

Basic Biomechanics, 8e (Hall)

Chapter 2 Kinematic Concepts for Analyzing Human Motion

1) Which of the following is not an example of a sagittal plane movement?

- A) flexion
- B) hyperextension
- C) lateral flexion
- D) plantar flexion

Answer: C

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2) The cardinal frontal plane divides the body into equal _____.

- A) right and left halves
- B) front and back halves
- C) top and bottom halves
- D) medial and lateral halves

Answer: B

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3) Movements in the transverse plane occur around which axis?

- A) mediolateral
- B) anteroposterior
- C) longitudinal
- D) horizontal

Answer: C

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4) A dancer performs a pirouette in which plane?

- A) sagittal
- B) frontal
- C) transverse
- D) longitudinal

Answer: C

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5) Most human movement falls into which category?

- A) rectilinear
- B) curvilinear
- C) angular or rotational
- D) general

Answer: D

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6) Which of the following terms best describes translational motion along a curved line?

- A) rectilinear
- B) curvilinear
- C) rotational
- D) general

Answer: B

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7) Which of the following motions occurs primarily in the sagittal plane?

- A) running
- B) a cartwheel
- C) a pirouette
- D) All of these answers are correct.

Answer: A

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8) Which of the following motions occurs primarily in the frontal plane?

- A) running
- B) cartwheel
- C) pirouette
- D) All of these answers are correct.

Answer: B

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9) Abduction occurs in which plane?

- A) sagittal
- B) frontal
- C) transverse
- D) it depends on the action being performed

Answer: B

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10) Which imaginary cardinal plane bisects the body into right and left halves?

- A) sagittal
- B) frontal
- C) transverse
- D) None of these answers are correct.

Answer: A

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11) During the preparatory phase for an underhand softball pitch, the hand holding the ball is drawn behind the body prior to the forward swing of the arm. When the hand is drawn behind the body, which of the following movements occurs at the shoulder?

- A) flexion
- B) extension
- C) hyperextension
- D) circumduction

Answer: C

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12) In which of the following planes does a forward roll occur?

- A) sagittal
- B) frontal
- C) transverse
- D) oblique

Answer: A

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13) Which of the following are transverse plane movements at the shoulder?

- A) horizontal abduction
- B) medial rotation
- C) both horizontal abduction and medial rotation
- D) None of these answers are correct.

Answer: C

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14) Which of the following terms means "farther from the head"?

- A) distal
- B) proximal
- C) superior
- D) inferior

Answer: D

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15) Which of the following describes the knee joint relative to the ankle joint?

- A) distal
- B) proximal
- C) medial
- D) lateral

Answer: B

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16) Which of the following is/are true regarding anatomical reference position?

- A) palms face forward
- B) erect posture
- C) starting position for describing motion
- D) All of these answers are correct.

Answer: D

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17) Foot pronation occurs at which joint?

- A) ankle
- B) subtalar
- C) both ankle & subtalar
- D) pronation does not occur in the foot

Answer: B

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18) Internal rotation is synonymous with which of the following?

- A) medial rotation
- B) lateral rotation
- C) external rotation
- D) None of these answers are correct.

Answer: A

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19) In anatomical position, the forearm is in what position?

- A) pronated
- B) supinated
- C) flexed
- D) abducted

Answer: B

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- 20) Which of the following is true regarding horizontal adduction?
- A) also called horizontal flexion
 - B) occurs in the transverse plane
 - C) both also called horizontal flexion & occurs in the transverse plane
 - D) None of these answers are correct.

Answer: C

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- 21) Which of the following is true regarding circumduction?
- A) combines flexion, extension, adduction, and abduction
 - B) synonymous with rotation
 - C) both combines flexion, extension, adduction, and abduction & synonymous with rotation
 - D) None of these answers are correct.

Answer: A

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- 22) Which is true about the Cartesian coordinate system?
- A) It is a special reference system used by biomechanists.
 - B) It can be used to describe two-dimensional *or* three-dimensional motion.
 - C) Both it is a special reference system used by biomechanists and it can be used to describe two-dimensional *or* three-dimensional motion.
 - D) None of these answers are correct.

Answer: C

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- 23) In two-dimensional Cartesian coordinate systems, what unit is used for the vertical axis?
- A) x
 - B) y
 - C) z
 - D) All of these answers are correct.

Answer: B

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- 24) Which of the following could be defined by a movement analyst as a mechanical system?
- A) entire human body
 - B) right arm
 - C) projected ball
 - D) All of these answers are correct.

Answer: D

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25) What term is used to describe the motion of bringing the foot closer to the lower leg?

- A) flexion
- B) extension
- C) dorsiflexion
- D) plantar flexion

Answer: C

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26) Shaking the head "no" involves which of the following movements?

- A) lateral and medial rotation
- B) left and right rotation
- C) internal and external rotation
- D) All of these answers are correct.

Answer: B

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27) Which action is *not* an example of sagittal plane movement?

- A) flexion
- B) hyperextension
- C) lateral flexion
- D) plantar flexion

Answer: C

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28) Choose the term that describes "involving translation and rotation simultaneously."

- A) frontal axis
- B) frontal plane
- C) general motion
- D) inferior

Answer: C

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29) Choose the term that describes "involving rotation around a central line or point."

- A) anatomical position
- B) angular
- C) anterior
- D) axis

Answer: B

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30) Choose the term that describes "along a straight line."

- A) posterior
- B) proximal
- C) rectilinear
- D) sagittal axis

Answer: C

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31) Choose the term that describes an erect standing position with all body parts, including the palms of the hands, facing forward.

- A) anatomical position
- B) angular
- C) anterior
- D) axis

Answer: A

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32) Choose the term that describes "toward the back of the body."

- A) medial
- B) posterior
- C) proximal
- D) rectilinear

Answer: B

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33) Choose the term that describes "toward the midline of the body."

- A) medial
- B) posterior
- C) proximal
- D) rectilinear

Answer: A

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34) Choose the term that describes "further from the trunk."

- A) cardinal planes
- B) curvilinear
- C) deep
- D) distal

Answer: D

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35) Choose the term that describes "toward the surface of the body."

- A) sagittal plane
- B) superficial
- C) superior
- D) system

Answer: B

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36) Choose the term that describes the plane in which lateral movements of the body and body segments occur.

- A) cardinal planes
- B) sagittal plane
- C) transverse plane
- D) frontal plane

Answer: D

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37) Choose the term that describes an imaginary line passing from top to bottom through the body and around which transverse plane rotations occur.

- A) axis
- B) frontal axis
- C) longitudinal axis
- D) sagittal axis

Answer: C

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38) The word _____ refers to a description of quality without the use of numbers.

Answer: qualitative

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39) Translation is a synonym for _____ motion.

Answer: linear

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40) _____ describes motion along a straight line, whereas _____ describes motion along a curved line.

Answer: Rectilinear; curvilinear

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41) Ventral is a synonym for _____, which means toward the front of the body.

Answer: anterior

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42) What are the two main sources of information for the analyst diagnosing a motor skill?

Answer: Answer may vary.

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43) Name two ways an analyst can increase his/her knowledge about the mechanics of a motor skill and describe the advantages and disadvantages of each.

Answer: Answer may vary.

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44) Describe the steps that should be taken when planning a qualitative analysis.

Answer: Answer may vary.

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45) To supplement visual observations, the analyst can often use non-visual information. Describe two examples of auditory information that could be used during a qualitative analysis.

Answer: Answer may vary.

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46) The center of mass is located at the intersection of the three cardinal planes.

Answer: TRUE

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47) Translation is synonymous with general motion.

Answer: FALSE

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