Post Seminar Quiz

1. John is now involved in a “work hardening” program, which he is literally simulating his job task as a grocery store cashier. This is considered:

a. Too much “work-like” stuff for John
b. A bottom-up approach to his rehab
c. A top-down approach to his rehab

2. When is the upper quadrant screen performed?

a. To rule out anything relative to cervical pathology.
b. To determine which anatomical region of the upper quarter is contributing to the patient’s symptoms and therefore needs greater attention.
c. Both A and B

3. Jane engages in seated work as a secretary for eight hours a day. Her work space is designed requiring her to place files into horizontal bins at shoulder level. Aside from possibly evaluating for a redesign of her work space, what other interventions would be beneficial for Jane?

a. Stretching
b. Postural education
c. Both A and B

4. Primary or idiopathic shoulder adhesive capsulitis is usually self-limiting, meaning the course is limited and the general prognosis of a resolution of symptoms is pretty good “even without therapy.”

a. True
b. False

5. A competitive baseball pitcher is diagnosed as having a supraspinatus impingement. All of the special tests relative to impingement are negative, ROM and strength is normal, yet the only time the pain can be reproduced is upon throwing with force. What other condition might one suspect?

a. Bicipital tendonitis
b. Labral tear/ lesion
c. Secondary frozen shoulder

6. The RENT test is a special test for rotator cuff tear.

a. True
b. False

7. After a rotator cuff operation, active or passive movement is not allowed for 4-6 weeks post-surgery.

a. True

b. False

8. The Gerber lift off test is a special test for noting the “function” of the subscapularis.
a. True
b. False

9. Even with a complete tear to the supraspinatus tendon, the patient will be able to adequately perform isolated abduction actively from approximately 0-160 degrees.
a. True
b. False

10. Relative to impingement, hypermobility or joint laxity would involve what as a treatment remediation program?
a. Lots of stretching
b. Lots of RTC and para-scapular strengthening
c. Seven weeks of immobility to tighten the joint

11. One specific test to help identify scapular instability contributing to impingement would be?
a. Lateral Scapular Slide Test
b. The Kibler
c. Neer’s Test
d. Hawkin’s Test

12. For the treatment of bicipital tendonitis, symptom reduction is key, which should be followed by “exercises” that involve what type of contractions of the bicep.
a. Concentric
b. Isometric
c. Eccentric

13. A SLAP lesion can occur from?
a. Falling on an outstretched hand “cramming” the head of the humerus into the Glenoid fossa.
b. Raising one’s arm up into forward flexion and elevation.
c. None of the above

14. Thoracic Outlet Syndrome can involve structures that are:
a. Neurological
b. Vascular
c. Both A and B

15. The Roos test can be used within a battery of special tests to identify what condition?
a. AC joint injury
b. Bankart lesion
c. Total shoulder replacement
d. TOS

16. A Bankart lesion is often associated with?
a. Throwing athletes
b. Line workers
c. Marathon runners
d. Physical and occupational therapist

17. Once the initial immobilization and PROM stage is completed with status-post RC repair following a full massive tear, it would be a good idea to initiate AAROM (i.e. cane "exercise" for "gentle" AROM), then graded AROM.
a. True
b. False

18. The initial priority with a status-post RC cuff surgery, once active motion is indicated:
a. Restore shoulder AROM
b. Restore shoulder strength
c. Both A and B

19. Part of the Upper Quadrant Screening involves Neural Tension. During this screen, what is the position of the shoulder, elbow, and wrist?
a. Shoulder flexed, elbow flexed, and wrist extended
b. Shoulder abducted (frontal plane), elbow and wrist in full and complete extension
c. Shoulder adducted, elbow extended, and wrist flexed
d. Full shoulder flexion with scapula stabilized

20. Given an Upper Quadrant Screen, one has obtained negative result for cervical testing, as well as dermatome and myotome testing. The joint scan is also negative regarding all aspects of the shoulder. At the elbow, a positive result (pain) is obtained when the joint is passively moved into full extension, flexion and rotation. At the medial epicondyle, a positive result was obtained, with a negative result at the lateral epicondyle. This may be indicative of what?

21. Relative to the Upper Quadrant Screen, cervical testing is positive for Spurling's maneuver; there is C6 myotome weakness and C6 dermatome paresthesia. What anatomical motion is definitely affected per the information above?
a. Wrist extension
b. Elbow flexion and Shoulder abduction
c. Elbow extension
d. Gross digital flexion and extension

22. What muscle is most responsible for anterior tilt of the scapula?

23. What muscle is most responsible for posterior tilt of the scapula?

24. One wishes to improve above shoulder reaching/AROM. What para-scapular muscle would one target?

25. In order to improve strength of the functional stabilizers and to assure proper pain free arm

use below shoulder level, what three para-scapular muscles would one target?

