

Practice Test

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Purpose

This practice test is designed to assist applicants writing the College of Kinesiologists of Ontario exam and to provide the public (educators, administrators, etc.) with practical information about the exam.

The practice test describes the context for the exam, explaining its importance as an instrument to help the College identify those who are competent to enter the profession of kinesiology and practise independently. The exam is competency based and designed to determine whether applicants have the knowledge, skills and judgment to practice safely without endangering the public.

The second part of the practice test describes the exam: what it tests, how it is developed and scored, and how applicants can prepare. The Practice Test has 101 questions selected to correspond with the Examination Blueprint. Rationales for the correct and incorrect answers and question-specific references are included to assist applicants in preparation. A list of references used in creating the questions, or which may interest applicants who wish to study certain topics in greater depth, is also included.

Preparing to write the exam

The following information will help you to understand more about the exam.

Frequency

The exam is offered up to twice per year.

Language

The exam can be written in English or French.

Time

Applicants will be allowed a maximum of three and a half hours to complete the examination.

Format

The exam consists of approximately 170 to 185 multiple choice questions. The exam is designed to enable the College to make reliable and valid decisions about an applicant's readiness to practise safely and ethically.

The multiple choice questions are presented either as case-based or independent questions. Case-based questions may include a set of approximately three to five questions associated with a brief case scenario. The applicant is required to read the case scenario carefully and use the content to assist in answering all the associated questions. Independent questions will contain the information necessary to answer the question.

Every question will consist of a stem (question) and four possible options. There is only ONE best answer for each question. Sample case studies and questions are provided for your information.

Examination Blueprint

| STRUCTURAL VARIABLES | | | | | | | | | | | | | |
|---|---|----------------------|---------------------|---|---------------------|---|---------------------|--|--------|--|-------|-------------------------------------|-------|
| Exam Length | 170-180 multiple-choice questions | | | | | | | | | | | | |
| Question Presentation and Format | Format: Multiple-choice questions, with four options Presentation: Case-based questions and independent questions Each case will have 3-5 questions | | | | | | | | | | | | |
| Competencies by Domain | <table> <tr> <td>Domain 1 - Knowledge</td> <td>20-25%</td> </tr> <tr> <td>Domain 2a - Kinesiology Practical Experience – Assessment</td> <td>15-20%</td> </tr> <tr> <td>Domain 2b - Kinesiology Practical Experience – Services</td> <td>20-25%</td> </tr> <tr> <td>Domain 3 - Professionalism/Professional Practice</td> <td>25-30%</td> </tr> <tr> <td>Domain 4 - Communication and Collaboration</td> <td>5-10%</td> </tr> <tr> <td>Domain 5 - Professional Development</td> <td>5-10%</td> </tr> </table> | Domain 1 - Knowledge | 20-25% | Domain 2a - Kinesiology Practical Experience – Assessment | 15-20% | Domain 2b - Kinesiology Practical Experience – Services | 20-25% | Domain 3 - Professionalism/Professional Practice | 25-30% | Domain 4 - Communication and Collaboration | 5-10% | Domain 5 - Professional Development | 5-10% |
| Domain 1 - Knowledge | 20-25% | | | | | | | | | | | | |
| Domain 2a - Kinesiology Practical Experience – Assessment | 15-20% | | | | | | | | | | | | |
| Domain 2b - Kinesiology Practical Experience – Services | 20-25% | | | | | | | | | | | | |
| Domain 3 - Professionalism/Professional Practice | 25-30% | | | | | | | | | | | | |
| Domain 4 - Communication and Collaboration | 5-10% | | | | | | | | | | | | |
| Domain 5 - Professional Development | 5-10% | | | | | | | | | | | | |
| Taxonomy Levels of Cognitive Ability | <table> <tr> <td>Theory/Comprehension</td> <td>20-25% of questions</td> </tr> <tr> <td>Application</td> <td>35-45% of questions</td> </tr> <tr> <td>Critical Thinking</td> <td>35-40% of questions</td> </tr> </table> | Theory/Comprehension | 20-25% of questions | Application | 35-45% of questions | Critical Thinking | 35-40% of questions | | | | | | |
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| Application | 35-45% of questions | | | | | | | | | | | | |
| Critical Thinking | 35-40% of questions | | | | | | | | | | | | |
| CONTEXTUAL VARIABLES | | | | | | | | | | | | | |
| Client | <ul style="list-style-type: none"> • Individual • Family • Groups • Community • Organization • Population | | | | | | | | | | | | |
| Lifespan (Age/Gender) | <ul style="list-style-type: none"> • General • Paediatric (to age 14) • Adolescent (15 to 17 years) • Adult (18 to 64 years) • Senior (65+) | | | | | | | | | | | | |
| Practice Setting/ Environment | The practice environment of entry-level kinesiologists can be any setting or circumstance within which kinesiology is practised. Most of the competencies are not setting dependent. The practice environment will be specified where necessary. | | | | | | | | | | | | |

Competencies

The Kinesiologist Core Competency Profile describes the performance required to demonstrate competence in the role of a kinesiologist at the entry-to-practice level. The profile is used as the basis for developing guidance on preparing for the competency-based exam and, ultimately, meeting the expectations of competent practice when registered. The profile describes competencies across five domains: knowledge; kinesiology practical expertise; professionalism/professional practice; communication and collaboration; and professional development.

The Kinesiologist Core Competency Profile was developed through a series of working and focus group meetings conducted by an external company with members of academia teaching in kinesiology programs and registered kinesiologists. These participants considered the challenges of defining a profile for an entry-level practitioner versus a graduate, the breadth of scope of practice, and the need to reflect what the entry-level practitioner should know and be able to do on “day one of the job”, regardless of practice area. A new graduate is a student who has completed the academic requirements to achieve a degree. An entry-level practitioner is an individual who has achieved the academic qualifications and sufficient experience in the areas of competency to be able to challenge the exam for entry into the profession and to practise independently and safely without endangering the public.

Domain 1: KNOWLEDGE (20-25% questions)

1. Apply knowledge of anatomy, physiology, biomechanics, and psychomotor learning/neuroscience to human movement and performance.
2. Apply knowledge of human movement and performance as it relates to health promotion, and to the prevention and treatment of chronic and other diseases and injury.
3. Apply knowledge of exercise physiology to the prevention and treatment of chronic disease and other disorders and the maintenance and enhancement of human movement and performance.
4. Apply knowledge of psychological and sociological factors that may influence/impact individuals and populations.
5. Demonstrate an understanding of how growth, development, and aging impact human movement and performance.
6. Apply knowledge of pathology of musculoskeletal, neurological, cardiopulmonary, neoplastic, and metabolic disorders and conditions.
7. Demonstrate an understanding of functional capacity including how structure governs function.
8. Demonstrate an understanding of how chronic diseases and conditions impact and limit functional capacity.
9. Demonstrate an understanding of ergonomics as it relates to human movement and performance.

10. Demonstrate an understanding of the principles of nutrition related to human movement and performance.
11. Demonstrate an understanding of the physiological effects of medications on human movement and performance.
12. Demonstrate an understanding of general principles of research ethics, design, methodology, and statistics.

Domain 2: KINESIOLOGY PRACTICAL EXPERIENCE

Assessment (15-20% of questions)

13. Able to obtain an accurate and comprehensive case history, including but not limited to medical, treatment, medications, psychosocial, and vocational/avocational history.
14. Able to recognize and select appropriate assessments or tools based on factors including but not limited to case history, contraindications, patient/client presentation, context, and reason for assessment.
15. Able to complete appropriate physical demands analysis.
16. Able to perform physical assessment procedures including but not limited to vital signs, anthropometrics, range of motion, strength, balance, cardiopulmonary fitness, and orthopaedic assessment.
17. Demonstrate understanding of the appropriate use of ergonomic assessments and tools.
18. Able to perform appropriate functional assessments of movement and performance.
19. Able to use knowledge of measurement concepts (for example, reliability, validity, norms) to assess the appropriateness of assessment instruments.
20. Able to understand, evaluate and interpret assessment findings and referral documentation to form a clinical impression.

Services (20-25% of questions)

21. Able to identify, select, develop, and prescribe intervention strategies to maintain, rehabilitate, or enhance movement and performance based on assessment findings.
22. Able to apply principles of program planning, design, adaptation, and prescription in physical activity, health, and rehabilitation programs.
23. Able to apply knowledge of learning theory and behaviour modification in communication, counselling, interviewing, and prescription.
24. Able to plan, design, and facilitate education programs including but not limited to health promotion; injury prevention; chronic disease treatment, management, and prevention; and human movement and performance.
25. Able to counsel patients/clients regarding healthy behaviours and lifestyle management.

26. Demonstrate understanding of therapeutic modalities and treatment applications used to optimize rehabilitation, including but not limited to ice, heat, exercise, taping, transcutaneous electrical nerve stimulation, and ultrasound.
27. Able to design customized exercise prescription for healthy individuals, including but not limited to flexibility; strength, endurance, balance, and cardiopulmonary training; and corrective movement patterning.
28. Able to design customized exercise prescription for individuals with pathology, including but not limited to flexibility; strength, endurance, balance and cardiopulmonary training; and corrective movement patterning.
29. Able to monitor, re-assess, and adjust prescriptions/treatment plans based on patient/client responses.
30. Able to make recommendations for task and/or job modification and accommodation based on assessment of the demands of the workplace and evaluate effectiveness.
31. Able to collect and objectively evaluate data on the effectiveness of programs and services.

Domain 3: PROFESSIONALISM/ PROFESSIONAL PRACTICE (25-30% of questions)

32. Demonstrate understanding of and comply with the Regulations on Standards, Guidelines, Code of Ethics, and Professional Misconduct.
33. Recognize and address conflicts of interest.
34. Act in the best interest of the patient/client.
35. Practise within limits of own professional knowledge, competence, and skill set.
36. Understand when to make referrals to the appropriate healthcare provider(s), other service providers, and/or programs.
37. Comply with federal and provincial codes and regulations relevant to kinesiology practice, including but not limited to Regulated Health Professions Act, Kinesiology Act, Ontario Human Rights Code, Personal Health Information Protection Act, and Personal Information Protection and Electronic Documents Act.
38. Adhere to guidelines and standards for documentation and reporting.
39. Apply safety techniques and procedures (for example, use universal precautions, follow emergency procedures, ensure a safe work environment).
40. Practise in a manner that respects diversity and avoids prejudicial treatment of any specific population group.
41. Facilitate patient/client access to services and resources.
42. Use problem-solving and professional judgment in all aspects of practice.
43. Be accountable for and objectively support decisions made and actions taken in professional practice.
44. Respect patient's/client's rights to reach decisions about treatment and/or services.

Domain 4: COMMUNICATION AND COLLABORATION (5-10% of questions)

- 45. Able to communicate and collaborate effectively as a member of an interprofessional team.
- 46. Able to communicate with empathy and appropriate language with patients/clients.
- 47. Able to communicate effectively with other stakeholders, including but not limited to third party payers, legal representatives, governmental entities, and community resources.
- 48. Able to effectively deliver education to patients/clients.
- 49. Able to use counselling skills and interviewing techniques with patients/clients.
- 50. Able to advocate for the health and wellness of patients/clients.

Domain 5: PROFESSIONAL DEVELOPMENT (5-10% of questions)

- 51. Develop and enhance own competence and demonstrate commitment to self-evaluation and lifelong learning.
- 52. Conduct regular self-assessments of professional development needs required to ensure ongoing competence.
- 53. Ensure safe practice and maintain fitness to practice.
- 54. Able to utilize best practice guidelines, including the interpretation and application of current, evidence-based knowledge.

Exam preparation

Applicants should pay particular attention to preparing for the exam. Adequate preparation time and careful planning are the keys to success. The exam is based on the Kinesiologist Core Competency Profile. Not all Ontario kinesiology programs are exactly alike; therefore, it is recommended that the Kinesiologist Core Competency Profile, the College's standard and guidelines, and reference list be used when studying. While course notes may be helpful, using them alone will not adequately prepare applicants for the exam.

Study tips and practice questions

Select a place for studying that is quiet, comfortable and free from distractions. Develop a study plan, dividing your time between specific topics or sections. Keep in mind that five, two-hour sessions are likely to be more beneficial than two, five-hour periods. Monitor your progress and revise your schedule as necessary.

Familiarize yourself with multiple choice questions

A thorough understanding of multiple choice questions will allow you to most effectively apply your knowledge and skills to the testing situation.

Read the exam instructions

It is essential that you have a clear understanding of what you are expected to do. If you do not understand what you have been told or what you have read, ask questions before the exam begins.

Answering multiple-choice questions

Consider each question separately. Try not to rush, but do not spend more than 1 to 1½ minutes on any individual question. If you do not know the answer to a question, skip it and return to it later. If you still do not know the answer, make a guess. No points are deducted for wrong answers.

Guessing

There is no penalty for guessing on the exam. You will not lose any marks if you select an incorrect answer for a multiple choice question.

Read the question carefully

Concentrate on what is being asked in the question and relate this to the data provided. Do not make any assumptions unless they are directly implied.

Pick out *important* words that relate to the question. For example, in some questions you may be asked for the most appropriate initial response by the kinesiologist; other questions may deal with the kinesiologist's most ethical response or the most therapeutic response. Reviewing the practice questions below will help you to recognize key words that will appear on the exam.

Use a three-step approach

It is often helpful to use the following three-step approach to answer multiple choice questions.

1. Carefully read the information provided in the case text (for cases) and in the stem of the question. Try to understand the client's health situation and the care or intervention the client is likely to require.
2. Read the stem carefully. Before looking at the options, make sure you have understood the question. Use the information provided and, based on your knowledge and skills, try to anticipate the correct answer.
3. Study the alternatives provided and select the one that comes closest to the answer you predicted. You may wish to re-read the stem before finalizing your selection.

Take advantage of the process of elimination

If you are not presented with an option that matches, or is close to the one you predicted after reading the stem, try to eliminate some of the options that you think are clearly incorrect.

Changing your answer

Be cautious about changing your answer. Very often your first choice is correct. Making a new selection is only advantageous if you are confident that the new choice is correct.

Applicants often make mistakes on an exam because of errors in processing facts and information. These are technical errors related to writing tests and not related to a lack of kinesiology knowledge or skill.

As you complete the practice questions, you may wish to keep a checklist of common test-taking errors you may have. Tick off the particular technical error(s) you made with the questions you answered incorrectly. Keep in mind that you may have more than one technical error with any one question.

