Kinematics
Part 3: Angular Position

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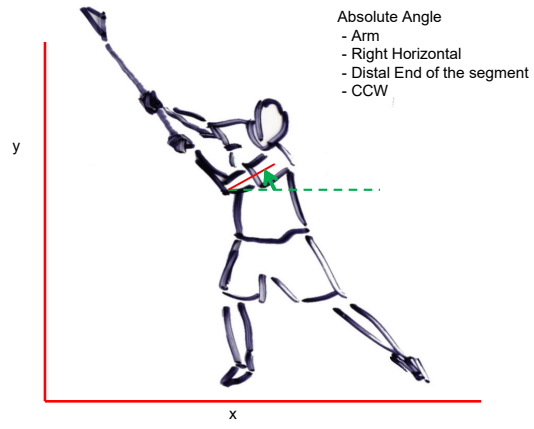
31

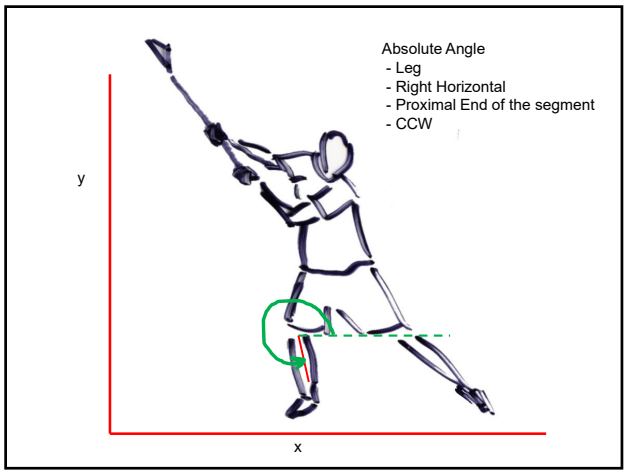
Angular Position

- Absolute Angle
  - aka segment angle
  - The angle between an anatomical segment and a fixed reference line.
- Relative Angle
  - aka joint angle
  - The angle between two anatomical segments, both have the potential to move.

