Corrections and Clarifications to

A Treatise on the Functional Pathology of the Musculoskeletal System—Volume 1: Introduction

TEXT

General Note: The corrections listed throughout these pages were made to the various versions of this book. The revised text listed is the text that appears in the fourth public version, which was published February 2024, except for highlighted text, which will appear in the next version.

Copyright Page

Text	Description
• Beta version – hardcover only: March 2022 • First public version – hardcover only: April 2022 • Second public version – hardcover only: May 2022 • Third public version – hardcover and e-book: July 2022 • Fourth public version – hardcover and e-book: February 2024	Added

Abbreviations

Page	Revised Text	Description
viii	AROM, active range of motion	Added after APROM
viii	**Rotation in the coronal plane around a center of rotation or around an A/P axis:** L/R (or CEPH vs PED Tilt) for unpaired structures; ADD vs ABD (or CEPH vs PED Tilt) for paired structures	Underlined text added
viii	**Rotation in the sagittal plane around a center of rotation or around an L/R axis for an unpaired structure or around an M/L axis for a paired structure:** FB vs BB (or CEPH vs PED Tilt) for unpaired structures: FB vs BB (or CEPH vs PED Tilt) for paired structures	Underlined text added

Preface

Page	Revised Text	Description
xv	whooping cough	Typo fixed

xvii, footnote 9	Adults and anyone with “low back pain,” a workers’ compensation claim,	Underlined text changed from “workman’s”
xix, footnote 11	(repeatability and quantifiability)	Changed from “(reproducibility and quantifiability)”
xix	(3) myofascial release with percussive vibration amplification	Underlined text corrected from “percussive amplification (MFRPVA)”
xxii	I gained an experiential appreciation for, as well as an ability to explain, foundational aspects	Comma placement corrected
xiv, footnote 3	and also played a central role	Underlined text corrected from “as well as playing”
xxiv	my best man John Scarlett, MD (Endocrinology) (1951-); my wife’s maid of honor Susan Scarlett (1951-);	Years of birth updated

Chapter 1

Page	Revised Text	Description
2	(Accompanying patient-completed pain diagrams are included in Appendix 1.)	Appendix call-out corrected from just “Appendix”
5, Case Example 1-4	Central and paracentral disc osteophyte complex, bilateral uncinate hypertrophy, no facet arthropathy, mild to moderate spinal canal stenosis, plus moderate bilateral recess and neural foraminal narrowing.	Underlined text added
7, box 1-1, right column	be based on **valid and reproducible data**	Underlined text added
7, box 1-1	**valid data.** Data derived from methods of investigation and analysis, of which specific criteria have been met. It must be generated by a **valid construct** that yields: • **precise data** • **reliable data** based upon a specified unit of measurement, that is, degree of precision • **accurate data—applicable if and only if** a “truth” or standard (target center) has been defined	Definition corrected where underlined

Chapter 2

Page	Revised Text	Description
20	(Figure 2-2)	Figure call-out corrected from “Figures 2-2”
21, Figure 2-2 caption	quadriceps, trapezii, as well as anterior longitudinal and interspinous/supraspinous ligaments.	Underlined text corrected
22, Figure 2-8 caption	chest and lumbar spine forward bending	“neck” was removed from this list
23, left column	thus, "stretching the latissimus dorsi" would be only transiently effective.	Quotation marks added

Chapter 3

Page	Revised Text	Description
25, left column	The rationale for the proposed lexicon of the Functional Pathology of the Musculoskeletal System paradigm includes those principles	Underlined text corrected from “include”
25, key terms	straight appendage	“segment” changed to “appendage”
25, key terms	bent appendage	“segment” changed to “appendage”
27, Table 3-1	“Torso,” “trunk,” or “core”—entire spine (except the head and neck), all ribs, both innominates, both clavicles, and scapulae	Underlined text added
28, Table 3-2, left side	• Innominate • Femur • Patella	“Patella” was added as a bone under “Thigh”
28, Table 3-2, right side	○ Scaphoid ○ Lunate ○ Triquetrum ○ Pisiform ○ Hamate ○ Capitate ○ Trapezoid ○ Trapezium	The order of the underlined carpal bones was corrected
32	Standard posture and starting posture in supine are the same. See Chapter Eight for descriptions of the other starting postures.	Underlined text added
36, left column	Rotation in the sagittal plane occurs around the medial/lateral (M/L) axes for paired and	Underlined text corrected

	right/left (R/L) axes for unpaired structures: "forward/backward bending" with "from cephalic/pedal" for both paired (Figures 3-19 and 3-20) and unpaired structures—including the pelvis as a whole.	
36, right column	Rotation in the coronal plane occurs around the anterior/posterior (A/P) axes for all structures: "abduction/adduction" for paired structures (Figures 3-21 and 3-22) or "right/left side bending" with "from cephalic/central/pedal" for unpaired structures and for the ribs.	Underlined text added
38	straight appendages	"segments" changed to "appendages"
39	—or motion toward standard posture, ie, "straightening" for the appendages at the elbows, knees, GH joints, and FA joints but "centralization" for the torso, hands, and feet.	"Torso" was changed from "axial skeleton," and the remaining underlined text was added.
41, right column	**Sequential direction.** The sequential direction of linked movement of and within the torso must be specified as either:	Underlined text added
41, footnote 18	A pedal appendage consists of a foot, a leg, a thigh, and a hip. "Leg" should be rigorously used to refer just to that specific portion of the pedal appendage anatomy delineated by the tibia and fibula and not, as is often the case in casual parlance, the entire pedal appendage. Likewise, a cephalic appendage consists of a hand, a forearm, an arm, and a shoulder. "Arm" should be rigorously used to refer just to that specific portion of the cephalic appendage delineated by the humerus and not, as is often the case in casual parlance, the entire cephalic appendage.	Underlined text updated for clarification of anatomy
42	*straight appendages*	"segments" changed to "appendages"
44	straight appendages	"segments" changed to "appendages"
44	*bent appendages*	"segments" changed to "appendages"
45	straight appendages	"segments" changed to "appendages"
54, Table 3-3, middle	Modified as "medial/medially" or "lateral/laterally" in relation to the sagittal plane	"coronal plane" was corrected to "sagittal plane"

row, middle column		
54, Table 3-3, sagittal plane row 1,	Modified as "clockwise" or "counterclockwise" viewed from right/left	Underlined text corrected
54, table 3-3; sagittal plane row 2	Modified as "cephalic/cephalad" or "pedal/pedad" ("caudal/caudad") in relation to the transverse plane	Underlined text corrected
54, Table 3-3, coronal plane row 1	Modified as "clockwise" or "counterclockwise" viewed from anterior/posterior	Underlined text corrected
54, Table 3-3 footnote	A line connects each point of orientation with each initial axis of rotation of each moving segment. That line participates in two planes of possible motion: one plane is that in which the rotation is occurring; the other plane is that toward which the rotation is occurring. The axis of rotation is in the plane toward which the rotation is occurring as well as the remaining plane. The direction of motion is, thus, determined by the plane containing the axis of rotation and the connecting line with the point of orientation. This principle will be illustrated in Volume Three.	Underlined text added

Chapter 4

Page	Revised Text	Description
59	(Figure 4-3)	Changed from plural to singular
60, Figure 4-3 caption	Bottom row: The plastic range is similar to the elastic range,	Underlined text corrected from "elastic"
62	(3) paraphysiologic range of motion	Number corrected
63	An accessory range of motion occurs at a specified joint, includes variable ratios of plastic range and elastic range, and cannot be isolated by the activation of (a) musculotendinous unit(s) that span(s) the joint(s) at which the movement is occurring. Component and joint play motions do not, but paraphysiologic motions do, directly extend the total range of active physiologic motion.	Text revised for clarity

63	(the point of orientation[14] for this description is the most distal central point of the tibia <u>for forward/backward bending and the tibial plateau for anterior/posterior glide)</u>	Underlined text added
63, footnote 15	See Box 2-2. This description is apropos an "open chain" context—for example, when one is sitting with legs dangling off a table, the thigh and trunk are not moving, and the leg and foot are moving freely without resistance from the external environment. This is in contrast to a "closed chain" context—for example, when one moves from prone to kneeling, the legs and feet are not moving and the thighs are moving freely without resistance from the external environment (the point of orientation for this description is the most proximal central point of the femur for forward/backward bending and the femoral condyles for anterior/posterior glide): the femur slides anteriorly on the tibia during bending and posteriorly upon straightening. Also, during squatting, the tibia and femur backward bend simultaneously upon one another along with simultaneous parallel anterior sliding. The reverse patterns occur when straightening.	Text revised for clarity
65, Figure 4-11 caption	(A/P axes of rotation are at the facet <u>and SI</u> joints and, thus, the points of orientation are on the central caudal vertebrae)	Underlined text added
69, Figure 4-21 caption	The ulnar styloid is <u>red</u>. Central image is <u>at mid-path</u> position.	Underlined text updated to reflect changed to Figure 4-21
74, end of footnote 28	of what constitute major and minor <u>motions</u> might potentially vary.	"active motions" changed to just "motions"
76, Figure 4-33 caption	on the talus during foot supination:	"(shock absorption)" was deleted before the colon
79, left column	with an immovable external environment <u>also</u> serve that role during closed chain activities	"also" added

Chapter 5

Page	Revised Text	Description
89	bent) <u>appendages</u>	"segments" changed to "appendages"

