

1. When form and force closure are combined what is it known as?  
Self-bracing or self-locking mechanism
2. Why do muscle slings come into play?  
When a person lacks form closure they require more stability to assist in force closure.
3. How can we develop new or correct movements?  
By facilitating awareness of optimal postural alignment which decreases stresses to comprised body parts in both static & dynamic positions.
4. How many vertebrae are there in the cervical, thoracic, and lumbar spine?  
7, 12, 5
5. What are the degrees of the facets in the cervical, thoracic and lumbar spine?  
50, 45, 90
6. What movements take place in the sagittal, coronal, and transverse planes?  
Flexion/extension, abduction/adduction/lateral flexion, rotation& internal/external rotation
7. When the spine is in flexion is it harder or easier to rotate?  
Harder
8. What is Freyett's Theory of motion in the spine?  
When the slack of the spine is taken up in one direction of movement, there will be less available movement in other planes of movement.
9. What is eccentric deceleration?  
When a muscle slows down to allow for smooth spinal articulation in all planes.
10. As you are moving does your muscle lengthen or shorten?  
Lengthen
11. While moving if your muscle distribution is decreased how does that affect your joints?  
It leads to excessive joint movement
12. When your muscle is not stable describe what happens.  
There is a neurological excitation in the global muscles, which create a muscle guarding or splint effect.
13. If the global muscles take over due to an injury how does that affect the injury?  
It results in a lengthening of the lever which increases the force at the fulcrum which is usually where the injury is.
14. Is there more or less pressure on the lungs when you exhale?  
Less

15. When you inhale which direction does the diaphragm go?  
Downward
16. Which natural chemical regulates breathing?  
CO<sub>2</sub>
17. What type of breath moves upward and lateral?  
Bucket handle
18. Describe Pump Handle breathing.  
Ribs 2-6 move upward and forward
19. What is the force couple of muscles of breathing?  
Pelvic floor, TA, diaphragm, lumbar multifidus, serratus posterior superior and inferior
20. When you do an extension is it better to inhale or exhale?  
Inhale
21. When you exhale is the air pressure on the outside lower or higher?  
Lower
22. Exhalation is good for spine stabilization what are 4 other actions it is good for?  
1. Hip extension, 2. Shoulder flexion, 3. Scapular depression, 4. External rotation of the humerus.
23. What are 2 terms used when describing how your breath helps with axial elongation and core control?  
1. Hydraulic amplifier, 2. Cylinder of support
24. In spinal articulation which area of the body works synergistically?  
Pelvic floor, abdominal region and thoracic vertebrae
25. What are 5 strategic reasons you would not match the needs of an activity.  
1. Could have neck or lung dysfunction, 2. Pain inhibition from low back, 3. Excessive breathing, 4. Over-recruitment of muscles of forced expiration, 5. Disconnection between the ribs and the pelvis
26. Which 2 movements do the hydraulic amplifier effect?  
Spinal stability during hip flexion and shoulder extension
27. How are movement and breath related?  
One facilitates the other
28. The global muscles create what to help the stabilizing muscles?  
They become a natural stint; if you break your arm the elbow is put in a cast to keep it still.

29. Which principle places the body in its optimal position?  
Axial elongation and core control
30. This position gives the body to what?  
Have more degrees of freedom and efficiency of movement
31. What is another name for sway back?  
Lordosis
32. Describe lordosis?  
Excessive curve of the lower back
33. Kyphosis is also known as?  
Hunchback
34. Where does kyphosis usually occur?  
In the thoracic spine near the neck.
35. Name the first two cervical vertebrae?  
Atlas and axis
36. The external and internal oblique create which movements?  
Rotation and side bending
37. What 3 things does the TA do to the trunk?  
Makes the waist smaller, draws the fibers horizontal, draws the fibers inward
38. Which actions are necessary to absorb shock to the discs?  
Compression and decompression
39. Name the anatomical terms for the outer shell and jelly like center of the discs?  
Annulus and the nucleus pulpus
40. In spine extension how does the disc compress and push the nucleus?  
Anteriorly and posteriorly
41. What is a closed chain?  
A movement which the distal segment (extremity) is fixed (on a stable surface) while the proximal segment is moving.
42. Why does the closed chain increase your awareness of your body position in space?  
Because the mechanoreceptors give more feedback and therefore our proprioception is heightened.
43. Most extremity movements are in the open or closed chain?  
Open

