BOWEN UNIVERSITY

COLLEGE OF HEALTH SCIENCES

BACHELOR OF PHYSIOTHERAPY PROGRAMME

FIRST SEMESTER EXAMINATION – 2021/2022 SESSION

COURSE CODE/TITLE: PST 413/Muscle Strengthening And Joint Mobilisation

DATE: Friday 13th May 2022 **TIME: 2 Hrs 30 Mins**

Instruction: Answer all questions:
Use each of the following to answer question 1- 5: (a) Homan's Sign, (b) Thompson Test (c) Hawkins Test (d) Drawers test

1) Deep venous thrombosis (DVT)

2) Shoulder dysfunction

3) Tendon Achilles contracture

4) Anterior cruciate ligament

5) Syndesmosis ligament

Use the following to answer Questions 6 to 15 on shoulder joint examination (a) Load and Shift test (b) fulcrum test, (c) stress test (d) drop arm test (e) sulcus sign

6) Is an indication for inferior instability

7) It is specific for posterior instability

8) Tear of supraspinatus tendon

9) It can be used for anterior as well as posterior instability

10) Majorly for anterior instability

11) Shoulder is abducted to 90 degree and the elbow is flexed to 90 degree to carry out the examination

12) There are 4 grades of the test

13) Posterior force is applied to the elbow while the shoulder is adducted and internally rotated

14) Common to patients with severe hemiplegia with upper limb affectation

15) Passively abduct patient's shoulder, observe as patient slowly lowers arm to waist

16) About the femoral stress test, a positive response is (a) increase percussion compared to the other side (b) diminished percussion noted compared with contralateral side(c) no percussion noted compared with contralateral side (d) none of the above

17) Fulcrum test is used to assess (a) knee injury (b) traumatic fracture of femur (c) stress test of femur (d) Knee osteoarthritis

18) Quadrant test is for capsular tightness of the (a) Knee (b)ankle (c) shoulder (d) Hip

19) Compression test for shoulder joint can be used to diagnose (a) shoulder OA(b) shoulder fracture (c) Frozen shoulder (d) shoulder dislocation

20)FAI is used for (a) Hip joint, (b) knee joint (c) elbow joint (d) menisci damage

21) Which muscle strengthening protocol(technique) is designed to diminish the onset fatigue during progressive resistance exercise

……..

22) Which of the strength training protocol is represented in the order:

Set 1: 10 repetitions at one-half (50%) the weight of the 10 RM

Set 2: 10 repetitions at three-quarter (75%) of the weight of the 10 RM

Set 3: 10 repetitions at the full weight of the (100%) 10 RM

……

23).Which of the strength training protocol is represented in the order:

Set 1: 10 repetitions at the full weight (100%) the weight of the 10 RM

Set 2: 10 repetitions at three-quarter (75%) of the weight of the 10 RM

Set 3: 10 repetitions at one-half (50%) 10 RM

…….

24).Which of the strength training technique requires both the Physiotherapist and the patient to determine when and how much a weight or resistance is increased

…….....

25).Type 1 muscle fibres are used in muscle strength type of activities while Type II muscle fibres are used in muscle endurance type of activities **TRUE/FALSE**

26). Which is an examples of isometric contraction exercises ?

a. Muscle setting exercise b. Stabilisation exercise c. Multi angle isometrics d. Circuit training exercise

27).Which of the following statements is FALSE

a. Muscle power is the ability of a muscle to contract and resist fatigue over an extended period of time

b. Muscle strength is the ability of a muscle to contract and resist fatigue over an extended period of time

c. Muscle endurance is the ability of a muscle to contract and resist fatigue over an extended period of time

d. Muscle performance comprises muscle strength, endurance training and muscle power

28). In which of the protocols of muscle strengthening is the suggested initial working weight recommenced as 6 RM

……

29).All the following are variations of stabilization exercise EXCEPT
a. Contract relax b. Rhythmic resistance c. Alternative isometrics d. Dynamic stabilisation

30). Which of the principle of muscle strengthening is described as following:
Detraining, reflected by a reduction in muscle performance, begins within a week or two after the cessation of resistance exercises and continues until training effects are lost. This is why, it is imperative that gains in strength and endurance are incorporated into daily activities as early as possible in a rehabilitation program.
……

31.Which of the following is FALSE about motor unit in muscle strengthening
a. Number of muscle fibres affect the diameter of the axon of the neuron involved b. number of muscle fibres affects the magnitude of the response to a stimulus.
c. Few motor units are recruited for gross movements
d. Fine movements requires many motor units

32. Which of the following is not a consideration in applying the overload principle
a. Fatigue b. Underlying pathology c. Stage of tissue healing d. Volume of exercise

33. Which of the following is not a modalty for muscle strengthening …
a. Static exercises b. Open and closed kinetic chain exercises c. Isokinetic exercises d. Dynamic manual exercises

