**KUS Sample Tests**

April 14th, 2023

[**100-Level Courses 1**](#_pdlwqj4nnz2d)

[KIN 110 1](#_uebthjmqsm6c)

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[KIN 140 19](#_mb04h7f92lh2)

[KIN 150 24](#_k02ff8ee7qfr)

[**200-Level Courses 39**](#_61nd31bxkg6)

[KIN 205 39](#_vt6idzscr4wt)

[KIN 211 44](#_6y72ik9c33fs)

[KIN 232 49](#_y0jt3k7xj8zr)

[KIN 235 52](#_act3jwbd4kem)

[**300-Level Courses 53**](#_5t1b7s1wpoli)

[KIN 313 53](#_xgtx80ys5hw7)

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[**400-Level Courses 62**](#_m6rn16auwmre)

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# 100-Level Courses

## KIN 110

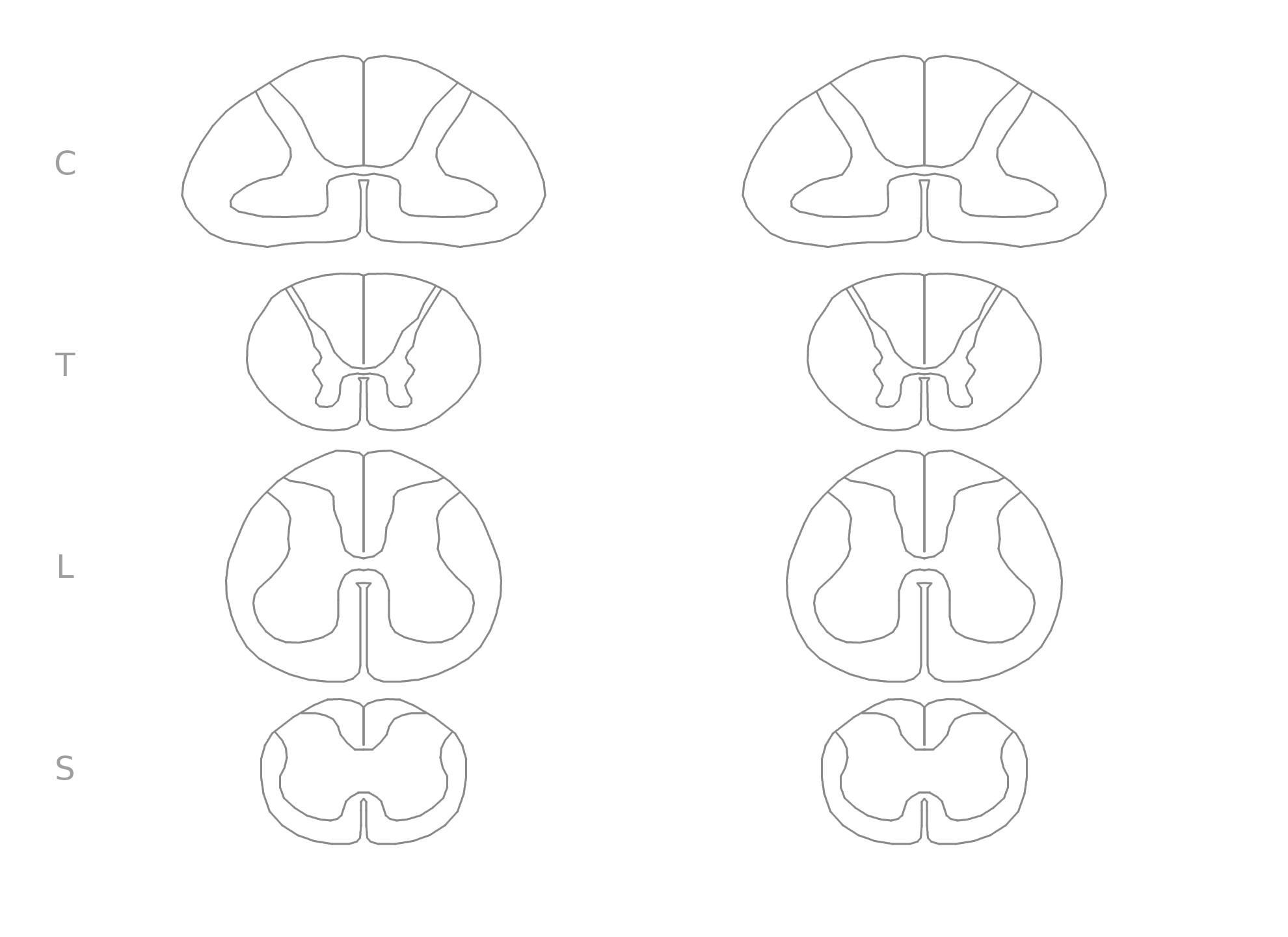
1. Which of the following statements is false?
   1. The axial skeleton has 80 bones.
   2. The appendicular skeleton has 126 bones.
   3. The axial skeleton is composed of the bones that run through the axis of the body.
   4. Children have more bones than adults.
   5. The appendicular skeleton does not include the pelvic and pectoral girdles.
2. Which of the following bones is NOT part of the axial skeleton?
   1. hyoid
   2. ribs
   3. vertebrae
   4. carpals
   5. Sternum
3. Which of the following bones is part of the axial skeleton?
   1. tarsals
   2. tibia
   3. sphenoid - skull/eye facial bones(butterfly-shaped, holds the pituitary gland)
   4. scapula - shoulder bone/shoulder blade
   5. clavicle - collarbone (part of pectoral)
4. Which of the following is NOT true of surface markings on bone?
   1. They allow the passage of nerves and blood vessels.
   2. They provide sites of attachment for muscles.
   3. They allow bones to shorten or lengthen.
   4. They help form joints.
   5. They can be depressions or projections.
5. An opening or hole in a bone through which blood vessels, nerves and ligaments pass is called a:
   1. fissure.
   2. foramen.
   3. fossa.
   4. meatus.
   5. Sulcus.
6. A rounded articular projection supported on a constricted portion (neck) of a bone is called a…
   1. Foramen
   2. Condyle
   3. Tuberosity
   4. Head
   5. Trochanter
7. A prominent ridge or elongated projection on a bone is called a
8. crest.
9. trochanter.
10. sulcus.
11. Fossa.
12. Tubercle.
13. The humerus is an example of a \_\_\_\_ bone. It articulates with the ulna to form the humeroulnar joint: a \_\_\_\_\_ joint, which is classified as a/n \_\_\_\_\_\_\_.
14. flat, ball-and-socket, amphiarthrosis
15. long, condyloid, diarthrosis
16. irregular, saddle, synarthrosis
17. long, hinge, diarthrosis
18. flat, pivot, amphiarthrosis
19. What passes through the vertebral foramen?
20. Which bony landmark is unique to C2 (axis)?
21. What articulates with the superior articular facet of C1?
22. Scoliosis is an abnormal \_\_\_\_\_ curvature in the spine.
23. What passes through the intervertebral foramen?
24. The sacrum and coccyx are generally fused by age \_\_\_\_.
25. The vertebral column is composed of \_\_ cervical, \_\_ thoracis, \_\_ lumbar vertebrae, the sacrum, and the coccyx.
26. The shoulder is a \_\_\_\_\_\_\_ joint.
27. The shoulder permits triaxial movements. What are the 3 types of movements, and what planes are they associated with?
28. The shoulder joint is formed by the articulation of the humerus and glenoid. Which types of bones are the humerus? The scapula?
29. The olecranon fossa is located on which bone?
30. Ulna
31. Radius
32. Scapula
33. Humerus
34. Sternum
35. The suture between 2 parietal bones is called \_\_\_\_\_
36. Name the 3 muscles that are supplied by the musculocutaneous nerve
37. The facial sheet that spans over top of the forearm is called the \_\_\_\_\_\_
38. Which head in the bicep brachii helps prevent dislocation of the shoulder?
39. Name all the carpal bones
40. What is the largest carpal bone?
41. Which carpal bone has the highest likelihood of fracturing?
42. Which finger does not have a middle phalanx?
43. Name the superficial muscles of the forearm
44. What is the muscle in the intermediate layer of forearm called?
45. Which muscle flexes the thumb?
46. Name the origin, insertion, innervation, and function of the palmaris longus.
47. Name the origin, insertion, innervation, and function of the pronator teres.
48. Name the muscles in the posterior superficial layer of the forearm.
49. Name the muscles in the posterior deep layer of the forearm.
50. Name the muscles that form the anatomical snuffbox
51. What are the two muscles used for extension of the thumb?
52. What is the purpose of the sacral promontory?
53. What is the purpose of the anterior sacral foramina?
54. What is the purpose of the sacral canal?
55. What is the purpose of the auricular surface?
56. Does the pelvis sit flat in the human body?
57. What 2 joints connect the tibia and fibula?
58. What bone does the calcaneus never articulate with?
59. Name all the ligaments that make up the subtalar (talocalcaneal) joint
60. Describe the function of interphalangeal joints
61. Which suture unites the frontal and parietal bones
62. What is the main function of the hamstring muscles?
63. Name all the main muscles involved in hip adduction
64. What is the main nerve innervation for Hip Adductors? What is the exception?

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## KIN 120

1. A physical or psychological event or condition that produces physical and emotional reactions is a?
   1. Stressor
   2. Stress Response
   3. Stress
2. The branch of the peripheral nervous system that controls basic body processes; consists of the sympathetic and parasympathetic divisions?
   1. The Autonomic Nervous System
   2. The Central Nervous System
   3. The Brain
3. A neurotransmitter released by the sympathetic nervous system onto specific tissues to increase their function; involved in arousal, as well as in learning and mood regulation. Also a hormone, released by adrenal gland?
   1. Acetylcholine
   2. Norepinephrine
   3. Epinephrine
   4. gamma-Aminobutyric acid
4. A steroid hormone secreted by the cortex (outer layer) of the adrenal gland; also called hydrocortisone; depletes dopamine, which decreases activity in the pleasure pathways of the brain. Also exacerbates anxiety?
   1. Testosterone
   2. Estrogen
   3. Progesterone
   4. Cortisol
5. \_\_\_\_\_ is a state of stability and consistency in a person's physiological functioning?
   1. Homeostasis
6. The General Adaptation Syndrome is a pattern of stress responses consisting of three stages: alarm, resistance, and exhaustion, please draw the graph for this.
7. What is stress resulting from an unpleasant stressor?
   1. Distress
   2. Eustress
   3. Negative stress resulting in a negative feedback loop
8. Sugar production is done through the process of \_\_\_\_\_?
   1. Glucogenosis
9. When the heart muscle does not receive enough blood, causing severe pain in the chest, arm and/or shoulder, what is it called?
   1. Angina Pectoris
   2. Sudden Cardiac Death
   3. Congestive Heart Failure
   4. Heart attack
10. What is it called when you have a sustained abnormally high BP?
11. A lipoprotein containing relatively little cholesterol that helps transport cholesterol out of the arteries; "good" cholesterol?
    1. HDL
    2. LDL
    3. Cholesterol
12. A scraping of cells from the cervix for examination under a microscope to detect cancer?
13. The HDL Range for men in danger and women in danger are…?
14. What are the exercise per week recommendations?
15. a measure of relative body weight correlate highly with more direct measures of body fat, calculated by dividing total body weight (in kilograms) by the square of body height (in meters)?
    1. BMI
    2. Fat Free Mass
    3. Waist to Hip Ratio
16. an eating disorder characterized by recurrent episodes of binge eating and then purging to prevent weight gain?
    1. Bulimia Nervosa
    2. Anorexia Nervosa
    3. Restrictive Eating
17. The ability to have an open mind, and the desire to learn and improve?
    1. Intellectual Wellness
    2. Interpersonal Wellness
    3. Cultural Wellness
    4. Spiritual Wellness
18. What % of people have high BP?
    1. 38%
    2. 12%
    3. 57%
    4. 20%
19. How many Canadians older than 20 have chronic disease?
    1. 1 in 8
    2. 2 in 4
    3. 3 in 5
    4. 16 in 20
20. How many years does smoking cut down your lifespan?
    1. 1-4
    2. 12-16
    3. 8-10
    4. 5-7
21. What are the enabling factors for physical activity (Select all that apply)?
    1. goal setting
    2. Self-assessment
    3. Self-monitoring
    4. Self-planning
    5. coping skills
    6. time management
22. theory used to predict and understand behaviours; behaviours are immediately determined by behavioural intentions, which in turn are determined by a combination of three factors: attitude toward the behaviour, subjective norms, and perceived behavioural control?
    1. Health Action Process Approach
    2. Trans-theoretical Theory
    3. Cusp Catastrophe Theory
    4. Theory of Planned Behvaiour
23. What is stress determined by?
24. Training, caffeine, injuries, disease, nutritional status?
    1. Physiological stressors
    2. Environmental stressors
    3. Major stressors
    4. Minor stressors
25. The SAM axis primary uses what?
    1. The sympathetic nervous system
    2. The parasympathetic nervous system
    3. The central nervous system
    4. The peripheral nervous system
26. Please explain epigenetics
27. What are the risk factors of high blood pressure (select all that apply)?
    1. Age
    2. gender
    3. family history
    4. overweight
    5. inactivity
    6. smoking
    7. high sodium
    8. low potassium
    9. low vit D
    10. Alcohol
    11. Stress
    12. Other chronic conditions
28. Please go over the steps of diabetes prevention?
29. Please go over the steps of diabetes treatment?