44. In bow legs and knock knees what position or your feet in?  
Bow legs are supinated and knock knees are pronated.
45. What is the difference between open and closed movement tasks?  
Open tasks are unpredictable and closed are habitual with minimal variation in relatively fixed environments.
46. Define motor control?  
The ability to regulate or direct the mechanisms essential to movement.
47. Define declarative learning?  
Awareness, attention and reflection like pilates
48. Define Procedural learning?  
Movements that require repetition
49. The pelvis functions as the handle to the spine. Name 4 movements of the pelvis.  
Flexion, extension, rotation, and lateral flexion
50. Give 4 reasons why having the ribs and pelvis integrated is so important.  
Axial elongation, flexion, lateral flexion and rotation of spine
51. When your body is functioning optimally what 3 principles are at play?  
Core stability, spine articulation and integration of upper and lower extremities
52. As the base of support is increased or the center of gravity is lowered what happens to the movement?  
It decreases the challenge
53. Generally if your ROM is smaller or your center of gravity is lowered are we more or less stable?  
Less
54. What is lever length?  
The distance between the fulcrum of movement and the end of the lever.
55. If the lever is shorter is the movement harder or easier?  
Easier.
56. What is the force couple 4 muscles of axial elongation and core control?  
Diaphragm, TA, multifidus and pelvic floor
57. What did AndryVleeming call force couples?  
Inner unit

58. In AndryVleeming's concept of Force couple of muscular slings describe what they are?

They are larger muscle groups and their fascial connections that move our trunk and limbs to create everyday functional movements.

59. Why they play an important role in movement?

As the demand of an internal or external load is increased, so is the demand for more core control. These musculo-fascial systems provide stability and protection for the inner stabilizing muscles and joints.

60. What is contralateral?

Opposite

61. Name the parts of the POS?

Latissimusdorsi, contralateral gluteus maximus and the thoracolumbar fascia.

62. How do the POS contribute to force closure?

The muscle fibers are directly in line with each other and perpendicular to the SIJ. This gives external support and helps compress the SIJ.

63. Which movement does the POS support and why?

All three together stabilize the SIJ which is significant in load transference through the pelvic girdle during rotational activities like walking and golf.

64. Where does the AOS contribute to force closure?

Between the pubic symphysis and the SIJ

65. What are the AOS muscles?

External oblique, contralateral internal oblique, contralateral adductors.

66. What do these muscles create?

The muscle fibers create an abdominal binder compressing the entire pelvis.

67. What are the muscles of the DLS?

Erector spinae, sacrotuberous ligament and multifidus, biceps femoris, peroniuslongus, anterior tibialis

68. Why is the DLS known as the GREAT COMMUNICATOR?

The muscles are affected whenever the foot is on the ground. It uses the thoracolumbar fascia and erector spinae muscles to transmit kinetic energy above the pelvis, while using the biceps femorus to communicate between the pelvis and lower extremities.

69. What are the muscles of the LS?

Gluteus medius and minimus, contralateral adductors, contralateral quadratuslumborum.

70. What do these muscles provide?

Essential frontal plane stability

71. Although not directly involved with force closure of the SIJ, what is their function?

Pelvic girdle stability during standing and walking.

72. Which is the famous quote that describes the inner unit?

“As much as necessary and as little as possible.”

73. The quote, “As much as necessary, as little as possible” how does this pertain to core control?

Strength and load bearing

74. This quote also increases your performance. How?

By distributing movements throughout all the spinal segments

75. Which other term do we use that helps with core control?

Muscular slings.

76. What are the names of the 4 **muscle slings**?

1. AOS – anterior oblique system, 2. POS- posterior oblique system, 3. DLS – deep longitudinal system and LS – Lateral system

77. Muscle slings are also known as?

Force couples

78. The pelvis consists of the?

Sacrum and 2 iliums

79. How are they connected?

By the SI joint

80. What shape do they make?

The triangular base of the spine.

81. Name 3 reasons why the SI joint needs to be stabilized?

1. For the pelvis to function normally, 2. To act as shock absorbers between the lower limbs and the spine, 3. To act as a proprioceptive feedback mechanism for to coordinate movement between the trunk and lower limbs.

82. What terms are used to describe stability of the SI joint?

Form and force closure

83. Describe **form closure**?

The shape, structure and congruency of the SIJ, bones and associated ligaments providing passive stability, like Lego pieces fitting together.

84. What is **force closure**?

External forces exerted by muscle systems through their attachments into connective tissue to connect and stabilize the SIJ and hence the pelvic girdle.