Chapter 6

Page	Revised Text	Description
104	(for example, gravity upon panspinal forward bending <u>in the standing context</u>)	Underlined text added
105, Figure 6-5 caption	(osteopathic "elastic <u>barrier</u>")	"range" changed to "barrier"
105	A classic example <u>of the latter</u> is the . . .	Underlined text added
107, Figure 6-8 caption	Middle image: <u>Traditional osteopathic manipulative</u> treatment is directed to restoring Y° of rotation.	Underlined text added
107, Box 6-2	Comparisons are proportionate only when **specified ratios** persist with multiplication or division. A square (a type of rectangle) is internally proportionate and symmetrical in all respects. However, other comparisons may be symmetrical but not proportionate—as nonopposite sides of a rectangle may or may not be proportionate and whole squares/rectangles may or may not be proportionate to each other—**depending upon how proportion is a priori defined**.	Text updated for clarity
107, Figure 6-9 caption	Top row: squares may or may not be proportionate to one another or to other rectangles. Middle row: **proportionate** rectangles—proportion a priori defined as length to height 3 to 1. Bottom row: **disproportionate** rectangles—proportion a priori defined as length to height 3 to 1.	Text updated for clarity

Chapter 7

Page	Revised Text	Description
111, right column	All four categories of excursion are <u>specific quantities</u>	Underlined text changed from "specific ideal quantities"
112, right column	the musculoskeletal system (SPMSS) rather than solely FPMSS (Figure 7-1).	Call-out to Figure 7-1 added
113, footnote 6	All bones of the cranium and face, including the mandible; the ribcage, including the sternum; <u>the vertebral column, including the sacrum and coccyx; and the hyoid.</u>	Text edited to include addition of the hyoid

114	• In the sagittal plane, note as
	  ○ increased “forward bending/kyphosis” or “backward bending/lordosis” for a group of vertebrae
	  ○ “straightening/flattening”[16] for a group of vertebrae
	• In the coronal plane, note as
	  ○ increased “curvature” (named for the convexity) for a group of vertebrae
	• In both the sagittal and coronal planes, note as
	  ○ "C/P (cephalic/pedal) tilt” for an individual or group or ribs
	  ○ "Clockwise/counter clockwise" for an individual vertebra
		Underlined text created/moved from the separate sagittal and coronal plane descriptions

114, footnote 16	In the appendicular skeleton, except the hands and feet, the term "straightening" refers to return to the same standard posture. In the axial skeleton, hands, and feet, the term "straightening" refers to return to standard posture, and the term "flattening" is synonymous with "straightening."	Underlined text was updated and corrected.
114, Figure 7-3 caption	compression of the posterior aspect of the disc, and tension of the anterior aspect of the disc.	Underlined text added
115, Box 7-2, right column	NRS has specified numbers (usually 1 to 10)	Scale corrected from “0 to 10”
122, right column	**predominance of findings** at RP and −1 along with various findings of −2, −3, −4, and GP (Figure 7-17).	Call-out to Figure 7-17 added.
123, right column	But the important point is that −2 and −1 motion loss takes on greater pathophysiologic significance than in the "common" phenotype.	Underlined text added

Chapter 8

Page	Revised Text	Description
127, right column, second paragraph	Any subsequent treatment will then be much less likely to benefit the patient, as nonspecific treatment might **only by chance** successfully address false negative findings.	Changed from “In turn, you will treat that dysfunction only by chance, and that treatment will be much less likely to benefit the patient, especially if the missed

		dysfunction is a “primary dysfunction.”
128, left column, last paragraph	However, for consistent application of forces as well as consistent perception of responses, it is very important that paired structures and motions not be examined from the same side of the body.	Underlined text changed from “be examined from the opposite side of the body.”
136	bent approximately 90° at the tibiofemoral/ patellofemoral joints. The legs are rotated 30° medially. The feet are in standard (open chain) posture—in other words, not on a surface	Underlined text added
145, 11, Technique, b	Note the axes of coupled rotations in the coronal and transverse planes of the calcaneus on the talus	Underlined text added
145, Figure 8-48 caption	Middle image: viewed from medial. Right image: viewed from lateral.	Underlined text corrected
150, Figure 8-61 caption	Hand holds for forefoot on midfoot coronal and transverse plane evaluation.	Underlined text added
152, 15, Technique, c	c. Hold the patient’s cephalic appendages at the elbows with your hands. Maintain the cephalic appendages as straight and in starting posture transverse plane rotation.	Underlined text was previously separated into 2 bulleted items
152, 15	Grading a. SP is simultaneous 90° bilateral abduction b. GP is simultaneous 90° bilateral abduction from starting position. c. If asymmetrical, grade each appendage separately.	Underlined text added and bullets re-lettered
152-153, Technique 16	c. Hold the patient’s cephalic appendages at the elbows with your hands. Maintain the cephalic appendages as straight and in starting posture transverse plane rotation.	Underlined text was previously separated into 2 bulleted items
154, Technique 18	e. Stage one: • Starting Position o Forward bend the forearm 90° and pronate the forearm. o Backward bend and medially rotate at the shoulder the 90° bent forearm pronated cephalic appendage, so as to place the patient’s posterior hand on the sacrum (Figure 8-73).	Underlined text added and bullets adjusted as needed

	○ Buttress the ipsilateral shoulder by placing your lateral hand anterior to the scapula and humerus. • Flatten the ipsilateral scapula against the chest wall with your medial hand by pressing the scapular angle anterior (Figure 8-74). f. Stage two: • Starting Position—release the pressures from both of your hands. • Continue forward bending the forearm at the humeroulnar/humeroradial joints (Figure 8-75).	
155	Grading a. GP • Stage one: Each practitioner must develop judgment regarding the ease of flattening the scapula against the chest wall, on the basis of pre- and posttreatment experience with his or her patient population, as to the amount and quality of motion that is RE. • Stage two: 150° forearm forward bending (hand between scapulae).	Underlined text added/corrected. Previously, the stage one description was listed for both stage one and stage two
156	f. Abduct and adduct the scapula angle around the anterior/posterior axis (Figure 8-76). (The lateral acromion is the point of orientation.)	Underlined text previously stated “apex of the scapula”
156, Figure 8-76 caption	Scapular gapping technique. Left image: hand holds. Middle image: cephalad and caudad translation. Right image: adduction and abduction. The lateral acromion is the point of orientation for coronal plane motion (abduction/adduction). The point of orientation for both cephalad/pedad glide and for protraction/retraction (a curvilinear glide in the transverse plane motion) is the entire scapula.	Underlined text was revised
164, right column	Starting posture, unless otherwise specified, is ideal sidelying posture, which is the same as standard posture except that: ● The cephalic appendages are 90° bent and 90° forward bent. ● The pedal appendages are forward bent 30° at the femoroacetabular joints and backward bent 60° at the tibiofemoral/patellofemoral joints.	Underlined text added

165, Figure 8-93 caption	Starting position (ceilingward appendage should be fully bent) and holding force for bent 90° forward bent pedal appendage abduction, backward bending, adduction. The fully bent ceilingward pedal extremity not depicted.	Underlined text added
166, Technique 31	a. Stand posterior to the patient. b. For starting position, modify starting posture by bending the tableward pedal thigh to 90° and straightening the ceilingward pedal appendage, allowing for gravity-induced adduction of the pedal appendage and pedad to cephalad side bending of the lumbar spine to the tableward side.	Underlined text added
169	Applying a posterior force on the patient's ceilingward ACIS with your pedal hand to progressively rotate the trunk from L5 through T1 in the ipsilateral direction. That is to say, if the patient's left side is ceilingward, then rotate the patient's ceilingward innominate to the left.	Underlined text changed from "shoulder"
172, left column	Pedal appendages are rotated medially 60°.	Underlined text changed from "20°"
191, right column	b. Medial rotation: 100° (70° from midline)	Changed from "b. Medial rotation: 70°"
191, top right column, RE	a. Lateral rotation: 100° (70° from midline) b. Medial rotation: 40° (70° from midline)	Changed from: a. Lateral rotation: 90° b. Medial rotation: 100° (70° from midline)
197, right column, RE	a. Forward bending: 90° b. Full fist forward bent in pronation: 70° c. Backward bending: 90° d. Full splay of hand and straight fingers in supination: 70° e. Abduction ("radial deviation"): 15° f. Adduction ("ulnar deviation"): 75° g. Medial rotation: 20° h. Lateral rotation: 10°	Changed from: a. Forward bending: 90° b. Backward bending: 90° c. Abduction ("radial deviation"): 15° d. Adduction ("ulnar deviation"): 75° e. Medial rotation: 20° f. Lateral rotation: 10° g. Full fist forward bent in pronation: 70° h. Full splay of hand and straight fingers in supination: 90°

197, Figure 8-177 caption	Right column, bottom image: proximal carpal row viewed from pedal. (Pisiform not depicted.)	Underlined text added
198, Figure 8-179 caption	Right column, bottom image: proximal carpal row viewed from pedal. (Pisiform not depicted.)	Underlined text added
211	The most common patterns of linkage, and thus potential compensation, are assumed in the descriptions.	Commas moved

Chapter 9

Page	Revised Text	Description
220, footnote 22	Force = mass x acceleration. Work = force x distance.	Multiplication signs added
221, footnote 24	those with high elastic behavior (the nonnavigational motions) contribute to improving the efficiency of posture as well as the efficiency and power of movement, whereas those with comparatively less elastic behavior (navigational motions) contribute to generating movement in the environment (Biewener, 1998).	Placement of underlined text was corrected
222, Figure 9-10 caption	Left image is a dome being flattened. Middle image is the dome at rest. Right image is the dome being peaked.	Descriptions of left and right images were transposed
223, Table 9-1, footnote b	During squatting, countertilting of the fibula and tibia result in the proximal leg rotating medially and the distal leg rotating laterally. Upon arising/jumping, the proximal tibia (Chou et al, 2007) "screws home" by rotating laterally until, upon standing (a closed chain context), "locking" at the fully straightened position at the tibiofemoral/patellofemoral joints.	"Proximal" and "distal" corrected from "cephalic" and "pedal", respectively; other underlined text was added
227	(fracture, strain, sprain including disc herniation, vascular injury with subsequent thromboembolic phenomena and/or bleeding)	Disc herniation clarified as a type of sprain
233, Table 9-3, Seated Thoracolumbar Spine and Rib	Right first rib displaced cephalad one gradation: severe loss pedad tilt Left second rib: moderate loss pedad tilt and medial rotation	"pedad tilt" added; "moderate loss pedad tilt and medial rotation" changed from "severe loss"