## KIN 131

1. slow oxidative fibres contain?
2. Fast-oxidative-glycolytic fibers
3. Fast-glycolytic fibers
4. What is epimysium?
5. 4 types of cells
6. True or false, muscle cells can be attached to your face
7. What are neurons specialized for?
8. What is epithelial tissue specialized for?
9. Troponin interacts with (select all that apply)
   1. Actin
   2. Tropomyosin
   3. Calcium
   4. Sodium
10. troponin interacts with
    1. one troponin molecule
    2. Actin
    3. Tropomyosin
11. each tropomyosin is bound by
    1. sarcoplasmic reticulum (SR)
12. source of Ca in skeletal muscle (select all that apply)
    1. motor neuron axon terminal
    2. T-tubule,
    3. dihydropyridine receptor (DHP),
    4. ryanodine receptor,
    5. sarcoplasmic reticulum
    6. terminal cisternae,
    7. Cytosol,
    8. troponin
13. List the places when muscle contraction occurs (select all that apply)
    1. terminal cisternae
    2. enlarged areas of the sarcoplasmic reticulum surrounding the transverse tubules.
    3. sliding filament mechanism
    4. the process in which myosin cross-bridges pull/"row" attached actin molecules closer to the midpoint of the sarcomere; therefore shortening sarcomere
    5. actin binding sites remain exposed
    6. cross-bridge cycling will repeat as long as
    7. attachment, movement, detachment, reenergize (with ATP)
14. Step \_\_\_ of the cross bridge cycle changes during isometric and concentric contraction
15. Reminder: isometric: the cross-bridges do not move, and repeatedly rebind to the same actin molecule (muscle is in same position, holding a calf raise)
16. eccentric: the excess load pulls the cross-bridges backwards (b/c load>tension) (Muscle is stretched/extended, lowering phase of bicep curl)
17. What is latent period
18. heavier loads cause isotonic contractions to have:
19. smooth muscle does not have
    1. Troponin
    2. Actin
    3. Myosin
    4. Calcium
20. Why is skin used as the pain and temp receptors (use relevant vocabulary)
21. In humans, the nervous system is initial divided into the \_\_\_\_\_ and \_\_\_\_\_ nervous systems.
    1. afferent;
    2. sympathetic;
    3. somatic;
    4. central; peripheral
22. Efferent nerves are associated with \_\_\_\_\_ functions, whereas afferent nerves are associated with \_\_\_\_\_ functions.
    1. sensory; motor
    2. external; internal;
    3. motor; sensory
    4. internal; external
23. The somatic and autonomic nervous systems control \_\_\_\_\_ and \_\_\_\_\_ movements, respectively.
    1. involuntary; voluntary
    2. automatic; reflexive
    3. volitional; willful
    4. voluntary; involuntary
24. Which system is responsible for preparing a hiker to act quickly when she sees a bear run onto the path in front of her?
    1. sympathetic nervous system
    2. central nervous system
    3. parasympathetic nervous system
    4. efferent neurons
25. Which system is engaged while relaxing after a large meal?
    1. sympathetic nervous system
    2. central nervous system
    3. efferent neurons
    4. parasympathetic nervous system
26. A person with damage to the occipital lobe will like have trouble with which sense?
    1. Hearing
    2. Taste
    3. Touch
    4. Vision
27. What is the name of the specialized receptors that are sensitive to stretch and that are located among your skeletal muscles?
    1. Meissner’s corpuscules.
    2. Acetylcholine receptors.
    3. free nerve endings.
    4. joint receptors.
    5. muscle spindles.
28. At the junction of muscle and tendon, in series with extrafusal fibres, lie small 'organs' which monitor changes in muscle tension. These small 'organs' are called Golgi Organs
29. What is the function of the GTO
    1. To assist and amplify the myotatic reflex
    2. To bring about muscle relaxation in response to extreme muscle tension
    3. To send ‘help’ signals to synergistic muscles in times of extreme muscle tension
30. How are endothelial cells in the brain different from endothelial cells in the rest of the body?
    1. Endothelial cells in the brain are tightly linked together to prevent toxins in the blood from entering the brain
    2. Endothelial cells in the brain are loosely linked together to let red blood cells enter brain tissue
    3. Smooth muscle cells outside the endothelial cells are tightly linked, preventing things in the blood from entering the brain
    4. Astrocytes help endothelial cells transport red blood cells from the blood into the brain to deliver oxygen
31. What type of brain cell helps the endothelial cells form the blood-brain barrier?
    1. Astrocytes
    2. Neurons
    3. Smooth Muscle
    4. Schwann Cells
32. All are components of the blood brain barrier except?
    1. Astrocytes
    2. Ependymal cells
    3. Endothelial cells
    4. Pericytes
33. Ependymal cells:
    1. are associated with the blood-brain barrier.
    2. are associated with the production of cerebral spinal fluid.
    3. are associated with the production of myelin.
    4. are associated with the healing of damaged tissue.
34. Walk me through the formation and flow for CSF.
35. Draw the somatosensory pathway:

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## KIN 132

1. The right side of the heart is the driving force for \_\_\_\_ circulation, while the left side is the driving force for \_\_\_\_\_ circulation.
   1. Systemic; Pulmonary
   2. Pulmonary; systemic
2. What are the types of cellular components/elements found in blood?
3. Where do red blood cells come from?
4. The major function of erythrocytes is:
   1. Distributing blood across the body
   2. Delivering nutrients to working muscles
   3. Gas transport of oxygen and carbon dioxide
5. What are the precursor steps to becoming an erythrocyte?
6. True or false: red blood cells have nuclei and vesicles
7. What can be found inside erythrocytes?
8. Does carbon dioxide (CO2) bind to the globin portion or the heme disc?
9. What is systole (contraction)?
10. What is diastole?
11. Isovolumetric ventricular contraction belongs to the \_\_\_\_\_\_ phase
12. Isovolumetric ventricular relaxation belongs to the \_\_\_\_\_ phase
13. Describe what happens when the kidneys receive a decreased amount of oxygen.
14. What are the 3 requirements for normal erythrocyte production?
15. Anemia is a decrease in the O2-carrying capacity of blood due to what reasons?
16. Define sickle-cell disease.
17. How does vessel damage trigger the formation of a platelet plug and vasoconstriction?
18. Distinguishing characteristics of veins include which of the following?
    1. All veins carry deoxygenated blood
    2. All veins carry blood toward the heart
    3. All veins have thick, elastic walls
    4. Veins have walls consisting only of endothelial cells
19. The plateau of the action potential in cardiac ventricular cells results from the opening of voltage-gated long-lasting \_\_\_\_ channels in the plasma membrane of the cell.
    1. Sodium
    2. Potassium
    3. Calcium
    4. Chloride
20. What is the term that describes the production of red blood cells?
    1. Erythropoietin
    2. Anemia
    3. Erythropoiesis
    4. Hemostasis
21. Which of the following statements about the cardiac cycle is TRUE?
    1. The duration of systole is greater than that of diastole in a subject at rest
    2. During isovolumetric ventricular relaxation, blood flows from the atria into the ventricles
    3. Closure of the atrioventricular valves occurs at the beginning of ventricular systole
    4. The QRS complex occurs at approximately the same time as the closure of the semilunar valves
22. Sally has had too many alcoholic drinks. Alcohol is a systemic vasodilator and it increases urine volume, thereby decreasing blood volume. In order to maintain cardiac output, what can her body do?
    1. Decrease heart rate
    2. Increase heart rate
    3. Increase stroke volume
    4. Decrease stroke volume
23. During exercise, there is a decreased flow of blood to the:
    1. Brain
    2. Skin
    3. Abdominal organs
    4. Skeletal muscles
24. At rest a blood flow rate was measured at 20 mL/min between an area starting at 180 mmHg pressure and finishing at 90 mmHg. If the only change were to increase the starting pressure to 240 mmHg and resistance remained unchanged what would the blood flow rate be? (short answer).
    1. Step 1: determine the pressure gradient: 180 mmHg-90mmHg = 90 mmHg
    2. Step 2: determine resistance at the start: R = 90 mmHg/ 20 mL/min = 4.5 mmHg min/mL
    3. Step 3: substitute in new starting pressure: F = 240 mmHg-90 mmHg/4.5 mmHg min/mL
    4. ANS: 33.3 mL/min
25. List the events from the start of isovolumetric contraction till the end. In your explanation define what this isovolumetric phase represents (short answer).
26. Which is TRUE regarding the regulation of heart rate?
    1. Stimulation of parasympathetic nerves to the heart causes a slowing of heart rate
    2. Stimulation of sympathetic nerves to the heart causes an increase in heart rate
    3. A person whose heart lacks autonomic innervation likely has a faster heart rate at rest than a person with a normally innervated heart
    4. All of the choices are true
27. Which of the following occurs first in hemostasis?
    1. Activation of the fibrinolytic system
    2. Platelet aggregation
    3. A clotting cascade that leads to the conversion of fibrinogen to stable fibrin
    4. Conversion of prothrombin to thrombin
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29. When the arterioles vasodilate the blood pressure as you enter the capillaries will be:
    1. Higher
    2. Lower
    3. Unchanged
30. Elizabeth had heart surgery to repair the pacemaker of her heart, into which structure did the surgeon need access?
    1. Sinoatrial node
    2. Atrioventricular node
    3. Bicuspid valve
    4. Bundle of HIs
31. What would be the effect of an increase in transpulmonary pressure? Outline the steps involved. (Short answer)
32. During a yoga class you take a deep breath, then relax and let the breath out slowly. During that exhalation, which would not be true?
    1. Intrapleural pressure is greater than alveolar pressure
    2. Lung volume decreases
    3. The diaphragm relaxes
    4. Alveolar pressure is greater than atmospheric pressure
33. In which form is most of the oxygen carried in arterial blood?
    1. Converted to HCO3-
    2. Bound to hemoglobin
    3. Dissolved in the plasm
    4. Dissolved in the cytosol of erythrocytes
34. Define the 3 volumes that make up vital capacity. How do they change with increases from rest to submaximal exercise? (short answer)
35. Which of the following would cause a decrease in the binding affinity of Hb to O2?
    1. Increased pH of blood
    2. Increased temperature of blood
    3. Decreased DPG levels in erythrocytes
    4. Decreased concentration of H+ in blood
36. How does the Hering-Breuer reflex work? (short answer).
37. A decrease in metabolism without a similar, compensatory decrease in alveolar ventilation will have what effect on the systemic pH?
    1. No change to pH is expected in this circumstance
    2. It is impossible to predict the effect on pH without first understanding why metabolism decreased
    3. pH will decrease
    4. pH will increase
38. What brain center has neurons that fire mainly during inspiration and have input to the spinal motor neurons that activate the diaphragm and inspiratory intercostal muscles?
    1. The pre-Botzinger complex
    2. The pneumotaxic center of the pons
    3. The ventral respiratory group of the medulla oblongata
    4. The dorsal respiratory group of the medulla oblongata
39. Using only constriction or dilation involving the arterioles how can you get decreased glomerular filtration rate? (Short answer)
40. Which of the following statements about renal control of blood acid-base balance is TRUE?
    1. H+ that binds to filtered bicarbonate in the tubular fluid is excreted in the urine
    2. Excretion in the urine of hydrogen bound to phosphate buffers decreases plasma bicarbonate concentration
    3. Increased metabolism of glutamine by renal tubular cells increases the plasma bicarbonate concentration
    4. The kidneys compensate for a metabolic alkalosis by increasing CO2 production
    5. When hypoventilation occurs at the lungs, the kidneys compensate by reducing glutamine metabolism
41. Yolanda was born with a rare genetic disease in which the proximal tubules of her nephrons express half the number of aquaporins as is typical. What will be the result?
    1. Reduced reabsorption of all materials in the proximal tubules
    2. Reduced reabsorption of water, although as much reabsorption of Na+ as is typical
    3. Reduced reabsorption of water, Na+, and glucose in the proximal tubules
    4. No change to reabsorption at this site
    5. Reduced reabsorption of both water and Na+ in equal proportions
42. Explain the steps by which glutamine contributes to new bicarbonate (short answer).
43. What are the steps of the enterohepatic circulation? (short answer)
44. Which of the following molecules crosses the luminal membrane of intestinal cells by facilitated diffusion?
    1. Maltose
    2. Glucose
    3. Galactose
    4. Fructose
    5. Lactose
45. During the postabsorptive phase of metabolism
    1. Triacylglycerols (or triglycerides) in adipose tissue are broken down to glucose by lipolysis
    2. The liver exports lactate to the muscles, which use it for fuel
    3. Glycogen in muscle cells is broken down to glucose, which is released into the blood
    4. Glycerol and fatty acids are rapidly assembled into triglycerides in adipose tissue
    5. Liver glycogen is broken down to glucose, which is released into the blood
46. A protein molecule will be digested by enzymes made by:
    1. The mouth, stomach, and large intestine
    2. The stomach, liver, and small intestine
    3. The pancreas, stomach, and small intestine
    4. The small intestine, mouth, and liver
47. Which occurs mainly in the small intestine?
    1. Acidic chyme is neutralized
    2. Pepsinogen is activated
    3. Gastrin is secreted
    4. H+ is secreted from epithelial cells into the lumen
    5. Bile salts are manufactured
48. Which of the following statements about the transport of the absorbed products of fat digestion is true?
    1. Free fatty acids and monoglycerides are transported to the liver via the hepatic portal vein
    2. Products of fat digestion are absorbed in the distal portion of the ileum, bound to intrinsic factor
    3. Triglycerides are transported to the liver via the hepatic portal vein to be processed
    4. Products of fat digestion first go to the lymph system, and then to the veins leading to the heart
49. Which is true regarding meiosis in a single germ cell?
    1. It results in 4 cells with 46 chromosomes each
    2. It results in 2 cells with 46 chromosomes each
    3. It results in 4 cells with 46 pairs of chromosomes each
    4. It results in 4 cells with 23 chromosomes each
50. Which is true regarding the immune system cells?
    1. Plasma cells are derived from T cells
    2. Neutrophils are classified as lymphoid cells
    3. Macrophages are derived from monocytes
    4. Macrophages are derived from basophils
51. If the granulosa cells are deficient in enzymes needed for estrogen production how are they helped during the early and middle follicular phases? (short answer)
52. What is a true statement about events occurring in the menstrual cycle?
    1. Progesterone is low during the first half of the cycle, and rises to a peak during the second half
    2. Each peak in estrogen concentration is accompanied by an even greater peak in progesterone concentration
    3. The corpus luteum normally degenerates on day 14 of the cycle
    4. FSH reaches its highest concentration 3 days before menstruation begins
53. What are the 4 functions of activated complement proteins? (short answer)
54. Which of these correctly describes a systemic response to infection?
    1. Appetite generally increases compared to normal
    2. The liver retains iron and zinc so plasma levels are decreased from normal
    3. Secretion of cortisol by the adrenal cortex is decreased
    4. The body’s set point temperature is reset so that body temperature is maintained lower than normal
55. Cytotoxic T cells
    1. Secrete perforin, which kills bacteria and viruses by perforating the membrane or coat that surrounds them
    2. Are activated by interleukin 1
    3. Are converted to plasma cells when activated by MHC proteins
    4. Require Class I MHC proteins to recognize foreign antigens