85. Adequate force closure is vital for which 3 movements?

Walking, stairs and bending

86. What 3 terms make up **Punjabi's model of stability**?

Motor control, inert structures and contractile structures.

87. Who coined the phrase **Neutral zone**?

Punjabi' model for motor control

88. What is **motor control** in Panjabi's model?

Proper axial elongation and core control gives us the greatest strategic potential for successful movement so we always start in this position.

89. What is **axial elongation** according to Panjabi?

An optimal position for segmental movement of the spine.

90. What can axial elongation prevent?

Compressive and shear forces that may cause spinal pathology

91. What is **core control** in Panjabi's model?

When the inner unit muscles are engaged.

92. Muscles fit into which term?

Contractile structure

93. Define **stability**.

The appropriate amount of stiffness for the anticipated load.

94. This is also known as?

Core control neutral

95. A healthy spine requires a balance between stability and mobility, which terms of stability facilitate this?

Motor control and neural control.

96. In Panjabi's theory of stability the inert structures are made up of what?

Bones, ligaments, fascia, and discs

97. Define **neutral spine**.

Where every joint is in an optimal position to allow for equal distribution of force through the entire structure.

98. What are the **connective tissues**?

Ligaments and fascia

99. What is Panjabi's definition of **neutral zone**?

A measure of spinal laxity in the vicinity of the neutral position.

100. If the neutral zone is abnormal in size what can this lead to?

Pain and strain on the surrounding supportive tissues.

101. Muscular factors are essential in maintaining neutral zone. Which is the most important muscle?

Multifidus

102. What does the multifidus do?

Increases the stability of the motion segment and provides more than 2/3 of the stiffness in L4 & L5.

103. What is **faulty organization** in Panjabi's Model of Motor Control?

Inappropriate stiffness for the anticipated load.

104. What are 3 possibilities for faulty organization?

1. Genetic predisposition 2. Habitual movement patterns 3. Compensatory patterns

105. In Panjabi's model of motor control how does proprioception play a role?

Spinal stability with the lumbar tissues providing the feedback.

106. How does the Multifidus help with proprioception?

It has up to 6x more spindle fibers than its superficial counterparts and it is one of the deepest intersegmental muscles of the spine.

107. How does the TA contribute?

It gives increased intra-abdominal pressure (IAP) and also works at submaximal levels during low-level activity. The TA should fire in anticipation of movement.

108. How does the Pelvic floor contribute?

It should also fire with the TA but it does not have to.

109. When someone has a back injury what happens to the muscles?

The stabilizing muscles inhibit and the global muscles spasm.

110. What is that called?

Neurological excitation.

111. What is another definition of neurological excitation?

Over recruitment (guarding) of the global muscles and over anticipation of the load.

112. What is **neurological inhibition**?

Pain inhibition of intrinsic muscles and reciprocal inhibition caused by over recruitment of the antagonist or the inability to recruit local stabilizers, which stops you from being able to control segmental movement during spinal deceleration.

113. Describe excessive stiffness vs. excessive movement?

Movement always takes the path of least resistance and increases the degree of movement at the most flexible segment.

114. What are 3 breath specific exercises?

Seated pelvic floor, pelvic clock and 100's

115. What is a shu-point?

A point on each vertebra that corresponds to an energy system.

116. In the sagittal and coronal planes which 3 exercises best emphasize spinal articulation?

Bridging, mermaid and swan

117. To maximize ROM how should the spine be placed?

Neutral spine with axial elongation

118. Which vertebrae have the most amount of rotation?

Thoracic

119. How does one process learning a new motor skill?

1. Unconsciously incompetent, 2. Consciously incompetent, 3. Consciously competent, 4. Unconsciously competent

120. Define **force couples**?

When 2 forces equal in magnitude act in opposite direction to produce rotation about an axis.

121. Which principle is said to improve sight, hearing, feeling and touch?

Organization of head, neck and shoulders.

122. When all body parts work towards the central axis what does this give you?

Ideal alignment

123. Who said this?

Eric Franklin

124. When we move in an integrated manner which relationship develops strength and who said this?

Body and mind and Dawn Strom

125. A **facet** is made up of what 3 parts?

Spinous process, transverse process, and body disc.

126. What increases the compressive force on a disc?

Weight bearing

127. Name the 2 main muscles of **inspiration** and the 2 accessory muscles?

Diaphragm and external intercostal (deeper) and sternocleidomastoid and scalene

128. What are the 3 muscles of **expiration**?

Abdominals, internal intercostal and pelvic floor muscles.