233, Table 9-3, Prone Propped	Thoracic spine and ribcage pedad tilt	Underlined text added
234, Table 9-3, Legs	Rotation of the legs and countertilt within the legs in all directions: GP	"(counterturn of)" was deleted
230, footnote 35, first bullet	patterns of restricted available motion—potentially	Underlined text added
233, Table 9-3, second row from bottom, middle column	Ribcage pedad tilt	Changed from "Thoracolumbar spine and ribcage"
233, Table 9-3, right column	Right first rib displaced cephalad one gradation: severe loss Left second rib: severe loss	"with pedal tilt" and "pedal tilt" deleted

Glossary

Page	Revised Text	Description
288	bent appendage	Changed from "bent segment"
288	**central sensitization.** Facilitation within the central nervous system resulting in a lower threshold for neural activation.	Underlined text changed from "with"
291	**mobility.** Navigational motion within an environmental context, including a body cavity.	Underlined text added
292, nonnavigational	but not limited to—respiratory, propulsive, and shock-absorbing.	"propulsive" changed from "amplifying"
292 organ system	and specific principles integrating those organs.	"principles" changed from "mechanisms"
293	**passive range of motion testing.** Using forces that exclude activation of (a) musculotendinous unit(s) that span(s) the joint(s) at which the movement is occurring to test how much motion is available, including through the active physiologic range.	Definition rewritten
293	**peripheral.** In contrast to "central," toward the periphery of a specified structure.	Definition rewritten
293, peripheral sensitization	Facilitation of the peripheral	"of" changed from "with"
294, reference excursion	Taken as a whole, reference excursions represent an initial ideal, not distributions, of proportionate motions for an individual.	Underlined text added

295	**rotation.** In general, motion potentially in two directions around an axis in a plane. Rotation in the transverse plane is often referred to merely as "rotation" around cephalic/pedal axes in relation to the sagittal plane that includes the axis of rotation and the point of orientation of the moving segment: medial/lateral for the appendages and for the paired structures of the trunk (clavicles, scapulae, ribs, and innominates); left/right for the unpaired structures of the trunk segment.	Underlined text was rewritten
295	**straight appendage.** When an appendage is configured without bending at the elbow (cephalic appendage) or knee (pedal appendage), then the whole appendage is referred to as "straight."	Definition rewritten
296	**straightening/flattening.** Motion returning a bent appendage to a straight appendage. Straightening motions may or may not return a segment to standard posture. For example, forward bending at the elbow returns to standard posture at the elbow by straightening. In contrast, a hand may backward bend, straighten, centralize (return to standard posture), and forward bend. Also, the spine may straighten in the course of moving from lordosis to kyphosis and from kyphosis to lordosis.	"appendage" changed from "segment"; other underlined text added
296	**torso or trunk.** The entire spine (except the head and neck), all ribs, both innominates, both clavicles, and the scapulae.	Underlined text added
296	**valid data.** Data derived from methods of investigation and analysis, of which specific criteria have been met. It must be generated by a **valid construct** that yields **precise data; reliable data** based upon a specified unit of measurement, that is, degree of precision; and **accurate data—applicable if and only if** a "truth" or standard (target center) has been defined	Definition revised
296	**valid idea**. A statement, law, theory, and/or paradigm of which specific criteria have been met. It must be **logically consistent**, be based	Definition revised

	on valid and **reproducible data**, and yield **satisfying explanations as well as accurate predictions.**	
NA	**central.** In contrast to “peripheral,” toward the center of a specified structure.	New definition added
NA	**distal.** In contrast to “proximal” and in relation to a specified point. If a point is not specified, then in relation to the point of intersection of the midsagittal, midcoronal, and midtransverse planes of the body.	New definition added
NA	**proximal.** In contrast to “distal” and in relation to a specified point. If a point is not specified, then in relation to the point of intersection of the midsagittal, midcoronal, and midtransverse planes of the body.	New definition added

Index

Page	Revised Text	Description
298	bent <u>appendage</u>	Underlined text changed from “segment”
299	diaphragmatic behavior	Spelling corrected
303	straight <u>appendage</u>	Underlined text changed from “segment”

FIGURES

<u>General Note</u>

Figures included in the following list replaced the originally published versions. Additionally, throughout Chapters 5 and 8, photographs were corrected to remove logos from clothing and examination tables.

