

LAKEHEAD UNIVERSITY

EXAMINATION

KINESIOLOGY	3134	FA	KINESIOLOGY
SUBJECT	COURSE NO.	SECTION	DEPARTMENT

INTRODUCTION TO SPORTS MEDICINE	PAOLO SANZO
COURSE TITLE	INSTRUCTOR

TUESDAY, DECEMBER 11, 2001	1:00 -4:00 p.m.	3 HOURS
EXAM DATE	EXAM TIME & DURATION	

TYPE OF EXAMINATION → FINAL MID TERM SPECIAL DEFERRED

TOTAL NUMBER OF PAGES IN THIS EXAM: 12

This examination question paper → MAY MAY NOT
be taken from the examination room

STUDENT PLEASE NOTE:

YOU MUST count the number of pages in this examination question paper **BEFORE** beginning to write, and report any discrepancy immediately to a proctor.

**KIN 3134: Introduction to Sports Medicine Final Examination
December 2001**

Student Name: _____ Student Number: _____

Part A: Multiple Choice:

Each question is worth one mark. Choose the best answer for the following questions and place your mark on the computer sheet provided:

- A. 1 and 3**
- B. 2 and 4**
- C. 1, 2 and 3**
- D. 4 only**
- E. All of the above**

The following history applies to questions 1 and 2.

A 13 year old wrestler was thrown during a match and had his shoulder forced into abduction and external rotation. You see that he has a visible deformity of the shoulder. He refuses to move his arm and has never had this injury before.

1. One would suspect:
 1. Rotator cuff tear
 2. Anterior subluxation of the humeral head
 3. Posterior dislocation of the humeral head
 4. Anterior dislocation of the humeral head
2. You should immediately:
 1. Place his arm in a sling, bandage the arm across his chest and send him to the hospital
 2. Avoid x-rays as she is too young to be exposed to radiation
 3. Assess the neurovascular status of the arm
 4. Apply a high velocity thrust to the shoulder to reduce the shoulder back into place
3. A pathological fracture:
 1. Is common in runners with chronic shin splints
 2. Can occur with excessive corticosteroid use
 3. Can occur only with trauma
 4. Occurs in bone weakened by disease

Each question is worth one mark. Choose the best answer for the following questions:

- A. 1 and 3**
- B. 2 and 4**
- C. 1, 2 and 3**
- D. 4 only**
- E. All of the above**

4. Chronic Achilles tendonitis:

- 1. Is often aided by wearing a temporary lift
- 2. Could be Sever's Disease in an athlete under the age of 18 years
- 3. May be caused by poor flexibility in the dorsiflexors of the ankle
- 4. Cortisone injections are especially helpful in treating this condition

5. In hand and finger injuries, it is very important to assess:

- 1. The presence of infection
- 2. The presence of an avulsion fracture
- 3. Angulation deformities
- 4. Muscle function and integrity

6. A 20 year old female on your track and field team has sustained a stress fracture of the cuboid bone. She wishes to maintain her aerobic fitness but reports to you that she is diabetic and has a congenital anomaly of the heart and had a pacemaker put in 3 years earlier. You recommend:

- 1. Low impact aerobic classes
- 2. Cycling on a stationary bicycle
- 3. Walking on a treadmill
- 4. Swimming

7. Quadriceps muscle contusions:

- 1. Are often caused by a direct blow to the thigh
- 2. Can be referred to as a Charlie Horse
- 3. Should be treated with ice and compression with the knee placed in flexion
- 4. Myositis ossificans is a rare but a possible complication

8. Which of the effects listed below applies to ultrasound:

- 1. The thermal effects increase the tissue temperature
- 2. The chemical effects increase enzyme activity
- 3. The mechanical effects are produced with a pulsed setting
- 4. The continuous setting decreases vascular permeability

Each question is worth one mark. Choose the best answer for the following questions:

- A. 1 and 3
- B. 2 and 4
- C. 1, 2 and 3
- D. 4 only
- E. All of the above

9. On examination, an effusion is evident with a positive McMurray's Test. The client is also unable to fully extend or flex the knee. There is pain with a Valgus Stress but a Lachman and Anterior Drawer Test is negative. Your differential diagnosis includes:

- 1. Anterior cruciate ligament sprain
- 2. Medial meniscal tear
- 3. Patellar subluxation
- 4. Medial collateral ligament sprain

10. The stroke on your rowing team is complaining of pain at the base of the thumb. There is no history of trauma to the area but there is marked pain with full flexion of the thumb and resisted extension and abduction of the thumb. No instability is noted. Which statement(s) is(are) the most true:

- 1. You suspect a scaphoid fracture
- 2. Treatment consists of rest, ice, compression and possible splinting of the region
- 3. Treatment involves casting the thumb in a thumb spica
- 4. DeQuervain's Disease is a likely possibility

11. The following statements are true:

- 1. The Anterior Drawer Test of the ankle denotes calcaneotalar ligament instability
- 2. Pain on toe raises denotes Achilles tendonitis
- 3. The Talar Tilt is useful in testing the Anterior talofibular ligament integrity
- 4. Tenderness over the base of the fifth metatarsal head may denote a fracture

12. Lateral epicondylitis implies:

- 1. Pain on palpation of the wrist flexors
- 2. An overuse injury that only occurs in racquet sports
- 3. Pain on combined elbow extension, forearm pronation, wrist extension and radial deviation
- 4. Pain on resisted wrist extension

Each question is worth one mark. Choose the best answer for the following questions:

- A. 1 and 3
 - B. 2 and 4
 - C. 1, 2 and 3
 - D. 4 only
 - E. All of the above
13. In the first few months after an inversion ankle sprain, reoccurrence is common. This is due to:
- 1. Excessive muscle flexibility of the anterior talofibular muscle
 - 2. Loss of proprioceptive ability
 - 3. Weakness of the plantarflexor muscles
 - 4. Weakness of the peroneus longus muscle
14. A basketball player has a hand deformity consisting of flexion of the proximal interphalangeal joint and extension of the distal interphalangeal joint after a blow to the tip of her finger tip when trying to catch a pass from a team mate. Which statement(s) is(are) true:
- 1. This implies that the volar plate is ruptured
 - 2. The dorsal slip is likely torn
 - 3. The proximal interphalangeal joint needs to be splinted in 30° of flexion
 - 4. This deformity is called a Boutonniere deformity
15. A soccer player sustained a valgus stress to the knee while his cleated foot was planted. He felt a pop and immediate swelling and pain. He was unable to continue to play. By the history alone one would suspect:
- 1. Anterior cruciate sprain
 - 2. Medial collateral ligament sprain
 - 3. Medial meniscus tear
 - 4. Lateral collateral ligament sprain
16. Iliotibial band friction syndrome:
- 1. Commonly presents after commencing hill workouts
 - 2. Presents with medial knee pain over Gerdy's Tubercle
 - 3. Can be diagnosed by a positive Ober's Test
 - 4. Is best treated by ultrasound to the pes anserine structure where the iliotibial band inserts

Each question is worth one mark. Choose the best answer for the following questions:

- A. 1 and 3
 - B. 2 and 4
 - C. 1, 2 and 3
 - D. 4 only
 - E. All of the above
17. Andre Agassi, a competitive tennis player, is complaining of elbow pain after a heavy schedule of tournaments recently and more recently after his weight and dry land training workout. He is tender over the medial epicondyle and weak on resisted flexion of the wrist.
- 1. Ice and rest are recommended
 - 2. Tennis elbow is the diagnosis
 - 3. The flexor muscle group origin is the site of the injury
 - 4. All weights should be discontinued
18. Avulsion injuries:
- 1. Require x-rays for a diagnosis
 - 2. Involve the tearing of tendons
 - 3. Are the result of a sudden forceful contraction of a muscle
 - 4. Are very common in children
19. A baseball player was complaining of a finger deformity after injuring the finger one week ago. The DIP joint is flexed and he cannot actively extend the joint.
- 1. He has a Boutonniere deformity
 - 2. An extension splint over the joint is required for about 4 months
 - 3. Treatment consists of strengthening exercises of the finger extensors
 - 4. He has a Mallet deformity
20. Overpronated feet are often etiological factors in:
- 1. Medial tibial stress syndrome
 - 2. Chronic Achilles tendonitis
 - 3. Tibial stress fractures
 - 4. Patellafemoral pain syndrome