26. What two muscles within the para-scapular region are considered “hypo-responsive or hypo-dominant?” Which one is generally considered “hyper-responsive or hyper-dominant?”

27. What is one symptom management technique for bursitis associated with impingement syndrome? What is one symptom management technique for idiopathic frozen shoulder?

28. What two para-scapular muscles might one target if the patient was experiencing pain at shoulder level and above upon reaching?

29. Given a SLAP lesion and conservative treatment through therapy, what is the one precaution that one would employ during the treatment program?

30. If there were one single priority relative to conservative intervention with a SLAP lesion, what would that focus be? For a Bankart lesion, what would that focus be?

31. Based on research, what is the one muscle within the para-scapular region that would probably be the lowest priority regarding strengthening?

32. Subscapularis is an anterior translator of the humeral head? True or false? Explain your answer.

33. Describe the clinical test that would be employed to possibly pick up on the infraspinatus being problematic (i.e. lesion or tear).

34. Name one intervention that would fall under “evidence based practice” for long- head bicipital tendinitis.

35. Aside from palpation, what is one special test that may be employed to detect an AC joint grade II or III sprain?

36. When performing anterior capsule stretching in CVA or Adhesive Capsulitis – what 3 anatomical motions would one be working on?

37. What are the characteristics of referred pain?

38. What is one traditional strengthening exercise of the rotator cuff that should no longer be employed per muscle EMG studies?

39. Kibler’s Lateral Scapular Slide test: Pathology can be detected on the side that demonstrates the greater or the lesser measurement? If the scapula did rest laterally, what three muscles would one target?

40. Pain and/or compromised motion at shoulder level or above; scapular winging is also noted. What muscle would one target as a priority during treatment?

41. Given shoulder impingement syndrome, what is the safe or protected position of the shoulder when reaching at shoulder level and above?

42. What are the corresponding movements of the scapula when the shoulder is flexed within the sagittal plane above shoulder level?

43. What is the one anatomical motion of the shoulder noted in most all of the impingement tests?

44. It is best to use special tests with good sensitivity values but beyond that sensitivity values are only as good as the therapist performing the special test correctly.
a. True
b. False

45. Take a look at the scapula in an individual with stroke. It may rest in what position(s) causing an orientation problem with the head of the humerus and thus influencing HSP?

46. What function of the musculotendinous cuff that becomes deficient as the rotator cuff integrity becomes compromised leading to secondary capsulitis?

47. What is the ratio of ligamentous capsule v. musculotendinous cuff regarding tissue elongation?

48. The Hughston PRE's focus on what?
a. Anterior rotator cuff (subscapularis) and the serratus anterior
b. Upper trapezius, middle trapezius, lower trapezius and serratus anterior
c. Upper trapezius, middle trapezius, lower trapezius and levator scapulae
d. Posterior rotator cuff (supraspinatus, infraspinatus, teres minor) and the functional stabilizers

49. A clinician has done several open chain humeral and rotator cuff strengthening with a patient, yet obtaining AROM at shoulder level and above is a tedious and a seemingly hopeless goal. Before the clinician gives up, they should probably focus on what para-scapular muscle?

50. A clinician completes the scapular reposition test. After recreating the normal biomechanics of scapular elevation, upward rotation and protraction, the patient states that she still has pain at shoulder level and above in the sagittal plane of flexion. The clinician then recreates the same actions but adds a posterior tilt of the scapula. The patient comments, "That definitely helps and takes the pain away". What muscle will the clinician direct his focus on?

51. A clinician suspects a herniated disc based on the occupational profile of the patient, the cervical AROM assessment, a positive meningeal sign plus issues with sensation at the lateral proximal upper extremity; weakness is also detected with abduction greater than 90 degrees. From a clinical standpoint; what cervical level is suspect of a herniation or protrusion?

52. A clinician tests scaption for suspected impingement syndrome and the anatomical motion is

not only painful but weak. The clinician then asks the patient to "pinch your shoulder blades together" as he retests scaption with a MMT once again. Although still weak, scaption is now stronger. What might he want to do at this point?
a. Perform a more in depth assessment of the functional stabilizers
b. Test serratus anterior
c. Test lower trapezius
d. The clinician tells the patient he is too confused and that he has to go home and rest

53. Name one of two special tests that will test the sufficiency or insufficiency of the subscapularis. Based on the special test noted, would it be most valid with idiopathic/primary adhesive capsulitis or a lesion of the subscapularis?