Chapter 3

Figure 3-23

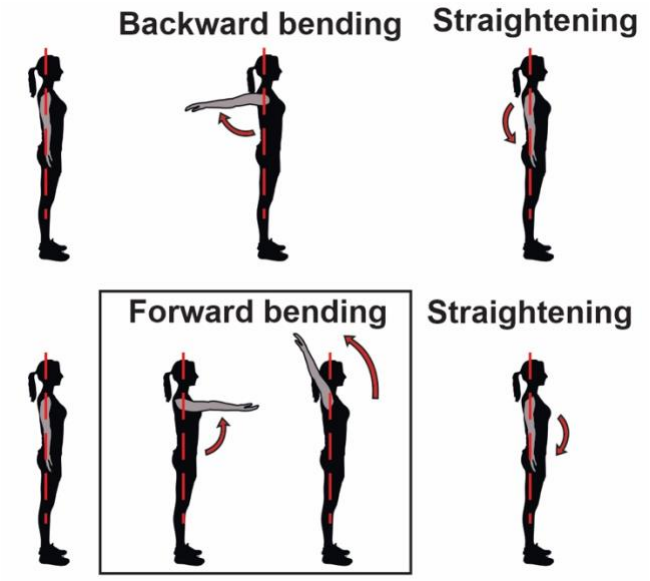


Figure 3-24

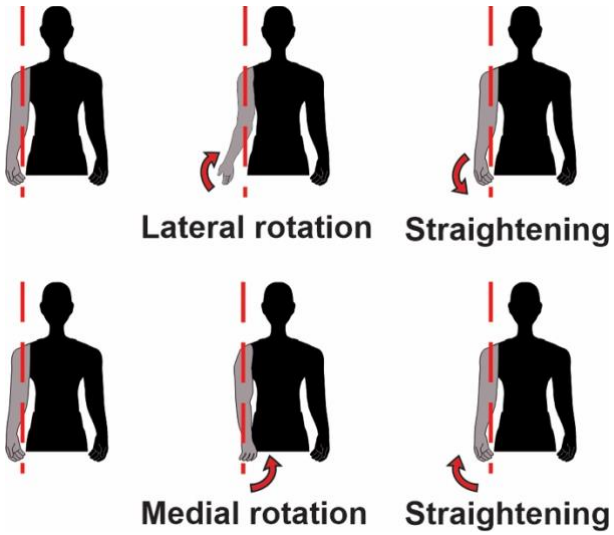


Figure 3-25

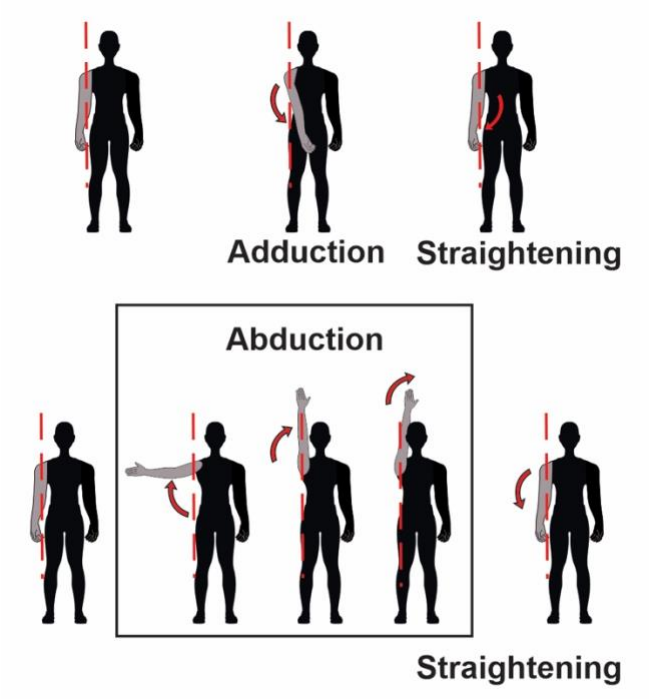


Figure 3-26

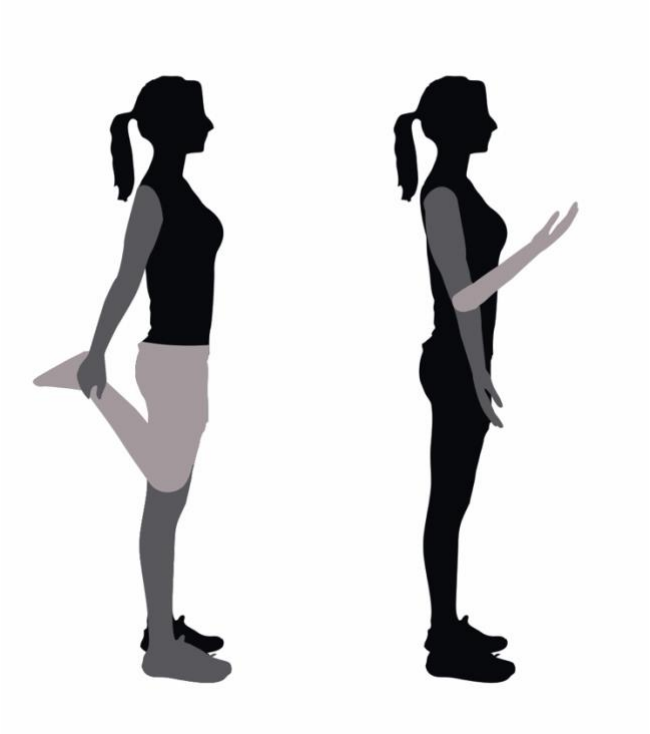


Figure 3-34

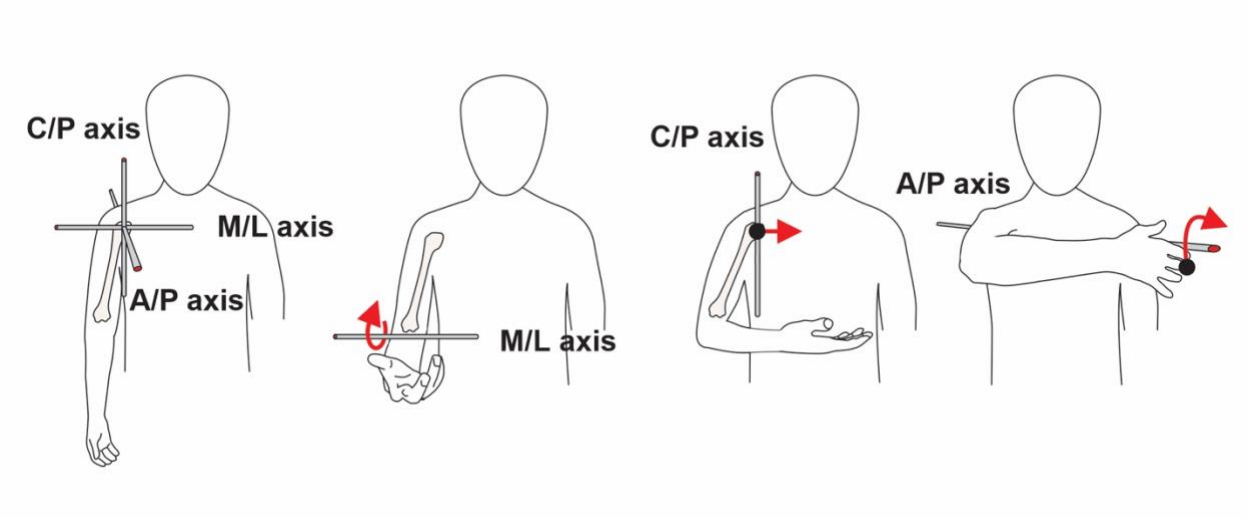
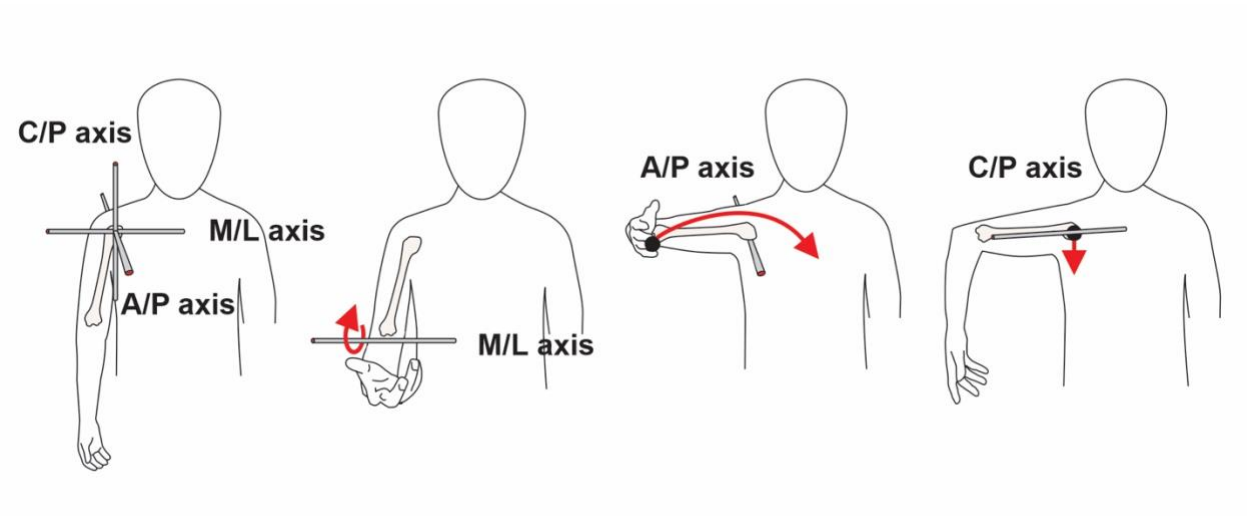