Checklist of common test-taking errors

- Missed important information in the case text
- Misread the stem of the question
- Failed to pick out important or key words in the stem of the question
- Did not relate the question to information in the case text
- Made assumptions in the case text/question
- Focused on insignificant details and missed key issues
- Selected more than one answer
- Incorrectly transferred answer from selection in exam book to answer sheet
- Switched answer selected
- Other (specify)

Marking the exam and completing the exam answer sheet

The answer sheets are electronically scanned and scored. It is very important that these answer sheets are filled out correctly. Only answers recorded on the answer sheet are scanned and scored. An applicant will not receive any credit for questions that are answered in the test booklet but not on the answer sheet. Likewise, no credit will be given where an applicant selected more than one answer to a single question.

Quality control reports and checks are done during and after marking to ensure accuracy. The answer sheet of an applicant with a “borderline” result - those with a score very close to the pass mark - is hand-scored to confirm the number of correct answers BEFORE the applicant’s result is released.

Interpretation of results

Applicants who are unsuccessful on the exam will receive a Candidate Performance Profile. This profile provides information on the applicant’s exam performance using scaled scores. The scaled score is the conversion of an applicant’s raw score on the exam to a common measurement scale. The passing score is 450 on a scale ranging from a minimum of 100 to a maximum of 700. If the applicant’s score on this common scale is at or higher than the passing score, the applicant will receive a “pass” result on the exam. If the applicant’s score is lower than the passing score, the applicant will receive a “fail” result on the exam.

The Candidate Performance Profile provides detailed information on the score broken down by different content categories from the exam. It is based on two different classifications of the content of the exam: (1) Competency Category (domain) and (2) Cognitive Level. For example, if an applicant receives a score below 450 in any of the competency categories, they should focus their study efforts on that category and all the other categories the next time they write the exam.

Applicants can also see how they performed in comparison to the average performance of the passing applicants (the reference group) for each of the content categories of the Examination Blueprint. This will help applicants see how well they performed compared to that group. An applicant does not have to pass each category to pass the exam. It is the total score that determines whether the result is a pass or fail.

About the Practice Test

Completing the practice test

It is up to you how and when you complete the practice test. You can use these questions at almost any stage of your preparation, depending on what you hope to gain from the exercise. The practice questions represent the types of questions that appear on the exam but do not necessarily cover all the areas specified in the Examination Blueprint.

Read the instructions carefully and follow them exactly. They are similar to the instructions you will see on the actual exam. When you have finished the practice test, consult the question rationales.

Instructions for the practice test

For you to become familiar with the exam format, the front cover and the instructions that are included below are very similar to those that appear on the exam. The front cover contains a test form number that is also repeated in the lower left-hand corner of each page of the exam. This test form number is required for scoring the exam.

Answering the questions using the blank answer sheet, included at the back of this document, will help you gain experience in recording the personal information and filling in the ovals that correspond to your answer selections. When you have finished all of the questions, you can calculate your total score by allocating one point to each question you answered correctly.

SECRET

THE COLLEGE OF KINESIOLOGISTS OF ONTARIO EXAMINATION

BOOK 1 TEST FORM 7501101

IMPORTANT NOTICE

This test book and its contents, including the examination questions, are highly confidential and are the property of the College of Kinesiologists of Ontario (CKO). Candidates taking the examination are therefore prohibited before, during or after the examination from disclosing the contents of the test book and must not, under any circumstances, share any of the information it contains with any person, except as authorized by CKO. Unauthorized production, reproduction or publication of the examination questions is also prohibited by copyright laws. Additionally, candidates must not engage in the following or similar dishonest practices: (1) using any books, papers, memoranda, calculators, audio or visual players or other memory aid devices; (2) speaking or communicating with other candidates; (3) purposely exposing written examination papers to the view of other candidates; (4) removing or attempting to remove examination material from the examination site. Any contravention of the above prohibitions will be considered professional misconduct and may result in a denial of registration as kinesiologist.

CANDIDATE DECLARATION

I acknowledge that I have read the above provisions regarding the disclosure, production, reproduction or publication of the test book and its content and cheating with respect to the examination.

My signature on this test book constitutes my agreement not to disclose, produce, reproduce or otherwise engage in the publication of the test book and its content, not to cheat with respect to the examination and to act in an ethical and professional manner.

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|--|--|--|--|--|--|--|--|--|--|

CANDIDATE NUMBER

PRINT NAME

SIGNATURE

Do not open your test book until advised to do so.

INSTRUCTIONS

TESTING TIME AND MATERIAL

(NOTE: The following instructions that you will receive when taking the exam.)

1. You will have 3 hours and 30 minutes to work on this test book.
2. The starting and finishing times will be announced and you will be advised when there are 60, 30 and 15 minutes working time remaining.
3. If at any time you have any questions about what you should do, raise your hand and an invigilator will assist you.
4. Clear your desk of all materials except your identification card, answer sheet, test book, pencils and eraser.
5. **Do not fold, bend, or tear your answer sheet, as this could affect the scoring of your test.**
6. You must receive permission before leaving the examination room if you finish the test before the time is up.
7. You must stop working when the signal is given. An invigilator will check your test book and answer sheet before you leave.

ANSWER SHEET

1. **Mark ALL of your answers directly on the answer sheet - no credit will be given for answers marked only in the test book.**
2. Complete the identification portion of your answer sheet:
 - Print your **name, writing centre code, date** of writing the examination and the **name of the examination**;
 - Print and fill in the **seven-digit form number** (from the cover of your test book).
 - Detach the label from the identification card and place the label in the appropriate location on the answer sheet.

The diagram illustrates the process of transferring information from an identification card to an answer sheet. On the left, a dashed line represents the identification card with the following fields:

- Family Name - Nom de famille: Jane Smith
- First Name - Prénom: Smith
- Writing Centre Code - Code de centre d'examen: _____
- Date of Writing - Date de l'examen: 18 / 05 / 2012
- Test - Examen: College of Kinesiologists of Ontario Examination

An arrow points from the identification card to the answer sheet. The answer sheet has a section for the Test Form number and a candidate label area. The Test Form section includes a grid of circles for entering the seven-digit form number. The candidate label area includes a barcode and the text: "Place CANDIDATE LABEL here." and "Smith, Jane".

- **Do not fill in the information to the right of the candidate label unless the candidate label is incorrect.**

3. Sign your name above the examination questions section.
4. Be sure the mark you make for each answer is black, fills the oval, and contains the number of the answer you have chosen. Do not fill in more than one oval for a question or you will get no credit for it.

5. Erase completely any answer you wish to change and mark your new choice in the correct oval. An incomplete erasure may be read incorrectly as an intended answer.
6. Do not press too heavily on your pencil or you may damage the answer sheet. Make no stray marks on the answer sheet; they may count against you.
7. Note that the questions on the answer sheet are numbered in columns. There are fewer questions in the test book than there are numbers on the answer sheet.

TEST BOOK

1. Print AND sign your name on the lines on the cover of this book and copy your 8-digit candidate number (from your barcode label) into the appropriate boxes.

2. Read each question carefully and choose the answer that you think is the best of the four alternatives presented. If you cannot decide on an answer to a question, go on to the next one and come back to this question later if you have time. Try to answer all questions. Marks are not subtracted for wrong answers. If you are not sure of an answer, it will be to your advantage to guess. It will probably be best to start at the beginning of the test and work through the questions in order.
3. The questions in the examination may be presented as cases or as independent questions. The context of some cases may seem similar to others in your test book. This reflects current practice where a kinesiologist may have to care for different persons with similar problems. Each case, however, tests different kinesiology content.

DO NOT BEGIN THE EXAM UNTIL INSTRUCTED TO DO SO.

Sample Question

1. What is a person with a BMI of 17.5 considered?
 1. Underweight
 2. Normal
 3. Overweight
 4. Obese

2 3 4

Practice test

Case 1

The kinesiologist has a meeting with Mr. Adam, a 45-year-old male who has recently joined a fitness facility. Prior to meeting with Mr. Adam, the kinesiologist reviewed his health questionnaire. Mr. Adam indicated that he feels pain in his chest when doing physical activity and that his physician indicated that medication for blood pressure management may be required. Mr. Adam has filled out the Physical Activity Readiness Questionnaire (PAR-Q) and his physician has signed it. The physician has cleared Mr. Adam to start an exercise program to see if his condition could be managed without the use of the medication. His goals are to increase his cardiovascular endurance and lose weight in order to walk 18 holes of golf.

The next FOUR (4) questions refer to this case.

1. To obtain baseline data, which of the following initial assessments would be most appropriate for the kinesiologist to administer?
 1. 3-min step test with a physician present, 1 repetition max (RM) and blood pressure (BP)
 2. BP, body fat (BF) % and 3-min step test with a physician present
 3. VO₂ max, BP and sit and reach
 4. 1 mile (1.6 km) run, 1 RM and sit and reach
2. Given that Mr. Adam can complete 15 minutes of aerobic exercise per session, what is the recommended progression for aerobic exercise duration?
 1. Increasing by 15 minutes per week
 2. Increasing by 25 minutes per week
 3. Increasing by 10 minutes per week
 4. Increasing by 5 minutes per week
3. At a scheduled 2-month follow-up assessment, the kinesiologist determines that Mr. Adam's body composition has not changed while adhering to the exercise program. How should the kinesiologist counsel Mr. Adam to proceed?
 1. Ask Mr. Adam to continue the exercise program for another month.
 2. Refer Mr. Adam to a dietitian for counselling.
 3. Tell Mr. Adam that he will never achieve his goals.
 4. Refer Mr. Adam to a physiotherapist.
4. The fitness facility has undergone renovations, and the kinesiologist realizes that Mr. Adam's file has been lost. Mr. Adam is coming in for his next appointment in 30 minutes. What should the kinesiologist do?
 1. Start a new file and recall all possible information from his questionnaires and appointments, and do not inform Mr. Adam or the healthcare team.
 2. Do not inform Mr. Adam, but complete a thorough search for his file and notify a supervisor.
 3. Notify a supervisor, start a new file for Mr. Adam and recommend new policies and procedures for the fitness centre.
 4. Notify Mr. Adam that his file has been lost, complete a thorough search for his file and recommend new policies and procedures for the fitness centre.

End of case 1

Case 2

Mr. Mayenga, 60 years old, was referred for cardiac rehabilitation 5 weeks post quadruple coronary artery bypass graft surgery. Mr. Mayenga was recently diagnosed with type 2 diabetes and started on insulin. He has experienced numerous episodes of hypoglycemia since starting insulin and has attempted to adjust his insulin dose on his own without success. He is walking for 20 minutes daily and is limited by fatigue. He continues to experience some incisional discomfort since surgery, but he denies any symptoms typical of angina. Symptom-limited exercise stress testing demonstrates the following:

Peak METs = 4.5;
Resting heart rate = 62 beats/min;
Peak heart rate = 135 beats/min;
Resting blood pressure = 155/80 mmHg;
Peak blood pressure = 245/90 mmHg;
The electrocardiogram (ECG) was unremarkable.

The next FOUR (4) questions refer to this case.

5. Which recommendation should be considered when designing an exercise program for Mr. Mayenga?
 1. Upper extremity activity should be restricted to 11.4 kg.
 2. Mr. Mayenga should decrease insulin dose on exercise days.
 3. Exercise testing should be conducted off cardiac medications.
 4. Blood pressure should be monitored during exercise.

6. Based on the heart rate reserve method, what is Mr. Mayenga's training heart rate if his exercise prescription is set at 60% of his functional capacity?
 1. 118 beats/min
 2. 81 beats/min
 3. 106 beats/min
 4. 96 beats/min

7. Which mode of exercise would be the most appropriate for Mr. Mayenga?
 1. Jogging
 2. Swimming
 3. Stationary cycling
 4. Walking stairs

8. Which of the following actions should the kinesiologist suggest that Mr. Mayenga perform to reduce the incidence of exercise-induced hypoglycemia?
 1. Inject insulin into the exercising limbs.
 2. Exercise right before bed.
 3. Ingest additional carbohydrates pre-exercise.
 4. Decrease the frequency of blood sugar monitoring.

End of case 2

Case 3

The kinesiologist is working with a bariatric client who has been overweight since childhood and is on medication to control high blood pressure. The client's goal is to lose 23 kg and normalize blood pressure.

The next THREE (3) questions refer to this case.

9. What is the initial recommended goal for caloric expenditure through physical activity per day for a sedentary adult?
 1. 300 kcal
 2. 1,000 kcal
 3. 500 kcal
 4. 150 kcal

10. Why is the formula $(\text{METs} \times 3.5 \times \text{body weight in kg})/200$ preferred to an accelerometer for predicting caloric expenditure?
 1. It personalizes estimate of caloric expenditure.
 2. Emphasis is placed on intensity of exercise, not on caloric output.
 3. Body weight is a factor when using an accelerometer.
 4. Accelerometer underestimates caloric output for walking.

11. What frequency of exercise should the kinesiologist prescribe to the client to aid in accomplishing the client's long-term goals?
 1. 3 days per week for 30 minutes a day
 2. 4 days per week, 2 times per day for 75 minutes
 3. 5 days per week for 20 minutes per day
 4. 7 days per week for 30 minutes per day

End of case 3

Case 4

Jennifer is a 16-year-old high school distance runner. She recently has been diagnosed with type 1 diabetes and has started insulin.

The next FOUR (4) questions refer to this case.

12. If Jennifer plans to go for a 30-45-minute run at moderate intensity 2 hours after lunch, what would be the expected dose adjustment to avoid an episode of hypoglycemia?
 1. Reducing the dose of her pre-meal short-acting insulin by 50%
 2. Increasing the dose of her pre-meal short-acting insulin by 50%
 3. Reducing her basal insulin by 50%
 4. Increasing her basal insulin by 50%

13. Blood glucose was measured at 5.5 mmol/L prior to a 45-60-minute running session at moderate intensity. What would be the most appropriate recommendation?
 1. Consume 30 to 45 g of carbohydrate prior to starting the exercise.
 2. Consume 10 to 15 g of carbohydrate prior to starting the exercise.
 3. Consume 10 to 15 g of carbohydrate after 30 min of running.
 4. Take no additional measure prior to starting the exercise.

14. Following Jennifer's training session, blood glucose was measured at 3.8 mmol/L. What is the appropriate intervention?
 1. Measure glucose level again after 10 minutes.
 2. Recommend that she consume 15 g of protein.
 3. Recommend that she consume 15 g of carbohydrate.
 4. Refer for treatment with 1 mg of glucagon (Glucagen) by intravenous.