54. A patient states that the mechanism of injury (MOI) relative to his "shoulder pain" was falling from a bicycle, ultimately striking his shoulder on the pavement. He has palpable tenderness across the AC joint and a "bump" that appears to be more prevalent compared to the opposing AC joint. This is formally called a Step Off Sign and it is indicative of a sprain of what grade?
a. Grade 1
b. Grade 2
c. Grade 4
d. Grade 5

55. A clinician is tasked a consultant to give his input relative to a high school softball pitcher who is experiencing long head bicipital tendinitis. The young athlete will not stop participating in pitching or her favorite sport of softball despite the pain she is experiencing. Her athletic trainer is kinesio-taping her shoulder strategically and performing an ice massage as indicated. What is the one additional singular intervention that he should suggest she do?

56. A patient is referred to a clinician for "evaluation and treatment, healed Colles fracture". Upon speaking with the clinician during her occupational profile, she stated "I busted my wrist as I tried to protect myself upon falling to the ground." She also notes that since that MOI, she has had pain and clicking, popping and at times "a catch" in my shoulder. The clinician should suspect what tissue is damaged? Name two special tests that he should perform on the patient.

57. A patient has suspected impingement syndrome. After a clinician's evaluation he interpreted the findings and decided that she has limitations in horizontal adduction, internal rotation and maybe flexion of the shoulder. What should be suspected as the reason for the sub-acromial overcrowding?

58. A patient has suspected impingement syndrome. He complains of very annoying "dull achy pain" in the lateral proximal upper extremity. As FROM is tested, a "catching" sign is noted and painful feeling with abduction in the frontal plane. What is suspected as the cause of the sub-acromial overcrowding?

59. A patient works on an automobile assembly line of which there is a lot of arm use below shoulder level. After each day for the past several months, he has complained of shoulder

fatigue, generalized pain and discomfort unilaterally and even bilaterally. What collective group of muscles might a clinician want to direct his attention to relative to strengthening and endurance retraining? Name the muscles.

60. A patient with idiopathic frozen shoulder, in the "frozen stage." A clinician wishes to stretch the subscapularis utilizing the "subscapularis stretch". This is effective yet the clinician is thinking he may have more success using the principles of reciprocal inhibition/contract-relax. Given the transverse plane, one 'fires' the antagonist external rotators and then one passively stretches the GH joint in what anatomical motion?

61. In an attempt to prevent hemiplegic shoulder pain (HSP), a clinician will focus on proper passive scapular mobilization, proper passive scapula-humeral mobilization and passive attempts to keep the anterior capsule nice and "supple". What are the 3 anatomical motions that the clinician will address relative to maintaining the "suppleness" of the anterior capsule?

62. The "plane of the scapula" is used with internal and external rotation strengthening to decrease/reduce the tensile forces placed upon the rotator cuff tendon pathway.
a. True
b. False

63. The plane of the scapula is slight forward flexion and about how many degrees of abduction in the frontal plane?

64. A patient has active and passive limitations in abduction (frontal plane). The clinician therefore suspects an inferior glenohumeral ligamentous capsular restriction. What is one stretching intervention that the clinician would have the patient independently do over time to try and elongate the inferior capsule?

65. If an individual has a shoulder problem, if nothing else, always assume they have some faulty scapular biomechanics or scapular dyskinesia. What are two precautions that one would employ during self-ROM of flexion and scaption if someone was going to employ the traditional "pulleys" as an occupational form? Select the one best answer.
a. Maintain external rotation and minimize reps above shoulder level
b. Maintain internal rotation and minimize reps above shoulder level
c. Keep the shoulder in anatomical neutral
d. None of the above

66. As a general statement, the upper trapezius is so instrumental to the para-scapular muscles that one should always prioritize treatment in strengthening this muscle tissue.
a. True
b. False

Answers and Explanations

1. C; A top-down approach to his rehab
Explanation: The Top-Down Approach is known as the occupational or functional based approach. This approach focuses on client's participation in his or her occupations involving Activities of Daily Living, Instrumental Activities of Daily Living and so on (Trombly, 1993).