34.All these are precautions to take during resistance exercise training EXCEPT
a. Pathophysiology of the muscles b. Exercise induced muscle soreness c. Valsalva maneuver d. Overtraining and overwork

35. All the following are false about muscle contraction exercise EXCEPT
a. Isotonic exercises are required during the early stage of tissue healing
b. Isokinetic exercises require the uses of specialized machines
d. Isometric exercise increases muscle tone and bulk and the angle of the joint

d. option a and c

36. Which of the following is true about closed kinetic chain exercises
a. The proximal part of the joint is fixed
b. The distal part of the joint is free to move
c. Press up exercise is an example
d. The proximal part is fixed while the distal part of the joint is free

37. Which of the following is true about open kinetic chain exercises except
a. Push up is an example
b. Biceps curl up with dumbbell in supine lying is an example
c. Bicycle ergometry exercise is an example
d. b and c

38.Which of the following can be used to determine the amount of exercise (training) load i.e the intensity of exercise at the beginning of a strength training program
……..
a. Repetition maximum b. Percentage of the body weight c. Free weights d. a and b

39. For muscle hypertrophy to occur during muscle strength training the duration of the strength training program should be……..
a. 4-12weeks b. 8-12weeks c. 4-8weeks d. a and b

40. All the following are true concerning exercise order during muscle strength training EXCEPT
a. Small muscle groups before large muscle group
b. Multi joint motion before single-joint motion
c. Higher intensity exercise before lower intensity exercise
d. b and c

41. All the following about intensity during muscle strengthening are false EXCEPT

a. Highly trained individuals 30%-40% of IRM

b. Patients with significant strength impairments 30%-50% of 1RM

c. Elderly/Sedentary individuals/Children/untrained individuals 80%-90% of 1 RM

d. Option a and b

42. The frequency of muscle strengthening program is dependent on the **following EXCEPT**

a. Intensity and volume

b. Physiotherapist's goal and patient health status

c. Response to the strengthening program

d. a and c

43. All the following is true about muscle strengthening EXCEPT

a. There is direct relationship between intensity and the volume of resistance exercise

b. Passive recovery is less efficient than active recovery to neutralize the effects of fatigue

c. Recovery period is dependent on the intensity, volume of exercise and the health status

d. Prepubescent children and the elderly frequency of exercise should be between 2-3 sessions weekly

44. The following are equipments used in muscle strengthening program EXCEPT

a. Reciprocal exercise equipment

b. Closed- chain training equipments

c. Free weights

d. Plyometric equipments

45) The following are true about Plyometric training EXCEPT

a. Stretch cycle: eccentric loading phase

b. Appropriate in the early stage of rehabilitation of active individuals requiring high level of physical performance

c. Amortization phase: period of time between stretch and shortening cycles

d. Shortening cycles: concentric phase

46) Compression test for shoulder joint can be used to diagnose (a) shoulder OA (b) shoulder fracture

(c) Frozen shoulder (d) shoulder dislocation

47) Trendelenburg Test confirms weakness of (a) gluteal medius (b) gluteal maximus (c) gluteal minimum (d) none of the above

48) Partick's test is used for (a) knee and Hip joint (b) elbow and shoulder joint (c) SI and Hip joint (d) Ankle and knee joint.

49) Muscle strength is assessed by (a) by using very high velocity testing to examine the peak torques produced (b) using low velocity testing to examine the torques produced.

(c)It is assessed by using slow velocity testing to examine the peak torques produced. (d) It is assessed by using medium velocity

In order to increase ROM of a stiff joints mentioned in questions 50-60, which of the following
techniques of mobilization is most appropriate considering the distal segment of such a joint.
(a) anterior glide (b) distraction (c) posterior glide (d) ventral glide (e) caudal glide
50) Flexion of elbow joint
51) Extension of knee joint
52) Flexion of the knee
53) Hip flexion
54) Wrist flexion
55) Shoulder circumduction
56) Shoulder Abduction
57) Shoulder extension
58) Hip internal rotation
59) increase movement of the fibular head
60)to reposition a posteriorly subluxed head

Use the following grades of mobilization techniques to answer Questions 61 to 65
(a) Grade 1 (b) Grade II (c) Grade III (d) Grade IV (e) Grade V
61) small amplitude movements performed with three to four oscillations per second
62) This amplitude of motion may cause slight discomfort to the patient.