## KIN 140

1. If a person has a 3-year old and a 10-month old, you can say the person has
   1. A pre-schooler and a toddler
   2. A kindergartener and an infant
   3. A pre-schooler and an infant
2. When people develop motor skills, they are also developing intellectually, emotionally, and physically. This is called:
   1. Multidirectional development
   2. Multidimensional development
   3. Multifactorial development
3. A girl on the merry-go-around is learning about rotational forces. This type of development is a change in the \_\_\_\_\_ domain.
   1. Cognitive
   2. Affective
   3. Physical
   4. Motor
4. Series of abrupt changes, which elevate person to new, more advanced level of functioning is referred to as:
   1. Cumulative growth
   2. Discontinuous growth
   3. Continuous growth
5. Example of a history-graded influence on human development includes:
   1. Obtaining a driver’s license at 16-years old
   2. Starting school at 6-years old
   3. Use of apps for tracking diet and physical activity levels
6. (FILL IN THE BLANK) Typical age periods of development represent \_\_\_\_\_ during which certain behaviours may be observed
7. Acquiring independent walking later than one's peers because the child falls in the 98th percentile for weight can be explained according to Newell's Model of Constraints, whereby weight is a(n) \_\_\_\_\_\_\_\_\_\_ constraint.
8. Wearing equipment while playing ice hockey is shown to increase aggression and confidence in young 5 and 6 year old boys in comparison to playing with no equipment during floor hockey. Increased perception of confidence in one's ability is what type of constraint?
9. Identify the functional constraint in the following sentence: "The children became very frustrated because they were unable to hit the tennis ball. Their racquets were too heavy for them.”
10. Identify the structural constraint in the following sentence: “The children became very frustrated because they were unable to hit the tennis ball. Their racquets were too heavy for them.”
11. Identify the task constraint in the following sentence: "The children became very frustrated because they were unable to hit the tennis ball. Their racquets were too heavy for them.”
12. Anomalies present at birth are called:
    1. Chromosomal defects
    2. Genetic defects
    3. Teratogenic defects
    4. Congenital defects
13. The most common neural tube defect is:
    1. Congenital rubella syndrome
    2. Spina bifida
    3. Arthrogryposis
    4. Cerebral palsy
14. Medical gestation for a full term human infant is considered to be:
    1. 20 weeks
    2. 35 weeks
    3. 40 weeks
    4. 42 weeks
15. Fetal movements are needed for (check all that apply):
    1. developing communication
    2. developing tendons
    3. developing body's joints
    4. developing neural pathways
16. Use figure 4.2 in textbook. If a significant teratogen was introduced at 13 weeks conceptional age, major anomalies may occur in the:
    1. Upper limb
    2. Eyes
    3. Heart
    4. Central nervous system
17. What does interdisciplinary refer to?
    1. an integrative mixture of scientific disciplines, wherein the work analyzes, synthesizes, and harmonizes links between disciplines into a coordinated and coherent whole when working in a relationship.
    2. a non-integrative mixture of scientific disciplines, wherein each discipline retains its methodologies and assumptions (stays within their respective boundaries) when working in a relationship; knowledge generated is additive.
    3. an integrative mixture of scientific disciplines, practitioners, and non-scientific sources to go beyond traditional boundaries by developing a new kind of knowledge involving the cooperation amongst different parts of society.
18. What is the difference between motor development and motor learning?
    1. Motor development is the study of the underlying process involved in movement, whereas motor learning is the science that examines how we learn, control, and develop a motor skill.
    2. Motor development is the study of the changes in human motor behavior as we proceed through the life span, the processes that underlie these changes, and the factors that affect them. Motor learning is the study of the processes involved in acquiring the capability to execute a motor skill whereby there is a relatively permanent change in behavior resulting from practice or experience.
19. What does developmental perspective refer to?
    1. the collective description of distinct behaviours as they occur across time; a series of transformations.
    2. a view that refers to development as an additive process that occurs gradually and continuously, without sudden changes; often discussed from the perspective of quantitative change.
    3. a research focus, which serves to understand changes in movement across the lifespan in an attempt to explain how and why a particular movement emerges from a previous behaviour, as well as predict and explain the emergence of a future movement behaviour; the focus of study goes beyond just examining motor behaviour in the present.
20. What does neonate refer to?
    1. A newborn child within the first 28 days of life.
    2. A stage in the early childhood period of the lifespan.
    3. A child within the age of 0 to 6 years.
21. Define affordance
    1. the global constraints (physical or sociocultural) related to the world outside our body, around us
    2. the function, opportunity, or action possibilities an environmental object, surface, place, or event provides to an individual in relation to the individual’s own capabilities
    3. constraints that are external to the body and consist of goals of the movement, as well as the rules and equipment use
22. Define phocomelia. What is it a side effect of?
    1. a major birth defect caused by the atypical development of the neural tube (gives rise to the central nervous system) during the embryonic period; Thalidomide
    2. a congenital malformation in which the hands or feet are attached close to a major joint and the limb is underdeveloped or absent; Thalidomide
    3. a condition where there are congenital joint contractures in two or more areas of the body, which causes reduced mobility of multiple joints, wherein the joints are fixated in extension or flexion; Folic acid
    4. a major birth defect caused by the atypical development of the neural tube (gives rise to the central nervous system) during the embryonic period; Folic acid
23. Define Parkinson’s Disease
    1. a progressive, autoimmune disease of the central nervous system, where the immune system attacks myelin causing inflammation and often damage to the myelin, which results in an interrupted or distorted flow of nerve impulses
    2. a disease which will continue to worsen, grow, or spread over time
    3. a progressive, degenerative disorder of the central nervous system that primarily impairs motor function due to a loss of dopamine-producing brain cells
24. Which of the following refer to synaptogenesis?
    1. the process of eliminating synapses that largely occurs between early childhood and puberty, the purpose of which is to increase networking capacity within the brain by removing neurons that have been damaged, degraded, or not needed to maintain efficiency of brain function
    2. the formation of synapses between neurons in the central nervous system; is highly active in early life, but continues to occur throughout the lifespan
    3. a change in function or structure of the brain from the use of cognitive functions and via experience
25. What is the form of rudimentary locomotion called when the body is moved on hands and knees in prone position with the abdomen well off the ground?
    1. Cruising
    2. Creeping
    3. Crawling
    4. Cycling
26. What term refers to a terrestrial animal that stands or walks with the toes, sole, and heel flat on the ground (heel to toe pattern)?
    1. Digitigrade
    2. Plantigrade
    3. Bipedalism
    4. Quadrupedalism
27. What term refers to the phase in walking in which both feet are in contact with the supporting surface?
    1. Double support phase
    2. Quiet stance
    3. Support phase
    4. Swing phase
28. What term refers to the fundamental locomotor pattern consisting of a forward step followed by a leap onto the trailing foot?
    1. Gallop
    2. Hopping
    3. Jumping
    4. Skipping
29. What term refers to the fundamental locomotor skill characterized by a forward step followed by a hop on the same foot with an alternating leading leg?
    1. Sliding
    2. Jumping
    3. Skipping
    4. Hopping
30. What term refers to a horizontal movement of the body around the centre of gravity?
    1. Location
    2. Quadrupedalism
    3. Postural sway
    4. Postural control

## KIN 150

1. What is the difference between the terms stress and stressors?

1. Stress refers to biological markers of damage in the body; stressors refer to the training that causes damage to the body.
2. Stressors refer to an experience; stress refers to situations that are potentially stressful.
3. Stress refers to the objective stimulus demands placed on the body; stressors refer to the perception of such objective demands.
4. Stress refers to an experience; stressors refer to situations that are potentially stressful.

2. Which of the following is not one of the best ways to determine the best evidence-based practice?

1. conduct peer-reviewed research studies
2. consider practitioner level of competence
3. test out the practice
4. consider ethical guidelines

3. Research hypotheses are defined as

1. directional educated guesses about the nature of the relationship
2. among scientific constructs given specific conditions.
3. educated guesses about the nature of the relationship among scientific constructs given specific conditions.
4. the results of a study.
5. non-directional educated guesses about the nature of the relationship among scientific constructs given specific conditions.

4. What was a key event for sport and exercise psychology that happened in 1986?

1. the formation of the Canadian Society for Psychomotor Learning and Sport Psychology (SCAPPS)
2. the formation of the Canadian Code of Ethics for Psychologists (CPA)
3. the formation of the Canadian Sport Psychology Association (CSPA)
4. the formation of the Association for Applied Sport Psychology (AASP)

5. Differences between an independent variable (IV) and a dependent variable (DV) are mostly used to examine

1. causal relationships.
2. negative relationships.
3. positive relationships.

6. What is a common assumption in many trait models of personality?

1. Traits have a normal distribution throughout the population.
2. Traits have an atypical distribution throughout the population.
3. Traits are skewed throughout the population.
4. There is no trend in the distribution throughout the population.

7. Individuals higher in \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_ are more likely to meet their intentions to exercise.

1. agreeableness; extraversion
2. openness to experience; extraversion
3. extraversion; conscientiousness
4. conscientiousness; openness to experience

8. The social learning theory posits that people are active agents in shaping their \_\_\_\_\_\_, influenced by their inner drives and environments.

1. thoughts
2. behaviours, emotions, and thoughts
3. emotions
4. behaviours

9. Which of the following is consistent with the cognitive-behavioural approach to understanding motivated behaviour?

1. Thoughts and emotions influence our behaviour, and our behaviour influences our thoughts and emotions.
2. Thoughts and emotions influence our behaviour.
3. Learning from others is key to understanding motivated behaviour.
4. Our behaviour influences our thoughts and emotions.

10. Jessica is considering the implications of an inactive lifestyle on her health. Her thoughts centre on her lack of energy and that she can't participate in certain activities with her family. According to the transtheoretical model, what process of change dimension is she in?

1. contemplation
2. decisional balance
3. behavioural
4. experimental/cognitive process of change

11. The intention-behaviour gap is a term that has been developed to describe the observation that people don't always do what they say they are going to do. Which variable was not identified as influencing the intention-behaviour gap in exercise?

1. habit or past exercise behaviour
2. identity linked to being an exerciser
3. gender
4. affective response to exercise

12. A personal trainer who provides clients with a variety of exercise options for engaging in moderate- or vigorous-intensity physical activity during each workout session is displaying

1. autonomy support.
2. competence.
3. structure.
4. controlled motivation.

13. Meghan is a marathon runner and exercises every day. According to dual-process models, Meghan is likely to respond to environmental cues supporting physical activity through

1. non-conscious processes.
2. both conscious and non-conscious processes.
3. conscious processes.
4. deliberate processes.

14. Which of the following approaches to understanding motivated behaviour has been used most frequently by sport psychologists?

1. psychodynamic approach
2. cognitive-behavioural approach
3. cognitive approach
4. behavioural approach

15. What is a key distinction between coping and emotion regulation?

1. Emotion regulation includes voluntary, conscious efforts to deal with stressors or the emotions resulting from stressors; coping includes voluntary and automatic, unconscious responses to an emotion or situation.
2. Coping refers to behaviours to manage stressors; emotion regulation refers to thoughts to manage stressors.
3. Coping refers only to strategies to deal directly with problems; emotion regulation refers only to strategies to deal directly with emotions.
4. Coping includes conscious efforts to deal with stressors or the emotions resulting from stressors; emotion regulation includes voluntary and automatic, unconscious responses to an emotion or situation.

16. Lashing out spontaneously at a referee after receiving a penalty would be considered a form of

1. emotion regulation.
2. internal affect-worsening.
3. external affect-worsening.
4. emotion-focused coping.

17. Which of the following is true about the temporal patterning of the intensity of anxiety prior to sport competition?

1. Somatic anxiety increases and cognitive anxiety decreases in the time leading up to competition.
2. Somatic anxiety increases significantly starting several hours before competition, while cognitive anxiety is relatively constant prior to competition.
3. Both cognitive and somatic anxiety remain low until just after competition begins, then they increase rapidly before they gradually decline.
4. Both cognitive and somatic anxiety peak just after competition begins and then drop off rapidly.

18. Some studies have shown that social physique anxiety leads to lower levels of physical activity only in those who are low in self-presentational efficacy. This finding has been demonstrated in all but which of the following groups?

1. This is true in all groups.
2. college students
3. adolescent girls
4. older women

19. The attentional focus and selectivity hypothesis states that

1. when athletes experience competitive state anxiety, they are less able to pay attention to and process large amounts of information.
2. athletes high in trait anxiety are unable to pay attention to relevant cues in the environment.
3. anxiety is unrelated to performance.
4. somatic anxiety interferes with the type of information processed.

20. According to the cusp catastrophe theory, when does a catastrophe occur?

1. when physiological arousal is moderately high and cognitive state anxiety is high
2. when physiological arousal and cognitive state anxiety are both high
3. when physiological arousal and cognitive state anxiety are both low
4. when physiological arousal is moderately high and cognitive state anxiety is low

21. Which of the following statements best describes our understanding of the concept of stress?

1. Stress is universally experienced by athletes involved in competitive sports.
2. Stress is detrimental for sport performance.
3. The term stress refers to an external event or situation that has the potential to be interpreted as taxing or exceeding the person's resources.
4. The term stress refers to a process that involves cognitive appraisals of a person-situation relationship and the physiological, cognitive, emotional, and behavioural reactions that people have to heavy demands.

22. Which of the following is not a guiding principle for implementing coping interventions in sport and exercise?

1. Athletes should be able to have meaningful choices about the strategies they are offered to cope with stress.
2. Athletes learn best to cope with stress when exposed to frequent, high-stress situations.
3. Coping interventions should be backed by empirical evidence.
4. The effectiveness of coping interventions can be evaluated based on a variety of outcomes, not just performance.

23. An athlete who compares her current situation and stressors in sport to other athletes and their experiences to try and see similarities in their experiences is adopting what aspect of self-compassion?

a) desire to alleviate suffering

b) mindfulness

c) self-kindness

d) common humanity

24. The relationships among emotions, physiological processes, and performance are complex. In research examining the relationship between anger and performance, most athletes report

a) they could not control anger and perceived that it undermined performance.

b) they could control their angry feelings and consequently perceived anger to be advantageous for performance.

c) there was no relationship between anger and performance.

d) anger produced changes in dopamine levels in the brain, so it interfered with muscle coordination.

25. An intercollegiate figure skater is getting ready to compete. She has five minutes until she has to be on the ice, and right now she is extremely nervous. She is especially nervous about how the judges will score her performance and if they will like her routine. Which type of anxiety is she experiencing?

a) state anxiety

b) state anxiety and competitive anxiety

c) competitive anxiety

d) trait anxiety

26. An exerciser is getting ready to do a high-intensity interval training class. She has never done the class before, but she's heard it's a killer and most people don't make it through the first time they try it. She's a little worried, because everyone else waiting looks extremely fit, and it's been a while since she worked out—she knows she's not in the best shape right now. In this case, the difficulty of the class represents the \_\_\_\_\_\_\_ and her low fitness level is an example of \_\_\_\_\_\_.

a) task demands; resources

b) task demands; poor priorities

c) group needs; individual needs

d) resources; individual needs

27. Which of the following statements would you expect from an exerciser who has high self-presentational efficacy?

a) I know others must think that I don't belong in a gym.

b) I know others will see me as someone who is fit.

c) I am not sure if others will see me as strong or not.

d) I'm worried about embarrassing myself at the gym because I look so unskilled.