129. What is **congruency**?

Maintaining optimal surface contact at the articulation between the bony surfaces of the joint.

130. Name 4 **neck movements**?

Flexion, extension, lateral flexion and rotation

131. What are faulty position of the head, neck and shoulders?

Hunch back and round shoulders

132. What is normal movement organization of the head, neck and shoulders?

To maintain glenohumeral joint providing enough stiffness for the anticipated load

133. What 3 things happen when you over recruit to execute a movement?

Increase energy expenditure, decrease endurance and decrease quality of movement

134. How does our famous quote "As much as necessary, as little as possible apply to head, neck and shoulders principle?

Ease of breath and oxygen exchange.

135. What effect does the diaphragm have on the ribcage?

It elevates the lower and upper ribs widening and deepening them.

136. What is the deepest abdominal muscle called

Transverse Abdominus (TA)

137. Which 2 muscles create the 'corset' effect?

Multifidus and transverse abdominus

138. Which 4 muscles flex the spine?

Rectus abdominus (RA), TA, internal obliques, external obliques

139. What is the primary muscle of the arm extensor and flexor?

Triceps and biceps

140. What connects muscle to bone?

Tendons

141. What connects bone to bone?

Ligaments

142. What is **superficial fascia**?

The loose connective tissue between the skin and the deep fascia

143. Define **Deep fascia**?

A sheet or band of fibrous connective tissue serving as an elastic sheath separating or binding together muscles insertions, origins, tendons, organs.

144. How does the **transverse plane** divide the body?

Top and bottom

145. Which plane divides the body into front and back?

Coronal or frontal plane

146. If I extend my shoulders which plane am I moving in and what action am I doing?

Sagittal and flexion

147. In the **sagittal plane** how is the body divided?

Right and left

148. What are the facet degrees of the cervical, thoracic and lumbar spine?

45, 60, 90

149. Define **proximal and distal**?

Near body – farther from the center of the body

150. Define **anterior and posterior**?

Front – back

151. Define **medial and lateral**.

Towards the midline – away from the midline

152. Define **superior rotation and inferior rotation**?

Upward - downward

153. Define **elevation and depression**?

Towards the superior – towards the inferior

154. Define **pronation and supination**?

Flattening of the arch – peeling the medial foot

155. What is a muscle **agonist**?  
The muscle that produces the movement
156. What is the muscle **antagonist**?  
Produces the opposite movement.
157. Define **synergetic**?  
Muscles that work together to produce the same movement
158. Define **concentric**?  
When the overall shortening of the muscle generates tension and contracts against resistance.
159. Define **eccentric**?  
And overall lengthening of the muscle as it develops tension and contracts to control the motion against resistance of an outside force.
160. Define **origin and insertion** of a muscle?  
Origin is the muscle site that is in some way fixed. The insertion moves as a result of muscle contraction.
161. Which part of the bone is the origin and the insertion attached to?  
Proximal and distal
162. Which vertebra has the greatest ROM?  
Cervical
163. The lumbar spine is used for what?  
Weight bearing
164. If one muscle contracts what does the opposite muscle do?  
Eccentrically lengthens
165. What position of the spine gives the most ROM?  
Neutral
166. What does not have a major effect on the successful performance of the roll up?  
Shoulder ROM
167. When muscle guarding occurs around the lower back, the superficial muscles are in a state of?  
Pain excitation
168. Name the 6 Polestar Principles?  
Breathing, axial elongation & core control, spinal articulation, organization of head, neck and shoulders, alignment and weight bearing of the extremities, movement integration

169. Name 2 reasons you would not be able to do the rollover?  
Spinal mobility and hamstring length
170. To perform swimming successfully which 2 fitness tests do you need to score well on?  
Prone shoulder flexion and superman
171. Name the 15 fitness screening exercise tests?  
Half squat, full squat, heel raise, goal post on the wall, long sit, seated hip adductor stretch, side lift, roll up, hundred, push up, prone shoulder flexion, superman, prone knee bend, z-sit, prone shoulder flexion
172. Name the 9 movement categories?  
Supine integration, supine abdominals, seated integrations, side lying integrations, prone integration, inverted, standing integration, full body integration, upper extremity and weight bearing integrations
173. Kneeling side kick falls into which 2 movement categories?  
Upper extremity and weight bearing and full body integration
174. Imagine your spine like a strand of pearls is what type of imagery?  
Indirect
175. Which exercise is the most challenging for spine flexion and core control?  
Control balance
176. Name 3 ways to progress an exercise?  
Increase the lever length, increase the base of support and slow down the ROM
177. Name 2 exercises that have the same orientation to gravity?  
Double leg kick, leg pull front
178. Sidebend is in which plane of motion?  
Coronal or frontal
179. Side kick series is in which plane of motion?  
All 3
180. How many vertebrae are in the cervical, thoracic and lumbar spine?  
7, 12, 5
181. Give an example of a direct imagery cue?  
Maintain equal weight on both sit bones
182. Squatting takes place in which plane of motion?  
Sagittal

