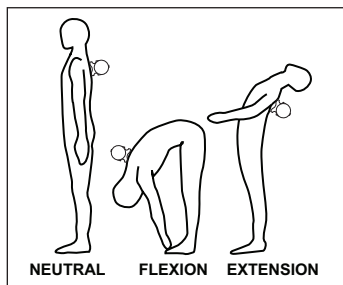


### ROTATION OF ABDUCTED SHOULDER

- Put shoulder at 90° abduction, elbow at 90° flexion, forearm and upper arm horizontal
- Place goniometer on forearm, set to zero
- Internally or externally rotate shoulder
- Read result from inner or outer dial

**Note:** Keep the subject's arm horizontal

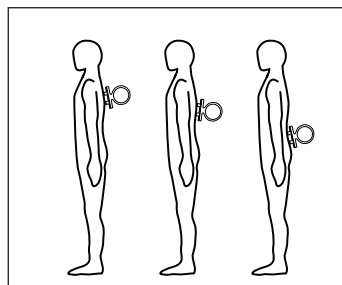
## SPINE



### FLEXION & EXTENSION

- Stand subject upright
- Place goniometer on region of spine to be tested, set to zero
- Flex or extend the spine
- Read result

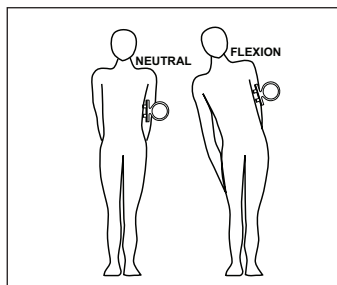
**Note:** If the subject is clothed, the goniometer may slip during flexion



### PLOTTING CURVATURE

- With the goniometer on its side, set to zero
- Stand subject upright
- Place the goniometer at different levels of the spine
- Read result at each level and plot

**Note:** Kyphotic and Lordotic curvatures are shown as positive or negative values

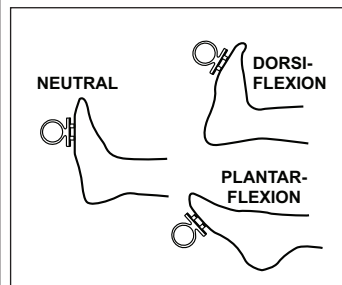


### LATERAL MOVEMENT

- Stand subject upright
- Place goniometer on ribs under arm, set to zero
- Laterally flex the spine
- Read result

**Note:** The higher the goniometer is placed the greater will be the measured compound angle

## ANKLE

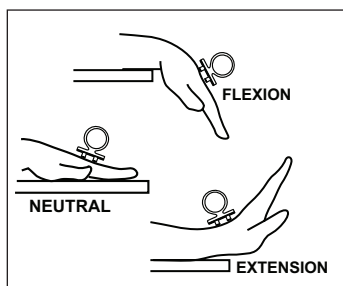


### DORSIFLEXION & PLANTARFLEXION

- Lay subject supine, with foot over edge of bed
- Place goniometer on the sole of foot, set to zero
- Plantarflex or dorsiflex the ankle
- Read result

**Note:** More accurate readings can be obtained when the subject wears flat shoes to reduce the curvature of the foot

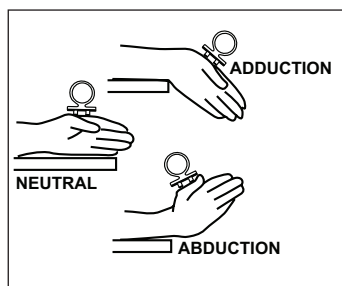
## WRIST



### FLEXION & EXTENSION

- Put hand and forearm prone on table
- Place goniometer behind MCP joints on back of hand, set to zero
- Move hand over edge of table, flex or extend wrist
- Read result from inner or outer dial

**Note:** Ensure forearm and elbow are always in contact with the table

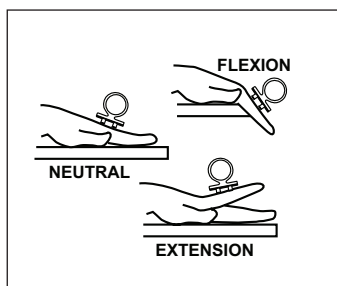


### ABDUCTION & ADDUCTION

- Place side of hand, forearm and elbow on table
- Place goniometer on side of hand, set to zero
- Move hand over edge of table, abduct or adduct wrist
- Read result

**Note:** Ensure back of the hand is always in vertical plane. To eliminate abduction/adduction of MCP joints put fingers in full flexion

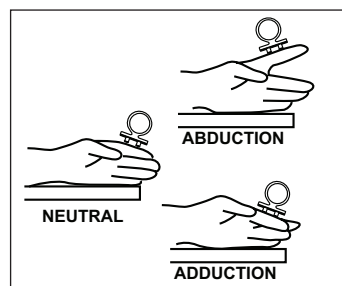
## MCP JOINT



### FLEXION & EXTENSION

- Put hand prone on table, finger over the edge
- Place goniometer on finger, set to zero
- Flex or extend MCP
- Read result

**Note:** Maintain full extension of the PIP joint. For small fingers a wooden splint may be taped to the finger



### ABDUCTION & ADDUCTION

- Put side of hand, forearm and elbow on table
- Place goniometer on finger, set to zero
- Abduct or adduct MCP
- Read result

**Note:** Ensure the little finger, wrist and elbow are always in contact with the table