28. Which of the following is an example of self-handicapping?

a) An athlete says to his tennis coach, "I really think I will lose my match today because I've been sick all last week and haven't been able to practice."

b) A baseball player says to his teammates, "There's no way our team can win today—everyone knows that umpire is the worst in the league."

c) A golfer tells her parents, "Don't expect much today. I'm teeing off last, and the weather is supposed to be terrible as the day goes on—it's going to get very windy and might even rain. The people teeing off this morning got a real lucky break."

d) All of the above

29. Two friends on a soccer team are chatting before the game, and one says, "I am way more anxious than you." His friend asks him how he knows that, and he replies, "Because you are always excited about competing, and say those butterflies in your stomach just mean you are ready to get out on the field. I experience those same butterflies, but for me they just make me feel sick and all I can think about is how I'm not prepared to play." Which dimension of anxiety are they talking about?

a) timing of symptoms

b) frequency of cognitive intrusions

c) directional interpretation of symptoms

d) intensity of symptoms

30. According to the individual zones of optimal functioning hypothesis, which of the following is true?

a) When anxiety is higher than the optimal bandwidth, performance is poorer, but when anxiety is lower than the optimal bandwidth, performance is improved.

b) All athletes playing the same position on the same team will have the same optimal bandwidth since the performance requirements are the same.

c) Each individual has an optimal bandwidth of anxiety—any athlete in that bandwidth should have an optimal performance.

d) For high-level athletes, moderate levels of facilitative anxiety are best.

31. According to the cusp catastrophe theory, when does enhanced performance occur?

a) when physiological arousal is high and cognitive state anxiety is low

b) when physiological arousal and cognitive state anxiety are both high

c) when physiological arousal and cognitive state anxiety are both low

d) when physiological arousal is low and cognitive state anxiety is high

32. When anxiety is high, switching to conscious control of movements during competitive sport situations

a) enhances performance because mistakes are minimized, and athletes pay attention to all the details needed to perform movements.

b) enhances performance, since athletes pay attention to all the details needed to perform movements.

c) enhances performance because mistakes are minimized.

d) leads to decrements in performance because the coordination that normally occurs automatically in well-learned skills becomes disrupted.

33. A golfer is about to hit a drive off the tee. Which of the following needs to occur for her to have a good shot?

a) She must consider information about the course, such as where to place the drive, how wide the fairway is, the direction and speed of the wind, and how much roll she will get.

b) She must not pay attention to irrelevant information like what her group members are doing.

c) She must make a smooth swing in which all the muscles of the body are coordinated properly and are activated appropriately.

d) All of the above

34. Which of the following would be considered examples of choking?

a) A swimmer in the finals of the U Sports Championships places second, finishing behind only the number 1 seeded swimmer.

b) The world number 1 ranked snowboard cross racer fails to even reach the finals at the Winter Olympics after having medalled at every other event that season.

c) A marathon runner who has been having the best season of her career is not able to finish the Boston Marathon because she has been sick in the week leading up to the event.

d) All of the above are examples of choking.

35. What kind of intervention approach(es) does positive psychology in sport and exercise psychology utilize?

a)emotional

b)behavioural

c)cognitive

d)all of the above

36. Ethics is concerned with

a) moral responsibility as it relates to human behaviour.

b) right and wrong actions.

c) matters of right and wrong as they relate to human behaviour.

d) moral decisions.

37. Which of the following is not one of the codes of ethics particularly relevant to sport and exercise psychologists?

a) AASP Ethical Principles and Standards

b) APA Code of Ethics

c) CPA Canadian Code of Ethics for Psychologists

d) CSPA Code of Ethics

38. In the late 1970s and the 1980s, which discipline did sport psychology separate from?

a) sociology

b) motor learning

c) counselling

d) physiology

39. Which of the following is not one of the three factors required to determine causation?

a) the relationship must be replicated in another study

b) other plausible and reasonable explanations must be ruled out

c) a clear temporal order between the IV and DV

d) a systematic statistical relationship between the IV and DV

40. What are the main tenets of humanistic psychology?

a) personal striving, individual dignity, thriving, and resilience

b) human growth, personal striving, and individual dignity

c) personal responsibility, human growth, and resilience

d) personal responsibility, human growth, personal striving, and individual dignity

41. According to the cognitive-behavioural approach, what does learning involve?

a) beliefs, expectancies, and goals

b) beliefs, experiences, and capabilities

c) goals, optimism, capabilities

d) expectancies, modelling, and success

42. According to Gill and Deeter (1988), what three dimensions make up a multidimensional

achievement orientation?

a) competitiveness, win orientation, and goal orientation

b) win orientation, motivation, goal orientation

c) motivation, competitiveness, resilience

d) competitiveness, motivation, goal orientation

43. What are the two dimensions of perfectionism?

a) harmonious perfectionism and obsessive perfectionism

b) perfectionistic control and perfectionistic criticism

c) commitment perfectionism and confidence perfectionism

d) perfectionistic strivings and perfectionistic concerns

44. Reinforcement is linked to which approach to understanding motivated behaviour?

a) cognitive approach

b) behavioural approach

c) cognitive-behavioural approach

d) all approaches

45. Over the last month, Mary has started exercising five days a week for 30 minutes each day. According to the transtheoretical model, what stage of change is Mary in?

a) temptation

b) action

c) contemplation

d) maintenance

46. Martin finds that his childcare responsibilities often act as a barrier to his exercise program. In order to succeed in reaching his exercise goals for the week, Martin arranges for childcare so that he can make sure he has an opportunity to exercise. This is an example of

a) self-efficacy.

b) action planning.

c) behavioural intention.

d) coping planning.

47. The most prominent approaches to understanding motivation are grounded in

a) conscious processes.

b) intention.

c) self-efficacy.

d) non-conscious processes.

48. Physiological reactions occur in which stage of the stress process?

a) Stage 1 (environmental demand)

b) stage 2 (perception of environmental demand)

c) stage 3 (stress response)

d) stage 4 (behavioral consequence)

49. Hanin's Individual Zones of Optimal Functioning (IZOF) model suggests which of the following?

a)The zone of optimal functioning is the same for all individuals

b) Each individual has a specific optimal level of efficiency

c) Performance is best when arousal is high

d) Performance in best when arousal is moderate

50. Cognitive restructuring attempts to

a) Improve attentional focus

b) Identify different strategies for mental preparation

c) Improve problem-solving ability

d) Identify and modify stress-inducing self-statements

51. Which of the following best describes how relaxation (anxiety reduction) techniques are usually classified?

a) state and trait

b) cognitive and somatic

c) sport specific and general

d) cognitive and appraisal

52. Which of the following terms best describes an electronic monitoring device that can detect and amplify internal responses not ordinarily available to us?

a) biofeedback

b) biological mapping

c) classical conditioning

d) systematic desensitization

53. Imagery involves which of the following senses?

a) kinesthetic

b) visual

c) all of these

d) auditory

54. In terms of the timing of imagery, it is best to imagine the scene in which of the following?

a) fast motion

b) slow motion

c) real time

d) a combination of slow motion and fast motion

55. "Vividly imagined events produce an innervation in muscles that is similar to the innervation produced by physically practicing the movement." This is an illustration of which of the following theories?

a) Psychoneuromuscular theory

b) innervation theory

c) muscular contraction theory

d) symbolic learning theory

56. Which of the following is NOT a way in which imagery should be used?

a) building condifence

b) improving concentration

c) controlling emotional responses

d) reducing the amount of physical practice time

57. Imagery involves which of the following senses?

a) visual

b) kinesthetic

c) auditory

d) all of these

58. The concept of attentional alertness operates under the assumption that increases in arousal will cause which of the following to occur?

a) disrupted attention

b) attention to broaden

c) attention to narrow

d) enhanced attention

59. If just before a tee shot, a golfer shifts her attention from the length of the fairway and the direction of the wind to focusing only on the ball, her attention has shifted from \_\_\_\_\_ to \_\_\_\_\_.

a) broad-external; narrow-external

b) broad-internal; narrow-external

c) broad-internal; narrow-internal

d) broad-external; narrow-internal

60. Using a trigger word to stop negative self-statements can be best described by which of the following options?

a) peripheral narrowing

b) attentional narrowing

c) external attentional focus

d) thought stopping

61. Which of the following would NOT be an example of an internal distractor?

a) Attending to past or future events

b) choking under pressure

c) people or objects in your visual field

d) inadequate motivation

62. "Ironic processes in sport" refers to which of the following?

a) Doing something an athlete is not trained to do

b) The idea that trying not to perform an action can trigger its occurrence accidentally

c) Performing well even with little experience

d) ironically performing movement

63. One's confidence can change as the situation changes. This is known as which of the following?

a) trait self-confidence

b) situational self-confidence

c) naturally occurring self-confidence

d) state self-confidence

64. Sport self-confidence is currently viewed as which of the following?

a) an affective variable

b) a state variable

c) a trait variable

d) state-like or trait-like depending on the situation

65. Confidence is seen as multidimensional, consisting of confidence in which of the following areas?

a) one's level of fitness

b) all of these

c) one's ability to execute physical skills

d) one's psychological skills

66. Coaches often form expectations of athletes based on which of the following items?

a) person cues and media reports

b) performance information and person cues

c) scouting and media reports

d) performance information and media reports

67. Self-efficacy has been used interchangeably with which of the following?

a) self-confidence

b) self-esteem

c) self-concept

d) self-fulfilling prophecy

68. Female volleyball players who must wear tight uniforms may experience stressors related to self-presentation and body-related concerns. These concerns may lead them to use coping strategies that male athletes do not have to develop. This is an example of

a) cultural norms in sport.

b) role constraint theory.

c) sex-role stereotyping.

d) the dispositional hypothesis.

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# 200-Level Courses

## KIN 205

1. What is research
   1. A method of obtaining observations, and producing results and analysis in helping the greater good
   2. A prescribed sequence of activities : purpose, methods, data collection, results
   3. A method of gather novel data
   4. A process of gathering information, analyzing information, and that contributes to new knowledge
2. What are the dimensions of research (Select all that apply)
   1. Topic
   2. Novelty
   3. Technology
   4. Scope
   5. Mode
   6. Methodology
   7. Ideology
   8. Politics
   9. Utility
3. What type of research is quantitative
   1. Synthesis research
   2. Meta-analysis
   3. Case studies
   4. Systematic review
4. What is scope
   1. Nature of the researcher’s belief about how we acquire knowledge about truth and reality
   2. basic vs applied research continuum
   3. Understand and change/impact health behaviour, typically field-based
   4. Focus on a single case or large sample
5. How is quantitative data generated?
   1. surveys/questionaires
   2. Case Studies
   3. Observational Research
   4. Interviews
6. How is qualitative data generated?
   1. Performance measures
   2. Motion analysis
   3. Questionaired
   4. Open ended responses on surveys
7. What are examples of performance measures
   1. Reaction time
   2. BMI
   3. FFM
   4. Body Composition
8. Which of the following is a type of interview
   1. Semi-structured
   2. Random assignment
   3. Equitable selection
   4. One on one
9. Which of the following is the best definition of epistemology?
   1. Nature of the researcher’s belief about how we acquire knowledge about truth and reality
   2. basic vs applied research continuum
   3. Understand and change/impact health behaviour, typically field-based
   4. Focus on a single case or large sample
10. What is pragmatism?
11. What is the transformative worldview?
12. What is an inductive approach
13. What is experimental research?
    1. Gathering data via observation
    2. Observing research trends via correlation
    3. studies that aim to evaluate interventions but that do not use randomization
    4. A study which seeks to isolate cause and effect by manipulating proposed casual variables
14. Study design: Hanna and Janice are the principal investigators, and have stated the purpose statement as, “In line with the Restorative Model of Sleep, the purpose of this exercise intervention is to test the type of running and its influence on sleep quality, which is mediated by muscle fatigue. Age, sex, time of exercise, time of sleep, duration of exercise, duration of sleep, and external stressors are controlled among novice kayakers, 21 years old.” “The hypothesis for this study is, if an individual partakes in a higher intensity running, then, their sleep quality will be greater as their muscles will be more fatigued.”
    1. Identify the Dependent variable, predictor variable, two extraneous variables, 1 mediator
15. How can you control for threats to internal validity
    1. Randomization, placebos and blinding, standardizing experieemnst and instruments
16. How can you control for external validity
17. Random assignment controls for (Select all that apply)
    1. Past history
    2. Testing
    3. Maturation
    4. Extraneous variables
18. Which of the following designs should the researcher use if he is interested in studying causal relationships that exist between events that have already occurred?
    1. Ex post facto
    2. Analytical
    3. Quasi-experimental
    4. Correlational
19. What is a grounded theory
20. A Commonly used to gain an in-depth understanding of a particular case, different methods of data collection to study the case, identify a bounded case to define sample/parameters
21. What are the three characteristics of community based research
22. The characteristics of mixed methods are (select all that apply)
    1. Qualitative and quantitative data are collected and analyzed rigorously (based on research questions)
    2. The two forms of data are mixed/integrated/linked
    3. Priority is given to one or both forms of data
    4. Procedures are used in a single study or in a multiple phases of a program of study
    5. Procedures are framed within philosophical worldviews
    6. Procedures are combined into specific research designs that direct the plan for conducting the study
23. Why should you use the mixed methods research type (select all that apply)
    1. One data source may be insufficient
    2. To explain initial results
    3. Generalize exploratory findings
    4. Enhance a study with a second method
    5. Understand a research objective through multiple phases
24. Why should you use the mixed methods research type (select all that apply)
    1. One data source may be insufficient
    2. To explain initial results
    3. Generalize exploratory findings
    4. Enhance a study with a second method
    5. Understand a research objective through multiple phases
25. What are the challenges with mixed methods (select all that apply)
    1. Need to be skilled in both quantitative and qualitative approaches
    2. Time and resources
    3. Externally validity insights of only quantitative data
    4. High reliability
26. What are the key decisions to guide mixed methods
27. What is the exploratory sequential design
    1. Qualitative -> Quantitative -> Interpretation
    2. Qualitative -> Quantitative -> Observation -> Interpretation -> Conclusion
    3. Qualitative -> Quantitative -> Conclusion
    4. Quantitative -> Qualitative -> Interpretation
28. What is the specific criteria for mixed methods
29. Please define the post-positivist worldview and give an example. What type of approach is it? What are two assumptions?
30. If I believe that friends are always nice and meet a new person who is always nice to me, I may refer to them as a friend, assimilating them into my schema. Maybe I'll meet a different person who sometimes pushes me to try harder and isn't always nice. I might change my schema to accommodate this person by deciding that a friend doesn't always have to be nice if they have my best interests at heart. This may also cause me to reconsider whether the first person still fits into my friend schema. What worldview would be best suited for this, and why? Have one guiding research question and hypothesis based on this world view. Be sure to label relevant variables (DV,IV, etc.). What source of data will you be using?