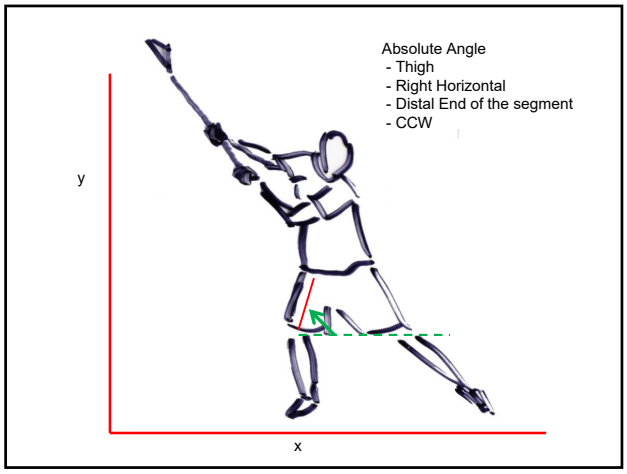
32



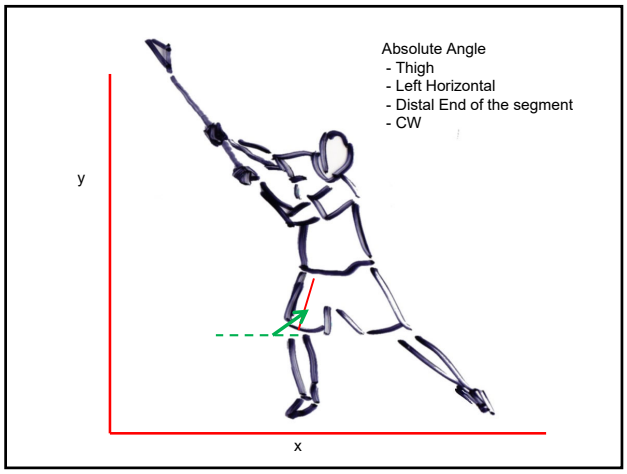
33


Absolute Angle
- Leg
- Right Horizontal
- Proximal End of the segment
- CCW
y
x

34


Absolute Angle
- Thigh
- Right Horizontal
- Distal End of the segment
- CCW
y
x

35

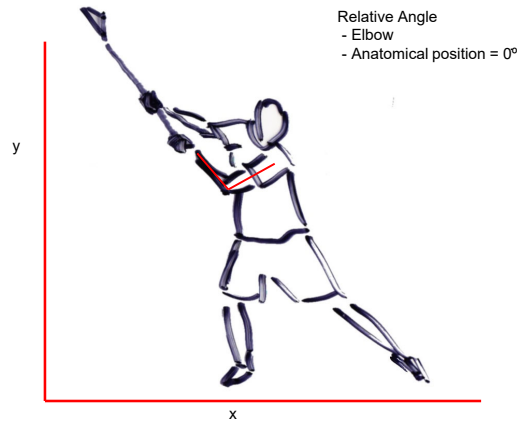

Absolute Angle
- Thigh
- Left Horizontal
- Distal End of the segment
- CW
y
x

36

Absolute Angle

- The angle between an anatomical segment (e.g., leg, thigh, foot, arm, trunk, …) and a fixed reference line in space.
- All segment angles are absolute angles.

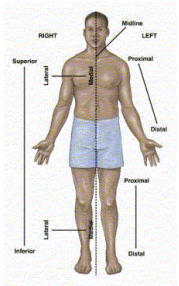
37



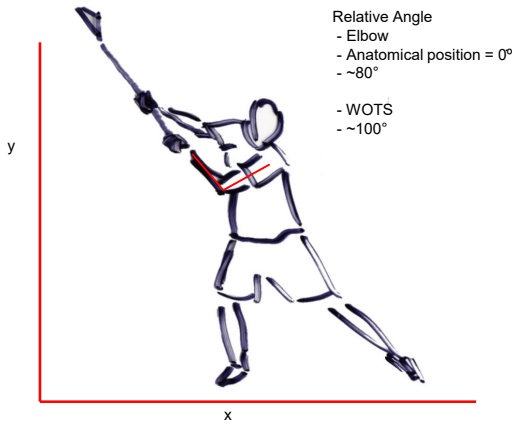
38

Relative Angle Reference System

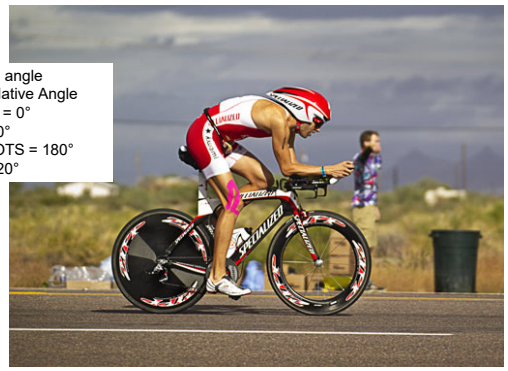
- Anatomical Position
  - Joint angles set to 0°
  - Flexion angles increasing
- Word on the Street
  - Joint angles = 180°
  - Flexion angles decreasing



39



40



41

Relative Angle

- Angle between two anatomical segments, both have the potential to move.
- All joint angles (e.g., wrist, elbow, shoulder, hip, knee, …) are relative angles.

42

Summary

- Absolute Angle
  - Describe location of reference line.
  - Indicate direction (i.e., CCW, CW).
- Relative Angle
  - Identify joint (and two segments).
  - Indicate reference system
    - Anatomical Position
    - WOTS

43

Summary: Kinematics

- Kinematic Parameters
  - Position
    - distance
    - displacement
  - Velocity
    - Speed
  - Acceleration
  - Vectors
  - Scalars

44