63)it is sometimes better tolerated because the joint motion is very small
64) high velocity thrust at end of available range

65) this is a very relaxing treatment technique

Use the following gliding techniques to answer Questions 66 to 74 (a) dorsal (b) lateral (c) volar (d) radial (e) ulna glide
66) To increase patellar mobility
67) Increase flexion of the wrist
68) Increase extension of the wrist
69) Increase radial deviation
70) Increase ulna deviation
71) increase supination
72) increase pronation
73) the elbow flexed 70° and the forearm supinated 35° and pull the radial bone
74) the elbow flexed 70° and the forearm supinated 35° and push the radial bone

Use the following tests to answer questions 75-79: (a) Trendelenburg, (b)Patrick (c) Piriformis (d) Thomas (e) Ober
75) to determine if a patient has tightness of the tensor fasciae latae
76) to determine if a patient has tightness of the iliopsoas muscles

77) A positive test is reproduction of gluteal pain or radicular symptoms in the distribution of the sciatic nerve
78) A positive sign is indicated by the pelvis dropping toward the unsupported limb
79) a test designed to alert the examiner to the possibility of hip pathology or SI joint
80) One repetitive maximum is (a)is defined as the maximum weight the individual can lift just once (b) is define as the minimum weight the individual can lift just once (c) is define as the maximum weight the individual can lift just ten times before fatigue (d) is define as the minimum weight the individual can lift ten times.

81) Muscle strength can be examined by measuring the following except (a) static strength (b) dynamic strength (c) strength at various speed(d) sustained contraction of a muscle for a period of time

82) Endurance can be estimated by (a) assessing the maximum number of repetitive muscle contraction somebody can perform (b) assessing the minimum number of repetitive muscle contraction somebody can perform (c) assessing the minimum number of repetitive muscle contraction somebody can perform (d) none of the above.

83) Muscular endurance can increase through the following EXCEPT (a) gain in muscular strength (b) changes in local metabolic rate (c) increase in circulatory functions (d) change in daily physical activities
84) Oxford muscle grading has how many scales (a) 2 (b) 4 (c) 5 (d) 6
85) Using oxford muscle grading scale, and manual muscle strength grading chart power 4 is equivalent to (a) poor (b) good (c) very good (d) normal
86) In femoral stress test, the stethoscope is placed over the (a) patellar (b) Thigh close to the inguinal region (c) pubic tubercle (d) over the anterior superior iliac crest.
87) Fulcrum test is used to assess (a) knee injury (b) traumatic fracture of femur (c) stress test of femur (d) Knee osteoarthritis
88) Quadrant test is for capsular tightness of the (a) Knee (b) ankle (c) shoulder (d) Hip
89) McConnel Test it is used for (a) knee joint (b) hip joint (c) patella-femoral joint (d) Shoulder joint
90) Compression test for shoulder joint can be used to diagnose (a) shoulder OA (b) shoulder fracture (c) Frozen shoulder (d) shoulder dislocation
91)Trendelenburg Test confirms weakness of (a) gluteal medius (b) gluteal maximus (c) gluteal minimum (d) none of the above
92)Partick's test is used for (a) knee and Hip joint (b) elbow and shoulder joint (c) SI and Hip joint (d) Ankle and knee joint
93)Using a universal goniometer, (a) movable arm points toward distal segment of the body (b) immovable arm point towards proximal segment (c) immovable arm points toward distal segment d) movable arm points toward the distal segment of the body
94)In using gravity reference goniometer, you observe (a) the angle between the long axis of the distal segment and the line of gravity (b) the angle between the long axis of the proximal

segment and the centre of gravity (c) the angle between the short axis of the distal segment and the line of gravity (d) a-c
95)Waist to height ratio of ------- may predispose a man to a disease (a) 0.6 (b) 0.3 (b) 0.4 (d) 0.5
96)In measuring muscle strength, power 2 can be measured in ---------- plane (a) sagittal (b) Transverse (c) frontal (d) median
97)Wrist circumference is measured from (a) depression between the styloid process (c) styloid process (d) 5 cm below or above the wrist
98)Chest circumference is measured at the level of the (a) forth costosternal joint and sixth rib (b) Fifth costosternal joint and sixth rib (c) sixth costosternal joint and forth rib
99)Disease associated with high waist circumference includes except (a) type 2 diabetes, (b) heart disease (c) high blood pressure(d) type 1 diabetes
100) In measuring muscle strength, power 2 can be measured in ---------- plane (a) sagittal (b) Transverse (c) frontal d) horizontal

ESSAY PART

1) A patient came to you as a physiotherapist complaining of knee pain enumerate various tests you need to perform and the indication for each of them.
2) Mention some therapeutic effects of joint mobilization techniques why it is important for patients with musculoskeletal dysfunction,
3) Design a biceps muscle training program for 35yrs old male athlete who is a heavyweight lifter using any of the protocols (techniques) of muscle strengthening.
4) As a Physiotherapist design a therapeutic guidelines with proper documentation for the rehabilitation of a 72yrs old woman with BMI of 32kg/m2 who underwent total knee replacement(TKR) surgery after 2 weeks she was referred to you for Quadriceps strengthening program.