## KIN 211

Midterm 1 Questions:

1. Define the following:
   1. Motor Behaviour
   2. Motor Control
   3. Motor Learning
   4. Reaction Time
   5. Movement Time
   6. Total Response Time
   7. Simple RT
   8. Choice RT
   9. Discrimination or Go/No-Go RT
   10. Absolute Error
   11. Constant Error
   12. Variable Error
   13. Mental Chronometry
   14. Chunking
   15. Declarative Memory
   16. Procedural Memory
   17. Stroop Effect
   18. Cocktail Party Effect
   19. Dichotic Listening Paradigm
   20. Psychological Refractory Period
   21. M1
   22. M2
   23. M3
2. Identify three sub-disciplines of motor behavior
3. List 4 reasons why we study motor behavior and where it can be applied
4. Contrast measures of brain and behaviour and determine when one measure would be better than another
5. What are the 4 criterias of a motor skill?
6. Describe three motor skill classification systems and be able to place skills along a continuum.
7. Be familiar with the terminology and equipment needed to separate and measure RT and MT.
8. AE refers to which of the following?
   1. Represents the mean error score for a person across a series of trials.
   2. Represents average magnitude and deviation.
   3. Measures how consistent (or, conversely, variable) you were.
9. Describe 3 kinematic measures of movement process (i.e., measure of movement form).
10. Describe the computer analogy (“humans as information processors”).
11. Describe the IP (information processing) approach to thinking about motor control.
12. Deciding on a plan of action falls under which stage of information processing?
    1. Stimulus Identification
    2. Response Selection
    3. Response Programming
13. Movement complexity influences which stage of information processing?
    1. Stimulus Identification
    2. Response Selection
    3. Response Programming
14. Which memory system is most resistant to decay and has an unlimited capacity?
    1. Short-Term Sensory Store
    2. Iconic Memory
    3. Long-Term Memory
    4. Short-Term Memory
15. What are the 4 things that affect LTM/retention?
16. What are the 3 key characteristics of attention?
17. Differentiate between structural and capacity interference (think about measures, probes/visual gaze).
18. Know the 2 main types of directional focus of attention and how they might interact with skill (drawing on study evidence).
19. Identify and describe the components of the closed-loop control system.
20. Provide a mechanical and human example of a closed-loop control system.
21. Know how to distinguish skills based on open-loop and closed-loop control.
22. Identify benefits and limitations of a closed-loop model.

**Midterm 2 Questions:**

1. Define the following:
   1. Tau
   2. The McGurk Effect
   3. Motor Program
   4. Generalized Motor Program
   5. Speed-Accuracy Trade-Off
   6. Motor Learning
   7. Positive/Negative Transfer
   8. Proactive/Retroactive Transfer
2. Describe the role of the ventral and dorsal streams for movement control and planning.
3. Be able to discern evidence supporting the separation of these two-streams.
4. Understand and know the results showing empirical evidence for influence of vision (fast/non-conscious processing of vision) on postural control.
5. Identify, describe and differentiate between sensory receptors that provide proprioceptive information to the CNS.
6. Know how the Dewhurst experiment illustrates M1 and M2.
7. Contrast closed-loop and open-loop models.
8. Describe deafferentation (Ian Waterman) and how this provides support for the concept of motor programs.
9. Describe studies and be able to interpret results from 4 streams of evidence in support of motor programs
10. Identify benefits and limitations of the early notion of a motor program.
11. List & describe the invariant features and parameters thought to characterize a GMP.
12. Know how to calculate relative timing to determine whether an action is from the same class of actions.
13. Know how schemas help solve the novelty and storage problem.
14. Define Fitts’ Law and the variables of the Fitts’ Law equation.
15. Know how to calculate index difficulty and MT based on the Fitts equation.
16. Differentiate between the Logarithmic and Linear Speed-Accuracy Trade-Off relationships.
17. Explain how manual aiming movements are controlled depending on the movement speed.
18. Know the relation between force and variability (& force & spatial accuracy) in the context of impulse timing models of motor control.
19. Distinguish performance from learning.
20. Describe performance curves.
21. Identify factors that affect the shape of performance curves.
22. Describe methods to assess motor skill learning.
23. Know why we implement a retention interval in motor learning experiments.
24. Calculate absolute retention and relative retention (difference score, saving score).
25. Differentiate between retention tests and transfer tests and transfer tasks and how we use them to assess learning.
26. Calculate savings score related to transfer/previous practice.
27. Describe the pattern of retention for discrete vs. continuous tasks.
28. Identify reasons for differences in retention between discrete and continuous tasks.
29. 4 things that affect LTM and retention

**Final Questions:**

1. Define the following:
   1. Deliberate Practice
   2. Practice Variability
   3. Recall Schema
   4. Recognition Schema
   5. Contextual Interference
   6. Knowledge of Results
   7. Knowledge of Performancce
2. Distinguish between massed and distributed/spaced practice
3. Describe practice-distribution effects on performance and learning and know evidence
4. What are the 3 hypotheses as to why massed practice might impair learning compared to distributed practice?
5. Distinguish between variable vs. constant practice
6. Know why schema theory explains variable practice effects and the especial skill exception
7. Know 2 explanations for the CI effect
8. Understand data showing benefits of “hybrid methods”
9. Distinguish part and whole practice methods
10. Identify task constraints on the effectiveness of part-whole practice (i.e., know the task conditions when part practice is thought to be effective
11. Identify task constraints on the effectiveness of part-whole practice
12. The following pattern represents which practice method? A, A, AB, AB, ABC, ABC, ABC, ABCD, ABCD, ABCD, ABCD
    1. Fractionation
    2. Segmentation
    3. Reverse-Chaining Method
    4. Simplification
13. Relate the simplification idea to simulation training and detail important considerations for maximizing transfer and decide whether to have simulation training (pros and cons)
14. Explain how data from the physical guidance literature has provided evidence to support the Guidance Hypothesis and detail reasons why physical guidance fails to aid learning
15. Distinguish between 2 methods of physical guidance practice and be able to identify examples which fall at these extremes from complete passive guidance to a more ative assist
16. Know how to interpret challenge-point performance/learning graphs (identify optimal challenge point, know how this may differ for beginners vs experts)
17. Identify techniques that can help to encourage “learning” (at the expense of performance) as well as principles to encourage transfer to the game
18. Distinguish intrinsic and extrinsic/augmented feedback
19. Know the 4 functions of augmented feedback
20. Be able to calculate absolute and relative frequency of feedback
21. List and describe methods which result in reduced feedback frequency, yet aid learning
22. Be able to describe effects of reducing feedback in terms of the guidance hypothesis
23. Describe bandwidth KR and provide 3 reasons for its efficacy
24. Be able to define and relate concurrent feedback to physical guidance and interpret data showing their similarities
25. Know whether short or long feedback delays are good for learning and why (relate to guidance)

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## KIN 232

1. The 2 biochemical reactions that make up metabolism are
   1. Catabolism and Aerobic Respiration
   2. Anabolism and the Krebs cycle
   3. Catabolism and Anabolism
   4. Catabolism and glycogensis
2. Glycolysis is the breakdown of
   1. Glucagon to pyruvate
   2. Glycogen to glucose
   3. Glycogen to glucagon
   4. Glucose to pyruvate
3. Beta oxidation is the breakdown of \_\_\_\_\_ into \_\_\_\_ to be used in the \_\_\_\_ cycle
   1. Cholesterol, acetyl COA, krebs
   2. Cholesterol, lactate, Nitrogen Fixation cycle
   3. Fatty acids, acetyl COA, krebs
   4. Fatty acids, lactate, nitrogen fixation cycle
4. Triglycerides are stored in the
   1. Adipocyte
   2. Neuronal tissue
   3. Lipoprotein lipase
   4. Skeletal muscle tissue
5. A male eats oats, berries, flax (11g fibre), 2 granola bars (3g fibre each), and pasta and broccoli (5g fibre). Does he have enough fiber to meet his RDA?
   1. No, he eats 22g but needs 38g
   2. No, he eats 22g, but needs 25g
   3. Yes.
6. Walk me through the steps of digestion and absorption of a carbohydrate
   1. Mouth: mechanical and chemical digestion. Salivary amylase breaks down polysachardies.
   2. Stomach: Stomach and enzymes prepare sugar for delivery to SI
   3. SI: Chemical digestion and absorption. Breaks carbs into monosacharides and they move into bloodstream
7. What is the treatment of celiac disease
   1. Ingestion of excess hydrogen
   2. Avoidance of gluten
   3. Avoidance of products like almond milk
   4. Dietary changes, increases in exercise, surgery
8. Which compound is similar to cholesterol
   1. Phospholipids
   2. Plant sterol
   3. Lecithin
   4. Triglyceride
9. Which of the following is not a function of polyunsaturated fats
   1. Epithelial cell function
   2. Regulation of gene expression
   3. Synthesis of epinephrine
10. The following occurs to your body at the start of ketosis
    1. Decreases rate of protein breakdown
    2. Thyroid hormone T3 falls, metabolic rate decreases
    3. Gluconeogenesis increases
    4. Decrease in circulating glucose
11. What are the 3 BCAA’s
    1. Leucine, isoleucine and valine
12. The RDA for protein in adults is..
    1. 0.7 g/kg
    2. 0.97 g/kg
    3. 0.8 g/kg
    4. 1.29 g/kg
13. A protein can be denatured due to..
    1. Due to very high heat in the environment
    2. Due to the R chain
    3. Due to the Nitrogen in protein
14. Iron is needed in how much per day (add units)
    1. <100mg/ day
15. Which of the following people are at risk for iron deficiency
    1. Vegans
    2. A recreational hockey player
    3. Sedentary individual
16. An athlete loses 3L of sweat during his track workout, how much Na+ is lost?
    1. 3000mg
17. The RDA for women for MG is
    1. 4700mg
    2. 320mg
    3. 420mg
    4. 1500mg
18. How much liquid does a female require
    1. 2.7L/day
19. In soccer what should you eat or drink
    1. Water
    2. Water and a banana
    3. Gatorade
    4. Gatorade and a granola bar
20. If a sports drink has 36g CHO, and is a volume of 591mL, what is the CHO%, and what type of drink is it
    1. 6.1%, isotonic
21. What are not one of the different tastes
    1. Sweet
    2. Umami
    3. Bitter
    4. Salty
    5. Sour
    6. Tangy

## KIN 235

Module 1 Questions:

1. Define Energy, Work, and Power
2. How do the Laws of Thermodynamics apply to human movement?
3. Describe the 4 types of Enzymatic Regulation:
4. Identify sources of Metabolic Inefficiency
5. Describe the 4 types of basic reactions in human metabolism:

Module 2-5

Module 6 Questions:

1. Two identical twins with the same baseline strength are randomized to complete 12 week resistance training programs where each set is performed to failure. One twin trains at 30% 1RM, the other at 80%. What adaptations would you expect to occur following training? Explain the physiological mechanism involved.
2. A student undergoes 16 weeks of resistance exercise, they get stronger, why?
3. The winning time for the 2016 Men’s Olympic marathon was 2:08:44. The time of the 50th place finisher was 2:18:36. What physiological differences might explain the differences in finishing time?
4. An untrained student cycles at 130 w which requires O2 consumption of 50% of their VO2max They then complete 3 months of aerobic training. After training, they again cycle at 130 W, what physiological differences occur between the pre and post training cycling bouts?

# 300-Level Courses

## KIN 313

Midterm #1 (Short answer):

1. Define a motor neuron pool, a motor unit, and a muscle unit.
2. Define the innervation ratio and give an example of a muscle with a large innervation ratio, as well as one with a small innervation ratio
3. Compare the differences in (a) input resistance, (b) rheobase, (c) conduction velocity, and (d) afterhyperpolarization between large motor neurons and small motor neurons.
4. Define a ‘twitch’. Draw and label one single force-time graph of the 3 different types of motor neurons: type S, type FR, and type FF. Compare the differences in twitch characteristics of these 3 types.
5. What are two methods of recording the activity of motor units?
6. Why is it important to recruit according to the Henneman’s size principle?
7. Draw the force-frequency relationship. What shape is it in?
8. Name and describe 2 discharge patterns that are altered to affect force production.
9. How are excitatory postsynaptic potentials (EPSPs) different from action potentials?
10. Draw a diagram of divergence vs. convergence
11. Draw diagrams of spatial summation & temporal summation.
12. Draw and label the intrafusal fibers of a muscle spindle. Be sure to include bag fibers, chain fibers, the afferents innervating the fibers, and the efferent system.
13. What does the primary afferent and secondary afferent primarily code for in muscle spindles? Do they code for anything else? Are these fast- or slow-adapting?
14. Draw a diagram of the discharge pattern of Ia afferent when the muscle shortens. Draw another diagram of the discharge pattern when the gamma system is turned on as the muscle shortens.
15. Give an example of how the fusimotor system is task dependent.
16. Describe the two ascending pathways that carry sensory information from muscle, joint, and skin receptors.

Midterm #2 (Short answer):

1. What do GTOs code for? How are they oriented in comparison to the muscle spindle?
2. Describe where the 4 types of joint receptors are located.
3. What are the 2 limitations of joint receptors?
4. Do high or low threshold joint receptors have strong projections on alpha motor neurons? Which receptors have strong projections on gamma motorneurons?
5. What is mechanotransduction?
6. Describe what each cutaneous receptor responds to?
7. What is the difference between kinesthesis and proprioception?
8. Why is there a problem with the code from muscle spindles? How does the brain solve this?
9. Draw the Hoffman or H-reflex. What is an antidromic propagation?
10. Define a reflex
11. Draw a simple diagram for reciprocal inhibition
12. Draw a simple diagram for the renshaw cell
13. Draw a diagram of pre-synaptic inhibition
14. Explain phase-dependent reflex reversal

Final (Cumulative): Remaining lectures

1. How does tonic descending input modulate reflexes?
2. What do otoliths and receptors in semicircular ducts code for receptively?
3. What is galvanic vestibular stimulation? What action does it cause?