Figure 3-35



Chapter 4

Figure 4-3, last image

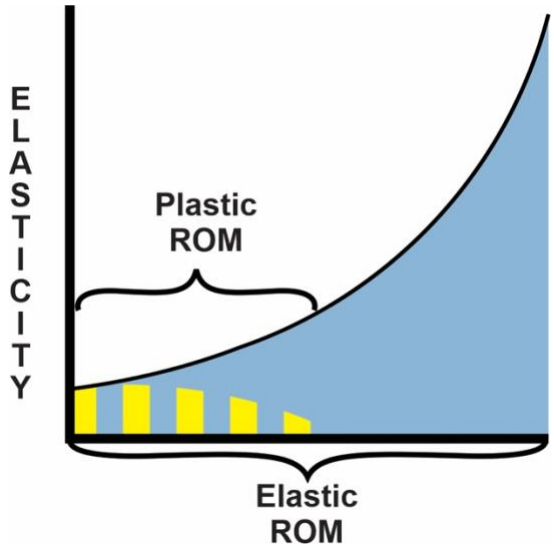


Figure 4-9

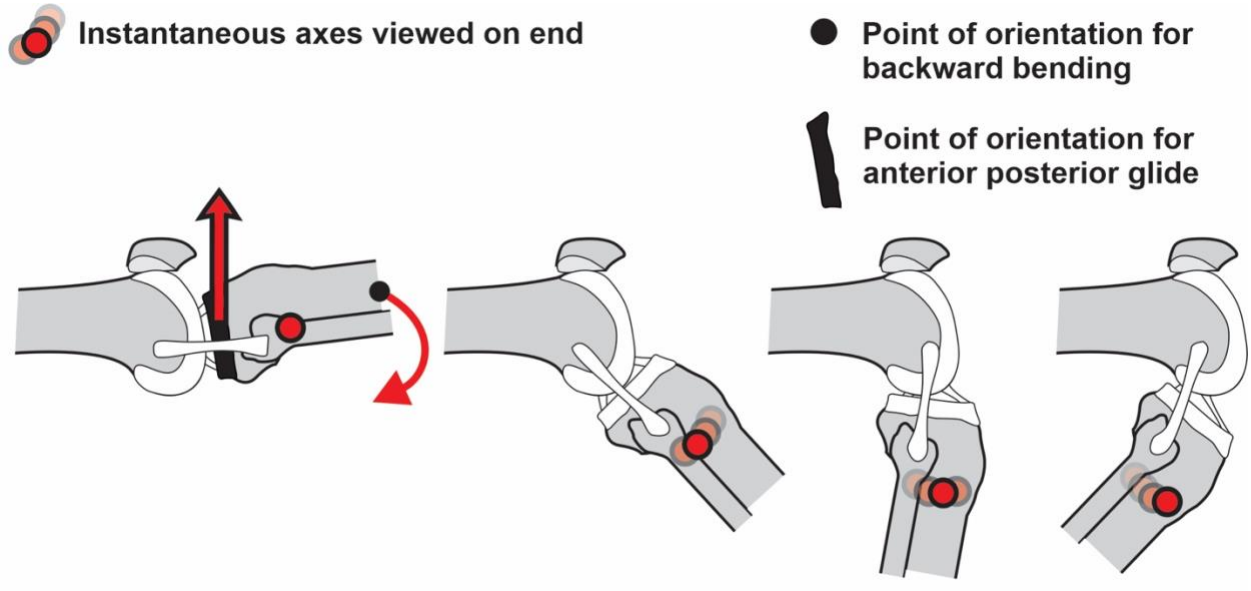


Figure 4-10

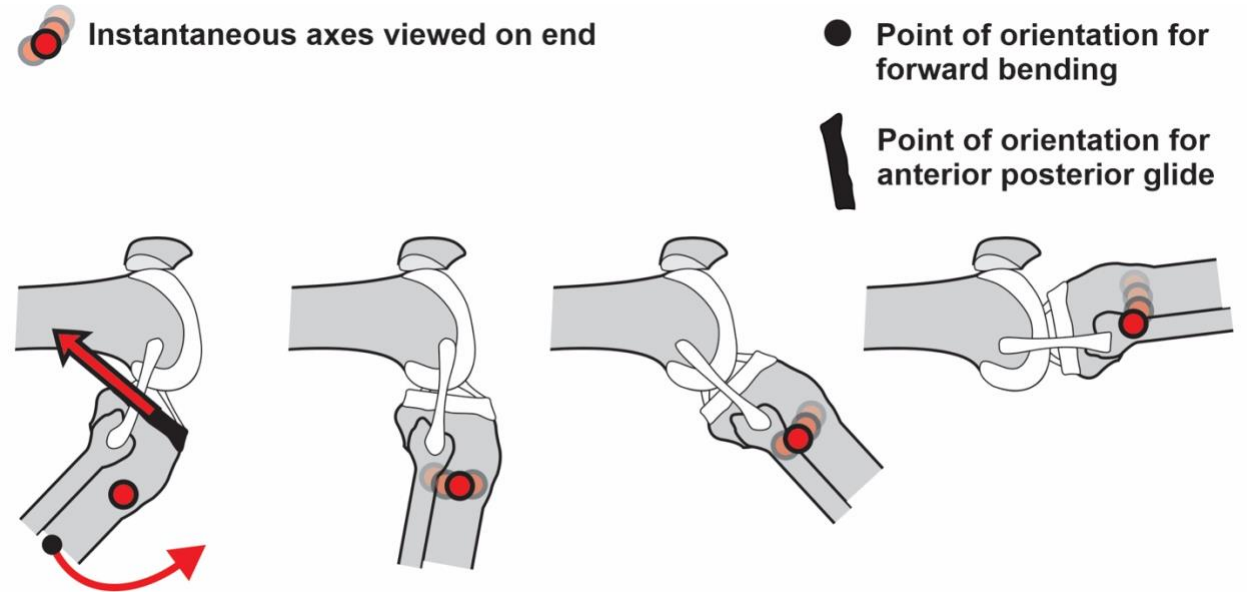


Figure 4-11

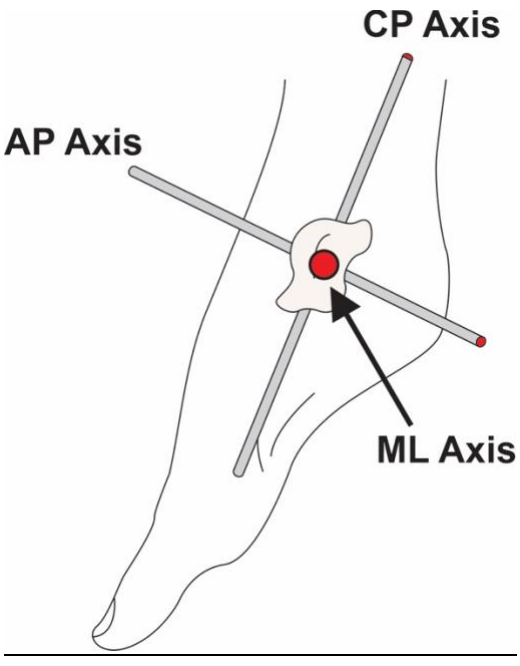


Figure 4-16

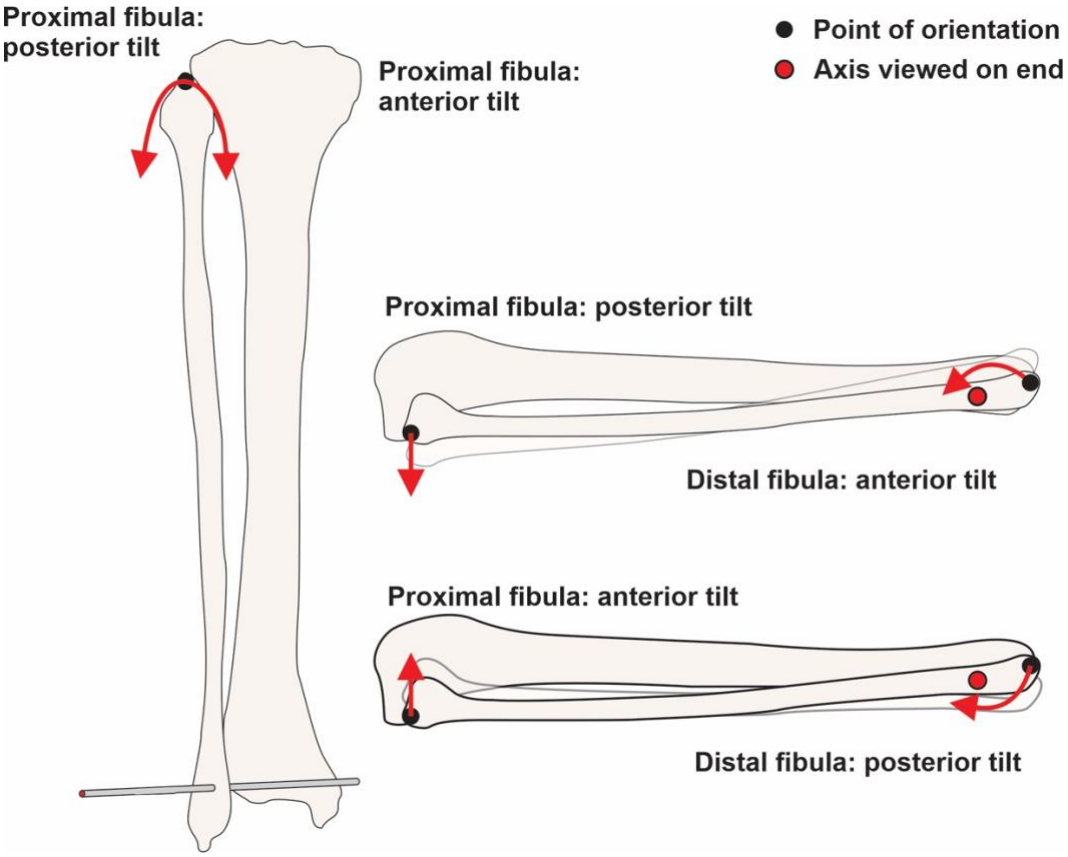

Proximal fibula: posterior tilt
Proximal fibula: anterior tilt
Point of orientation
Axis viewed on end
Proximal fibula: posterior tilt
Distal fibula: anterior tilt
Proximal fibula: anterior tilt
Distal fibula: posterior tilt