183. What year and country was Joseph Pilates born in?  
1880 – Germany
184. What year did he die?  
1967
185. When did Joseph come to the USA?  
1923
186. What were his 3 principles?  
Whole body health, whole body commitment and breath
187. What did he say about our spine?  
It should be like a newborn
188. What did he say about spine flexibility  
If you are inflexible at 30 you are old and if you are flexible at 60 you are young
189. When Joseph first came to states which state and where did he stay?  
NYC and with the NYC ballet
190. Who was the first director of his studio?  
Romana Kryzanowski
191. Name 7 of Joseph's first students?  
Eve Gentry, Bruce King, Mary Bowen, Robert Fitzgerald, Carola Trier, Kathy Grant and Lolita San Miguel
192. Joseph studied a lot of different exercise regimens and had many different jobs name them?  
Skiing, body building, yoga, kung fu, gymnastics, diving, body building, boxing, self defense and circus performance.
193. What was the original name of his exercise routine?  
Contrology
194. What was Joseph's wife's name?  
Clara
195. What does the **superman** fitness test for?  
Spine and hip strength into flexibility
196. What do you have to watch for in the **Superman**?  
Inability to clear the full sternum, inability to clear more than half way between the greater trochanter and patella scapular elevation

197. If you could not perform the **Superman** well which movement category would be the most difficult?  
Prone integrations
198. How do you execute the **superman**?  
In a prone position with arms out to the sides, lift trunk and limbs off the floor.
199. What determines a 3 in **superman**?  
Sternum and upper thighs can lift off the floor and your scapulae does not elevate
200. What is the difference between scoring 1 and 2 in **superman**?  
1 – Nothing comes off the floor and 2- either sternum or thighs cannot come off the floor
201. How do you execute the **full squat**?  
Squat with the arms flexed to shoulder level in front of your body, ankles and knees are aligned with the hips and allow the heels to rise with a minor posterior tilt of the pelvis.
202. Which exercises will help improve the **full squat** and why?  
For control in knee flexion use side to side and for leg strength use scissors and leg pull
203. What would give someone a 1 and 2 in the **full squat**?  
1 – cannot go all the way down and needs support 2- can complete the motion but it is not smooth and the alignment is off
204. In the **full squat** what constitutes a 3?  
The ability to execute with a smooth motion down and up and maintain lower extremity alignment.
205. How do you execute the **long sit**?  
Sit with straight legs shoulder width apart in neutral spine.
206. What does the **long sit** test for and which exercises can we do to improve.  
For hamstring flexibility – spine stretch and for spine stability – 100's
207. What is the difference between a 2 and a 3 in the **Long sit**?  
3 – can maintain neutral spine, flex the trunk forward from the hips and keep the knees straight and the 2 – cannot flex the trunk forward.
208. Which disease is contraindicated for the **long sit**?  
Adverse neural tension like sciatica
209. What scores someone a 1 and a 2 in the **hundred**?  
1 – is unable to lift the legs and maintain spinal flexion and 2- maintains lumbar flexion but has a rectus bulge.

210. How do you improve the **hundred**?

For deep abdominal control – assisted roll up and for spine flexion – roll over

211. How do you execute the **hundred** position?

Lie supine with your arms at your side off the ground 3-6 in., lift your head, neck and shoulders then lift the legs 2 inches from the floor and hover.

212. In the **half squat** what determines a score of 2?

2- Cannot extend the spine with the scapular depressed for 30 seconds or can't flex the knees more than 45 degrees.

213. How do you execute the **half squat**?

Squat with the arms flexed to shoulder level. Keep the hips, knees, and ankles aligned. Extend the lumbar and thoracic spine with minimum trunk flexion forward.

214. Which exercises will improve your score in the **half squat** and why?

For leg strength – single and double leg stretch, for hip disassociation leg circles and for neutral spine bent knee fall out.

215. What does the **heel raise** test for?

Calf strength and balance

216. What do you need to watch for in the **heel raise**?

Lack of full range of ankle plantar flexion and the ability to maintain pressure through the 2<sup>nd</sup> toe.