## KIN 320

Test #1 Questions

1. When looking at the Canadian demographic, what do the statistics tell us about Canadians’ health and fitness?
2. What are some common misconceptions about physical activity? How might we rephrase those?
3. What are the 24-Hour Movement Guidelines?
4. What changes to the 24-Hour Movement Guidelines have been made? Why?
5. What is the difference between “Evidence-Informed Practice” and “Evidence-Based Practice”?
6. What are the 4 Pillars of Evidence-Informed Practice? / Define the evidence-informed practice model.
7. What aside from the actual intervention itself is important to consider when prescribing exercise?
8. What are the Stages of Motivation (also called the Transtheoretical Model)? What should this model be used for? Motivational interviewing is used for individuals in which stage(s)?
9. What is Motivational Interviewing?
10. What is the difference between Sustain Talk and Change Talk?
11. What is the difference between Preparatory Change Talk and Mobilizing Change Talk? Use the acronyms.
12. What is the “Spirit of MI”? Use the acronym.
13. What are the Fundamental Processes of MI?
14. What is the Intention-Behaviour Gap? How prevalent is this issue?
15. Which behavior change model targets the Intention-Behaviour gap?
16. What is SMART goal setting?
17. What does Brief Action Planning entail?
18. Highlight the key aspects of clearing someone for exercise

Test #2 Questions:

1. Who can administer pre-exercise evaluations? Use EIP to explain your answer.
2. What is Cardiorespiratory Fitness (CRF)?
3. Identify the different types of Maximal or Near Maximal Cardiorespiratory Fitness (CRF) assessments.
4. Identify the different types of Submaximal Cardiorespiratory Fitness (CRF) assessments.
5. Compare the advantages and disadvantages of different assessments and use EIP to select an appropriate Ax method.
6. When do you use a submaximal test and when do you use a maximal test?
7. Should we always assess client weight and body composition?
8. Define obesity, weight bias, stigma, body composition and sarcopenia.
9. What’s more important for health? Aerobic fitness or strength training? Or both?
10. What is muscular fitness?
11. How do we pick the appropriate modality for strength training?
12. Define muscular strength, muscular endurance, muscular power, static strength, and dynamic strength.
13. What is a 1RM test? Is it used for prescription? What are the general principles?
14. What are some of the sources of error when conducting 1RM tests?
15. Which aspect of muscular fitness is most important to older adults? Why?
16. What measures of flexibility do we use?
17. When should you NOT assess ROM? (contraindications to ROM)
18. What are the Principles of Training?
19. What is FITT-VP?
20. What should a warm-up consist of?
21. How do you administer a HR assessment?
22. What is a rating of perceived exertion?
23. How do you target strength/power/endurance/hypertrophy with varying rep ranges?
24. What can we use to prescribe instead of %1RM?
25. What is Time Under Tension?
26. Why do we do a Cool-Down?
27. When someone is starting a program, how would you typically program for them?
28. What is periodization and programming?
29. What is the General Adaptation Syndrome (GAS)?
30. Why do we use periodization?
31. What are the 7 Strength Training Programming Variables?

Test 3 Questions:

1. What happens in a SCI?
2. How do we classify SCIs?
3. How do we grade motor function?
4. Identify considerations for prescribing exercise for individuals with SCI
5. What are the differences in the principles of exercise prescription for those with SCI versus able-bodied prescriptions?
6. What modality would you use to assess CRF for someone with stroke (hemiplegia)?
7. Identify exercise testing considerations for clients with SCI.
8. What bodily cues should we use/not use when describing PA intensity for someone with SCI?
9. If two people both have a T9 incomplete injury, will their injury experience be the same?
10. What is FES? What is it used for? Who should use FES? How long do the benefits of FES last?
11. Why is physical activity important for older adults?
12. How do we define “Older Adults”?
13. What health benefits to resistance training may be important to my client?
14. Describe what happens to muscle strength as we age.
15. What are the rates of PA among older adults?
16. Describe what we typically see happen to physiologic and health-related variables as people age.
17. What do we use to assess functional status in older adults?
18. What are the FITT recommendations for older adults?
19. What can we do to help prevent falls?
20. What is the difference between Alzheimer’s Disease and Dementia?
21. Describe the pathology of Alzheimer’s (AD).
22. Understand the ATN….V Model.
23. Identify the stages of Alzheimer’s Disease.
24. Why have we shifted away from focusing on when individuals are diagnosed with dementia/AD in research settings?
25. How do mobility and cognition interact (“the intersection”)? What does this test allow us to do/w
26. What is the linea alba? The Distasis Recti?
27. What incisions are made in a C-section?
28. Many women return to work 6 weeks after birth in the US? Is this enough time?
29. Describe the tearing that can occur from vaginal births.
30. What is a pelvic organ prolapse? Name the types of pelvic organ prolapse that can occur.
31. What is arthritis?
32. How do we treat arthritis?
33. What is osteoarthritis? What is the pathophysiology? What are the risk factors for OA?
34. Identify exercise considerations for people with OA.
35. What is Rheumatoid Arthritis? What is the pathophysiology?
36. What are some of the biggest barriers to exercise among people with arthritis? How would you address those barriers? Prescription considerations for people with arthritis.
37. How do we employ exercise testing in the arthritic population?
38. What are the components of an Injury Prevention Program?
39. Identify evidence-based exercise programs for people with arthritis.
40. What are the RAMP principles?
41. What should we research when doing our homework on an unfamiliar disease or disability?
42. ​​What are some things we should be mindful of when considering a patient with Diabetes?
43. What is Diabetes?
44. What are the signs and symptoms of Diabetes?
45. Define the 4 types of Diabetes.
46. Describe the pre diabetes stage of diabetes.
47. What are the benefits of regular exercise in those with Diabetes?
48. Describe contraction induced glucose uptake.
49. Exercise testing considerations for individuals with diabetes.
50. What are the 2 biggest concerns we have as exercise professionals when working with someone with diabetes?
51. Define common types of cardiovascular disease (CVD).
52. What is heart failure (HF)? What exercise training considerations are there for this population?
53. Identify some procedures or medical devices that may be associated with individuals with CVD across a number of different populations.
54. What are some general considerations for those with CVD?

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## KIN 335

Midterm - MC

1. What substrate possesses the most potential energy?
   1. Glucose
   2. Glycerol
   3. Amino acids
   4. Fatty acids
2. Which anaerobic system changes occur with training:
   1. Increased capacity to generate & tolerate high levels of blood lactate during all-out effort
   2. Decreased quantity & activity of the glycolytic phase of glucose metabolism
   3. Reduced levels of anaerobic substrates
   4. None of the above
3. Endurance training lowers blood lactate levels and extends exercise before onset of blood lactate accumulation during exercise of increasing intensity by:
   1. Increasing the amount of O2 in arterial blood
   2. Increasing rate of lactate formation during exercise
   3. Decreasing rate of lactate clearance during exercise
   4. Combined effects of decreasing lactate formation and increasing lactate removal
4. Producing high blood lactate levels during maximal exercise increases with specific sprint-power anaerobic training and decreases when training ceases due to:
   1. Reduced motivation during training
   2. Increased intramuscular glycogen stores with training
   3. Training-induced reductions in glycolytic-related enzymes
   4. Higher O2 in arterial blood
5. Which of the following does not augment lipase activation and subsequent lipolysis and free fatty acid mobilization from adipose tissue:
   1. Epinephrine
   2. Norepinephrine
   3. Oxaloacetate
   4. Glucagon
   5. Growth hormone
6. During maximum effort exercise (E.g. cycling, running), the rate of glycolysis is limited by:
   1. Phosphofructokinase
   2. ATPase
   3. Lipase
   4. Glycogen synthase
7. Which enzyme catalyzes the following reaction of pyruvate → lactate:
   1. Pyruvate dehydrogenase
   2. Pyruvate hydrogenase
   3. Lactate dehydrogenase
   4. Lactate hydrogenase
8. Following an extended period of aerobic training (E.g. 3 months), which of the following is an aerobic training adaptation that would facilitate the rate of aerobic metabolism when exercise begins:
   1. Increased reliance on amino acid metabolism
   2. A more rapid increase in muscle bioenergetics
   3. Reduced end-diastolic volume
   4. A lower plasma volume
9. Regarding the citric acid cycle, which statement is false?
   1. FAD is involved in only one operation in the cycle
   2. The formation of acetyl CoA from pyruvate is irreversible
   3. Oxygen participates directly in the reactions
   4. An acetyl group joins with oxaloacetate the produce citrate
10. With respect to Poiseuille’s Law, which factor influences blood flow the most:
    1. Blood viscosity
    2. Vessel radius
    3. Vessel length
    4. Gradient in pressure

Midterm - Short Answer

1. Name the 3 prerequisites for continual re-synthesis of ATP during coupled oxidative phosphorylation.
2. A number of cardiovascular adjustments accompany dynamic exercise such as running. Name 2 factors that contribute to reduced blood flow to non-active tissue. Within active tissue, vasodilation occurs from local factors related to tissue metabolism that act directly on smooth muscle bands of small arterioles and precapillary sphincters. Name one.
3. Individuals possess many steady-rate levels during exercise depending on training level. Name the two factors that help explain athletes’ high steady-rate levels.
4. Sketch the relationship between O2 consumption and cardiac output for an endurance athlete and a sedentary college-aged student
5. Name the 3 specific energy sources for fat catabolism.
6. Name the four key enzymes that help regulate glycolysis.
7. Explain the difference between lactic acid vs. lactate.

Midterm - Long Answer Essay

1. Compare and contrast the energy systems used by an athlete completing a 200 m running sprint (21 seconds) and another athlete competing in an ironman triathlon (9 hours; 3.8 km swim, 180 km cycle, 42 kim run). Explain the difference with respect to ATP turnover, substrate utilization and the key physiological and biochemical features that permit energy turnover in each event.

Final - MC

1. Which of the following would NOT be considered part of the collective changes known as “the athlete’s heart”:
2. Increase in heart mass & volume
3. Reduced left ventricular end diastolic volume during rest and exercise
4. Myocardial cell enlargement
5. Increased LV cavity
6. Which aspects of cardiovascular function decline as a function of aging (>65 y)?
   1. Maximum cardiac output
   2. Compliance of large arteries
   3. Capillary muscle fibre ratio
   4. All of the above
7. Increase in blood’s oxygen-carrying capacity provides the most important longer-term adjustment to high altitude exposure. What factors account for this adaptation?
   1. Initial decrease in plasma volume
   2. Increase in erythrocytes and hemoglobin synthesis
   3. The lactate paradox
   4. A and B

Final - Short answer

1. There are six mechanisms for how ergogenic aids might work. Name one.
2. Three factors influence the total amount of sweat vaporized from the skin and pulmonary surfaces. Name one.

Final - Long answer

1. Summarize the potential mechanisms for impaired cardiac function during prolonged exercise.
   1. Based on the in-class debate and reading regarding “live-high, train-low,” compare and contrast the physiological changes observed in short-term altitude exposure versus long-term altitude exposure.

# 400-Level Courses

## KIN 411

Midterm 1:

1. What are the different planes?
2. What are the different orientations?
3. Describe the organization of the human nervous system.
4. Describe the anatomy of a neuron.
5. What are the 3 different kinds of connections within the brain?
6. Describe the anatomy of the brain.
7. Describe the anatomy of the central structures of the brain (the thalamus and brainstem).
8. Describe how the inferior portions of the brain align with it’s “carrying case”.
9. What are the protective layers of the brain?
10. What is a herniation? How do the meningeal layers play a role here?
11. What is cerebrospinal fluid (CSF)? How is it created? Where is it found? What is its purpose?
12. What is the ventricular system in the brain?
13. Describe the basic anatomy of the SC.
14. Where do spinal nerves exit?
15. Identify the clinically significant nerve roots and their myotomes.
16. What is a lower motor neuron? Why is it called the ‘Final Common Pathway’?
17. What symptoms do we see in LMN lesions?
18. What is “Foot Drop”?
19. What are the causes or mechanisms of a LMN lesion?
20. What are upper motor neurons?
21. Outline the neuroanatomical names for the bundles of white matter as they travel through the brain and brainstem (via the corticospinal tracts).
22. Describe the 2 corticospinal tracts.
23. Describe the corticobulbar tract.
24. Describe the somatotopic organization of the corticospinal and corticobulbar tracts.
25. Describe the rubrospinal tract
26. Describe the reticulospinal tract
27. Describe the vestibulospinal tract
28. Describe the tectospinal tract
29. What are the causes or mechanisms of an UMN lesion?
30. What are the symptoms of an UMN lesion?
31. Describe Hemiplegic Gait?
32. What are the 2 diseases that affect the UMNs?

Midterm 2:

1. What are the 5 types or modalities of sensory input?
2. What are dermatomes? Where are they globally located? Name the clinically significant dermatomes.
3. What are the 2 main ascending pathways?
4. Where is the primary somatosensory cortex?
5. Describe the symptoms associated with damage to the PCML pathway.
6. Describe Tabetic (Ataxic) Gait
7. Describe the symptoms associated with damage to the spinothalamic (AL) pathway.
8. Describe the trigeminal nuclei
9. Describe the symptoms associated with damage to the sensory inputs from the face.
10. Describe the 5 different spinal cord syndromes and how they present.
11. Describe other sensory disorders that are known to affect sensory function.
12. What is neuropathy? What are the types of neuropathies?
13. What is the vestibular system? Describe where the vestibular system is found.
14. Describe the anatomy of the vestibular system.
15. Describe how the vestibular system codes for head movement within the semicircular canals.
16. Describe how the vestibular system codes for head movement within the otolith organs.
17. Describe the vestibular sensory neurons and their pathways.
18. Describe the vestibulo-ocular reflex (VOR).
19. Describe the difference between a peripheral/central vestibular lesion. How can we test if someone has a peripheral/central lesion?
20. What is a unilateral vestibular lesion? Describe the symptoms, tests, and causes.
21. What is bilateral vestibular loss? Describe the symptoms and causes
22. What is association cortex? What are the types of association cortex?
23. Describe the motor association cortex generally.
24. Describe the role of the premotor cortex of the motor-association cortex.
25. Describe the role of the supplementary motor area of the motor-association cortex.
26. Describe the Somatosensory Association Cortex.
27. What might we see if there is damage to the somatosensory association cortex?