15. What additional referral should the kinesiologist make to help Jennifer manage her blood glucose levels while training?
 1. Nutritionist
 2. Sport psychologist
 3. Diabetes team
 4. Chiroprapist

End of case 4

Case 5

A manufacturing facility has noticed an increase in shoulder and low back musculoskeletal disorders (MSDs) being reported by workers on a recently installed line. The line is composed of five workers, all completing different tasks. The tasks require workers to handle component parts ranging from 1-15 kg throughout the duration of their 8-hour shift. Workers are also required to complete brief assembly tasks using a hand-held drill (5 kg) 50 times per shift. Management has tasked the kinesiologist to address this problem to reduce the occurrence of work-related MSDs.

The next FIVE (5) questions refer to this case.

16. What is the first step the kinesiologist should take to address the increase in MSD reporting?
 1. Review manual material handling training principles with the employees on the line.
 2. Implement job rotation between the five workers.
 3. Provide assistive bracing to the employees reporting injuries.
 4. Investigate the workstation to determine the potential cause of the reported MSDs.
17. What document should the kinesiologist complete to capture physical movements and environmental conditions associated with the workers' job?
 1. NIOSH Lifting Assessment
 2. Physical Demands Description
 3. Employee Comfort Survey
 4. Biomechanical Task Analysis
18. In one task, it was observed that the employees are required to move a 15-kg bin of parts from a shelf to a workbench at the start of every shift. What ergonomic assessment tool should be used to assess the risk associated with the task?
 1. REBA
 2. ACGIH TLV for Hand Activity
 3. NASA-TLX
 4. NIOSH Lifting Equation
19. To reduce the risk of developing an MSD, what primary solution should the kinesiologist recommend?
 1. Redesign job to reduce amount of manual handling tasks that employees are required to complete.
 2. Conduct mandatory MSD awareness training and manual material handling training.
 3. Redesign workspace to position most of the handling tasks within the workers' power zone.
 4. Introduce employee job rotation between the five different positions.
20. When using the drill on the workbench, the worker must adopt the following posture: shoulder abduction, internal rotation and elbow flexion all to 90 degrees, with ulnar deviation. What recommendations should the kinesiologist make to reduce the force and posture hazards at the shoulder?
 1. Tilt the line to a 45-degree angle and add padding to the drill grip.
 2. Install a tool balancer and use an inline grip on the drill.
 3. Install a tool balancer and add padding to the drill grip.
 4. Tilt the line to a 45-degree angle and use a lighter drill.

End of case 5

Case 6

Mrs. Marie, 37 years old, has been referred to the kinesiologist, within the family healthcare team by her family physician. Her weight is 70 kg, height 140 cm and waist circumference 90 cm. She is a mother of two children and recently divorced. Mrs. Marie works long hours in the real estate business from April-September and has no time for herself. When not working, she has to take her children to their sport and leisure activities. Mrs. Marie knows that exercise is important for her but struggles to do it on her own.

The next FOUR (4) questions refer to this case.

21. What should the kinesiologist do first?
 1. Calculate her BMI.
 2. Set goals for weight loss.
 3. Develop rapport.
 4. Suggest a strength-building program.

22. What is Mrs. Marie's main barrier to engaging in physical activity?
 1. Lack of knowledge
 2. Lack of time
 3. Lack of motivation
 4. Lack of discipline

23. What is Mrs. Marie's BMI?
 1. 24
 2. 36
 3. 28
 4. 50

24. What is her BMI classification?
 1. Normal
 2. Obesity
 3. Overweight
 4. Extreme obesity

End of case 6

Case 7

Madeline has been exercising regularly at a cardiac rehabilitation clinic for a few weeks. The kinesiologist within the clinic, Andrew, decides to discuss Madeline's risk factors as part of her initial assessment. The subject of smoking arises, and Madeline states that she is not ready to quit and does not want to discuss the issue. Andrew persists with the discussion and schedules an appointment with a smoking cessation specialist. Andrew explains how difficult quitting smoking was for him when he was going through a divorce and offers to discuss strategies over a cup of coffee at the cafeteria. Madeline leaves the clinic feeling frustrated and uncomfortable. She does not return to the clinic after that.

The next THREE (3) questions refer to this case.

- 25.** What should Andrew have done to address the smoking issue more effectively?
1. Continue to be persistent with the issue.
 2. Allow Madeline to be the one to decide her treatment and not bring up the issue again.
 3. Ask if he could reassess her smoking again in the near future.
 4. Respect the fact that she does not want to discuss the issue but do not cancel the smoking cessation appointment.
- 26.** What boundaries did Andrew cross?
1. Raising the issue of smoking
 2. Making a referral to smoking cessation counselling
 3. Inviting her to discuss treatment over coffee
 4. Counselling on the hazards of smoking
- 27.** Andrew reads in a recent edition of a popular magazine that the strategy of laser therapy for quitting smoking has the best success rates. What should Andrew do with this information?
1. Begin to use this information to counsel his clients on smoking cessation.
 2. Do not use this information because magazines are not valid sources of accurate health information.
 3. Use the information only after he conducts a full review of its validity.
 4. Consult with his manager for permission to use the source.

End of case 7

Independent Questions

QUESTIONS 28 to 102 do not refer to a case.

- 28.** Which class of medication has the greatest influence on both resting and exercise heart rate?
1. Angiotensin converting enzyme inhibitor (ACE)
 2. Statin
 3. Beta blocker
 4. Diuretic
- 29.** In general, when does injury or failure of a tissue occur?
1. Whenever a load is applied to the tissue
 2. When the applied load exceeds the failure tolerance of the tissue
 3. When the applied load is followed by a period of rest
 4. When the failure tolerance of the tissue exceeds the applied load
- 30.** A 25-year-old male produces a relative VO_2 max of 25 mL/kg/min on a treadmill test. What should the kinesiologist conclude?
1. This person's cardiovascular fitness is very high for his age and gender.
 2. This person's cardiovascular fitness is average for his age and gender.
 3. This person's cardiovascular fitness is very low for his age and gender.
 4. It is difficult to assess cardiovascular fitness from his VO_2 max score.
- 31.** Mr. Ron, 44 years old, presents to the clinic with a physician's referral for weight management and pre-arthroscopic knee surgery strengthening. Mr. Ron is 103.6 kg with a body fat of 30%, on a 168 cm frame and a weekend athlete. What should the kinesiologist do?
1. Tell him to lose some weight before surgery and drop calories by 1,000 per day.
 2. Explain that weight will be an issue post-surgery and discuss lifestyle modification.
 3. Suggest that he start a high-intensity plyometric program.
 4. Focus on a pre-surgery rehabilitation plan for his knee.
- 32.** Why is heart rate higher, both at rest and during exercise, in children?
1. Children typically have a lower stroke volume than adults.
 2. Children have lower peripheral resistance than adults.
 3. Children have an increased ability to sweat.
 4. Children have increased vascular stiffness.
- 33.** What action does the serratus anterior have on the scapula?
1. It depresses and retracts.
 2. It retracts and rotates to depress the glenoid cavity.
 3. It depresses and rotates the scapula downward.
 4. It protracts and holds the scapula against thoracic wall.
- 34.** The kinesiologist is starting a training program with low-altitude athletes at a high altitude. What effects does high-altitude exposure have on the heart during exercise of similar intensity as exercise at sea level?
1. Increased cardiac output, decreased myocardial oxygen requirements
 2. Decreased cardiac output, increased myocardial oxygen requirements
 3. Decreased cardiac output, decreased myocardial oxygen requirements
 4. Increased cardiac output, increased myocardial oxygen requirements

35. Which task will be most limiting for a person with a supraspinatus injury?
1. Abduction
 2. Flexion
 3. Extension
 4. Horizontal adduction
36. What are the primary ergonomic risk factors for musculoskeletal disorders?
1. Postures, vibration and work methods
 2. Force, repetition and postures
 3. Repetition, force and vibration
 4. Work methods, vibration and temperature
37. For a healthy individual, how is blood pressure affected during exercise with a progressive increase in intensity?
1. Systolic, diastolic and mean arterial pressures increase.
 2. Systolic blood pressure increases, diastolic blood pressure decreases and mean arterial pressure remains the same.
 3. Systolic and mean arterial pressures increase, and diastolic blood pressure remains essentially the same.
 4. Systolic and diastolic blood pressures increase, and mean arterial pressure remains essentially the same.
38. A worker is required to perform precise work tasks, such as writing or drawing, from a standing position. Which working height is considered most desirable to perform these tasks?
1. Above-elbow height
 2. At-elbow height
 3. Slightly below-elbow height
 4. Significantly below-elbow height
39. Which movement is most likely to become limited following damage to the gracilis muscle?
1. Hip abduction
 2. Hip external rotation
 3. Hip adduction
 4. Knee extension
40. Which of the following signs and symptoms are expected for an individual with multiple sclerosis?
1. Diffuse non-articular pain, multiple tender points and sleep disturbance
 2. Pain during joint use, cartilage destruction and gait problems
 3. Heat sensitivity, bladder dysfunction and cognitive deficits
 4. Prolonged morning stiffness, joint swelling and muscle weakness
41. What is the appropriate order for the three phases of the healing process?
1. Endurance, proliferation, flexibility
 2. Flexibility, inflammation, remodelling
 3. Inflammation, proliferation, remodelling
 4. Proliferation, strength, remodelling
42. Which of the following is a characteristic of androgenic-anabolic steroids?
1. They are nearly identical to male sex hormones.
 2. They improve aerobic capacity in untrained athletes.
 3. They decrease the rate of bone maturation.
 4. They have similar effects to female sex hormones.

43. What is a mechanism of an anterior cruciate ligament (ACL) sprain?
1. Knee hyperextension with rotation
 2. Falling onto a flexed knee
 3. Impact to the medial side of the knee
 4. Degenerative disorder
44. Which of the following signs and symptoms of anxiety would the kinesiologist observe while working with a client during injury rehabilitation?
1. Decreased negativity and unrealistic expectations
 2. A sudden increase in motivation
 3. Increased school or work performance
 4. Social withdrawal and abruptness with others
45. Which of the following intervention strategies is contraindicated as a treatment for juvenile rheumatoid arthritis?
1. Aquatic exercises
 2. Static stretching
 3. Strength training
 4. Jogging
46. What type of performance outcome should the kinesiologist expect from a client when introducing a more complex exercise?
1. Improved confidence
 2. Decrease in speed
 3. Increase in accuracy
 4. Decrease in time
47. When counselling sedentary clients on behavioural modification, during what stage of change are they at most risk for relapse?
1. Precontemplation
 2. Contemplation
 3. Preparation
 4. Action
48. What is a key idea of the Transtheoretical Model of Behaviour Change?
1. Individuals move through the stages of behavioural change at a constant rate.
 2. Individuals use behavioural change strategies only during the initial stages.
 3. Individuals move back and forth along the stage continuum.
 4. Individuals only progress forward through the stages.
49. Which of the following would be appropriate exercise prescription advice to provide to a client who has osteoarthritis of the knee joint, pain with weight-bearing activity and atrophy of the quadriceps muscle?
1. Focus on aerobic conditioning.
 2. Avoid quadriceps strengthening.
 3. Focus on aquatic exercises.
 4. Avoid isometric contractions.

50. Which of the following would cause an increase in blood pressure with aging?
1. Increased arterial compliance and decreased arterial stiffness
 2. Decreased arterial compliance and increased arterial stiffness
 3. Decreased in both arterial compliance and arterial stiffness
 4. Increased in both arterial compliance and arterial stiffness
51. Which of the following injuries is least likely to occur because of the strong static and dynamic structures of the knee?
1. Meniscus tears
 2. Complete dislocation
 3. Partial tears of ligaments
 4. Patella subluxation
52. The kinesiologist is employed with a youth competitive figure skating team for development of an off-ice training program. John, a skater, informs the kinesiologist that his pairs partner, Susie, has not been eating much lately, and he is concerned about her decreased energy for practice and the upcoming competition. What step should the kinesiologist take?
1. Have Susie complete a food diary to monitor food intake until competition.
 2. Refer Susie to a physician, dietitian and psychologist.
 3. Discuss the issue with the coach, Susie and John.
 4. Change Susie's training program to be less demanding.
53. An electrician has been referred to the kinesiologist for anterior shoulder pain with shoulder adduction at 90 degrees of flexion. The client shows positive signs for Hawkins-Kennedy test. What injury does the client show positive signs for?
1. Subscapularis tear
 2. Primary frozen shoulder
 3. Shoulder impingement
 4. Distal biceps tendon rupture
54. A basketball player presents to the kinesiologist after sustaining an injury. The ankle was forced into inversion while plantar flexed upon landing on an opponent's foot. Which ligament is most likely injured?
1. Calcaneofibular
 2. Anterior tibiofibular
 3. Tibiocalcaneal
 4. Anterior talofibular
55. The kinesiologist is taking a case history from a client with significant low back pain and learns that the client is having difficulty with bowel and bladder control. How should the kinesiologist proceed?
1. Assess pelvic alignment.
 2. Strengthen multifidus muscles.
 3. Strengthen transversus abdominis muscles.
 4. Refer client to urgent care.

56. Joseph presents to the kinesiologist with an elevated level of LDL cholesterol. What advice is most appropriate for Joseph?
1. Decrease omega-3 intake.
 2. Increase water intake.
 3. Increase branched-chain amino acid intake.
 4. Decrease animal fat intake.
57. During a training session, an athlete reports an unexplained weight loss of 3.6 kg over the previous 2 weeks, with no change in training level or caloric intake. What should the kinesiologist do?
1. Increase the athlete's caloric intake and reassess in 2 weeks.
 2. Have the athlete track caloric intake for an additional 2 weeks.
 3. Refer the athlete to a registered dietitian.
 4. Refer the athlete to a physician.
58. Which of the following is used to control heart rate and to treat hypertension?
1. Calcium channel blockers
 2. Beta blockers
 3. Antiarrhythmics
 4. Anticoagulants
59. While supervising clients in a rehabilitation clinic, the kinesiologist is called into an office by a colleague to attend to a matter. What should the kinesiologist do prior to leaving the rehabilitation room to ensure best practice?
1. Leave the room and check in with the clients upon return.
 2. Have the clients stop their exercises for the current visit.
 3. Assign someone qualified to supervise the clients.
 4. Instruct the clients to complete self-directed exercises in the kinesiologist's absence.
60. What should the kinesiologist do regarding documentation when working in a private studio as a personal trainer?
1. Obtain consent to work with a certified personal trainer.
 2. Ensure that clients keep a personal journal of their program.
 3. Have clients fill out a PAR-Q prior to each session.
 4. Maintain an accurate record of the clients' sessions.
61. While the kinesiologist is conducting a weight training session with a youth soccer team, one athlete invites his younger siblings to wait in an area of the facilities where they will be unsupervised. What should the kinesiologist do?
1. Allow them to remain there if they promise not to use the equipment.
 2. Ask them to remain in the waiting area until the session is over.
 3. Allow them to use the equipment that has the least risk of injury.
 4. Have the athlete check in on his siblings during rest periods.
62. Anna, a kinesiologist, is a fitness coach for a grade 9 high school basketball team. During a game, one of the players sustains two hits to the head but the plays were not stopped. Unsure of the severity, the coach wants the athlete to continue playing and pretends not to have seen the injury. What should Anna do if she is the most qualified practitioner on the bench?
1. Insist that the athlete sit out for the remaining time.
 2. Allow the coach to decide if he wants the athlete to remain on the court.
 3. Ask the athlete if she is able to continue playing.
 4. Inquire if there is a physiotherapist among the spectators to assess the athlete.