217. What determines a 2 in the **heel raise**?

Someone that can execute the movement 5 times but needs to use a fingertip touch to balance.

218. What does **seated hip abduction** test?

Length of hip adductors, capsular restrictions and core stability.

219. How do you execute **seated hip abduction**?

Sit against the wall in neutral spine with hips in full abduction.

220. What degrees of hip abduction determines a 1, 2, & 3 in **seated hip abduction**?

1- Less than 45 degrees – no neutral spine, 2- 45 degree up to 65 degrees 3- more than 65 degrees

221. What can we do to improve **seated hip abduction** and why?

To lengthen adductors, side kick up and down, hip capsular constriction – leg circles and core stability – chest lift.

222. What does the **Z-sit** test for?

Internal and external rotation

223. What is the difference between a 1, 2, and 3 in the **Z-sit**?

3 – sit bones contact the floor within one inch, 2- sit bones within 2 inches and neutral spine, 1- cannot maintain sit bones within 2 inches of floor and uncomfortable or no neutral spine alignment

224. Give some exercises to improve the **Z-sit** and why?

Internal hip rotation – mermaid for external rotation – leg circles or seal

225. Which exercises will improve the **goal post on the wall**?

For postural alignment – standing roll down, for shoulder abduction – star, shoulder external rotation – book openings, spine control – rollup and scarecrow. Chest lifts and arm arcs are also helpful to improve this score.

226. How do you execute the **goal post on the wall**?

Stand with hips, shoulders and head against the wall. Feet are 6-8 inches from the wall.

Shoulders are abducted to 90 degrees and elbows are bent at 90 degrees. Slide the elbows up the wall maintaining contact of elbows and forearms.

227. What gives someone a 1, 2, or 3 in the **goal post on the wall**?

3-Can maintain neutral spine and slide arms up the wall until shoulders are fully abducted not losing contact with the head and forearms, 2- neutral spine but can only slide arms up 5 inches, 1- no neutral spine can't keep arms on the wall.

228. How do you execute the **roll up**?

Lying in supine arms over head, flex the trunk to full seated position and back down to starting position, articulating one vertebra at a time.

229. Give some exercises to improve the **roll up** and why?

For spine flexion – spine stretch, spine articulation – bridging, spine flexor strength – inverted

230. What scores a 1, 2, or 3 in the **roll up**?

1 – needs to modify, 2- can't fully articulate spine, 3- full articulation

231. What is the position for **prone shoulder flexion**?

Prone on the floor with arms overhead with abdominal muscles engaged.

232. What does the **prone shoulder flexion** test for?

Shoulder flexion strength and ROM in prone.

233. What are some good exercises to allow someone to improve score in **prone shoulder flexion**?  
Scarecrow and push ups
234. What do you have to watch for in **prone shoulder flexion**?  
Scapular elevation due to engaging upper trapezius muscle, hyperextension of cervical or lumbar spine.
235. In **prone shoulder flexion** we can use book openings, swimming, push ups and rocking what do these exercises improve?  
Book openings and swimming are for shoulder flexion, push ups for shoulder strength, and rocking for shoulder ROM in prone.
236. If you cannot hold your leg up in the **side lift** for 3 sec. but can do everything else in the side lift what is your score?  
2
237. What determines a 1 in the **side lift**?  
Can only lift hips but nothing else
238. Which exercises will improve the **side lift** and why?  
For trunk and shoulder girdle stability – quadruped for hip abductor strength – heel beats
239. What determines a 3 in the **side lift**?  
The ability to avoid a rectus abdominus bulge and maintain lumbar flexion.
240. How do you execute **side lift**?  
Lie on your side, propped on forearm with only one hand and foot contracting floor. Lift hips off floor, raise top leg and hold for 3 seconds and maintain supporting ankle dorsiflexed and in neutral spine.
241. What is the objective of **prone press up**?  
Tests distribution of spine extension between cervical, thoracic and lumbar spinal segments.
242. What would give someone a 2 on **prone press up**?  
The inability to maintain a 'C' curve throughout the spine or maintain abdominal engaged.
243. What do you have to watch out for in the **prone press up**?  
Hinging at the lumbar spine, hyperextension of cervical spine, rigidity of thoracic spine and flaring ribs.
244. How do you perform the **prone press up**?  
Lie prone on the floor, hands at the sides of the chest elbows pointing up and lift up to the pubis

245. What is a 1 in **prone press up**?

Cannot extend on the pubis and maintain long 'C' curve in the spine.