Each question is worth one mark. Choose the best answer for the following questions:

- A. 1 and 3
- B. 2 and 4
- C. 1, 2 and 3
- D. 4 only
- E. All of the above

Questions 21 and 22 are based on the following history and physical examination.

A 17 year old forward on your soccer team is complaining of heel pain radiating into the arch of the foot. This occurs after running for the ball and is becoming worse. Her pain is most severe with the first few steps in the morning as well. She is exquisitely tender on palpation at the base of her calcaneus and has severe pronation deformities of her feet. The rest of your examination is normal. Her running shoes are 3 years old.

21. The most likely diagnosis is:
- 1. Achilles bursitis
 - 2. Achilles tendonitis
 - 3. Sever's Disease
 - 4. Plantar fasciitis
22. The treatment may include:
- 1. Ultrasound
 - 2. Change of footwear
 - 3. Corrective orthotics for her running shoes
 - 4. Low dye taping

Answer the next 13 questions by choosing the best answer. Each question is worth one mark.

23. Which of the five statements below is incorrect? A quadriceps strain:
- a. Usually involves the rectus femoris muscle
 - b. Is often due to inadequate preparation and warm up
 - c. Is often caused by sudden changes in acceleration
 - d. Occasionally results in a defect in the muscle
 - e. In the rehabilitation, isotonic exercises are initiated first, followed by isometric exercises

24. Dislocation of the _____ are the most common hand joint dislocations:
- Distal interphalangeal joint
 - Proximal interphalangeal joint
 - Metacarpophalangeal joint
 - Radioulnar joint
25. Stress fractures:
- Are microfractures in the muscular tissue
 - Are rare in the lower limb
 - Cannot be diagnosed by an x-ray
 - Are only diagnosed by a bone scan
 - None of the above
26. Which of the statements below does not pertain to the proper rehabilitation of hamstring muscle strains:
- Ice, compression and elevation should be applied immediately
 - Slow and gradual strengthening after the pain and swelling have decreased
 - Start stretching program immediately as the patient may develop a contracture
 - Should not return to the sport until full range of motion is attained
 - Continue stretching before and after activity
27. The primary elbow flexor is the:
- Brachialis
 - Brachioradialis
 - Biceps brachii
 - Coracobrachialis
 - Flexor carpi ulnaris
28. For muscle resistance testing, a muscle is the most efficient in:
- Outer range
 - Inner range
 - Middle range
 - All of the above
 - None of the above

29. Occasionally after an anterior dislocation of the shoulder, the axillary nerve is compromised. The injured athlete then presents with:
- Numbness of the lateral aspect of the shoulder
 - Decreased power with resisted shoulder abduction
 - Numbness of the thumb and index finger
 - A and B are correct
 - B and C are correct
30. TENS:
- Stands for transcutaneous electromyographic strengthener
 - Is a low intensity current applied to the skin
 - Has minimal pain relieving effects
 - Is mainly used to decrease swelling
 - None of the above
31. Morton's neuroma is:
- A problem of the ankle mortice
 - A foot problem often requiring surgery
 - Painful on compression of the first metacarpal joint
 - All of the above
 - B and C are correct
32. The _____ joint is considered the true ankle joint:
- Subtalar
 - Talocrural
 - Midtarsal
 - Talonavicular
 - Calcaneonavicular
33. A dinner fork deformity is often associated with which of the following pathologies:
- Humeral fracture
 - Radial fracture
 - Ulnar fracture
 - Clavicular fracture
 - Metacarpal fracture