63. How many kcal would a 200-kg man utilize in a minute if exercising at 4 METs?
1. 14
 2. 10.5
 3. 17.5
 4. 10
64. What precautions should be taken when exercising in cold environments?
1. Modify activity based on wind chill temperature.
 2. Prevent hypothermia by retaining all layers throughout activity.
 3. Hydrate with warm fluids post exercise.
 4. Avoid exercise in temperatures below zero (0) degrees Celsius.
65. Which of the following physiological responses is expected for pregnant women compared to non-pregnant women during acute exercise?
1. Stroke volume is higher; heart rate will remain the same.
 2. Stroke volume is lower; blood pressure will increase.
 3. Blood pressure may increase; submaximal oxygen uptake will decrease.
 4. Blood pressure may remain the same; submaximal oxygen uptake will be higher.
66. What does the sensitivity of a cardiac stress test refer to?
1. Clients without an abnormality with a negative test
 2. Clients with a positive test who have an abnormality
 3. Clients with a negative test who do not have an abnormality
 4. Clients with known abnormality with a positive test
67. What is a common gait characteristic in children under 2 years old?
1. Initial contact with foot flat
 2. Increased single limb stance
 3. Decreased co-activation of muscles
 4. Narrow base of support
68. What tool improvement should be provided to a hand-held drill operator who has developed symptoms of stenosing tenosynovitis (trigger finger)?
1. Provide a drill with a two-finger-width trigger.
 2. Provide a drill with a thumb trigger.
 3. Provide a drill with a pistol grip.
 4. Provide a drill with an inline grip.
69. What physiological effect would a client taking beta blockers experience during submaximal exercise?
1. Reduced blood pressure
 2. Increased blood pressure
 3. No effects on heart rate
 4. Increased heart rate response

70. Mr. Charles, 83 years old, performed a 6-minute walk test (MWT) to assess his cardiorespiratory fitness. He was able to walk for the full 6 minutes. He walked 328 m of the estimated 409 m, which represents 80% predicted fitness for his age. What intensity range should be used to prescribe exercise?
1. 20-39% HRR
 2. 60-85% HRR
 3. 40-59% HRR
 4. 65-70% HRR
71. Mr. Peterson, 38 years old, faints after exercising on the treadmill. He has no history of fainting. What should the kinesiologist recommend to Mr. Peterson?
1. Go to the emergency room.
 2. Have his blood pressure taken.
 3. Sit down and rest.
 4. Continue to exercise.
72. A kinesiologist has developed a rehabilitation program for Mr. Sanderson after discharge from a local physiotherapist. Mr. Sanderson has missed 4 consecutive weeks of appointments with the kinesiologist. How should the kinesiologist proceed upon his return?
1. Explain to him that the scheduled time slot will not open up for another 3 weeks.
 2. Continue with the training plan as if he never missed a session.
 3. Assess him and make modifications to his treatment plan.
 4. Suspend the training plan and refer him back to physiotherapist.
73. Ms. Blackson's job requires lifting 11 kg at work. When reviewing Ms. Blackson's file, the treating kinesiologist observes that a recent physician's report, dated 2 weeks ago at the time of the injury, states "no lifting over 4.5 kg." Considering Ms. Blackson's goal to return to work, what is an appropriate next step?
1. Contact the physician and ask if the restriction is permanent.
 2. Eliminate lifting tasks in the exercise program.
 3. Contact the employer to request a Functional Abilities Evaluation (FAE).
 4. Contact the employer to determine if permanent modified duties are available.
74. Mr. Samuelson suffered a hemorrhagic stroke. Upon assessment, what would the kinesiologist expect to find in his affected arm during active motion as compared to his unaffected arm?
1. Peak joint torque is decreased, and time to reach peak joint torque is increased.
 2. Peak joint torque is increased, and time to reach peak joint torque is increased.
 3. Peak joint torque is increased, and time to reach peak joint torque is decreased.
 4. Peak joint torque is decreased, and time to reach peak joint torque is decreased.
75. What statement is the kinesiologist most likely to hear from a female client who is intrinsically motivated toward physical activity?
1. "I participate in physical activity to reap the health benefits."
 2. "I participate in physical activity because physical activity is in line with my values."
 3. "I participate in physical activity out of choice for my well-being."
 4. "I participate in physical activity because it's enjoyable."
76. Which combination of assessments could be used to estimate a client's body fat percentage?
1. One-rep max and skin fold calipers
 2. Bioelectrical impedance and dual-energy X-ray absorptiometry
 3. Dual-energy X-ray energy absorptiometry and Bruce Protocol
 4. Hydrostatic weighing and goniometer

77. Based on the Standards for Professional Practice, how long must a child client's record be kept within a clinic?
1. 10 years following the client's 18th birthday
 2. Until the day the client becomes 18
 3. A total of 10 years after the last encounter
 4. A total of 8 years after the last encounter
78. What is an example of a conflict of interest?
1. A consulting ergonomist refers workers to a kinesiology clinic without disclosing that he has partial ownership.
 2. A consulting ergonomist provides recommendations for ergonomic equipment that his company sells (make more wrong)
 3. A kinesiologist refers a client to a fellow physiotherapist who is a former colleague of the kinesiologist.
 4. A kinesiologist refers a client to a facility next door to the kinesiologist.
79. A kinesiologist has decided to start offering ergonomic services in addition to clinical kinesiology services. What should the kinesiologist do to ensure she is competent?
1. Read the latest issue of *Applied Ergonomics Journal*.
 2. Take an ergonomics course offered by an accredited institution.
 3. Meet with a professional ergonomist to review the latest trends in ergonomics.
 4. Purchase ergonomic analysis software.
80. Based on the Transtheoretical Model of Behaviour Change, a person who irregularly exercises is at what stage of change?
1. Contemplation
 2. Precontemplation
 3. Preparation
 4. Action
81. What is spondylolisthesis?
1. Increased extension of the upper cervical spine
 2. A forward displacement of a vertebra in the lumbar spine
 3. Excessive rounding of the thoracic spine
 4. A lateral curve of the spine
82. When comparing two stress tests at the same workload, before and after 10 weeks of cardiovascular training, which physiological change would be expected?
1. A lower cardiac output
 2. An increase in oxygen consumption
 3. An increase in stroke volume
 4. Higher blood lactate levels
83. Which of the following are examples of foods containing soluble fibre recommended to decrease elevated blood lipid concentrations?
1. Fruits, beans and oats
 2. Dairy foods
 3. Meat products
 4. Fish and eggs

- 84.** What should happen to aerobic capacity as an individual ages, with no change in activity level?
1. It decreases linearly.
 2. It increases linearly.
 3. It remains the same.
 4. It may increase or decrease.
- 85.** Which of the following symptoms are expected for an individual with osteoarthritis?
1. Diffuse non-articular pain, multiple tender points and sleep disturbance
 2. Pain during joint use, cartilage destruction and antalgic gait
 3. Heat sensitivity, bladder dysfunction and cognitive defects
 4. Prolonged morning stiffness, joint swelling and muscle weakness
- 86.** Why is exercise prescribed for a person with type 2 diabetes?
1. Muscle contraction decreases insulin sensitivity, thus helping to manage high blood glucose.
 2. Muscle contraction does not affect insulin sensitivity and thus does not influence blood glucose.
 3. Muscle contraction increases levels of circulating insulin, thus helping to manage high blood glucose levels.
 4. Muscle contractions have an insulin-like effect which helps to manage high blood glucose.
- 87.** During the early stages of rehabilitation, what is the best reason for using electrical stimulation currents for neuromuscular control?
1. To increase range of motion
 2. To decrease swelling
 3. To control pain
 4. To avoid reinjury
- 88.** What type of characteristics would be associated with type IIx muscle fibres?
1. Small motor neuron size, high resistance to fatigue and low glycolytic capacity
 2. Large motor neuron size, low resistance to fatigue and high glycolytic capacity
 3. Large motor neuron size, high resistance to fatigue and low glycolytic capacity
 4. Small motor neuron size, high resistance to fatigue and high glycolytic capacity
- 89.** Which energy system is primarily responsible for energy production in an individual running for 30 minutes?
1. ATP-CP
 2. Non-oxidative
 3. Oxidative
 4. Lactate
- 90.** Which of the following is a micronutrient that plays a key role in energy production?
1. Carbohydrates
 2. Vitamin B₂
 3. Vitamin K
 4. Fat

91. What activities are recommended for individuals managing symptoms of osteoarthritis?
1. Stair climbing, jumping rope, swimming
 2. Swimming, cycling, stretching
 3. Tennis, bowling, dancing
 4. Stretching, jogging, weight lifting
92. Christine, a 16-year-old gymnast, expresses a fear of gaining weight and significantly decreases her caloric intake in the days leading up to competition. What eating disorder is Christine most likely experiencing?
1. Anorexia nervosa
 2. Binge eating
 3. Anorexia athletica
 4. Bulimia nervosa
93. Which class of drugs has a lowering effect on sub-maximal and maximal heart rate?
1. Antiarrhythmics
 2. Angiotensin-converting enzyme (ACE) inhibitors
 3. Beta blockers
 4. Diuretics
94. Which risk factor may lead to an increased risk of cardiovascular disease in women?
1. Fasting glucose of 125 mg/dL (6.9 mmol/L)
 2. Blood pressure of 125/80 mmHg
 3. HDL cholesterol of 42 mg/dL (2.3 mmol/L)
 4. Waist circumference of 82 cm
95. What is the mechanism of injury for a herniated intervertebral disc in the lumbar region of the spine?
1. Repeated compressive loading of the spine
 2. Repeated or prolonged hip extension
 3. Sustained contraction of the erector spinae
 4. Repeated or prolonged flexion of the lumbar spine
96. Which posture is exaggerated by tight hip flexors, tight low back extensors and weak abdominals?
1. Scoliosis
 2. Thoracic kyphosis
 3. Cervical lordosis
 4. Lumbar lordosis
97. Which of the following is the most efficient way to achieve a healthy weight loss?
1. Resistance exercise
 2. Calorie-reduced diet
 3. Endurance exercise
 4. Increased muscle mass
98. After performing a manual muscle test, the kinesiologist observes that the client can flex her elbow fully when gravity is eliminated. According to standard manual muscle testing grading criteria, what should be the expected grade?
1. 1
 2. 2
 3. 3
 4. 4

- 99.** Which of the following describes a second class lever?
1. Applied force and the resistance force are on the same side of the fulcrum with the resistance force being closer to the fulcrum.
 2. Applied force and the resistance force are positioned on opposite sides of the fulcrum.
 3. Applied force and the resistance force are on the same side of the fulcrum with the applied force being closer to the fulcrum.
 4. Applied force and the resistance force are on the same side of the fulcrum and are the same distance from the fulcrum.
- 100.** What is an example of a statistical type II error?
1. Null hypothesis is true but is incorrectly rejected.
 2. Null hypothesis is false but is incorrectly accepted.
 3. Null hypothesis cannot be determined to be true or false but is incorrectly accepted.
 4. Null hypothesis cannot be determined to be true or false but is incorrectly rejected.
- 101.** Ms. Sheppard reports that she ate a breakfast consisting of 30 g of carbohydrates, 11 g of protein and 4 g of fat. How many calories did Ms. Sheppard consume?
1. 263 calories
 2. 200 calories
 3. 350 calories
 4. 180 calories

End of Practice Test

Answer key and rationales

1. Answer: 2

1. Incorrect: It is unsafe to perform 1 RM with an individual who has chest pains when doing physical activity.
2. **Correct: Based on the health questionnaire, these assessments were chosen because they will give the kinesiologist information on the client's health without compromising safety.**
3. Incorrect: It is unsafe to perform VO₂ max test with someone who has chest pain when doing physical activity.
4. Incorrect: It is unsafe to perform 1 RM with an individual who has chest pains when doing physical activity.

Classification

Cognitive Level: Critical Thinking

Competency Domain: Kinesiology Practical Experience - Assessment

Competency: 14. Able to recognize and select appropriate assessments or tools based on factors including but not limited to case history, contraindications, patient/client presentation, context, and reason for assessment.

Reference

American College of Sports Medicine (2009), p. 80

2. Answer: 4

1. Incorrect: This is not the recommended progression.
2. Incorrect: This is not the recommended progression.
3. Incorrect: This is not the recommended progression.
4. **Correct: This is the progression recommended by the American College of Sports Medicine (ACSM) for individual hypertension.**

Classification

Cognitive Level: Application

Competency Domain: Kinesiology Practical Experience - Services

Competency: 28. Able to design customized exercise prescription for individuals with pathology, including but not limited to flexibility; strength, endurance, balance, and cardiopulmonary training; and corrective movement patterning.

Reference

Durstine, Moore, Painter, & Roberts (2009), p. 113

3. **Answer: 2**
1. Incorrect: This is not addressing the problem.
 2. **Correct: This shows an ability to work within scope of practice and collaborate effectively as a member of an interprofessional team.**
 3. Incorrect: This is unethical.
 4. Incorrect: This is not the correct use of an interprofessional team.

Classification

Cognitive Level: Application
Competency Domain: Communication and Collaboration
Competency: 45. Able to communicate and collaborate effectively as a member of a interprofessional team.

Reference

Standards of Practice (2012) p. 1

4. **Answer: 4**
1. Incorrect: The kinesiologist must notify the client.
 2. Incorrect: The kinesiologist must notify the client.
 3. Incorrect: The kinesiologist must notify the client.
 4. **Correct: The kinesiologist must notify the client, look for the record and make recommendations.**

Classification

Cognitive Level: Critical Thinking
Competency Domain: Professionalism/Professional Practice
Competency: 38. Adhere to guidelines and standards for documentation and reporting.