246. What exercises improve the **prone press up**?

To strengthen the extension between all the spinal segments use scarecrow and pre-swimming.

247. What improves the **push up** and why?

To strengthen pecs – leg pull, strengthen triceps – leg pull front, strengthen core – hundred, scapular stability – quadruped

248. What is a 3 score in the **push up**?

Neutral spine with upper extremity alignment

249. What is a 1 in **push up**?

Can't maintain neutral spine, can't lower body fully or needs modification

250. How do you execute the **push up**?

From plank maintain neutral spine and bend elbows towards feet to lower body within 2 inches of floor, wrist, elbows, shoulders in alignment and return to starting position

251. What do you have to watch for in the **push up**?

Loss of neutral spine in lumbar or cervical spine i.e. head or neck lowering prematurely and elbows and forearms aiming away from ribcage.

252. What gives someone a 2 in the **push up**?

Can execute neutral spine but arms abduct away from trunk.

253. What can you do to improve the score on **prone knee bend**?

Rocking and heel beats for hip flexor flexibility

254. How do you execute **prone knee bend**?

Lie on your belly and hold one foot with knees together and lift

255. What are the 2 things you need to maintain in **prone knee bend**?

Keep contact of ASIS on floor and no hip hiking (lateral spine flexion)

256. If you get a 2 on **prone knee bend** what are you unable to do?

Lift thigh off floor.

257. Define **direct cueing**.

Anatomical or biomechanical – the body part stays the body part

258. Give 2 examples of direct imaging.

Top of the head reaching to the ceiling, aim your knee cap over your 2<sup>nd</sup> toe

259. Define **indirect cueing**.  
Metaphorical – the body part becomes something else
260. Give 2 examples of indirect imaging.  
imagine your spine like a strand of pearls and place them on the ground one pearl at a time,  
smile across your forehead, face chest and ribcage
261. Give a couple of examples of space/location imagery.  
Inner: bath beads between the vertebrae, in to out: energy moving from the center of the body  
towards the limbs, out to in: sunlight warms the muscles of the body.
262. What are the 8 sensory cues?  
See, touch, hear, smell, taste, notice, feel
263. Give 5 other types of cueing ideas.  
Nature – tree limbs, animals-cat, food – cup of tea balances, weight-like a feather,  
connectedness- the energy of the others around
264. Name 3 types of movement facilitation techniques.  
Corrective positioning, guided resistance, guided touch.
265. What helps your clients acquire proper alignment and movement patterns?  
Postural corrections.
266. What is guided touch?  
A light touch on the bony landmarks to guide movement through space
267. For axial elongation what is a tactile cue?  
A light touch on the crown of the head.
268. How can you touch the client to help spinal articulation in flexion?  
Gently touch the spinous process asking them to move the bone through space in flexion.
269. What are two other ways to touch body to give direction of movement?  
Stroking or sweeping parts of the body
270. Define corrective positioning.  
Placing the hand to correct alignment of the structure in both static and dynamic postures
271. What is guided resistance?  
Uses resistive touch to facilitate an active contraction of the agonist muscle to move the body  
through space.
272. What does over pressure, hold, and relax do for the client?  
Stimulates the use of the proper muscles to learn the correct organization.

273. If the client presses into your hand while extending the legs how does this help?  
It maintains correct alignment of the legs.
274. What is a good assist for spinal rotation?  
After they have rotated as far as they can, have them push against your hand in the opposite direction, hold and relax and then with the available slack have them rotate more.
275. In leg circles how can resistance be used to facilitate trunk stability?  
Resist hip abduction to increase contralateral spine stability
276. How would you use touch to facilitate spine extension?  
Provide upward force on the sternum and downward force on the opposing spinous processes
277. Name 3 movement cues for head, neck and shoulders?  
1. Relax jaw, sternum and face when breathing, 2. Increase lateral width of the shoulders and thorax, 3- optimize the space between the ears and shoulders.
278. The cue to optimize the width between the ears and the shoulder does what?  
Gives optimal postural alignment
279. What is a good tactile upper body cue?  
Use your thumb to depress the spine of the scapula and your fingers to distract laterally the clavicle.
280. What is **osteoporosis**?  
Literally means porous bones. It is a skeletal disease by low bone mass and deterioration or demineralization of bone tissue. It affects the vertebrae, neck of the femur and the wrist bones.
281. What is **Acute Disc Herniation**?  
Disc bulges through a tear in the annulus
282. What is **stenosis**?  
Narrowing of the central spinal canal or the lateral inter-vertebral foramen or nerve root canals
283. What is **spondylolisthesis**?  
A defect in the laminae or vertebral arch or posterior projection of the vertebral body between the superior or inferior facets which causes anterior vertebral displacement. Most of the instability is in L5-S1 or L4-L5.
284. What is **facet joint syndrome**?  
Hypomobility of one facet joint causing secondary hypermobility in other segments with pain and pain referral.