Final:

1. What are multimodal or heteromodal association areas?
2. Describe the asymmetry of the multimodal association areas.
3. Describe what Apraxia is.
4. Describe what hemispatial neglect (or hemineglect) is.
5. Describe what Alien Hand is.
6. Describe the anatomy of the cerebellum.
7. Describe how the cerebellum is connected to and communicates with the brain stem.
8. Describe the 3 key input pathways that send information to the cerebellum.
9. Describe the main cerebellar output pathways from the cerebellum and their functions.
10. Describe the somatotopic organization of the cerebellum.
11. Describe the general role of the cerebellum.
12. Describe what the “double crossover” is.
13. Describe what symptoms will present when there is damage to the intermediate hemisphere of the cerebellum.
14. Describe what symptoms will present when there is damage to the midline of the cerebellum.
15. Describe what symptoms will present when there is damage to the flocculo-nodular lobe of the cerebellum.
16. Describe the anatomy of the basal ganglia
17. Describe the cortical inputs to the basal ganglia.
18. Describe the outputs from the basal ganglia.
19. How does the basal ganglia process the information it receives?
20. What are the functions of the basal ganglia?
21. Describe what Parkinson’s Disease (PD) is and how it relates to the basal ganglia.
22. What are the treatments for PD?
23. What is Huntington’s Disease (HD) and how does it relate to the basal ganglia?
24. How do we rank movement disorders by movement speed?
25. What is Athetosis?
26. What is Hemiballismus?
27. What is Tourette’s Syndrome and how does it relate to the basal ganglia?
28. Describe the anatomy of the vascular supply of blood to the brain.
29. How do vascular injuries occur and what happens as a result?

## KIN 420

Midterm Questions:

1. Be aware of relevant foot and ankle anatomy
2. What is the difference between patient-oriented outcome measures and disease-oriented outcome measures?
3. What are the 2 evaluation templates?
4. What are the aspects of a physical examination?
5. What has RICE been replaced with in recent years?
6. What are the Ottawa Ankle Rules?
7. Know the MOI, risk factors, special tests, signs and symptoms, treatment, RTP, and other potential diagnoses for the following: Lateral Ankle Sprain; Medial Ankle Sprain; Ankle Dislocation; High Ankle Sprain; Plantar Fasciopathy; Turf Toe; Lisfranc Injuries; MTP joint injury; Hallux valgus; Fractures
8. Know the relevant knee and lower leg anatomy
9. Know the MOI, risk factors, special tests, signs and symptoms, treatment, RTP, and other potential diagnoses for the following: ACL injuries; MCL injuries; patellar dislocation; patellar tendon rupture; meniscus injuries; chronic knee pain; patellar tendinopathy; patellofemoral pain syndrome; achilles tendon injuries; medial tibial stress syndrome; chronic exertional compartment syndrome; tibial stress fracture; anterior tibial stress fracture
10. Know the relevant hamstring anatomy
11. Know the MOI, risk factors, grades, diagnosis, differential diagnosis, acute injury management, subacute management, and prevention methods for hamstring injuries/strains.
12. Know the relevant pelvic/hip anatomy
13. Know the MOI, risk factors, special tests, signs and symptoms, treatment, RTP, and other potential diagnoses for the following: Femoral stress fracture, femoroacetabular impingement, tears to the labrum, pubic bone stress,
14. Know the relevant low back anatomy
15. Know the MOI, risk factors, special tests, signs and symptoms, treatment, RTP, and other potential diagnoses for the following: Low back pain, acute low back pain, acute low back pain (with and without radicular pain), and fractures.
16. Know the relevant elbow anatomy
17. Know the MOI, risk factors, special tests, signs and symptoms, treatment, RTP, and other potential diagnoses for the following: Lateral elbow pain, medial elbow pain, elbow dislocations, UCL injuries, ulnar nerve injury.

Final Questions:

1. Know the difference between the sensitivity and specificity of special tests
2. Be aware of injury relevant hand anatomy
3. Know the MOI, sxs, prevention practices, and treatment for an A2 Pulley Injury, Mallet Finger, Skier’s/Gamekeeper’s Thumb, Stener Lesion, Boxer’s Fx
4. How do you take a Hx of the shoulder?
5. How do you take a physical exam of the shoulder?
6. What are the 3 special tests for shoulder impingement?
7. What is the special test for the AC joint?
8. What are the special tests for shoulder instability?
9. What special test did we learn about for the labrum?
10. What is the special test for scapular dyskinesis?
11. Identify the movements to assess shoulder ROM.
12. Be aware of injury relevant shoulder anatomy
13. Know the MOI, sxs, criteria for diagnosis, and treatment for an AC Joint Separation, Shoulder Dislocation, Rotator Cuff Tendinopathy, Scapular Dyskinesis, Scapular Winging, Labral Tears of the Shoulder
14. Know the 2 bony injuries that are commonly seen with a shoulder dislocation
15. Know what Shoulder Impingement is and the types often associated with RCT
16. Know how we test the strength of the rotator cuff muscles
17. Discuss the normal movements that occur at the scapula and scapulohumeral rhythm
18. Know what the Thrower’s 10 Program is
19. What is a therapeutic modality? What are the types of modalities?
20. Why do we use therapeutic modalities?
21. How do we choose a therapeutic modality?
22. What are the basics/principles of orthopedic injury rehabilitation?
23. What are the goals of rehabilitation? Which modalities target each goal?
24. Know how to distinguish between inflammation, swelling, and edema.
25. Describe the basic inflammatory reaction
26. What is the secondary injury model?
27. What is chronic inflammation?
28. Describe the experience of DOMS, the proposed theories for why it occurs, and its relation to injury risk.
29. Describe Thermotherapy in greater detail (define, types, use, contraindications).
30. Describe Cryotherapy in greater detail (define, types, use, contraindications).
31. What is a muscle spasm?
32. What are contrast baths?
33. What are the 2 primary methods of recovery cryotherapy? Is recovery cryotherapy beneficial?
34. What modality should we use in the subacute injury stage?
35. How do we care for chronic pain?
36. What are lymphedema pumps?
37. What is a therapeutic ultrasound?
38. What are the treatment parameters for ultrasound use?
39. Outline the effects of thermal ultrasound treatment versus nonthermal ultrasound treatment.
40. How does the ultrasound exert nonthermal/mechanical effects?
41. What is TENS?
42. Describe the following manual therapies: therapeutic massage, bodywork, and somatic therapy.
43. What is the difference between a “concussion” and “mild traumatic brain injury”?
44. Identify the MOIs for concussions.
45. What is the pathophysiology of a concussion?
46. How do we diagnose a concussion?
47. How does a concussion typically present?
48. How do we quantify concussions? / How do we measure the mechanics of a concussion?
49. How do we assess concussions?
50. What concussion signs indicate that we should remove an athlete from play?
51. Describe RTP/RTS protocols after sustaining a concussion.
52. Describe some of the “new developments” in concussion research.
53. Know the injury relevant neck anatomy.
54. Know the MOI, sxs, criteria for diagnosis, and treatment for a Brachial Plexus Injury, Thoracic Outlet Syndrome, Acceleration-Deceleration Injury, Cervical Spine Injury, Intracranial Hemorrhage
55. Outline how to do a Nerve Root Exam
56. Know the injury relevant brain anatomy
57. Describe the 2 types of severe head injuries
58. Know what the long-term athlete development model is
59. What is the difference between specialization and sampling?
60. How do we avoid burnout? Define physical literacy.
61. What are the musculoskeletal differences between adults and children?
62. What are the 4 stages of overuse injuries (from most acute to most severe)
63. How do we manage overuse injuries?
64. Know what apophysitis is and types of apophysitis. How are these injuries managed?
65. Know what growth plate injuries are and how we treat them
66. How do we generally prevent pediatric injuries?
67. What is the FIFA 11+ Program?
68. Is resistance training safe for children and adolescents?
69. What are the leading causes of sudden death in sport? How do we rexognize, treat, and prevent them?
70. What issues do we see in the management of asthma?
71. Diabetic individuals can also experience a hyperglycemic (high blood sugar) event. What are the signs/sxs and causes?
72. What should you do in a diabetic emergency (decision tree)?
73. What is sickle cell disease/trait? How do you get it? How prevalent is it? What can cause death?
74. Describe the debate around mandatory screening for SCT in the NCAA.
75. How do we cool the body during exercise in the heat?
76. What is the protocol for heat acclimatization in football?
77. Know the injury relevant anatomy of the heart
78. What are the causes of sudden cardiac death?
79. Define HCM. Describe the detection, prevalence, and risk characteristics.
80. Describe the important aspects of an EAP and its importance. Describe the importance/prevalence of AEDs as well.

## KIN 424

Midterm:

1. What is EBP? Why is it important?
2. Understand the hierarchy of evidence.
3. How do we characterize a study?
4. Understand the different study designs (RCT; Case-Control; Cohort; Cross-sectional survey; Meta-analysis)
5. Understand different sources of bias and provide an example of each (selection, measurement, interviewer, response, referral, and reporting).
6. Understand sensitivity and specificity, know how to calculate them.
7. What are the weaknesses in Sport Science Research?
8. Understand the difference between surrogate and meaningful outcomes.
9. Understand and describe the significant decrease in aerobic capacity at altitude
10. Be aware of Altitude Illness Syndromes
11. How do we prevent/treat altitude illnesses?
12. Discuss some other health effects that are important to consider at altitude.
13. How do we optimize sleep?
14. Describe the different pre-acclimatization strategies
15. Differentiate between asthma and exercise-induced bronchospasm (EIB)
16. Define an approach to the treatment of EIB and discuss the doping related considerations
17. Differentiate between EIB and other key conditions causing dyspnoea during exercise including EILO and Pulmonary embolism
18. Explain different modes of heat loss during exercise
19. Describe the key elements of diagnosing thermal illness and injury (Heat Stroke/Heat Exhaustion; Hyponatremia; Hypothermia; Frostbite).
20. Understand acclimatization to both heat and cold.
21. Understand the constituents of air pollution.
22. Be able to compare the benefits and drawbacks of different types of pollution research.
23. Summarize the effects of diesel exhaust and traffic related air pollution on exercise in healthy people.
24. Summarize the effects of ozone during exercise.
25. Name some key strategies to reduce pollution effects with exercise.

Final:

1. What are the types of Hyperbaric Exposures?
2. Understand the Physics of Diving Illness.
3. Understand why asthma might be contraindicated and the evidence around this.
4. Understand the following conditions: Decompression Sickness; AGE; Immersion Pulmonary Edema; Squeezes.
5. What is Doping?
6. Why do athletes dope?
7. Describe the Doping Control Process.
8. What substances/methods are prohibited?
9. What is an Athlete Biological Passport and what is the purpose?
10. What should athletes do when they want to take a substance?
11. What is the issue with supplement use? Is food safe?
12. What are Social Drugs of Abuse?
13. How do exceptions or TUEs work?
14. Have a good basic understanding of the anatomy of the GI tract.
15. Understand the effects of exercise on the gastrointestinal tract.
16. How can nutrition affect GI distress? NSAIDs? FODMAPs?
17. Understand the clinical presentation and management of Upper GI issues with exercise.
18. Understand the clinical presentation and management of Lower GI issues with exercise.
19. What should the pre-event protocol entail for someone with GI issues?
20. Describe Infectious Diarrhea / Traveler’s Diarrhea.
21. What is the difference between overtraining and overreaching?
22. What is the difference between Jet Lag and Travel Fatigue?
23. What CV changes have been found in the literature with regard to aging?
24. What causes the decline in exercise performance as we age?
25. Describe the relationship between strength/fitness and mortality.
26. Describe the conditions associated with aging

## KIN 432

Module 2: (McCrudden, 2022a)

1. Athletes need to consume carbohydrates during training. You are working with a runner who regularly undertakes 90 minute steady state running sessions at 85% VO2 max. What would you advise them about carbohydrate intake during training?
   1. They do not need to consume any carbohydrates as they are not exercising for long enough
   2. They need to consume 90g of carbohydrates per hour of exercise
   3. They can mouth rinse with a carbohydrate solution every 5 – 10 mins
   4. They need to consume 30 – 60g of carbohydrates per hour of exercise
2. True or false, when blood glucose levels start to drop, the body can begin to convert liver and muscle glycogen into glucose to provide an energy source.
   1. False, the liver cannot convert glycogen to glucose
   2. True, both liver and muscle glycogen can be converted to glucose
   3. False, the muscle cannot convert glycogen to glucose
3. What is nutrition periodization?
   1. Following a specifically designed nutrition plan to enhance training adaptations
   2. A nutrition plan that is created by the sport coach with no input from the sport science team
   3. A nutrition plan that focuses on the food preferences of the athlete to shape the plan
   4. A nutrition program that does not adapt to the training plan to enhance training stress
4. True or false, as exercise intensity increases, muscle glycogen levels decreases and liver glucose output increases:
   1. True
   2. False
5. Our bodies are capable of storing carbohydrate as an important energy reserve. Which of the following is the largest glycogen/glucose reserve in the body?
   1. Blood
   2. Muscle
   3. Kidneys
   4. Liver
6. According to the carbohydrate classification table, starch is a type of:
   1. Oligosaccharide
   2. Monosaccharide
   3. Polysaccharide
   4. Disaccharide
7. Which of the following athletes is least likely to rely on their carbohydrate stores to be successful in their event?
   1. Soccer player
   2. 100m sprinter
   3. Marathon runner
   4. Hockey player
8. We discussed the practice of strategically withholding carbohydrates around training in elite athletes. Why is this thought to be of interest in elite athletes?
   1. all of the answers are correct
   2. to create a state of ketosis in the body
   3. it is a very effective way to reduce body fat
   4. to up-regulate the expression of certain enzymes and regulators in athletes when faced with an energy crisis

Module 3: (McCrudden, 2022b)

1. An elite 10k runner you are working with has heard that following a HFLC diet could spare their glycogen stores. How would you explain the effects of this on performance to them?
   1. It doesn't matter because they don't rely on stored glycogen to support a 10K race
   2. An enzyme which breaks down glycogen is affected so they can't easily access glycogen stores when they need them
   3. It's true, following a HFLC diet means that athletes can sustain very high intensity exercise without using glycogen
2. A minimum level of body fat is important for our health. Which of the following is not a role of body fat?
   1. To provide essential fatty acids
   2. To insulate against heat loss
   3. To protect organs from impact
   4. To insulate nerves
3. An athlete is consuming a 2500kcal diet, including 67g of fat. Are they meeting the guidelines for health according to the Institute of Medicine ? (round to the nearest whole number)
   1. Yes, they are consuming 11% of their calories as fat and the range is 10 – 25%
   2. Yes, they are consuming 24% of their calories as fat and the range is 20 – 35%
   3. No, they are consuming 11% of their calories as fat and the range is 25 – 35%
   4. No, they are consuming 24% of their calories as fat and the range is 25 – 35%
4. Which of the following is true in relation to Project Supernova (research on race walkers and fat adapted diets)?
   1. The oxygen cost of race walking decreased in the high fat low carbohydrate group
   2. All subject showed improved VO2 max as a result of adaptation to training
   3. Fat oxidation rates increased in the high carbohydrate group
   4. The low carb, high fat group performed better in a 10K time trial than the other groups
5. Choose the one correct answer. Fat oxidation is thought to be inhibited when exercise reaches an intensity of ........
   1. >45% VO2max
   2. >65% VO2max
   3. >55% VO2max
   4. >75% VO2max
6. Fill in the blank. EPA and DHA are an example of a \_\_\_\_\_\_\_\_\_\_\_\_
   1. Trans fatty acid
   2. Saturated fatty acid
   3. Monounsaturated fatty acid
   4. Polyunsaturated fatty acid
7. Why are high fat foods not recommended in the immediate recovery window post exercise?
   1. They are high in sodium
   2. They may slow down the absorption of other nutrients
   3. They may cause stomach upset
8. Which of the following circumstances may a low carbohydrate - high fat diet be considered as a potential nutrition strategy?
   1. In sports where VO2 max component is high (e.g. sprint cycling)
   2. Before competition
   3. When an athlete needs to lose body fat with appropriate supervision
   4. Low carb high fat is never an appropriate strategy for athletes