Reference

Standards of Practice (2012), p. 7

5. **Answer: 4**
1. Incorrect: Lifting should be restricted to 2.3-3.6 kg 5-8 weeks post surgery.
 2. Incorrect: The kinesiologist should advise the client to consult his physician regarding medication changes.
 3. Incorrect: Exercise testing should mirror conditions of exercise training.
 4. **Correct: Mr. Mayenga has an exaggerated blood pressure response to exercise testing, and his BP should be monitored during training.**

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience - Services
Competency: 28. Able to design customized exercise prescription for individuals with pathology, including but not limited to flexibility; strength, endurance, balance, and cardiopulmonary training; and corrective movement patterning.

Reference

American College of Sports Medicine (2006), p. 216, 235

6. **Answer: 3**
1. Incorrect: $(HR_{peak} + HR_{rest}) \times 0.6$
 2. Incorrect: $HR_{peak} \times 0.6$
 3. **Correct: Karvonen Formula is $(HR_{peak} - HR_{rest}) \times \% FC + HR_{rest}$.**
 4. Incorrect: $(220 - age) \times 0.6$. This is often used for individuals without stress test data.

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience - Services
Competency: 28. Able to design customized exercise prescription for individuals with pathology, including but not limited to flexibility; strength, endurance, balance, and cardiopulmonary training; and corrective movement patterning.

Reference

American College of Sports Medicine (2006), p. 156

7. **Answer: 3**
1. Incorrect: Jogging typically requires at least an 8 MET capacity.
 2. Incorrect: Upper extremity activity should be limited secondary due to recent surgery. Physical requirements of swimming typically exceeds client's peak METs.
 3. **Correct: This minimizes upper extremity work. Intensity can be set below client's peak MET level.**
 4. Incorrect: MET requirements are too high.

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience - Services
Competency: 28. Able to design customized exercise prescription for individuals with pathology, including but not limited to flexibility; strength, endurance, balance, and cardiopulmonary training; and corrective movement patterning.

Reference

Ainsworth, Haskell, Whitt, & Irwin (2000), p. S506

8. **Answer: 3**
1. Incorrect: Insulin should not be injected into exercising limbs.
 2. Incorrect: This increases risk of delayed post-exercise hypoglycemia.
 3. **Correct: 20-30 g of carbohydrates should help avoid exercise-induced hypoglycemia if pre-exercise capillary blood sugar is less than 5.6 mmol/L.**
 4. Incorrect: Frequency of blood sugar monitoring should be increased.

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience - Services
Competency: 28. Able to design customized exercise prescription for individuals with pathology, including but not limited to flexibility; strength, endurance, balance, and cardiopulmonary training; and corrective movement patterning.

Reference

American College of Sports Medicine (2006), p. 235

9. **Answer: 4**

1. Incorrect: This is not the initial goal for a sedentary adult; 300 kcal is too high for initial goal.
2. Incorrect: This is not the initial goal for a sedentary adult; 1,000 kcal is too high for initial goal.
3. Incorrect: This is not the initial goal for a sedentary adult; 500 kcal is too high for initial goal.
4. **Correct: This is the initial goal for a sedentary adult. Due to deconditioning, work rate must be conservative at the start of routine to achieve success.**

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 10. Demonstrate an understanding of the principles of nutrition related to human movement and performance.

Reference

American College of Sports Medicine (2006), p. 148

10. **Answer: 1**

1. **Correct: This formula calculates what the caloric output is per minute; therefore, clients are able to understand how many minutes of exercise and intensity are required to reach their goals.**
2. Incorrect: Intensity is not considered in the formula.
3. Incorrect: Typically an accelerometer will underestimate caloric output by 30-60% for activities other than walking.
4. Incorrect: Typically an accelerometer will underestimate caloric output by 30-60% for activities other than walking.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Kinesiology Practical Experience- Assessment

Competency: 19. Able to use knowledge of measurement concepts (for example, reliability, validity, norms) to assess the appropriateness of assessment instruments.

Reference

American College of Sports Medicine (2006), p. 148-149

11. Answer: 4

1. Incorrect: Exercise is recommended daily, minimum 5 times/week for 30-60 minutes a day.
2. Incorrect: Exercise is recommended daily, minimum 5 times/week for 30-60 minutes a day.
3. Incorrect: Exercise is recommended daily, minimum 5 times/week for 30-60 minutes a day.
4. **Correct: Exercise is recommended daily, minimum 5 times/week for 30-60 minutes a day.**

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Kinesiology Practical Experience - Services

Competency: 28. Able to design customized exercise prescription for individuals with pathology, including but not limited to flexibility; strength, endurance, balance and cardiopulmonary training; and corrective movement patterning.

Reference

Durstine, Moore, Painter, & Roberts (2009), p. 197

12. Answer: 1

1. **Correct: Because of the effect of exercise on insulin sensitivity, less insulin is required and short-acting insulin should be decreased.**
2. Incorrect: Increase in pre-meal short-acting insulin would increase risk of hypoglycemia because of the effect of exercise on insulin sensitivity.
3. Incorrect: Basal insulin would only be reduced in long-endurance exercise session and in addition to a reduction to short-acting insulin.
4. Incorrect: Basal insulin would never be increased, especially if planning to do an endurance exercise training session on that day.

Classification

Cognitive Level: Application

Competency Domain: Knowledge

Competency: 11. Demonstrate an understanding of the physiological effects of medications on human movement and performance.

Reference

Swain, & Leutholtz (2002), p. 129

13. Answer: 1

1. **Correct: Prior to moderate duration and moderate intensity exercise, 30 to 45 g of carbohydrate would be recommended if blood glucose were at 5.5 mmol/L.**
2. Incorrect: 10 to 15 g of carbohydrate would not be enough, and the client would end up with hypoglycemia.
3. Incorrect: To avoid hypoglycemia, it is necessary to consume at least 30 to 45 g of carbohydrate prior exercise.
4. Incorrect: Prior to moderate duration and moderate intensity exercise, 30 to 45 g of carbohydrate would be recommended if blood glucose were at 5.5 mmol/L.

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience - Services
Competency: 29. Able to monitor, re-assess, and adjust prescriptions/treatment plans based on patient/client responses.

Reference

Ehrrman, Gordon, Visich, & Kateyian (2009), p. 202

14. Answer: 3

1. Incorrect: A blood glucose of 3.8 mmol/L needs immediate intervention.
2. Incorrect: Hypoglycemia needs to be treated with carbohydrate.
3. **Correct: It is recommended that 15 g of carbohydrate be consumed to treat mild-to-moderate hypoglycemia.**
4. Incorrect: Mild-to-moderate hypoglycemia should be treated with 15 g of carbohydrate.

Classification

Cognitive Level: Critical Thinking
Competency Domain: Kinesiology Practical Experience - Services
Competency: 29. Able to monitor, re-assess, and adjust prescriptions/treatment plans based on patient/client responses.

Reference

Canadian Diabetes Association (2012), p. S44

15. **Answer: 3**

1. Incorrect: A nutritionist is not a regulated healthcare provider. It is preferred that the athlete be followed by a diabetes team or certified diabetes educator.
2. Incorrect: It is preferred that the athlete be followed by a diabetes team or certified diabetes educator. Sports psychologist deal with performance enhancement.
3. **Correct: All children and adolescents with diabetes should have access to an experienced diabetes healthcare team and specialized care starting at the time of diagnosis.**
4. Incorrect: There is no reason for this adolescent to see a chiropodist. Chiropody involves the assessment and management of foot and lower limb disorders. This includes the management of a wide variety of disorders, injuries and local manifestations of systemic conditions.

Classification

Cognitive Level: Critical Thinking

Competency Domain: Professionalism/Professional Practice

Competency: 41. Facilitate patient/client access to services and resources.

Reference

Canadian Diabetes Association (2012), p. S84

16. **Answer: 4**

1. Incorrect: The cause of the MSDs must be determined before any solutions can be implemented.
2. Incorrect: The cause of the MSDs must be determined before any solutions can be implemented.
3. Incorrect: The cause of the MSDs must be determined before any solutions can be implemented.
4. **Correct: A risk assessment/investigation can provide the kinesiologist with guidance on the potential cause of an MSD.**

Classification

Cognitive Level: Application

Competency Domain: Kinesiology Practical Experience - Assessment

Competency: 17. Demonstrate understanding of the appropriate use of ergonomic assessments and tools.

Reference

Occupational Health and Safety Council of Ontario (OHSCO) Musculoskeletal Disorders Prevention Series Part 1- Part 3 (A,B,C), p. S1P11

17. **Answer: 2**

1. Incorrect: This is an assessment tool associated with a specific task.
2. **Correct: The kinesiologist must collect job demands before assessing the hazards and implementing controls.**
3. Incorrect: Comfort surveys do not provide full details of job demands.
4. Incorrect: This is an assessment tool associated with a specific task.

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience- Assessment
Competency: 17. Demonstrate understanding of the appropriate use of ergonomic assessments and tools.

Reference

Chengalur, Rodgers, & Bernard (2004), p. 19-20

18. **Answer: 4**

1. Incorrect: This is a postural assessment tool only and is not time-weighted.
2. Incorrect: This tool is specific to hand activity only.
3. Incorrect: This tool is used to measure worker perception of workload.
4. **Correct: This tool is specific to determining the risk of lifting tasks.**

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience- Assessment
Competency: 17. Demonstrate understanding of the appropriate use of ergonomic assessments and tools.

Reference

Konz, & Johnson (2004), p. 243

19. **Answer: 1**

1. **Correct: This is an engineering control that will eliminate some of the risk entirely.**
2. Incorrect: This is an administrative control that is used as a secondary solution or only when engineering controls cannot be implemented.
3. Incorrect: This is an engineering control but manual handling is still required.
4. Incorrect: This is an administrative control that is used as a secondary solution or only when engineering controls cannot be implemented.

Classification

Cognitive Level: Critical Thinking
Competency Domain: Kinesiology Practical Experience - Services
Competency: 21. Able to identify, select, develop, and prescribe intervention strategies to maintain, rehabilitate, or enhance movement and performance based on assessment findings.

Reference

Chengalur, Rodgers, & Bernard (2004), p. 490

20. **Answer: 2**

1. Incorrect: This does not eliminate force hazard, although it may eliminate vibration hazard.
2. **Correct: This reduces force and posture hazard, and is affordable.**
3. Incorrect: This does not eliminate posture hazard.
4. Incorrect: This does not fully reduce force hazard; it is unlikely to gain management support.

Classification

Cognitive Level: Critical Thinking

Competency Domain: Kinesiology Practical Experience - Services

Competency: 30. Able to make recommendations for task and/or job modification and accommodation based on assessment of the demands of the workplace and evaluate effectiveness.

Reference

Chengalur, Rodgers, & Bernard (2004), p. 349

21. **Answer: 3**

1. Incorrect: This should be done after initial rapport is formed.
2. Incorrect: Discussion of goal-setting may not be specific to weight loss.
3. **Correct: Developing a rapport is the basis of building a foundation of trust with the client prior to commencing any programming.**
4. Incorrect: Discussion of goal-setting may not be specific to increasing strength.

Classification

Cognitive Level: Critical Thinking

Competency Domain: Kinesiology Practical Experience - Services

Competency: 25. Able to counsel patients/clients regarding healthy behaviours and lifestyle management.

Reference

Magee (2007), p. 2

22. Answer: 2

1. Incorrect: Behaviour change is often not a question of lack of knowledge. She could learn more but this is not her main barrier.
2. **Correct: This is her main barrier due to working and being a single parent of two children.**
3. Incorrect: Ms. Marie has identified interest in exercising.
4. Incorrect: It is not possible to assess her level of discipline until a program tailored to her schedule and needs is initiated.

Classification

Cognitive Level: Critical Thinking

Competency Domain: Kinesiology Practical Experience- Assessment

Competency: 14. Able to recognize and select appropriate assessments or tools based on factors including but not limited to case history, contraindications, patient/client presentation, context, and reason for assessment.

Reference

Faney, Inset, & Roth (2010), p. 49

Weinberg, & Gould (2011), p. 419

23. Answer: 2

1. Incorrect: body weight (kg) / height (m) squared
2. **Correct: body weight (kg) / height (m) squared**
3. Incorrect: body weight (kg) / height (m) squared
4. Incorrect: body weight (kg) / height (m) squared

Classification

Cognitive Level: Application

Competency Domain: Kinesiology Practical Experience- Assessment

Competency: 16. Able to perform physical assessment procedures including but not limited to vital signs, anthropometrics, range of motion, strength, balance, cardiopulmonary fitness, and orthopaedic assessment.

Reference

Faney, Inset, & Roth (2010), p. 175

24. **Answer: 2**

1. Incorrect: Normal = 18.5-24.9
2. **Correct: Obesity = 30-39.9**
3. Incorrect: Overweight = 25-29.9
4. Incorrect: Extreme obesity = >40

Classification

Cognitive Level: Theory/Comprehension
Competency Domain: Kinesiology Practical Experience- Assessment
Competency: 20. Able to understand, evaluate and interpret assessment findings and referral documentation to form a clinical impression.

Reference

Faney, Inset, & Roth (2010), p. 175

25. **Answer: 3**

1. Incorrect: Andrew should respect Madeline's request not to discuss the issue.
2. Incorrect: Andrew should respect Madeline's right to reach decisions about her own treatment/services; however, he should ask if he can bring up the issue again.
3. **Correct: Andrew should respect Madeline's right to reach decisions about her treatment and/or services; however, it is acceptable to ask if he can bring up the issue again.**
4. Incorrect: A referral to appropriate healthcare professionals should only be made with the client's consent.

Classification

Cognitive Level: Critical Thinking
Competency Domain: Professionalism/Professional Practice
Competency: 44. Respect patient's/client's rights to reach decisions about treatment and/or services.

Reference

Standards of Practice (2012), p. 11

26. Answer: 3

1. Incorrect: Discussing risk factors is within the kinesiologist's scope of practice.
2. Incorrect: Referring to smoking cessation counselling is within the kinesiologist's scope of practice; however, client consent must be obtained.
3. **Correct: This is a violation of the professional boundaries established by the Standards of Practice 2012.**
4. Incorrect: Counselling on the hazards of smoking is appropriate and within the kinesiologist's scope of practice.

Classification

Cognitive Level: Critical Thinking

Competency Domain: Professionalism/Professional Practice

Competency: 32. Demonstrate understanding of and comply with the Regulations on Standards, Guidelines, Code of Ethics, and Professional Misconduct.