2. C; Both A and B
Explanation: The Upper Quarter/Quadrant Screen has three purposes. The first is to determine which anatomical region of the upper quarter is contributing to the patient's symptoms and therefore needs to be examined in greater detail. The second is to rule out gross sensory or neurologic deficits (Novak & Mackinnon, 2005). The third is to rule in or rule out if the upper quadrant pathology could be originating from the upper thoracic or cervical region.

3. C; Both A and B
Explanation: A Symptom management strategy involves two major parts, postural management, education and stretching. With this information noted, postural education and implementation of stretching would be beneficial for Jane (Wahlström, 2005).

4. A; True
Explanation: Primary shoulder adhesive capsulitis is a self-limiting condition, meaning although treatment options are available, prognosis can be positive even without seeking treatment options (Wolf & Green, 2002).

5. B; Labral tear/ lesion
Explanation: Due to forceful dynamic angle change of the shoulder, throwing athletes are common to tear the labrum, resulting in intense pain. Severe accelerating forward forces of the arm add a strike or hit to the shoulder is a different thing (Burkhart, Morgan, Kibler, 2003). The thing here is that it has to do with the distracting forces on the glenohumeral joint.

6. A; True
Explanation: True. The Rent Test is a special test used for identifying a rotator cuff tear (Wolf & Agrwal, 2005). It is only positive, and not always the case, when one experiences a massive tear of supraspinatus.

7. B; False
Explanation: Post rotator cuff operation, active movement is not allowed for 4-6 weeks after a massive tear with surgical repair. Per physician, passive skilled movement is acceptable (Athwal, 2007).

8. B; True
Explanation: The Gerber Lift Off Test is used with manual muscle testing to detect the sufficiency of the subscapularis function. This is especially sensitive when attempting to clinically detect a lesion of subscapularis. It is not especially valid for testing insufficiency of the subscapularis relative to idiopathic shoulder adhesive capsulitis. The subscapularis is an internal rotator, thus the manual muscle test is used during internal rotation of the patient (Greis, Kuhn, Schultheis, Hintermeister, & Hawkins, 1996).

9. B; False
Explanation: Considering the supraspinatus initiates abduction in the frontal plane to about 70 degrees, if there is a complete tear, the patient will be unable to abduct their shoulder without substitution.

10. B; Lots of RTC and para-scapular strengthening
Explanation: Many interventions focus on range of motion restoration followed by rotator cuff and para-scapular strengthening (Athwal, 2007). In this case, this can be accomplished as noted to focus on improving the dynamic stability of the humeral head as it communicates with the glenoid fossa of the lateral scapula.

11. A; Lateral Scapular Slide Test
Explanation: This test focuses mainly on scapular instability and muscle strength by measuring asymmetry (Shadmehr, Bagheri, Ansari, & Sarafraz, 2008). Kibler noted that a greater measurement on the affected side typically denotes functional stabilizer passive and/or active insufficiency; the scapula sits more laterally when compared to the non-affected scapula (Kibler, 1998).

12. C; Eccentric
Explanation: Symptom reduction for bicipital tendonitis should be followed by tolerating eccentric contraction of the biceps. The primary goal for treatment of bicipital tendonitis is tissue elasticity in which one is to prevent adhesions and scarring and decrease inflammation (Wilson & Best, 2005). The end result would be tolerating the most advanced role of muscle performance, an eccentric contraction without discomfort.

13. A; Falling on an outstretched hand where the head of the humerus is “crammed” into the glenoid fossa.
Explanation: The mechanism of injury (MOI), for a Slap Lesion is superior compression or inferior traction. This often occurs when falling on an outstretched hand, direct blows to the shoulder, or with overhead activities (Brockmeyer, Tompkins, Kohn, & Lorbach, 2016).

14. C; Both A and B
Explanation: Thoracic Outlet Syndrome compresses a neurological structure and vascular structures. The first structure that may be compressed is the brachial plexus, which is neurological. The second set of structures that may be compressed are the subclavian vessels (venous & arterially) which are vascular (Altus, 2015).

15. D; TOS
Explanation: The five special tests to identify Thoracic Outlet Syndrome are The Adson Test, The Halstead Maneuver, The Costal-Clavicular syndrome testing, The Hyperabduction Test, and The Roos Test (Altug, 2015; Özcakar, Inanici, Kaymak, Abali, Cetin, & Hascelik, 2005).

16. A; throwing athletes
Explanation: Forceful micro-trauma and overuse involving distraction forces to the shoulder, such as motions of baseball pitchers, are common causes of Bankart lesions (Aboalata,

Plath, Seppel, Juretzko, Vogt, & Imhoff, 2017).