Figure 4-17

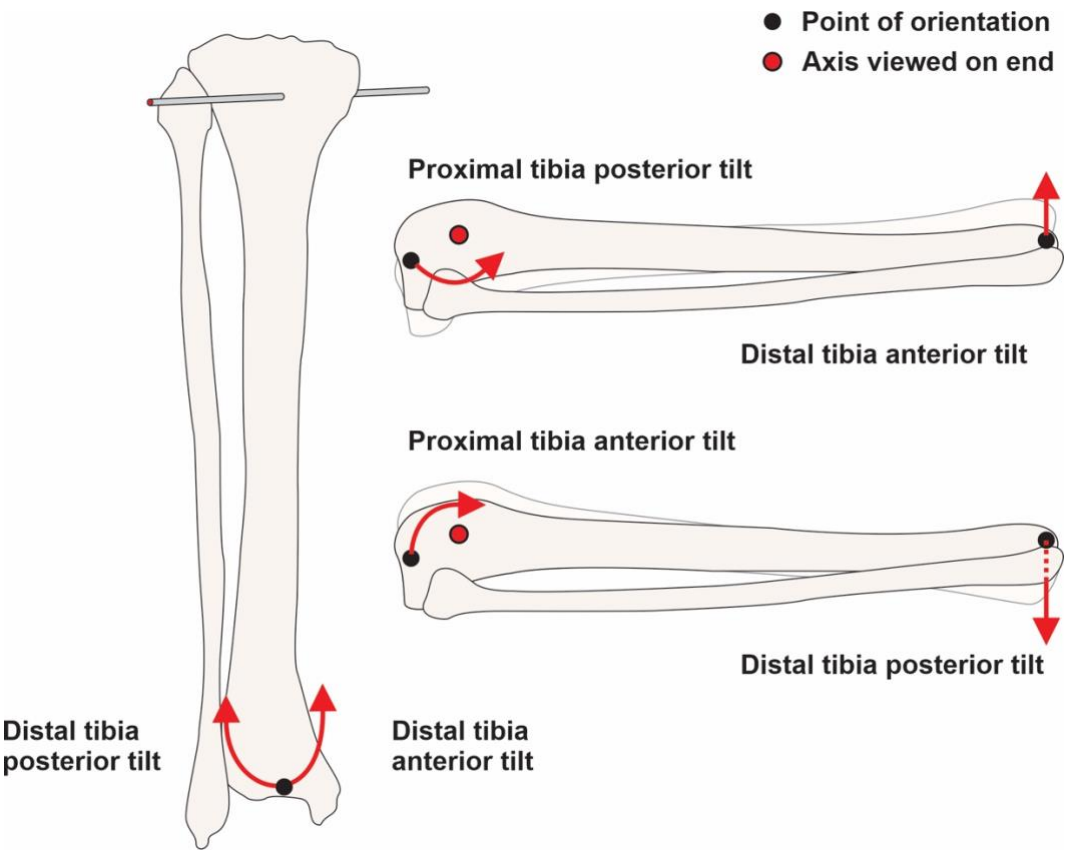


Figure 4-19

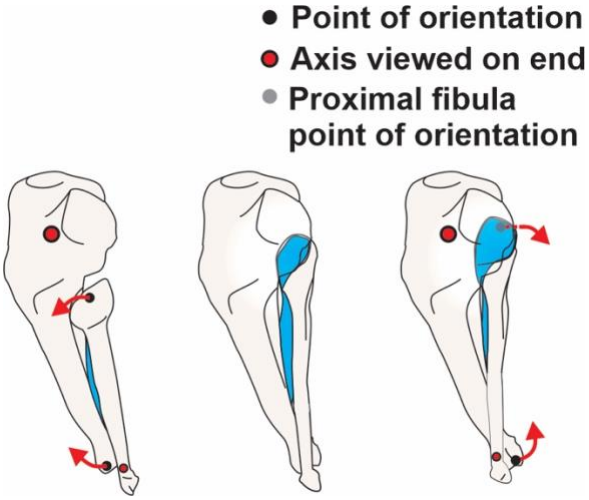


Figure 4-21

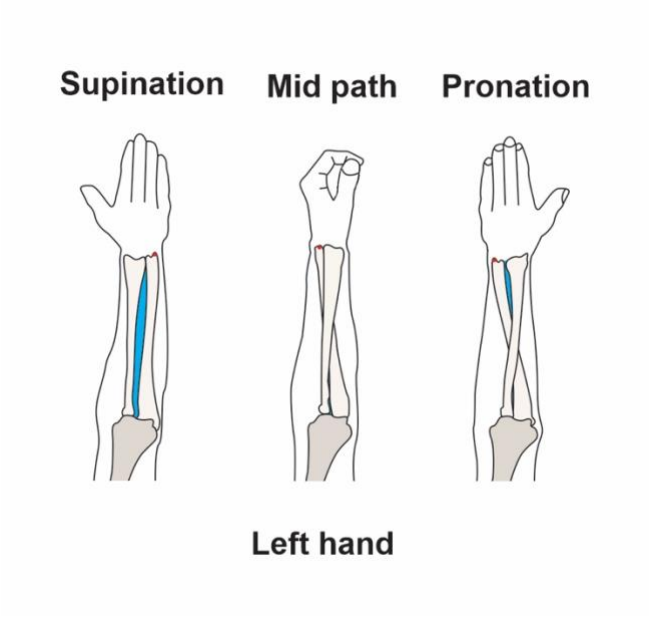


Figure 4-22

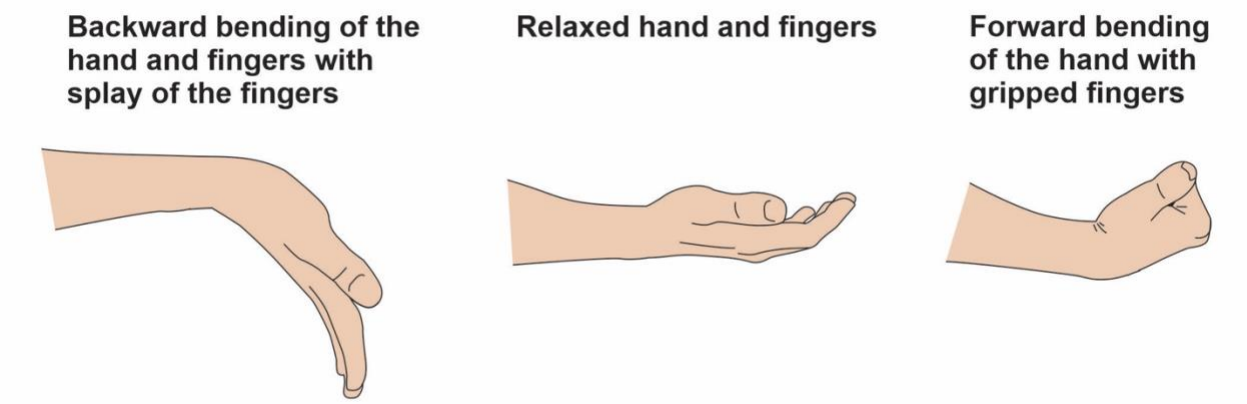


Figure 4-34

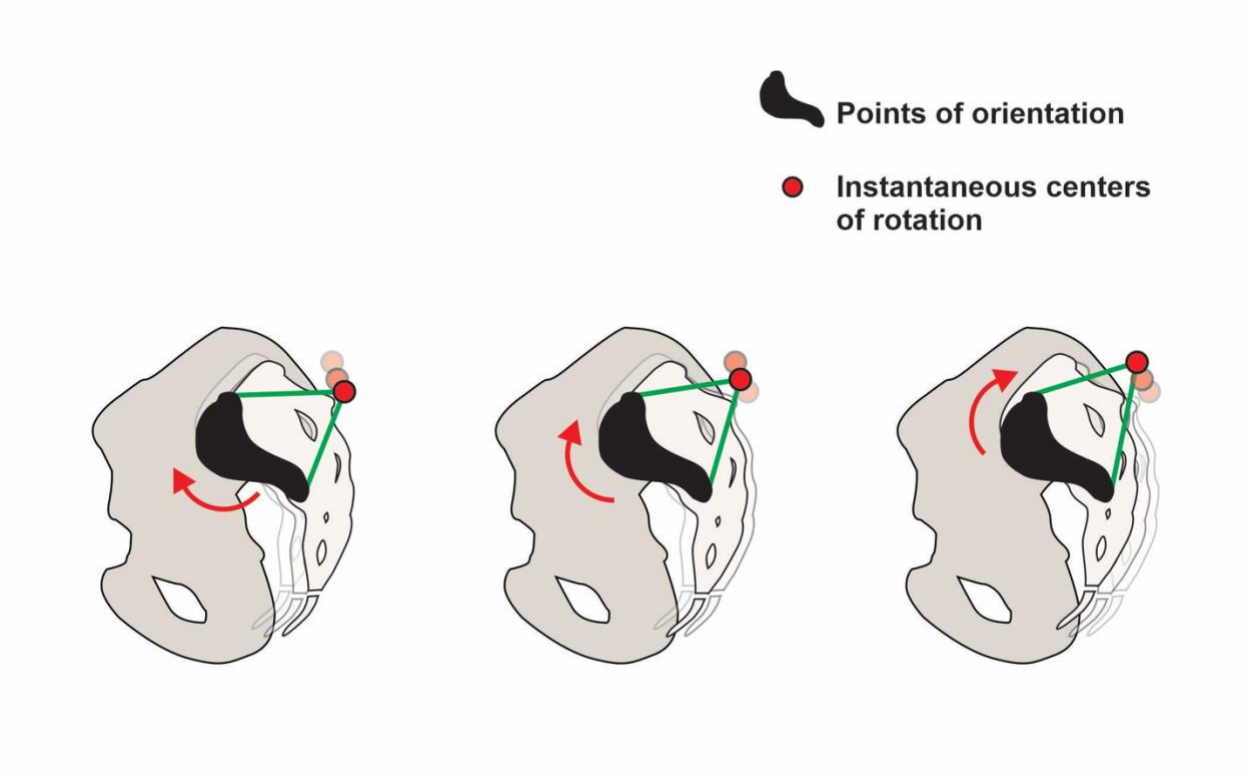
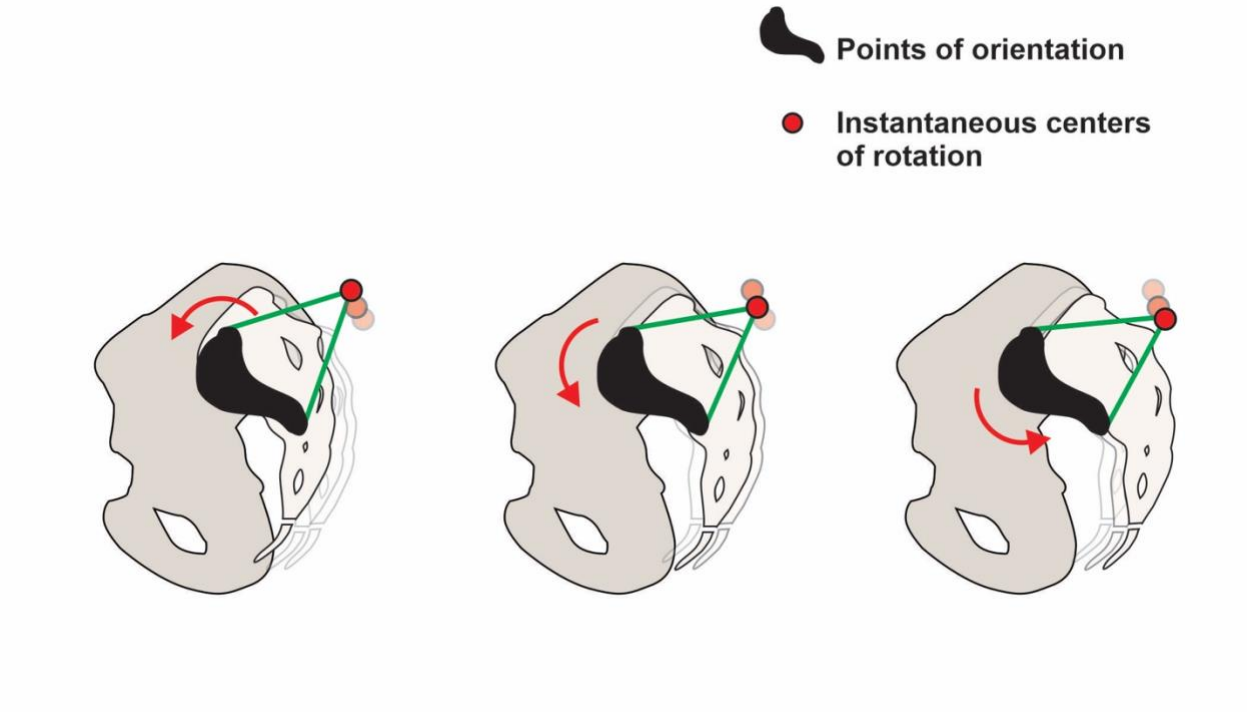
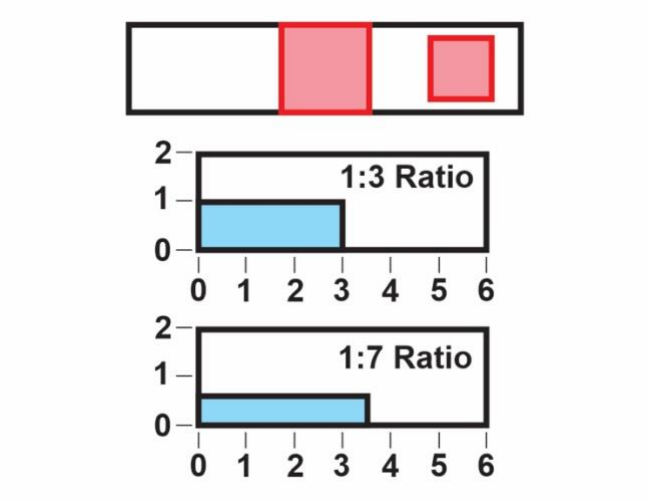