Reference

Standards of Practice (2012), p. 28

27. Answer: 3

1. Incorrect: Andrew should only be counselling based upon best practice guidelines and evidence-based knowledge.
2. Incorrect: Even if information is found in a magazine, it does not make it invalid. Andrew could do his own research on the topic.
3. **Correct: If Andrew does a full review of the validity of the research, he will be able to counsel based on solid evidence.**
4. Incorrect: Andrew should only be counselling based upon best practice guidelines and evidence-based knowledge. Andrew and his manager might not be able to assess validity and appropriateness.

Classification

Cognitive Level: Critical Thinking

Competency Domain: Professional Development

Competency: 54. Able to utilize best practice guidelines, including the interpretation and application of current, evidence-based knowledge.

Reference

Standards of Practice (2012), p. 7

28. Answer: 3

1. Incorrect: ACE inhibitors do not affect resting or exercise heart rates.
2. Incorrect: Statins do not affect resting or exercise heart rates.
3. **Correct: Beta blockers significantly decrease resting and exercise heart rate.**
4. Incorrect: Diuretics do not have significant effects on resting or exercise heart rate.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 11. Demonstrate an understanding of the physiological effects of medications on human movement and performance.

Reference

American College of Sports Medicine (2006), p. 286-291

29. Answer: 2

1. Incorrect: If the load applied is a "subfailure" load and applied once, injury will not occur.
2. **Correct: A load that exceeds the failure tolerance of the tissue produces an injury.**
3. Incorrect: A load followed by a period of rest leads to adaptive tissue response that increases tolerance.
4. Incorrect: Reversal of (2). If failure tolerance of the tissue exceeds the load applied, injury will not occur.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 6. Apply knowledge of pathology of musculoskeletal, neurological, cardiopulmonary, neoplastic, and metabolic disorders and conditions.

Reference

McGill (2007), p. 12-14

30. Answer: 3

1. Incorrect: A high VO₂ max score for this population is 50 + mL/kg/min.
2. Incorrect: An average VO₂ max score for this population is in the 40s mL/kg/min.
3. **Correct: A VO₂ max this low indicates very poor cardiovascular function.**
4. Incorrect: There is a direct correlation between cardiovascular fitness and VO₂ max

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience – Assessment
Competency: 20. Able to understand, evaluate and interpret assessment findings and referral documentation to form a clinical impression.

Reference

Thompson (2010), p. 84

31. Answer: 2

1. Incorrect: This is a poor recommendation and there is lack of empathy.
2. **Correct: The kinesiologist is collaborating with the client to identify a need and solution.**
3. Incorrect: A high-intensity plyometric program could cause further damage to the joint.
4. Incorrect: This does not address the main problem.

Classification

Cognitive Level: Critical Thinking
Competency Domain: Communication and Collaboration
Competency: 48. Able to effectively deliver education to patients/clients.

Reference

McArdle, Katch, & Katch (2009), p. 812-824

32. Answer: 1

1. **Correct: Heart rate is higher in children to compensate for a lower stroke volume relative to body size.**
2. Incorrect: Peripheral resistance has the same impact on children as adults.
3. Incorrect: Children have a decreased ability to sweat.
4. Incorrect: Vascular stiffness increases with age.

Classification

Cognitive Level: Theory/Comprehension
Competency Domain: Knowledge
Competency: 5. Demonstrate an understanding of how growth, development, and aging impact human movement and performance.

Reference

American College of Sports Medicine (2009), p. 94

33. Answer: 4

1. Incorrect: This is not the action of the serratus anterior.
2. Incorrect: This is not the action of the serratus anterior.
3. Incorrect: This is not the action of the serratus anterior.
4. **Correct: This is the action of the serratus anterior.**

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 1. Apply knowledge of anatomy, physiology, biomechanics, and psychomotor learning/neuroscience to human movement and performance.

Reference

Moore, Dalley, & Aqur (2009), p. 698-701

34. Answer: 4

1. Incorrect: The cardiac output and oxygen requirements increase.
2. Incorrect: The cardiac output and oxygen requirements increase.
3. Incorrect: The cardiac output and oxygen requirements increase
4. **Correct: Lower atmospheric partial pressure of oxygen necessitates increased cardiac output and myocardial oxygen demands.**

Classification

Cognitive Level: Application

Competency Domain: Kinesiology Practical Experience - Services

Competency: 27. Able to design customized exercise prescription for healthy individuals, including but not limited to flexibility; strength, endurance, balance, and cardiopulmonary training; and corrective movement patterning.

Reference

American College of Sports Medicine (2006), p. 307

35. Answer: 1

- 1. Correct: The supraspinatus muscle abducts the arm.**
2. Incorrect: This is not the action of the supraspinatus muscle.
3. Incorrect: This is not the action of the supraspinatus muscle.
4. Incorrect: This is not the action of the supraspinatus muscle.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 7. Demonstrate an understanding of functional capacity including how structure governs function.

Reference

Delavier (2012), p. 272

36. Answer: 2

1. Incorrect: These are not primary ergonomic risk factors for musculoskeletal disorders.
- 2. Correct: These are all primary ergonomic risk factors for musculoskeletal disorders.**
3. Incorrect: These are not primary ergonomic risk factors for musculoskeletal disorders.
4. Incorrect: These are not primary ergonomic risk factors for musculoskeletal disorders.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 9. Demonstrate an understanding of ergonomics as it relates to human movement and performance.

Reference

Occupational Health and Safety Council of Ontario (2007), p. 19

37. Answer: 3

1. Incorrect: Diastolic blood pressure typically does not increase during progressive exercise.
2. Incorrect: Mean arterial pressure increases during progressive exercise.
3. **Correct: Systolic blood pressure increases during progressive exercise and is a component of mean arterial pressure, thereby causing it to increase as well.**
4. Incorrect: Diastolic blood pressure typically does not increase during exercise, and mean arterial pressure increases.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 3. Apply knowledge of exercise physiology to the prevention and treatment of chronic disease and other disorders and the maintenance and enhancement of human movement and performance.

Reference

Durstine, Moore, Painter, & Roberts (2009), p. 107

38. Answer: 1

1. **Correct: Precise and visual work should be conducted above-elbow height.**
2. Incorrect: At-elbow height is too low for visual requirements and neck posture.
3. Incorrect: Below-elbow height is suitable for manipulative work.
4. Incorrect: Below-elbow height is suitable for tasks that require downward force.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 9. Demonstrate an understanding of ergonomics as it relates to human movement and performance.

Reference

Kroemer (2009), p. 54

39. Answer: 3

1. Incorrect: This is not the action of the gracilis muscle.
2. Incorrect: This is not the action of the gracilis muscle.
3. **Correct: This is the primary action of the gracilis muscle.**
4. Incorrect: This is not the action of the gracilis muscle.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 7. Demonstrate an understanding of functional capacity including how structure governs function.

Reference

Watkins (2010), p. 369

40. Answer: 3

1. Incorrect: Multiple tender points are more indicative of fibromyalgia.
2. Incorrect: Cartilage destruction is more indicative of osteoarthritis.
3. **Correct: Neurological signs and symptoms are more indicative of multiple sclerosis.**
4. Incorrect: Joint swelling is more indicative of rheumatoid arthritis.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 8. Demonstrate an understanding of how chronic diseases and conditions impact and limit functional capacity.

Reference

American College of Sports Medicine (2009), p. 40

41. Answer: 3

1. Incorrect: Endurance and flexibility are not part of the healing process.
2. Incorrect: Flexibility is not part of the healing process. Inflammation is in the wrong order.
3. **Correct: Inflammation, proliferation and remodelling are sequential parts of the healing process.**
4. Incorrect: Strength is not part of the healing process.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 1. Apply knowledge of anatomy, physiology, biomechanics, and psychomotor learning/neuroscience to human movement and performance.

Reference

Houglum (2010), p. 36

42. Answer: 1

- 1. Correct: Anabolic steroids are nearly identical to male sex hormones.**
- Incorrect: An improved aerobic capacity has not been shown in research.
- Incorrect: Androgenic-anabolic steroids increase the rate of bone maturation, not decrease it.
- Incorrect: Androgenic-anabolic steroids are nearly identical to male sex hormones, not female ones.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 11. Demonstrate an understanding of the physiological effects of medications on human movement and performance.

Reference

Kenney, Wilmore, & Costill (2012), p. 405-407

43. Answer: 1

- 1. Correct: This is one of the two most common modes of ACL sprains. The other is moving the knee into valgus position with lateral rotation.**
- Incorrect: This is more indicative of the mechanism of posterior cruciate ligament sprains.
- Incorrect: This is more indicative of the mechanism of collateral (LCL & MCL) ligament sprains.
- Incorrect: An ACL sprain is usually acute, not a chronic degenerative disorder.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 2. Apply knowledge of human movement and performance as it relates to health promotion, and to the prevention and treatment of chronic and other diseases and injury.

Reference

Houglum (2010), p. 888-898

44. Answer: 4

1. Incorrect: Increased negativity would be a sign of anxiety during injury rehabilitation.
2. Incorrect: A decrease in motivation would be a sign of anxiety during injury rehabilitation.
3. Incorrect: A decrease in school or work performance would be a sign of anxiety during injury rehabilitation.
4. **Correct: Both are social signs of anxiety in injury rehabilitation.**

Classification

Cognitive Level: Application

Competency Domain: Kinesiology Practical Experience - Assessment

Competency: 20. Able to understand, evaluate and interpret assessment findings and referral documentation to form a clinical impression.

Reference

Anderson, Parr, & Hall (2008), p. 196

45. Answer: 4

1. Incorrect: Low-impact activities are recommended for rheumatoid arthritis.
2. Incorrect: Range-of-motion exercises are considered an appropriate intervention strategy for rheumatoid arthritis.
3. Incorrect: Muscle toning is considered an appropriate intervention strategy for rheumatoid arthritis.
4. **Correct: Long-distance/endurance training would not be considered an appropriate intervention strategy because it would place unnecessary stress on the joints.**

Classification

Cognitive Level: Application

Competency Domain: Kinesiology Practical Experience - Services

Competency: 22. Able to apply principles of program planning, design, adaptation, and prescription in physical activity, health, and rehabilitation programs.

Reference

Durstine, Moore, Painter, & Roberts (2003), p. 264

46. Answer: 2

1. Incorrect: Self-confidence would increase only once the exercise is mastered.
2. **Correct: According to Fitts' law, the difficulty of a movement is inversely related to its speed. Due to premature neuromuscular processing, speed will not increase with the introduction of a new more difficult movement.**
3. Incorrect: Due to premature neuromuscular processing, accuracy will not increase with the introduction of a new more difficult movement.
4. Incorrect: Due to premature neuromuscular processing, there will be an increase in the time required to perform the more complex exercise.

Classification

Cognitive Level: Theory/Comprehension
Competency Domain: Kinesiology Practical Experience - Services
Competency: 23. Able to apply knowledge of learning theory and behaviour modification in communication, counselling, interviewing, and prescription.

Reference

Schmidt, & Donald (2011), p. 226

47. Answer: 4

1. Incorrect: This stage includes individuals who are not changing a behaviour and not thinking about changing a behaviour. Goal for this stage is to think about the change in behaviour.
2. Incorrect: This stage includes individuals who have yet to try to change a behaviour; however, they are thinking about changing.
3. Incorrect: This stage includes individuals who are engaging in the behaviour change, but are not at a recommended level.
4. **Correct: This stage refers to individuals who are engaging in the changed behaviour as recommended but have been doing so for less than 6 months. Relapse prevention strategies are key to success in this stage.**

Classification

Cognitive Level: Theory/Comprehension
Competency Domain: Kinesiology Practical Experience - Services
Competency: 23. Able to apply knowledge of learning theory and behaviour modification in communication, counselling, interviewing, and prescription.

Reference

American College of Sports Medicine (2009), p. 712-713

48. Answer: 3

1. Incorrect: This theory suggests that progression from one stage to another is not usually linear but is characterized by a series of advancements and declines.
2. Incorrect: An important feature of this model is that it progresses from verbal strategies of change to behaviour-based strategies.
3. **Correct: This theory suggests that progression from one stage to another is not usually linear but is characterized by a series of advancements and declines.**
4. Incorrect: This theory suggests that progression from one stage to another is not usually linear but is characterized by a series of advancements and declines.

Classification

Cognitive Level: Theory/Comprehension
Competency Domain: Kinesiology Practical Experience - Services
Competency: 23. Able to apply knowledge of learning theory and behaviour modification in communication, counselling, interviewing, and prescription.

Reference

American College of Sports Medicine (2009), p. 245

49. Answer: 3

1. Incorrect: The main focus should be on improving the primary functional limitations of the client and then progressing to more general aerobic conditioning.
2. Incorrect: Resistance exercise usually results in dramatic improvements in muscle strength, endurance, muscle contraction speed and joint pain.
3. **Correct: Water exercises are less weight-bearing than exercises on ground; these exercises are generally much better tolerated, and clients are able to improve cardiovascular fitness because physical limitations are usually minimized.**
4. Incorrect: Isometric contractions can be performed on clients with arthritis who have direct joint involvement and limited joint range of motion. These types of exercises have been shown to increase muscle strength with minimal movement of joint, therefore decreasing likelihood of pain.

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience - Services
Competency: 21. Able to identify, select, develop, and prescribe intervention strategies to maintain, rehabilitate, or enhance movement and performance based on assessment findings.

Reference

American College of Sports Medicine (2009), p. 139-142

50. **Answer: 2**

1. Incorrect: With aging generally comes a decrease in arterial compliance and increase in arterial stiffness, therefore increasing total peripheral resistance and hence blood pressure.
2. **Correct: With aging generally comes a decrease in arterial compliance and increase in arterial stiffness, therefore increasing total peripheral resistance and hence blood pressure.**
3. Incorrect: Arterial compliance and arterial stiffness are opposite to each other. Arterial compliance is an artery's ability to expand upon pressure. Arterial stiffness occurs when elastic properties within an artery dominate and the artery is less able to stretch in response to pressure.
4. Incorrect: Arterial compliance and arterial stiffness are opposite to each other. Arterial compliance is an artery's ability to expand upon pressure. Arterial stiffness occurs when elastic properties within an artery dominate and the artery is less able to stretch in response to pressure.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 5. Demonstrate an understanding of how growth, development, and aging impact human movement and performance.

Reference

American College of Sports Medicine (2009), p. 94

51. **Answer: 2**

1. Incorrect: Partial tears are very common knee injuries.
2. **Correct: A complete dislocation is a rare injury and is less common than the other answers.**
3. Incorrect: Injuries to multiple ligaments are common knee injuries.
4. Incorrect: Patellar subluxations are common knee injuries.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 7. Demonstrate an understanding of functional capacity including how structure governs function.