17. A; True
Explanation: Four to six weeks post rotator cuff repair following massive tear, when the PROM stage is completed, AAROM is the safest next step (i.e. cane AROM exercises, pulleys) and progression should be made as tolerated. Restoring AROM at this stage is a priority (Athwal, 2007).

18. A; Restore shoulder AROM
Explanation: Four to six weeks post rotator cuff repair following massive tear, when PROM is completed, progress to AAROM. Range of motion is the main priority to regain functional mobility of the joint. Strengthening is the focus after ROM is obtained (Athwal, 2007).

19. B; Shoulder abducted (frontal plane), elbow and wrist in full and complete extension
Explanation: A simple screen for the upper quarter is the combined active motions of full shoulder abduction in the frontal plane also with elbow, wrist, and finger extension. A positive test occurs if any form of paresthesia (numbness and/or tingling) occurs, however, one should terminate the motion once this symptomatology becomes present.

20. Medial elbow epicondylitis
Explanation: When a client is unable to achieve pain-free passive full range of motion, this is one clinical marker of an issue. Another clinical marker is that there was a positive sign relative to palpation at the medial epicondyle rather than the lateral epicondyle, which was negative. This showed there was an issue on the medial epicondyle. These findings suggest that the tissues attaching to the medial epicondyle of the humerus may exhibit some degree of pathology.

21. A; Wrist extension
Explanation: The wrist extensors are innervated by C6.

22. Pectoralis minor
Explanation: As individual's age, it is not uncommon to note an imbalance, tightness of the pectoralis minor and hypo-responsiveness of the lower trapezius which, when observed posturally, an excessive anterior tilt is noted.

23. Lower Trapezius
Explanation: The Lower Trapezius provides scapular posterior tilt. This movement is especially important when the shoulder moves above shoulder level in the sagittal plane of flexion. As individual's age, is not uncommon to see an imbalance, tightness of the pectoralis minor and hypo-responsiveness of the lower trapezius with observed posturally, creates an excessive anterior tilt.

24. Serratus Anterior
Explanation: The origin of the Serratus Anterior is located on the first 8 ribs, while the insertion

is on the medial border of the scapula and anterior surface of the scapula. When an individual raises his or her arm in the sagittal or frontal plane, the Serratus Anterior upwardly rotates and protracts the scapula in the sagittal plane of flexion and upwardly rotates in the frontal plane of abduction (Py Gonasalves Barreto et al., 2012).

25. Middle Trapezius, Lower Trapezius, Rhomboids
Explanation: The Lower Trapezius, Middle Trapezius, and Rhomboids are collectively known as the functional stabilizers. They are primarily responsible for orienting the scapula, more specifically the glenoid fossa with the humeral head.

26. Serratus Anterior and Lower Trapezius; Upper Trapezius
Explanation: The Serratus Anterior and the Lower Trapezius are both considered to be hypo-responsive muscles relative to the general aging population. When the Serratus Anterior becomes insufficient "winging" will occur where the scapula will rise away from the ribcage (Py Gonasalves Barreto et al., 2012). When the Lower Trapezius becomes actively insufficient, the individual may have a compromised posterior tilt with motion above shoulder level in the sagittal plane of flexion. If the lower trapezius is more passively insufficient, this phenomenon may cause an individual to develop an excessive anterior tilt, where the individual will appear to have a more forward-rounded shoulder posturing. The Upper Trapezius is typically a hyper-responsive muscle; if there is one para-scapular muscle that will take over when insufficiency occurs in the others, the upper trapezius will do this. This can be clinically observed with the frequent compensatory "scapular hiking" that goes on with some conservatively and surgically managed patient conditions (Paine and Voight, 2013).

27. Self-Mobilization technique in plane of the scapula – passive self-distraction
Explanation: One symptom management technique for bursitis which is associated with impingement syndrome is to do passive self-mobilization/distraction in the plane of the scapula. One symptom management technique for idiopathic frozen shoulder is passive self-distraction as well. Self-Joint Distraction is a type of mobility technique that we can incorporate into one's treatment plan in order to create more space inside the joint complex (Paine and Voight, 2013).

28. Could be Serratus Anterior and even Lower Trapezius
Explanation: If an individual experiences problems when reaching at shoulder level and above, targeting the Serratus Anterior and Lower Trapezius would be the best plan of action for the therapist. This is because the Serratus Anterior is responsible for upward rotation of the scapula as well as protraction, depending on either sagittal or frontal plane motion (Py Gonasalves Barreto et al., 2012). The Lower Trapezius would also have to be addressed because this tissue is integral to a posterior tilt of the scapula when the arm is moved above shoulder level in the sagittal plane of flexion (Paine and Voight, 2013).

