6.10 & 6.11 Classwork & Evlauations

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Overview

A joint's flexibility or Range of Motion (ROM) is a description of how much movement exists at a joint. This is called "angular" movement. Because the movement is angular, the unit "degree" is used when measuring ROM rather than inches or millimeters.

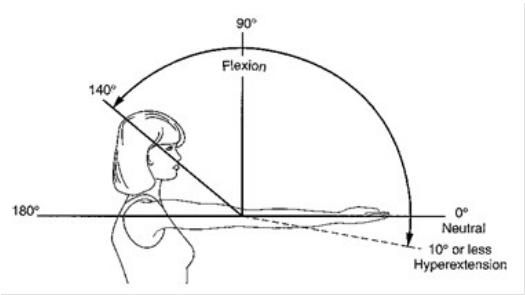
ROM can be measured as either active or passive. **Active ROM** *is created by the person contracting the muscles around that joint*. **Passive ROM** *is created by an external force pushing on the body around the joint (e.g., a partner, an opponent, a piece of equipment).* Passive ROM is always greater than active ROM.

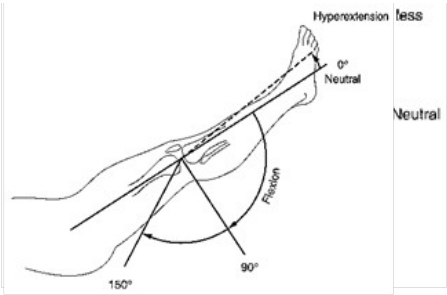
Your assignment

1. Get a partner. Each group member should be both a tester and a subject for all measurements.
2. Where possible, measurements should be taken on each subject's ***right side and left side***.
3. Where possible, goniometers should be placed ***directly on the skin***.
4. Fill in the measured values on the worksheet and respond to the summary questions.

Goniometer Measurements

- With the goniometer you will be measuring the angle through which the participant can move at the particular joint
- The goniometer has a central area or disc where the angles of movement (range of motion) are read.
- Basically, the goniometer is centered on the axis of rotation.
- It has two arms: **a stationary arm and a moving arm**.
- The stationary arm is placed in the starting position and will not move as the participant moves through the range of motion.
- The moving arm starts in the same position as the stationary arm, but as the participant moves through the ROM it follows until no more movement is possible.
- The angle of movement from the stationary arm to the movement arm is read off the central disc and reported as the ROM.
- Be aware of the position the body is supposed to be in for movement and any stabilization issues.
- If you do not follow the instructions specifically you will not make the measurements correctly and may be misrepresenting the ROM.
- At this point go through the series of measurements below and record your findings in the result section.





Record the following measurements on both the left and right side of the body:

Joint Movement	AROM Left	AROM Right	PROM Left	PROM Right	Norm? Y
Shoulder abduction (º)	153	155	167	178	n
Shoulder flexion (º)	165	162	173	177	y
Shoulder extension (º)	52	56	58	62	y
Elbow flexion (º)	148	149	152	154	y
Elbow extension (º)	5	7	6	8	n
Wrist flexion (º)	76	74	79	78	y
Wrist extension (º)	66	63	70	69	y
Knee flexion (º)	141	142	142	143	y
Hip flexion (º)	133	135	134	137	n
Hip extension (º)	20	19	23	21	n
Ankle plantar flexion (º)	57	59	59	62	n
Ankle dorsi flexion (º)	16	15	18	19	n

Use the following table to determine if your measurements fall in the range that would be considered normal or abnormal and report the outcome with your results above:

Analysis and Conclusion

1. Discuss the relative difference in your athlete and the norms for their movements.
2. Discuss the difference in active and passive range motion for what you saw.
3. Highlight the highest and lowest values for each of the movements in the above chart. Were there obvious reasons for the differences between group members?
4. Compare your values with your partner's values and determine who has more flexibility. Why might one of you have more flexibility than the other?

Shoulder	
Flexion	150-180
Extension	50-60
Abduction	180
Medial rotation	70-90
Lateral rotation	90
Elbow	
Flexion	140-150
Extension	0
Radio-ulnar	
Pronation	80
Supination	80
Wrist	
Flexion	60-80
Extension	60-70
Radial deviation	20
Ulnar deviation	30
Cervical spine	
Flexion	45-60
Extension	45-75
Lateral flexion	45
Rotation	60-80
Thoracic-lumbar spine	
Flexion	60-80
Extension	20-30
Lateral flexion	25-35
Rotation	30-45
Hip	
Flexion	100-120
Extension	30
Abduction	40-45
Adduction	20-30
Medial rotation	40-45
Lateral rotation	45-50
Knee	
Flexion	135-150
Extension	0-10
Ankle	
Dorsiflexion	20
Plantar flexion	40-50
Subtalar	
Inversion	30-35
Eversion	15-20

Data from the American Academy of Orthopaedic Surgeons (Greene and Heckman 1994) and the American Medical Association (1988).

1My athlete was on the higher for her numbers because she was a dancer and is actively involved in yoga so her flexibity was higher than usual.

2 Active ROM is what the patient can do on their own while Passive ROM is what they can do with assistance. This led to showing that the passive ROM numbers were higher because someone could help push you further.

3 There were clear differences between me and my partner's knee flexion numbers because my partner recently had surgery on their meniscus due to a sports-related injury so their ROM was low.

4 Partners could have various levels of flexibility due to past training experience or genetics.