Reference

Houglum (2010), p. 849-850

52. **Answer: 2**

1. Incorrect: Drawing attention to the amount eaten can be futile to improving the athlete's actions.
2. **Correct: This situation should be referred to one, if not all, the suggested professionals in order to aid the athlete most effectively.**
3. Incorrect: Bound by confidentiality, this matter should not be discussed with other teammates.
4. Incorrect: Changes may have to be made, depending on the severity of the case; however, the most appropriate choice is referral.

Classification

Cognitive Level: Critical Thinking

Competency Domain: Professionalism/Professional Practice

Competency: 36. Understand when to make referrals to the appropriate healthcare provider(s), other service providers, and/or programs.

Reference

Baechle, & Earle (2008), p. 228-230

53. **Answer: 3**

1. Incorrect: This is tested using lift-off test.
2. Incorrect: There are no known tests for frozen shoulder.
3. **Correct: This involves mechanical compression of the supraspinatus and biceps tendon with the subacromial bursa, resulting in a positive Hawkins-Kennedy test.**
4. Incorrect: Distal biceps tendon rupture will not allow client to flex elbow, and requires immediate surgery to reattach.

Classification

Cognitive Level: Application

Competency Domain: Kinesiology Practical Experience- Assessment

Competency: 20. Able to understand, evaluate and interpret assessment findings and referral documentation to form a clinical impression.

Reference

Prentice (2004), p. 401-407

54. Answer: 4

1. Incorrect: This ligament is taut in the extreme range of dorsi flexion.
2. Incorrect: This ligament attaches the tibia to the fibula and does not resist inversion or plantar flexion.
3. Incorrect: This ligament is taut during dorsi flexion.
4. **Correct: This ligament resists inversion during plantar flexion.**

Classification

Cognitive Level: Application

Competency Domain: Knowledge

Competency: 2. Apply knowledge of human movement and performance as it relates to health promotion, and to the prevention and treatment of chronic and other diseases and injury.

Reference

Anderson, Hall, & Martin (2000), p. 486

55. Answer: 4

1. Incorrect: This is not appropriate; it is a medical emergency. This action does not address the bowel and bladder control issues.
2. Incorrect: This is not appropriate; it is a medical emergency. This action does not address the bowel and bladder control issues.
3. Incorrect: This is not appropriate; it is a medical emergency. This action does not address the bowel and bladder control issues.
4. **Correct: Difficulty with bowel and bladder control may indicate an injury to the cauda equina, a condition that requires immediate medical attention.**

Classification

Cognitive Level: Critical Thinking

Competency Domain: Professionalism/Professional Practice

Competency: 36. Understand when to make referrals to the appropriate healthcare provider(s), other service providers, and/or programs.

Reference

Houglum (2010), p. 90

56. Answer: 4

1. Incorrect: Omega-3 intake will not significantly decrease LDL levels.
2. Incorrect: An increase in water intake will not significantly decrease LDL levels.
3. Incorrect: An increase in branched-chain amino acids will not significantly decrease LDL levels.
4. **Correct: Of the choices given, decreasing animal fat intake would be the most effective at lowering LDL levels.**

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Communication and Collaboration

Competency: 48. Able to effectively deliver education to patients/clients.

Reference

American College of Sports Medicine (2009), p. 197

57. Answer: 4

1. Incorrect: This may not address a potentially serious underlying medical issue.
2. Incorrect: It may be cancer. This may not address a potentially serious underlying medical issue.
3. Incorrect: It may be cancer. This may not address a potentially serious underlying medical issue.
4. **Correct: This amount of weight loss may be an indication of an urgent medical issue, such as cancer.**

Classification

Cognitive Level: Critical Thinking

Competency Domain: Professionalism/Professional Practice

Competency: 36. Understand when to make referrals to the appropriate healthcare provider(s), other service providers, and/or programs.

Reference

Houglum (2010), p. 90

58. **Answer: 2**

1. Incorrect: Calcium channel blockers mainly lower blood pressure.
2. **Correct: Beta blockers lower heart rate and blood pressure.**
3. Incorrect: Antiarrhythmics control heart rhythm.
4. Incorrect: Anticoagulants are an antiplatelet therapy.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 11. Demonstrate an understanding of the physiological effects of medications on human movement and performance.

Reference

American College of Sports Medicine (2006), p. 274-277

59. **Answer: 3**

1. Incorrect: The kinesiologist should not leave the room without notifying the clients.
2. Incorrect: The treatments should not be cut short because the kinesiologist has to leave the room temporarily.
3. **Correct: Kinesiologists are at all times guided by a concern for the client's well-being. The safest option out of the choices given involves having continued supervision in the absence of the supervising kinesiologist, so that the clients can safely complete their exercise protocols.**
4. Incorrect: The clients should not be conducting self-directed treatment protocols.

Classification

Cognitive Level: Critical Thinking

Competency Domain: Professional Development

Competency: 53. Ensure safe practice and maintain fitness to practice.

Reference

Standards of Practice (2012), p. 7

www.csep.ca/cmfiles/publications/parq/par-q.pdf

60. Answer: 4
1. Incorrect: Consent for kinesiology services must be obtained.
 2. Incorrect: The kinesiologist must maintain proper record keeping; the onus to do this is not on the client.
 3. Incorrect: PAR-Q clearance is valid for 12 months from the date it is completed and becomes invalid if a health condition changes.
 4. **According to the Record Keeping Standards, the kinesiologist must maintain up-to-date, accurate information about clients' health.**

Classification

Cognitive Level: Application
Competency Domain: Professionalism/Professional Practice
Competency: 38. Adhere to guidelines and standards for documentation and reporting.

Reference

Standards of Practice (2012), p. 35
www.csep.ca/cmfiles/publications/parq/par-q.pdf

61. Answer: 2
1. Incorrect: It is not safe to have unsupervised children in a training facility.
 2. **Correct: The kinesiologist is committed to delivering quality, safe, professional services, so the siblings should not be left unattended in area where there is training equipment.**
 3. Incorrect: It is unsafe to allow children or youth to use training equipment while unsupervised.
 4. Incorrect: It is neither in the best interest of the athlete nor the siblings to have the athlete check on them for safety in a training facility during a session.

Classification

Cognitive Level: Critical Thinking
Competency Domain: Professionalism/Professional Practice
Competency: 39. Apply safety techniques and procedures (for example, use universal precautions, follow emergency procedures, ensure a safe work environment).

Reference

Standards of Practice (2012), p. 7

62. Answer: 1

1. **Correct:** The kinesiologist is at all times guided by concern for the client's well-being. The athlete may have sustained a concussion and therefore should not continue playing. A second simple concussion during one activity eliminates the individual from further activity that day.
2. **Incorrect:** The kinesiologist is the most qualified practitioner and therefore should be making decisions regarding the athlete's health and well-being.
3. **Incorrect:** The kinesiologist should be deciding the outcome based on concern for the athlete's well-being. The athlete is not of the age of consent and cannot make the decision or overrule the kinesiologist's decision.
4. **Incorrect:** The kinesiologist can reach out for collaboration, but the kinesiologist will make the decision if there is not someone more qualified present. Even if the physiotherapist believes the athlete should continue, it will not be in the athlete's best interest for her safety if she has a concussion.

Classification

Cognitive Level: Critical Thinking
Competency Domain: Professionalism/Professional Practice
Competency: 34. Act in the best interest of the patient/client.

Reference

Anderson, Parr, & Hall (2009), p. 240
Standards of Practice (2012), p. 7

63. Answer: 1

1. **Correct:** $(\text{METs} \times 3.5 \times \text{body weight in kg})/200$ ($4 \times 3.5 \times 200$)/200 = 14
2. **Incorrect:** $(\text{METs} \times 3.5 \times \text{body weight in kg})/200$ ($3 \times 3.5 \times 200$)/200 = 10.5
3. **Incorrect:** $(\text{METs} \times 3.5 \times \text{body weight in kg})/200$ ($5 \times 3.5 \times 200$)/200 = 17.5
4. **Incorrect:** $(\text{METs} \times 2.5 \times \text{body weight in kg})/200$ ($4 \times 2.5 \times 200$)/200 = 10

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience- Assessment
Competency: 19. Able to use knowledge of measurement concepts (for example, reliability, validity, norms) to assess the appropriateness of assessment instruments.

Reference

American College of Sports Medicine (2006), p. 149

64. Answer: 1

- 1. Correct: Wind exacerbates heat loss by facilitating convective heat loss and reduces the insulative value of clothing.**
2. Incorrect: As body heat increases, clothing layers should be removed. Clothing layers should be adjusted to minimize sweating.
3. Incorrect: Hydrating with warm fluids post exercise increases core body temperature.
4. Incorrect: It is safe to exercise in temperatures below zero degrees, if dressed appropriately.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 3. Apply knowledge of exercise physiology to the prevention and treatment of chronic disease and other disorders and the maintenance and enhancement of human movement and performance.

Reference

American College of Sports Medicine (2010), p. 199-200

65. Answer: 4

1. Incorrect: Heart rate will increase in pregnant woman compared to non-pregnant women.
2. Incorrect: Pregnant women will experience an increase in stroke volume, and no change in blood pressure.
3. Incorrect: Pregnant women will experience no change or a decrease in blood pressure, and increased oxygen uptake.
- 4. Correct: Pregnant women will experience no change or a decrease in blood pressure, and increased oxygen uptake.**

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 8. Demonstrate an understanding of how chronic diseases and conditions impact and limit functional capacity.

Reference

American College of Sports Medicine (2006), p. 184

66. Answer: 4

1. Incorrect: This is test specificity.
2. Incorrect: This is the predictive value of a positive test.
3. Incorrect: This is the predictive value of a negative test.
4. **Correct: The sensitivity of a test refers to how often the test uncovers an abnormality or disease in a population with the abnormality or disease. This is referred to as a positive test.**

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 12. Demonstrate an understanding of general principles of research ethics, design, methodology, and statistics.

Reference

American College of Sports Medicine (2009), p. 365

67. Answer: 1

1. **Correct: Children under 2 have immature walking patterns and do not yet roll through the foot, from heel strike to toe off.**
2. Incorrect: Children under 2 demonstrate decreased single limb stance.
3. Incorrect: Children under 2 demonstrate greater co-activation of muscles to increase balance.
4. Incorrect: Children under 2 demonstrate a wider base of support.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 5. Demonstrate an understanding of how growth, development, and aging impact human movement and performance.

Reference

Houglum (2012), p. 565

68. Answer: 1

- 1. Correct: A longer trigger that allows the use of two or three fingers to activate the drill reduces discomfort and minimizes the risk for injury.**
2. Incorrect: There is a thumb trigger safety concern due to stabilizing effect of thumb.
3. Incorrect: Grip will not improve trigger finger symptoms.
4. Incorrect: Grip will not improve trigger finger symptoms.

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience - Services
Competency: 30. Able to make recommendations for task and/or job modification and accommodation based on assessment of the demands of the workplace and evaluate effectiveness.

Reference

Chengalur, Rodgers, & Bernard (2004), p. 350

69. Answer: 1

- 1. Correct: Beta blockers lessen the rise of systolic blood pressure in response to submaximal exercise.**
2. Incorrect: Beta blockers reduce blood pressure.
3. Incorrect: Beta blockers will lower blood pressure response.
4. Incorrect: Beta blockers reduce heart rate.

Classification

Cognitive Level: Theory/Comprehension
Competency Domain: Knowledge
Competency: 11. Demonstrate an understanding of the physiological effects of medications on human movement and performance.

Reference

Durstine, Moore, Painter, & Roberts (2009), p. 110

70. Answer: 3

1. Incorrect: This intensity is too low.
2. Incorrect: This is vigorous intensity which is too high for this individual and not necessary based on his age and current fitness level.
3. **Correct: This is moderate intensity as outlined by ACSM. Moderate intensity will give this client an increase in cardiorespiratory fitness.**
4. Incorrect: This is vigorous intensity which is too high for this individual and not necessary based on his age and current fitness level.

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience - Services
Competency: 21. Able to identify, select, develop, and prescribe intervention strategies to maintain, rehabilitate, or enhance movement and performance based on assessment findings.

Reference

American College of Sports Medicine (2009), p. 450

71. Answer: 1

1. **Correct: Due to loss of consciousness, Mr. Peterson should seek immediate medical attention.**
2. Incorrect: Due to loss of consciousness, Mr. Peterson should seek immediate medical attention.
3. Incorrect: Due to loss of consciousness, Mr. Peterson should seek immediate medical attention.
4. Incorrect: Due to loss of consciousness, Mr. Peterson should seek immediate medical attention. It is not safe to continue to exercise.

Classification

Cognitive Level: Critical Thinking
Competency Domain: Professionalism/Professional Practice
Competency: 39. Apply safety techniques and procedures (for example, use universal precautions, follow emergency procedures, ensure a safe work environment).

Reference

American College of Sports Medicine (2009), p. 796

72. Answer: 3

1. Incorrect: This does not demonstrate the best problem-solving and professional judgment because it ignores his goals.
2. Incorrect: This does not demonstrate the best problem-solving and professional judgment because the training plan could be putting him at an increased risk of injury because it does not take into account the deconditioning that may have taken place.
3. **Correct: Reassessment of Mr. Sanderson's current capacity is required to determine continuation and modification of program.**
4. Incorrect: Mr. Sanderson has been discharged from physiotherapy treatments.

Classification

Cognitive Level: Critical Thinking

Competency Domain: Professionalism/Professional Practice

Competency: 42. Use problem-solving and professional judgment in all aspects of practice.

Reference

Houglum (2010), p. 15

73. Answer: 1

1. **Correct: Further clarification from the physician is required to determine duration of restrictions provided.**
2. Incorrect: Eliminating lifting tasks does not promote work hardening and reconditioning.
3. Incorrect: Employer does not complete Functional Abilities Evaluation. Employer may request a functional abilities form.
4. Incorrect: Permanent modified duties at work do not address restrictions and injury recovery.

Classification

Cognitive Level: Critical Thinking

Competency Domain: Kinesiology Practical Experience- Assessment

Competency: 20. Able to understand, evaluate and interpret assessment findings and referral documentation to form a clinical impression.