29. Careful shoulder level and above
Explanation: The individual would want to avoid excessive movement at shoulder level and above due to excessive force on the superior labrum as well as avoiding any aggressive over-the-shoulder activity (Sherry, 2011). This is only a precaution thus this should be limited only if symptomatology, such as pain, occurs.

30. Stretch posterior and inferior capsule to maintain or improve Internal Rotation provided a SLAP lesion; strengthen the internal rotators in the plane of the scapula to help compensate for the weakened portion of the anterior capsule, given a Bankart lesion.
Explanation: The first priority relative to intervention with a SLAP lesion would be to stretch the tight posterior and inferior capsule that occurs with this condition. This is because maintaining or improving shoulder internal range of motion via posterior inferior capsular stretches and active range of motion is important. As for the Bankart lesion, improving the overall dynamic stability of the humeral head as it sits in the glenoid fossa of the scapula is important. This will be done by improving internal rotation strength to help compensate for the weak portion of the anterior scapula (McDonough and Funk, 2013).

31. Upper Trapezius
Explanation: The Upper Trapezius would be one muscle in the para-scapular region that would not be a focus when it comes to strengthening, for most individuals. This is because the muscle is typically hyper-responsive and strengthening may only further habituate this if this muscle needs to be targeted it would be more beneficial to implement stretches as the intervention strategy (Paine and Voight, 2013). Given those individuals who have experienced stroke, this population may be an exception to this.

32. False, just the opposite
Explanation: The Subscapularis insertion is on the lesser tubercle of the humerus and the origin is on the subscapular fossa. When the Subscapularis is innervated it causes the humeral head to translate posteriorly, improving the communication of the humeral head with the glenoid fossa of the scapula (Manske, 2013).

33. Resisted External Rotation, gravity eliminated plane
Explanation: The clinical test of placing an individual in resisted external rotation in a gravity eliminated plane may potentially detect a lesion of the infraspinatus. Since the infraspinatus is the most integral musculotendinous stabilizer of the shoulder, this special test is testing for the stabilizing qualities of this tissue.

34. Weighted Pendulum
Explanation: A weighted pendulum is an intervention that is shown to decrease inflammation and maintain tissue elasticity, while preventing adverse adhesions or scarring with long head

bicipital tendinitis (Long et al., 2010). It is essentially "manipulating" the second and third stage of tissue repair, just as compression does to burned skin that has healed.

35. Step Off Sign
Explanation: A special test that can be employed to detect an AC joint injury of at least a grade II is evaluating for a step off sign. Due to the damage to the AC joint ligament, the lateral clavicle migrates superior. As this heals, a step off sign is present. Clinically, the therapist palpates the superior lateral portion of the clavicle and upon lateral motion, the therapist's finger "steps down" to the fixed acromion of the scapula. Thus a deformity is felt and can be visually observed as well (Kiner, 2004).

36. Horizontal Abduction, Extension, and External Rotation
Explanation: Given spasticity from stroke, this is one of three phenomenons that lead to hemiplegic shoulder pain (HSP). Therefore, it is imperative immediately post stroke, that the suppleness of the anterior ligamentous capsule be maintained through skilled PROM (Hjelm, Draper, & Spencer, 1996)

37. Dull aching annoying…
Explanation: Dull aching annoying discomfort experienced away from the site of the primary pathology. Shoulder bursitis and ischemic points of the levator scapulae are two such examples.

38. Scaption thumb down (empty can)
Explanation: The supraspinatus is equally recruited in scaption and "thumb down" scaption. Traditionally some therapists have used the "thumb down" scaption as a PRE. This is an intervention that is no longer indicated since it draws the tendon of supraspinatus into the zone of encroachment, otherwise known as the subacromial space. This motion therefore puts this tendon in a volatile and tenuous position, possibly subjecting it to further trauma (Paine and Voight, 2013).

39. Greater measurement on the affected side, functional stabilizers
Explanation: If the measurement taken showed that the scapula was resting laterally that may indicate that the functional stabilizers (Rhomboids, Middle Trapezius, and Lower Trapezius) are collectively hypo-responsive or insufficient. Should this be identified, a strengthening intervention would need to be implemented in order to increase the active sufficiency of the functional stabilizers (Paine and Voight, 2013).