34. Carpal tunnel syndrome is best described by:
1. Diminished strength of the abductor pollicis longus
 2. Increased symptoms at night
 3. Atrophy of the hypothenar eminence
 4. Atrophy of the thenar eminence
 5. Paresthesia of D4 and D5 of the hand
 6. Paresthesia of D1, D2 and D3 of the hand
 7. Positive Tinel Test
- a. 4 and 6
b. 4, 6 and 7
c. 1, 3, 6 and 7
d. 2, 4, 6 and 7
e. 1, 2, 4, 5 and 7
35. What is the amount of shoulder abduction available if the glenohumeral joint were fused:
- a. 0°
 - b. 30°
 - c. 60°
 - d. 90°
 - e. 120°

Answer the following questions in the booklets provided. Point form is acceptable. Keep your answers brief and concise. Double space answers or 5 marks will be deducted if not double spaced.

Questions 36 to 42 pertain to the following history:

Joe Smith is a member of the Lakehead University Thunderwolves varsity basket ball team who has been referred to see you for his chief complaint of pain in the lower leg over the left tibia. The client has come in to see you and has been diagnosed as having medial tibial stress syndrome of the left lower leg. His general health has been otherwise unremarkable in terms of problems involving the cardiovascular, neurological, genitourinary, renal and respiratory systems.

36. Describe in detail the phases of soft tissue healing that the client will go through and the events that highlight each phase. **20 marks**
37. As you examine this individual you are concerned that they may be presenting with a stress fracture of the tibia and not medial tibial stress syndrome. If this is in fact the correct diagnosis and not medial tibial stress syndrome, describe in detail the stages of bone healing that must be considered when dealing with this client's injury and the events that highlight each stage. **20 marks**
38. What are the possible causes of a stress fracture? **10 marks**

You are considering several treatments for this client and must consider the following:

39. Define what is meant by the term contraindication? **2 marks**
40. Muscle stimulation is one of the things that you are considering to use on this client. List 5 contraindications for the use of neuromuscular electrical stimulation. **5 marks**
41. The client has now gone for a bone scan and it has ruled out the presence of a tibial fracture. This investigation has now confirmed your initial thoughts that the problem may be medial tibial stress syndrome. As a result, you have decided to use ultrasound as another modality on this client. What are the effects of ultrasound that would lead you to use this modality on a client? **5 marks**
42. a. You have also decided to use cryotherapy with this client. If you decided to use this, how long should you apply this to the injured area? **1 mark**
- b. What contraindications may prohibit you from using this modality on a client? **5 marks**

Questions 43 and 44 pertain to the following history:

Monica Smith is a 10 year old recreational soccer player who is presenting with left heel pain. She has come to see you at the Lakehead University Sports Medicine Clinic for an assessment and presents you with a referral slip from her doctor with the diagnosis of Sever's Disease.

43. What is Sever's Disease? **3 marks**
44. Describe a treatment plan for an individual with Sever's Disease. **10 marks**

The remaining questions do not pertain to a specific history as described for the earlier questions. Answer each of the questions in the booklets provided.

45. What are the risk factors for developing a hamstring muscle strain? **5 marks**
46. What are the intraarticular causes of snapping hip syndrome? **5 marks**
47. What questions must be asked during the subjective assessment of an individual who has injured his knee? **4 marks**
48. What are some of the potential causes of patellafemoral pain syndrome? **5 marks**
49. a. What is a hemarthrosis? **3 marks**
b. How is this managed? **2 marks**
50. What 2 muscles are most commonly involved with lateral epicondylitis? **2 marks**
51. A client has come in to see you today complaining of lateral elbow pain. This problem has been on going for quite some time now. Describe a possible treatment plan for a client presenting with lateral epicondylitis? **10 marks**
52. What are the subjective and objective assessment findings that would lead one to suspect that a client is presenting with carpal tunnel syndrome? **10 marks**

TOTAL MARKS 162 marks