285. What is **pelvic instability**?

Joints of the pelvis instable. Pregnancy can cause this due to the hormone relaxin.

286. What is **thoracic outlook syndrome**?

5 main entrapment locations in blood vessels or nerve fibers between the neck and the armpit

287. What is **diastasis recti**?

Common in pregnancy where the RA bulges and it can separate along the linea alba. Then you can have lumbar instability and worst case abdominal hernia.

288. If your client has **shoulder impingement** what 3 things should they be careful of?

1- Avoid overhead shoulder positions if there is pain, 2- no weight bearing although leg pull and leg pull front are 90 degrees therefore ok but check shoulder alignment 3- no end range loading of shoulder joint combined with abduction as this is the impingement position

289. What 4 things must we avoid in **carpel tunnel syndrome**?

1- Wrist flexion, 2- pressure to base of palm during flare ups, 3- forearm supination, 4- resistance training of upper body extremities.

290. **Hypertension** patients should avoid what 2 things?

All inverted postures and not to put the head below the heart if the breath is held

291. What 2 things should **glaucoma** patients avoid?

Inversions and aerobics

292. If you have **gastric reflux** what 3 things should you avoid?

All inversions, monitor supine positions, and do not eat at least 2 hours prior to exercise.

293. **Osteoarthritis** patients need to be very careful with 4 activities, name them?

1. High impact, 2. Low intensity but frequent, 3. Length of exercise should be shortened based upon pain level, 4. If joints flare up after exercise and the pain last for more than 2 hours, take 1-2 days' rest.

294. Which 5 contraindications cannot do the roll over?

1. Osteoporosis, 2. Acute disc herniation, 3. Mid to late stage pregnancy, 4. Hypertension, 5. Gastric reflux

295. What 4 things to people with **rheumatoid arthritis** patients need to avoid?

1. End range stretching to inflamed joints, 2. Heavy resistance, 3. Upper extremity weight bearing if wrists are swollen, 4. Exercising to extreme fatigue and exhaustion

296. What is **adverse neural tension**?

Trauma to the tissue around the nerves which can lead to scar tissue which then pins down the nerves.

297. What 4 things happen if you stretch the affected area?

1. Numbness, 2. Tingling, 3. Burning, 4. Headaches

298. What is a common adverse neural tension disease?

Sciatica

299. What 4 things should a sciatica patient avoid?

1. Long sit position, 2. Dorsiflex the foot, 3. Fully flexing the spine, 4. Combination of spine, hip, knee and foot flexion

300. Name 3 **neurological diseases**?

1. Parkinson's, 2. MS, 3. ALS

301. What are 3 things contraindicated for **neurological diseases**?

Fatigue, overheating and balancing exercises

302. If you have **osteoporosis** which 3 movements should you not do?

Flexion, lateral flexion and rotation

303. For **acute disc herniation** which 2 types of exercises are contraindicated?

Flexion and supine

304. When you are in the 2<sup>nd</sup> and 3<sup>rd</sup> trimester which exercise 3 types of exercises are contraindicated?

Flexion, long lever loading of spine and supine

305. If you have **stenosis** which 2 types of exercises should you avoid?

Extension and lateral flexion

306. With **spondylolisthesis** which group of exercises are contraindicated?

Extensions

307. What is contraindicated for **facet joint syndrome**?

Extensions or lateral flexion

308. What is contraindicated for **pelvic instability** (joint & pubic separation)?

Single leg weight bearing and asymmetrical leg movements.

309. If you have **osteitis pubis** which movements are contraindicated?

Single leg weight bearing, asymmetrical leg movements, bilateral adductor resistance if it aggravates the symptoms (adductor activation)

310. What 4 contraindications for **total hip replacement** patients?

Hip flexion above 90 degrees, hip adduction, internal rotation and no Z-sits.

311. In trochanteric bursitis how can you protect an inflamed bursa?

Use 2 mats to create a space for the bursa.

312. In thoracic outlook syndrome what is contraindicated?

Lateral upper extremity weight bearing exercise or excessive scapular depression



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