40. Serratus Anterior
Explanation: The action of the Serratus Anterior is upward rotation of the scapula along with abduction-protraction of the scapula in the sagittal plane of flexion above shoulder level and works as an upward rotator in the frontal plane of abduction (Py Gonasalves Barreto et al.,

2012).

41. Outward Rotation
Explanation: The safe or protected position of the shoulder when reaching at or above shoulder level is to remain in outward rotation. This will allow for the supraspinatus to avoid overcrowding in the sub-acromial space (Paine and Voight, 2013). Two additional precautions for those with shoulder conditions would be to encourage thoracic cervical extension (creates a good balance between the pectoralis minor which anterior tilts the scapula and the lower trapezius which posteriorly tilts the scapula). Additionally, limiting repetitions above shoulder level may be warranted since many of these individuals' have some degree of scapular dyskinesia.

42. Elevation, Posterior Tilt, Upward Rotation. and Protraction
Explanation: When going into shoulder flexion and being at least shoulder level or above the scapula will elevate via the contraction of the upper trapezius. The posterior tilt is created by the contraction of the lower trapezius. Lastly, the serratus anterior upwardly rotates and protracts the scapula as it is recruited (Paine and Voight, 2013).

43. Internal Rotation
Explanation: The provocative anatomical motion of the shoulder during impingement tests is always internal rotation. This is due to the supraspinatus entering the zone of encroachment otherwise known as the subacromial space (Paine and Voight, 2013).

44. A; True
Explanation: This is true because if the therapist is not performing the special test correctly, the validity or sensitivity of the tests become poor. Many authors have researched the validity of special tests however that validity is only as strong as the therapist doing these as they were originally designed to be employed.

45. Depressed and Downward Rotation
Explanation: According to Davis (2012), due to this phenomenon, proper passive scapular mobilization would be indicated, followed by proper passive scapula-humeral mobilization followed by maintaining the suppleness of the anterior ligamentous capsule. This may help prevent or reduce hemiplegic shoulder pain (Gillen, 2013).

46. Downward depression of humeral head
Explanation: The musculotendinous cuff is responsible for holding the humerus against the glenoid fossa and to depress the humeral head in order to open up subacromial space. When depression of the humeral head is lost, it can lead to subacromial overcrowding and even secondary shoulder adhesive capsulitis (Gillen, 2013)

47. 13:1

Explanation: Glenohumeral joint ligamentous capsular tissue is more difficult and resistant to stretch when in comparison to musculotendinous cuff tissue. It takes more time and effort to stretch out ligamentous capsular tissue versus the cuff tissue. Therefore, individuals exhibiting any Glenohumeral ligamentous capsular restrictions should be expected to complete a home exercise program of considerable stretching.

48. D; Posterior rotator cuff (supraspinatus, infraspinatus, teres minor) and the functional stabilizers

Explanation: Hughston focuses on Posterior Rotator Cuff & Functional Scapular Stabilizer Program (Townsend et al., 1991). It provides a comprehensive shoulder (re)conditioning program. If one should need to focus on the serratus anterior and the internal rotators, then two additional exercises would be required to supplement this program.

49. Serratus Anterior

Explanation: The serratus anterior is responsible for upward rotation and protraction of the scapula in the sagittal plane of flexion over shoulder level and upward rotation in the frontal plane of abduction over shoulder level (Py Gonasalves Barreto et al., 2012).

50. Lower Trapezius

Explanation: Given this scenario, the lower trapezius is responsible for scapular posterior tilt. By providing active assistance to the posterior tilt of the scapula given the repositioning, in this case, the individual's pain complaints were reduced. The Lower Trapezius should be the focus because it is responsible for the movement that helped relieve the patient's pain (Paine & Voight, 2013).

51. C5

Explanation: A C5 disc protrusion or herniation would be suspected because the C5 myotome is abduction greater than 90 degrees (collective deltoid). This dermatome is responsible for sensation of the lateral proximal upper extremity. Since these are the areas that are affected, from a clinical standpoint, it would be suspected that the herniation is at the C5 level (Butler, 2014).

52. A; Perform a more in depth assessment of the functional stabilizers

Explanation: When the functional stabilizers are consciously engaged during scaption and thus the manual muscle test is stronger, it is indicative of an issue with supraspinatus but most likely also the functional stabilizers (insufficiency). If there is no change during the manual muscle test when the functional stabilizers are engaged this is indicative that there is still an issue with supraspinatus but may or may not include the functional stabilizers. Further assessment of the functional stabilizers would be suggested either way.