Figure 4-35



Chapter 6

Figure 6-9



Chapter 7

Figure 7-18

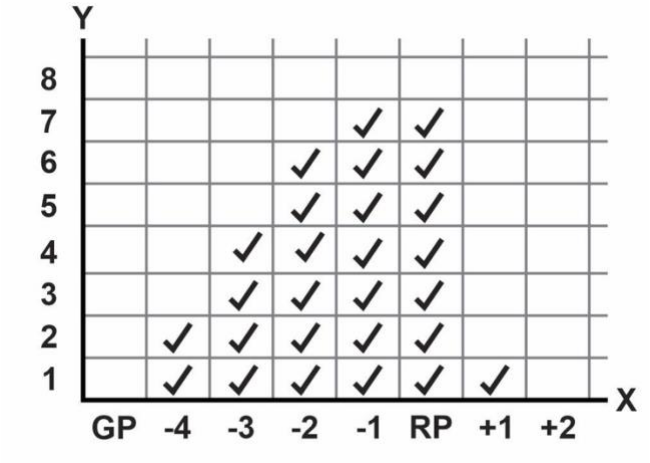


Figure 7-19

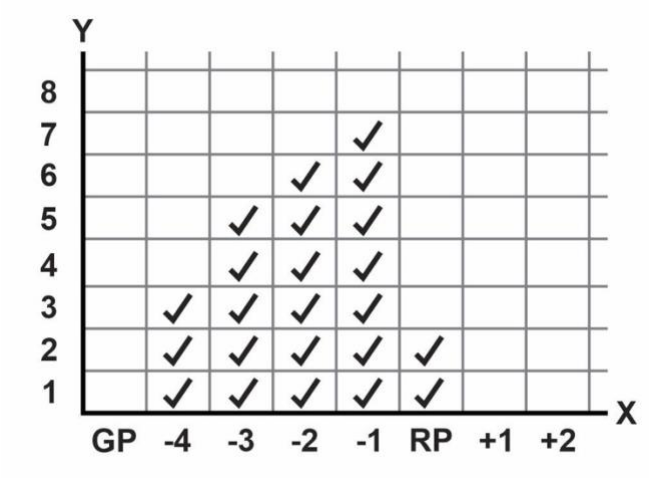


Figure 7-20

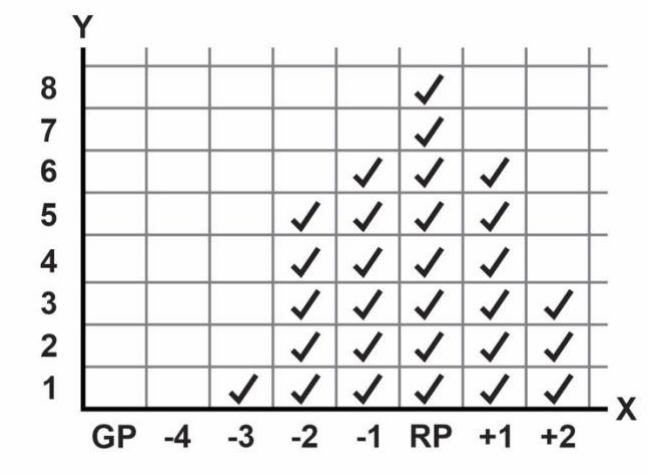
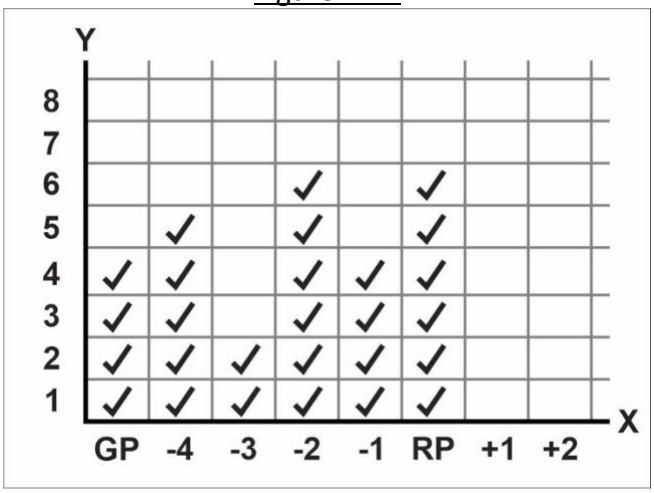