Module 4: (McCrudden, 2022c)

1. Anabolic steroids are an example of an ergogenic aid. Which category do they belong to?
   1. Mechanical
   2. Physiological
   3. Pharmacological
   4. Nutritional
2. Athletes are not always sure where to get the best information regarding supplement use in sport. According to a 2012 study of Canadian Athletes, where did most athletes get their information on dietary supplements from?
   1. Internet
   2. Family and Friends
   3. Coach
   4. Athletic trainer
3. With the new publication of the 2021 code, which of the following is true of marijuana use in sport (excluding UFC) according to the CCES? Choose all that apply
   1. CBD use is banned in sport
   2. A positive for THC will result in a suspension from the sport
   3. Marijuana use is legal and is permitted both in and out of competition
4. True or false, the supplement below - Klean Creatine - is part of the NSF Sport Certified Program? (you will need to go to https://www.nsfsport.com/certified-products/ (Links to an external site.) to check)
   1. True
   2. False
5. True or false, the supplement below - PVL Sport Whey - is part of the informed choice program? (you will need to go to https://choice.wetestyoutrust.com/ (Links to an external site.) to check)
   1. True
   2. False
6. The Prohibited List identifies substances and methods prohibited in and out of competition and at all times. This list is generic for all sports and they must adhere to all parts of the list.
   1. True
   2. False
7. To be included on The Prohibited List, a drug has to meet certain criteria. Which of the following are these criteria? Choose all the answers you believe to be correct
   1. It has been approved by the IOC
   2. It potentially enhances performance
   3. It masks the detection of prohibited substances
   4. It places an athletes health at risk
8. Which of the following is the least likely reason for athletes to be recommended supplements?
   1. If they are eating a poor quality, highly processed diet
   2. To directly impact performance
   3. To manage micronutrient deficiencies which cannot be overcome through diet alone
   4. For indirect benefits like supporting intense training regimens

Module 5: (McCrudden, 2022d)

1. You are working with an athlete who is trying to gain lean muscle mass. Which of the following supplements are you most likely to recommend to help the athlete achieve their goals?
   1. Sodium Bicarbonate
   2. Creatine
   3. Caffeine
   4. Beta Alanine
2. You have learned this week that some supplements need to be taken for a longer duration to have an ergogenic effect in athletes. Which of the following supplements can be taken within 45 minutes of competition and still have and ergogenic effect?
   1. Nitrate
   2. Beta Alanine
   3. Caffeine
   4. Creatine
3. Based on what you have learned, in which of the following sports is a practitioner least likely to recommend creatine use?
   1. Tennis
   2. Rugby Union
   3. 200m Sprinting
   4. Marathon Running
4. An athlete you are working with approaches you about caffeine supplementation. They weigh 50kg and have found a 400mg caffeine supplement they would like to take for competition day. Based on what you have learned is this the recommended caffeine dose for this athlete?
   1. No, this exceeds the recommendations based on body weight
   2. No, this is below the recommendations based on body weight
   3. Yes, 400mgs is the upper limit according to Health Canada so all athletes can consume this amount
   4. Yes, this athlete should not consume more than 5g of caffeine per kg body weight
5. An S & C coach you are working with wants to start creatine supplementation with a female soccer player (75kg). They would like you to speak with the athlete about this. Select the pieces of information that you are most likely to give to the athlete when speaking to them.
   1. The athlete should take 20g per day for one month and reassess
   2. Soccer players are not likely to benefit from creatine supplementation
   3. The athlete should not expect to gain any weight whilst on creatine
   4. A trial of 5g of creatine per day for 28 days can be started
6. We discussed the protocol for beta alanine supplementation this week and how long it should be taken for. If an athlete were to take it for longer than the standard recommendation, would you be concerned?
   1. No, but it is not effective after 8 weeks
   2. Yes, it's use has not been researched beyond 24 weeks
   3. Yes, the side effects of taking beta alanine get worse the longer someone takes it for
7. Which of the following options are likely to influence a practitioner's decision to use a supplement with an athlete? Choose all the answers that you believe are correct
   1. High quality evidence supporting the use of this supplement in this sport
   2. The costs involved in using this supplement
   3. How difficult the supplement strategy is to implement with the athlete
   4. The marketing claims about the ergogenic effect of the supplement
8. The ergogenic effects of sodium bicarbonate can be achieved by acutely taking
   1. 1.6g
   2. 200 - 400mg/kg
   3. 0.6mg/kg
   4. 3-5g

Module 6: (McCrudden, 2022e)

1. Why might it be recommended that an athlete consume protein rich foods before they sleep
   1. Protein foods helps induce sleep
   2. Protein foods are rich in calcium
   3. Protein helps increase fractional synthetic rate overnight
   4. Protein is good for weight management
2. You receive a food diary for an athlete (72kgs) who would like some guidance on their protein intake. The diary shows the following intake: Breakfast: Cereal with almond milk (6g protein); Post training snack: Gatorade (0g protein); Lunch: Chicken stir-fry with rice - large portion (60g protein); Afternoon snack: granola bar & apple (8g protein); Dinner: Soup & toasted cheese sandwich (20g protein); Before bed: Chocolate almonds (5g protein). Which of the following pieces of advice are you likely to give this athlete? Choose all that apply
   1. eat ~20g of protein after training to support recovery
   2. eat more protein because they are not meeting their total daily protein requirements
   3. spread their protein intake more evenly throughout the day
   4. take BCAA supplements
3. A friend asks you if there are any differences between animal and plant proteins. Which of the following statements is true in relation to both of these options?
   1. Plant proteins contain more essential amino acids per gram than animal proteins
   2. A vegetarian athlete will likely need to eat plant proteins in greater amounts, compared to animal proteins, to achieve the current protein recommendations
   3. Animal proteins are not digested as well as plant-based proteins.
   4. There are no BCAAs in plant proteins
4. Which of the following is true of Branched Chain Amino Acids (BCAAs)
   1. They can be directly oxidized by the muscle for energy during exercise
   2. They play an important role in triggering muscle protein synthesis
   3. All of the options are correct
   4. They are the amino acids Leucine, Isoleucine and Valine
5. You receive a food diary for an 80kg soccer player male and are asked to calculate his protein requirements for a training day. Which of the following would you recommend based on most athlete requirements?
   1. 128g
   2. 24g
   3. 176g
   4. 80g
6. How many amino acids are thought to play a role in the human body?
   1. 29
   2. 20
   3. 11
   4. 9
7. The popularity of plant-based diets including vegan and vegetarian diets has increased in recent years. Based on what you have learned, would this be problematic if you were working with a vegetarian athlete where daily protein intake is concerned?
   1. Animal and plant proteins differ in their amino acid content but eating a variety of plant protein foods in correct quantities is the most important thing
   2. No, animal and plant proteins contain the same amounts of amino acids
   3. Yes, vegetarians and vegans are at risk of not eating enough protein
8. BCAA supplements have become very popular, especially amongst those trying to increase their muscle mass. Which of the following is true in relation to BCAA supplements?
   1. BCAAs trigger muscle protein synthesis
   2. All of the options are true
   3. They are the only amino acids needed to build muscle
   4. Our diets are not naturally high in BCAAs so it's important to consume supplements

Module 7: (McCrudden, 2022f)

1. Jack is considering a number of different sport drinks to use during his long bike rides that are part of his triathlon training. He likes the taste of all of them but has noticed they all provide different quantities of carbohydrates per bottle. Based on the tonicity of the drinks, which of the following would a practitioner recommend he choses?
   1. Drink B - 50g of carbohydrates in 330mls
   2. Drink C – 30g carbohydrates in 330mls
   3. Drink D - 40g carbohydrates in 500mls
   4. Drink A - 60g carbohydrates in 600mls
2. Annie is a soccer player who has recently been feeling more tired than normal. Her doctor tests her bloodwork and finds her hemoglobin is 108 g/L and serum ferritin 21 μg/L. Which of the following terms best describes Annie’s current iron status?
   1. Both her hemoglobin and her serum ferritin are below desired for athletes
   2. Her hemoglobin and her serum ferritin are within the desired range for athletes
   3. Her hemoglobin is below the ideal range but her serum ferritin is within the desired range
   4. Her hemoglobin is within the ideal range but her serum ferritin is below desired
3. True or false, all athletes must have a carbohydrate and protein rich meal within 30 minutes after they finish training, they will fail to recover or adapt to training.
   1. True
   2. False
4. Based on the information below, which of the following athletes are most likely to be at risk of developing iron deficiency? choose all that apply
   1. A young female who has recently started long distance running
   2. A young male who has started resistance training
   3. All of these athletes are equally at risk of developing iron deficiency
   4. A young male soccer player who has recently started a vegan diet
5. This is to give you a chance to practice with this equation! Use this equation to estimate the energy required for this athlete, rounded to a whole number. Adult Woman: 354 – 6.91 (age in years) + PA [9.36 (weight in kg) + 726 (height in meters)]; Age: 21y; Weight: 72kgs; Height: 1.73m; Physical activity factor: 1.6 (Highly active, typical daily activities > 120 min of vigorous activity).
   1. 3297
6. This is to give you a chance to practice with this equation! Use this equation to estimate the energy required for this athlete, rounded to a whole number. Adult Man: 662 – 9.53 (age in years) + PA [15.91(weight in kg) + 539.6 (height in meters)]; Age: 23y; Weight: 84kgs; Height: 1.95m; Physical activity factor: 1.48 (Very active, typical daily activities plus 90 - 120 minutes of moderate - vigorous activity).
   1. 3978
7. Mike is a soccer player and is aware that his hydration is important for performance. He knows he should weigh himself pre and post training so he did this recently. He was 87kgs at the start of a training session and 84kgs at the end of the training session. But he isn't sure what to do with this information. He really just drinks water during training. Which of the following pieces of advice is a practitioner likely to give Mike about his hydration?
   1. Athletes should aim to lose no more than 2-3kgs of their body weight in a training session and Mike is within this range.
   2. A sports drink may be needed depending on how long or hard his training session is
   3. Athletes should aim to lose no more than 2-3% of their body weight in a training session and Mike is losing more than this.
   4. Mike should add some electrolytes to his water to replace his sodium losses and avoid cramp
8. True or false coconut water is a good rehydration drink for athletes who experience heavy sweat losses because it contains high levels of sodium and potassium.
   1. True
   2. False

Module 8 (McCrudden, 2022g)

Module 9: (McCrudden, 2022h)

1. Weight loss targets for athletes should be individualized but some research has been presented to help guide practitioners in setting weight loss goals. True or false, aiming for a 0.7% weekly weight loss has been shown to support a) retention or slight increases in muscle mass and b) greater fat mass loss?
   1. True
   2. False
2. You are working with a basketball team. They have been approached by a supplement company who would like to provide recovery products to the team. Which of the following are most likely to meet the recovery needs of the team after a game? Choose all that you believe to be correct.
   1. A BCAA powder
   2. Milk based recovery drink
   3. Protein bar
   4. A carbohydrate gel
3. Which of the following supplements is likely beneficial to a strength / power athlete for competition where one explosive movement is performed e.g. javelin, shot put, discus?
   1. Beta alanine
   2. Nitrate
   3. Sodium bicarbonate
   4. Creatine
4. The ABCDE nutrition assessment is a great tool for nutrition screening with athletes. Match the examples below with the correct nutrition assessment category.

| Biochemical | Avoidance of dairy or animal products |
| --- | --- |
| Clinical | Vitamin D blood work |
| Anthropometry | Menstrual cycle history |
| Food Environment | Cooking skills |
| Dietary | Height and weight |

1. An athlete discloses to you that they have recently been struggling with binge eating behaviours. They are afraid to talk with their coaching staff because they feel this will make the coach think they aren't tough enough. What would you do in this situation? Choose all answers you believe to be correct.
   1. Remind them that anything they say will be treated as confidential
   2. Encourage them to share their concerns with their coach privately; or ask if you can have their permission to share this on their behalf as it affects their health and wellbeing
   3. Reassure the athlete that you have heard their concerns
   4. It's in the interests of their health and wellbeing so you should ignore the athlete's concerns and talk to the coach
2. An athlete approaches you because they have been told by their coach that they need to lose weight. You have spoken to the coach and the support team with the athletes permission and it has been decided that some fat loss is appropriate to improve the athletes performance. Which of the following actions are you likely to take?
   1. Check that their protein intake is sufficient or towards the higher end of the range to promote feelings of fullness
   2. Encourage a slow and steady approach to weight loss and calorie reduction
   3. Recommend creatine as it will help with their goals
   4. Add extra snacks during the day e.g. crackers, bagels and dried fruit so they don't overeat at meals
3. Gavin weighs 82kgs and has his weekly soccer game on Sunday at 10 am. He is usually nervous the morning before games and he plans to get up early and eat his breakfast at 7am. Based on what you have learned about the pre-exercise meal; which of the following is best for Gavin before games? (assume he likes all of the food items mentioned)
   1. 2 pieces of bacon, 2 sausages, 3 fried eggs and hash browns with a cup of juice (~90g of carbohydrates)
   2. He shouldn’t eat anything if he’s nervous; it will impair his performance
   3. A bowl of oatmeal with milk, 2 pieces of toast with banana and a cup of juice (~180g of carbohydrates)
   4. 500ml of sport drink and an apple (~55 g of carbohydrates)
4. You are working with a hockey team and have noticed that they have bottled water in the changing room for the players before the game and at half time. Which of the following would you ask the management to stock in the changing rooms for the players to use before the game and at half time?
   1. Sport Drink
   2. Candy / jelly chews
   3. Chocolate milk
   4. Bananas

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