53. Gerber Lift Off; a Lesion of Subscapularis

Explanation: The Gerber Lift Off Test is a special test to employ given a suspected lesion of Subscapularis. It helps to determine the sufficiency or insufficiency of the muscle. To perform this test, the patient places their hand of their back and attempts to lift it off (Kelly, Kardrmas & Speer, 1996). Furthermore, to test the sufficiency or insufficiency of this tissue given primary shoulder adhesive capsulitis (SAC), the belly press test would be more valid. The Gerber Lift Off test would be invalid for primary SAC since the posterior capsule also becomes tight which would further restrict the Gerber Lift Off position of internal rotation.

54. B; Grade 2

Explanation: Acromioclavicular joint injuries can be classified in six different grades. This injury is classified as a grade 2 because a step off sign is present. Acromioclavicular joint injuries are given a grade 2 classification when there is inflammation and joint laxity due to tearing of the acromioclavicular joint ligament and having the presence of a step off sign (Kiner, 2004).

55. Weighted Pendulums

Explanation: Weighted pendulums are a common intervention used with individuals experiencing long head bicipital tendinitis. Performing a weighted pendulum helps to maintain and improve tissue elasticity. It also helps to prevent scarring and adverse adhesions from occurring. With this intervention, attempts are made to positively impact the second and third stage of wound and tissue healing.

56. (Superior) Labral - Sulcus, Bicep Load, Yerguson, Speeds, Clunk

Explanation: Damage to the superior labral sulcus would be suspected because this type of injury commonly occurs when some fall on an outstretched hand. This type of injury presents with deep shoulder pain in the superior portion, pain with overhead activity, and clicking, popping, catching, or locking of the shoulder. Special tests that are done to check for this type of injury are the Bicep Load test, Clunk test, Yerguson test, Speeds test, Sulcus sign, and possibly complaints of pain with flexion above shoulder level (Butler, 2014).

57. Tight Posterior Cuff

Explanation: The condition is indicated as having sub-acromial overcrowding due to subtle superior migration of the humeral head caused by tightness of the posterior rotator cuff. Restrictions of shoulder internal rotation, flexion, and horizontal adduction are indicative of this impingement etiology (Tyler et al., 2000).

58. Bursitis

Explanation: These two symptoms when combined are very much suggestive of bursitis. When tendons become, inflamed or agitated they may irritate the bursa sac causing it swell "bursitis". In addition, when the inflamed tendon moves through frontal plane abduction it hits the "zone of encroachment" or 70^{o} of frontal plane abduction and as the tendon moves medially it contacts the swollen bursa sac causing the "catching" and painful feeling.

59. Functional Stabilizers, including the Lower Trapezius, Middle Trapezius and Rhomboids

Explanation: The ability to sustain work over time, otherwise known as muscular endurance is assumingly affected with this individual. Since the majority of arm use is below shoulder level, the active sufficiency of the functional stabilizers would be in question (Paine & Voight, 2013).

60. External Rotation

Explanation: The Subscapularis is responsible for internal rotation, so in order to stretch it, you would want to stretch the shoulder in external rotation. Most tissues are stretched in the opposite anatomically motion that they create. In order to get the agonist internal rotators to relax, the antagonist external rotators need to be recruited according to these principles.

61. Extension, Horizontal Abduction and External Rotation

Explanation: Restrictions of the anterior capsule can be observed by noticing limitations in external rotation, extension & horizontal abduction.

62. A; True

Explanation: By placing the arm in the plane of the scapula, it helps to reduce the forces placed on the rotator cuff tendon pathway. It is the safe position when performing transverse plane internal and external rotation.

63. 25-30

Explanation: Placing the arms 25-30 degrees in the frontal plane of abduction with slight forward flexion is the plane of the scapula. When performing a movement in this position the supraspinatus is isolated (Castelein et al., 2016).

64. Explanation: Go to the wall, stand sideways or perpendicular to the wall. Raise arm up and slide arm up wall with it outwardly rotated

65. A

Explanation: Maintain external rotation and minimize repetitions above shoulder level. It is important to follow these precautions since many patients with adverse shoulder symptomatology have some degree of faulty scapular biomechanics, otherwise known as scapular dyskinesia.

66. B; False

Explanation: The Upper Trapezius is typically regarded in the general population as a hyper-responsive para-scapular muscle. For this reason, strengthening this tissue is usually not needed to be the focus during treatment. The exception may be those who have experienced stroke.