Figure 7-21



Chapter 8

Figure 8-52

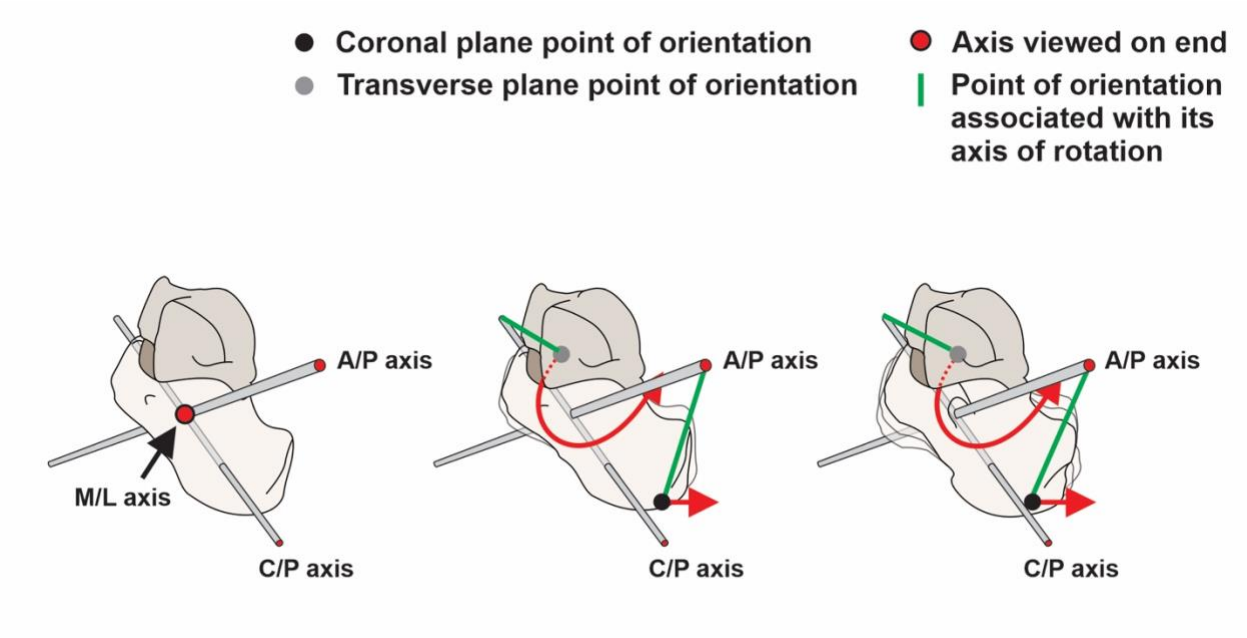


Figure 8-55

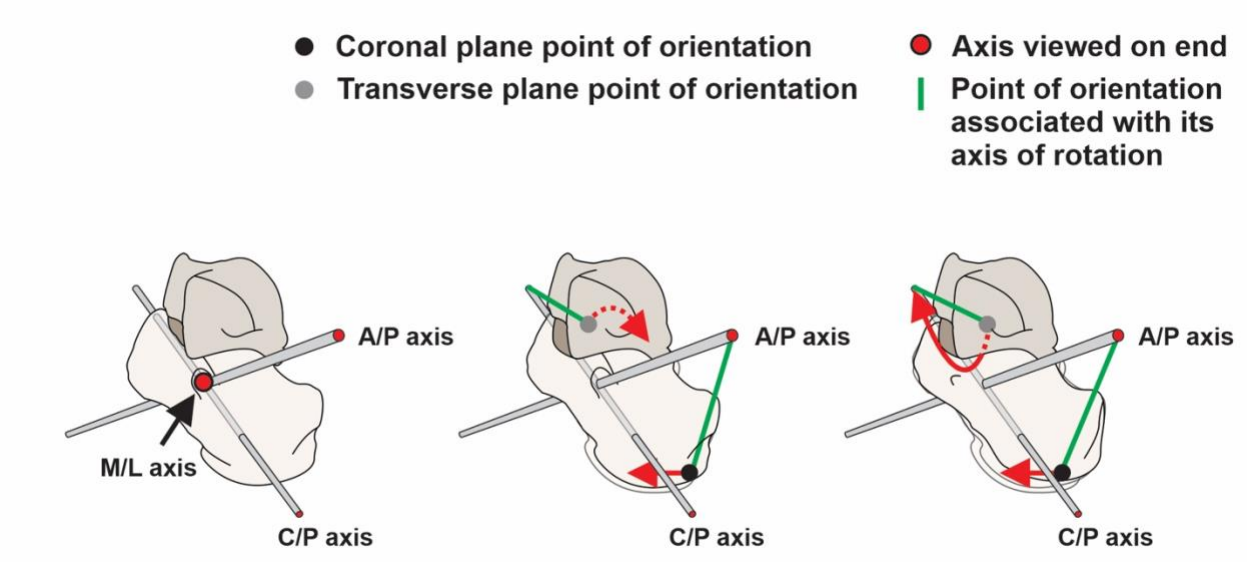


Figure 8-76

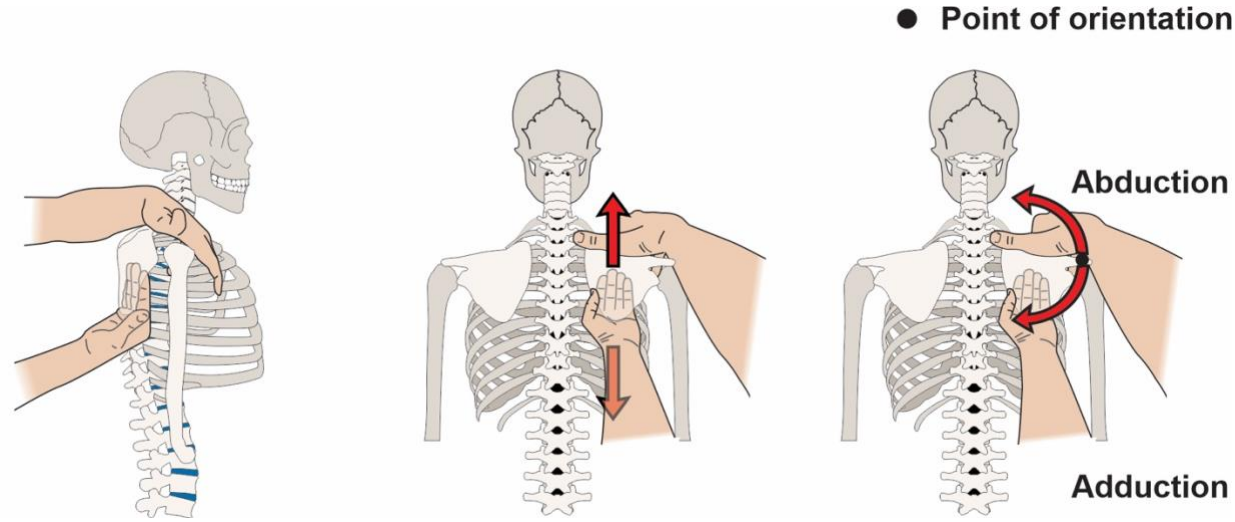


Figure 8-191

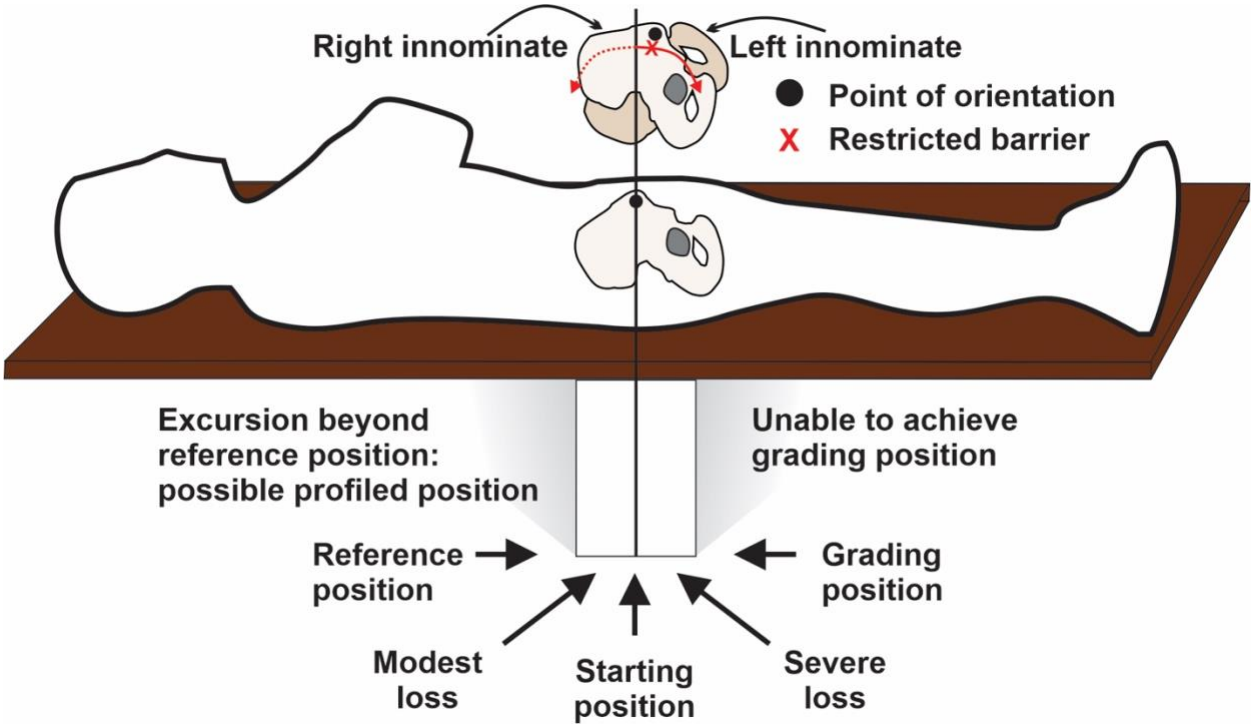
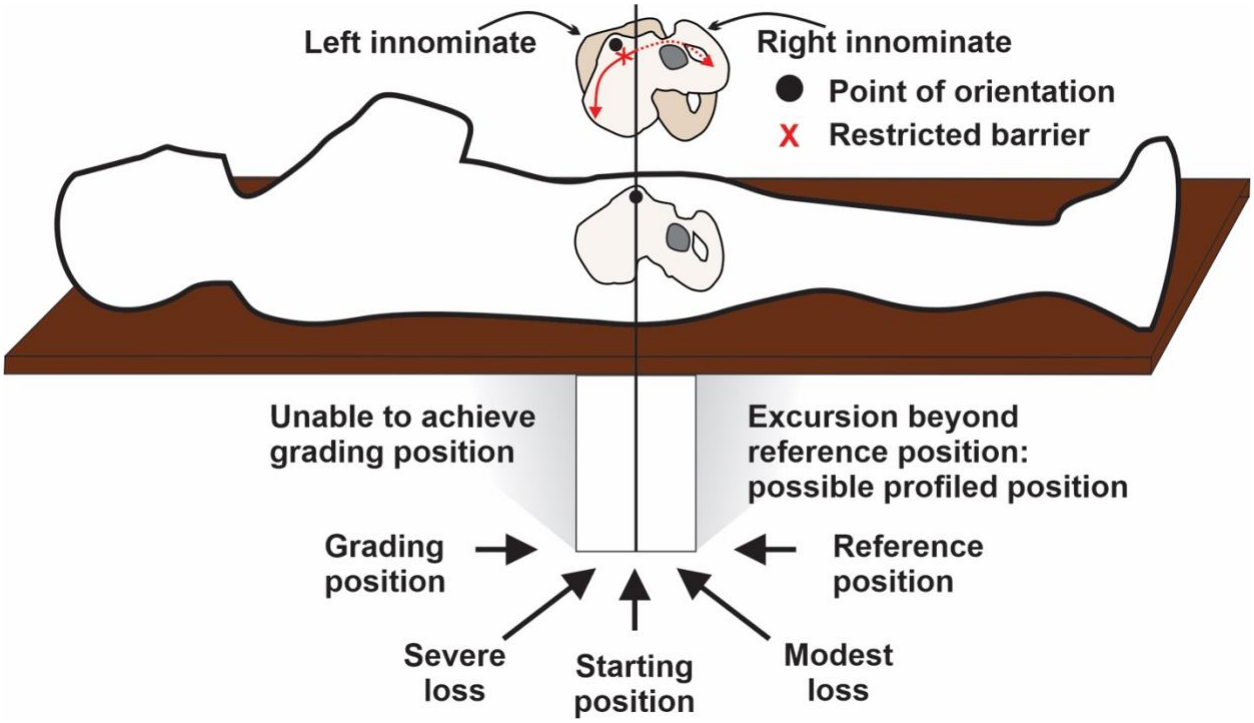


Figure 8-192


Left innominate
Right innominate
Point of orientation
X Restricted barrier
Unable to achieve grading position
Excursion beyond reference position: possible profiled position
Grading position
Reference position
Severe loss
Starting position
Modest loss

Chapter 9

Figure 9-7

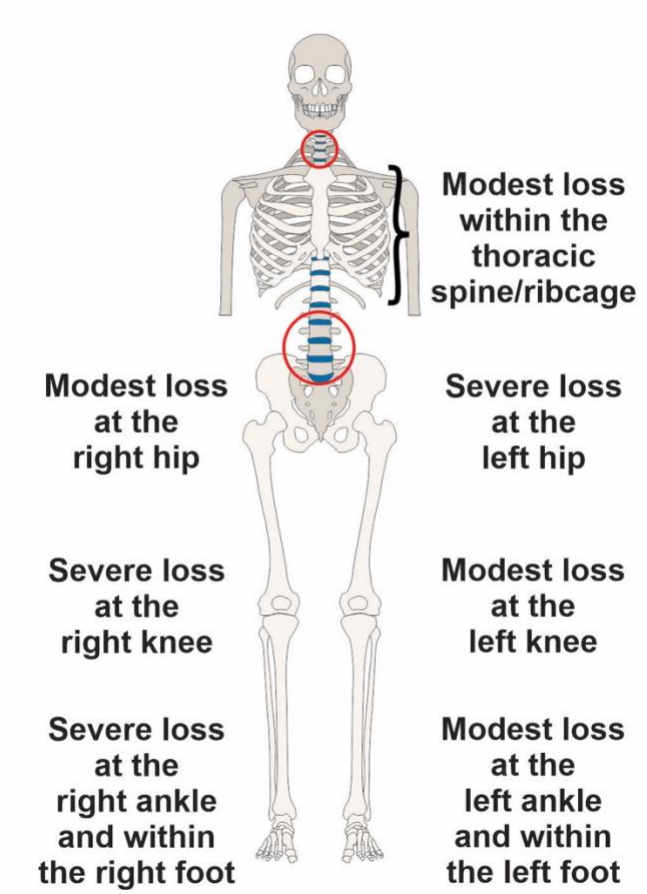


Figure 9-11