Reference

Talmage (2005), p. 11

74. Answer: 1

- 1. Correct: A hemorrhagic stroke results in deficits in motor control that can involve muscle weakness, abnormal synergistic organization of movements, impaired regulation of force, decreased reaction times and abnormal muscle tone. Weakness is characterized by reduced joint torque. Time to reach peak increases with reduced motor unit recruitment.**
2. Incorrect: Peak joint torque decreases in the affected limb, compared to the unaffected limb.
3. Incorrect: Time to reach peak increases, and peak torque decreases in the affected limb, compared to the unaffected limb.
4. Incorrect: Time to reach peak torque increases in the affected limb, compared to the unaffected limb.

Classification

Cognitive Level: Application

Competency Domain: Kinesiology Practical Experience- Assessment

Competency: 18. Able to perform appropriate functional assessments of movement and performance.

Reference

American College of Sports Medicine (2009), p. 4-5

75. Answer: 4

1. Incorrect: This describes identified motivation.
2. Incorrect: This describes integrated motivation.
3. Incorrect: This describes identified motivation.
- 4. Correct: This describes intrinsic motivation.**

Classification

Cognitive Level: Application

Competency Domain: Kinesiology Practical Experience - Services

Competency: 23. Able to apply knowledge of learning theory and behaviour modification in communication, counselling, interviewing, and prescription.

Reference

Markland, & Tobin (2004), p. 193

76. Answer: 2

1. Incorrect: One-rep max measures strength.
2. **Correct: Both measure body composition.**
3. Incorrect: Bruce Protocol measures cardiorespiratory fitness.
4. Incorrect: Goniometer measures range of motion.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Kinesiology Practical Experience - Assessment

Competency: 16. Able to perform physical assessment procedures including but not limited to vital signs, anthropometrics, range of motion, strength, balance, cardiopulmonary fitness, and orthopaedic assessment.

Reference

American College of Sports Medicine (2009), p. 63-70

77. Answer: 1

1. **Correct: As per the Standards of Practice, financial and patient/client health records shall be retained following the patient/client's last contact for the following periods of time:**
 - (a) For patients/clients who are 18 years of age or older at the time of the last contact: a period of at least 10 years.
 - (b) For patients/clients who are less than 18 years of age at the time of the last contact: period of at least 10 years following the date at which they would have become 18 years of age.
2. Incorrect: This timeframe is too short. The records should be kept for a period of at least 10 years following the date at which the child would have become 18 years of age.
3. Incorrect: This timeframe is too short. The records should be kept for a period of at least 10 years following the date at which the child would have become 18 years of age.
4. Incorrect: This timeframe is too short. The records should be kept for a period of at least 10 years following the date at which the child would have become 18 years of age.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Professionalism/Professional Practice

Competency: 38. Adhere to guidelines and standards for documentation and reporting.

Reference

Standards of Practice (2012), p. 38

78. Answer: 1

1. **Correct: As per the Standards of Practice, a conflict of interest includes referring a client to a supplier of healthcare products or services in which the member has a financial interest, unless the member discloses the interest to the client and offers to refer the client to suppliers with whom the member has no financial interest.**
2. Incorrect: This is not a conflict of interest because the patient is not told that the equipment has to be purchased from the ergonomist's company.
3. Incorrect: This is not a conflict of interest. There is no financial or other gain to the kinesiologist.
4. Incorrect: This is not a conflict of interest. There is no financial or other gain to the kinesiologist.

Classification

Cognitive Level: Application
Competency Domain: Professionalism/Professional Practice
Competency: 33. Recognize and address conflicts of interest.

Reference

Standards of Practice (2012), p. 8-9

79. Answer: 2

1. Incorrect: It is insufficient to read a journal as only some aspects of ergonomics might be covered.
2. **Correct: Accredited course will assess for learning and ensure competence upon completion.**
3. Incorrect: This is not accredited and not ethical; bad practices could be adopted.
4. Incorrect: Ergonomic software requires user to understand how to interpret results and make appropriate judgments based on results. Software will not train user.

Classification

Cognitive Level: Application
Competency Domain: Professional Development
Competency: 51. Develop and enhance own competence and demonstrate commitment to self-evaluation and lifelong learning.

Reference

Standards of Practice (2012), p. 6

80. Answer: 3

1. Incorrect: At this stage, an individual is not participating in behaviour change modification, but thinking about it
2. Incorrect: At this stage, an individual is not thinking about behaviour change.
3. **Correct: At this stage, an individual is engaging in behaviour change modification but not at the recommended frequency.**
4. Incorrect: At this stage, an individual is engaging in the new behaviour on a regular basis but has been doing so for less than 6 months.

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience - Services
Competency: 23. Able to apply knowledge of learning theory and behaviour modification in communication, counselling, interviewing, and prescription.

Reference

American College of Sports Medicine (2009), p. 712-713

81. Answer: 2

1. Incorrect: This is a description of cervical lordosis.
2. **Correct: This is a description of spondylolisthesis.**
3. Incorrect: This is a description of thoracic kyphosis.
4. Incorrect: This is a description of scoliosis.

Classification

Cognitive Level: Theory/Comprehension
Competency Domain: Knowledge
Competency: 6. Apply knowledge of pathology of musculoskeletal, neurological, cardiopulmonary, neoplastic, and metabolic disorders and conditions.

Reference

Houglum (2010), p. 560

82. Answer: 3

1. Incorrect: Cardiac output is essentially unchanged at any fixed maximum workload in unconditioned and conditioned individuals.
2. Incorrect: VO_2 will be essentially unchanged at any fixed submax workload; however activities will be perceived as being easier and require less effort for individuals who are aerobically conditioned.
3. **Correct: Improvements in venous return and blood pressure are a result of short-term exercise training.**
4. Incorrect: Blood lactate levels at a given submax workload are lower as a result of aerobic exercise training resulting in improved ability to perform at higher absolute workloads.

Classification

Cognitive Level: Application

Competency Domain: Knowledge

Competency: 1. Apply knowledge of anatomy, physiology, biomechanics, and psychomotor learning/neuroscience to human movement and performance.

Reference

American College of Sports Medicine (2009), p. 477-481

83. Answer: 1

1. **Correct: Recent reports indicate that viscous (soluble) dietary fibre can reduce cholesterol levels. However, insoluble fibre does not significantly affect cholesterol levels. Examples of soluble fibre include cereal grains, barley, oatmeal, apples, bananas, beans, chick peas, broccoli and carrots.**
2. Incorrect: These are part of the milk, yogurt and cheese food group and do not contain significant amounts of soluble fibre.
3. Incorrect: These are part of the meat, poultry and fish food group and do not contain significant amounts of soluble fibre.
4. Incorrect: These are part of the meat, poultry and fish food group and do not contain significant amounts of soluble fibre.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 10. Demonstrate an understanding of the principles of nutrition related to human movement and performance.

Reference

American College of Sports Medicine (2009)

<http://www.nhlbi.nih.gov/guidelines/cholesterol/atp3full.pdf>

84. Answer: 1

1. **Correct: As an individual gets older, aerobic capacity will decrease.**
2. Incorrect: Aerobic capacity will decrease with no change in exercise level.
3. Incorrect: Aerobic capacity will plateau for a period of time but eventually it will decrease.
4. Incorrect: Aerobic capacity will not increase as an individual ages.

Classification

Cognitive Level: Theory/Comprehension
Competency Domain: Kinesiology Practical Experience - Assessment
Competency: 5. Demonstrate an understanding of how growth, development, and aging impact human movement and performance.

Reference

Kenney, Wilmore, & Costill (2012), p. 433

85. Answer: 2

1. Incorrect: These are symptoms of fibromyalgia.
2. **Correct: These are symptoms of osteoarthritis.**
3. Incorrect: These are symptoms of multiple sclerosis.
4. Incorrect: These are symptoms of rheumatoid arthritis.

Classification

Cognitive Level: Theory/Comprehension
Competency Domain: Knowledge
Competency: 8. Demonstrate an understanding of how chronic diseases and conditions impact and limit functional capacity.

Reference

American College of Sports Medicine (2009), p. 133

86. Answer: 4

1. Incorrect: This would have the opposite effect.
2. Incorrect: Muscle contraction is very important for preserving insulin sensitivity across the lifespan.
3. Incorrect: Muscle contraction does not affect insulin circulation.
4. **Correct: The effect of exercise facilitates the disposal of glucose from the bloodstream.**

Classification

Cognitive Level: Theory/Comprehension
Competency Domain: Knowledge
Competency: 6. Apply knowledge of pathology of musculoskeletal, neurological, cardiopulmonary, neoplastic, and metabolic disorders and conditions.

Reference

Thompson (2010), p. 234

87. Answer: 4

1. Incorrect: Some passive range of motion will be established, and stimulation will only aid in supporting already achieved active range.
2. Incorrect: Swelling causes neuromuscular inhibition, and is most common immediately after injury, and should be addressed in the acute stage.
3. Incorrect: Pain can be a limiting factor in rehabilitation, as well as a neuromuscular inhibitor.
4. **Correct: During injury, the central nervous system does not successfully put together information from the muscle to the mechanoreceptors. Neuromuscular stimulation aids in the conscience control of the muscle until the movement becomes automated.**

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Kinesiology Practical Experience - Services

Competency: 26. Demonstrate understanding of therapeutic modalities and treatment applications used to optimize rehabilitation, including but not limited to ice, heat, exercise, taping, transcutaneous electrical nerve stimulation, and ultrasound.

Reference

Prentice (2004), p. 7-9

88. Answer: 2

1. Incorrect: These are the characteristics of a type I muscle fibre.
2. **Correct: Type IIx muscle fibres possess the greatest anaerobic potential and therefore are used primarily for quick powerful muscle actions and activities that rely almost entirely on anaerobic systems. Thus, they exhibit large motor neuron sizes for great force production, a low resistance to fatigue and high glycolytic capacity for anaerobic energy systems.**
3. Incorrect: Type IIx muscle fibres do not have a high resistance to fatigue. They also have a high glycolytic capacity. These are not characteristics of a type IIx muscle fibre.
4. Incorrect: Type IIx muscle fibres have a large motor neuron and low resistance to fatigue.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 1. Apply knowledge of anatomy, physiology, biomechanics, and psychomotor learning/neuroscience to human movement and performance.

Reference

American College of Sports Medicine (2009), p. 63

Kenney, Wilmore, & Costill (2012), p. 40-42

89. Answer: 3

1. Incorrect: The ATP-CP system supplies the most energy for activities that last less than 5 seconds; for exercise lasting less than 30 seconds, there would be a shift to more rapid glycolysis.
2. Incorrect: For activities lasting less than 3 minutes, the non-oxidative system is primarily used. This is an anaerobic system where oxygen is not required for functioning. Carbohydrates are the only source of energy and ATP production in this system. This short-term energy source feeds muscles during activities lasting less than 3 minutes, but lactic acid quickly begins to accumulate and this inevitably causes the muscle to fatigue. The shorter and more intense the activity is, the greater the contribution of anaerobic systems.
3. **Correct: The oxidative system is a system that produces ATP through the use of mainly carbohydrates and fat, and some protein. The energy to perform most types of activities does not come from a single source but from a combination of anaerobic and aerobic metabolism. The oxidative system requires oxygen to function and is therefore considered an aerobic pathway. The oxidative system is primarily used in activities lasting longer than 3 minutes, to supply energy to working muscles. The longer the activity is, the lower the intensity and the greater the aerobic contribution.**
4. Incorrect: The non-oxidative system builds up lactic acid eventually and in turn will cause the muscle to tire.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 1. Apply knowledge of anatomy, physiology, biomechanics, and psychomotor learning/neuroscience to human movement and performance.

Reference

American College of Sports Medicine (2009), p. 49

90. Answer: 2

1. Incorrect: Carbohydrates are macronutrients.
2. **Correct: This is a micronutrient involved in energy production. B complex vitamins have a role in energy production, acting as coenzymes aiding in metabolism of macronutrients.**
3. Incorrect: This is a micronutrient but it is involved in blood clotting.
4. Incorrect: Fats are macronutrients.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 10. Demonstrate an understanding of the principles of nutrition related to human movement and performance.

Reference

American College of Sports Medicine (2009), p. 80, 88

91. Answer: 2

1. Incorrect: It is recommended that individuals with symptoms of osteoarthritis avoid high-impact activities. High-impact activities will further exacerbate symptoms and joint degeneration.
2. **Correct: Low-impact exercises are recommended for joint protection.**
3. Incorrect: It is recommended that individuals with symptoms of osteoarthritis avoid high-impact activities. High-impact activities will further exacerbate symptoms and joint degeneration.
4. Incorrect: It is recommended that individuals with symptoms of osteoarthritis avoid high-impact activities. High-impact activities will further exacerbate symptoms and joint degeneration.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 3. Apply knowledge of exercise physiology to the prevention and treatment of chronic disease and other disorders and the maintenance and enhancement of human movement and performance.

Reference

Durstine, Moore, Painter, & Roberts (2003), p. 262

92. Answer: 1

1. **Correct: This is characterized by fear of gaining weight, self-perception of being fat and a refusal to maintain body weight at normal levels.**
2. Incorrect: Binge eating is characterized by cycles of bingeing on large amounts of food.
3. Incorrect: Anorexia athletica is characterized by the excessive use of exercise to control weight or to gain self-control.
4. Incorrect: Bulimia nervosa is characterized by purging food via vomiting, laxatives or excessive exercise.

Classification

Cognitive Level: Application

Competency Domain: Kinesiology Practical Experience - Assessment

Competency: 13. Able to obtain an accurate and comprehensive case history, including but not limited to medical, treatment, medications, psychosocial, and vocational/avocational history.

Reference

Weinberg, & Gould (2011), p. 464

93. Answer: 3

1. Incorrect: Antiarrhythmics do not alter heart rate response.
2. Incorrect: Angiotensin-converting enzyme (ACE) inhibitors do not generally affect heart rate response to exercise.
3. **Correct: Beta blockers decrease resting, sub-maximal and maximal heart rate.**
4. Incorrect: Diuretics maintain fluid balance. They will lower blood pressure but will not alter heart rate response.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 11. Demonstrate an understanding of the physiological effects of medications on human movement and performance.

Reference

American College of Sports Medicine (2009), p. 52-53

94. Answer: 1

1. **Correct: Impaired fasting glucose is defined as >110 mg/dL (6.1 mmol/L). This will increase the risk of coronary heart disease in women.**
2. Incorrect: Hypertension (BP > 120/80 mmHg) is a positive risk factor.
3. Incorrect: HDL cholesterol of < 40 mg/dL (2.2 mmol/L) or use of lipid-lowering medication is a positive risk factor.
4. Incorrect: A waist circumference of > 88 cm is a positive risk factor.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 6. Apply knowledge of pathology of musculoskeletal, neurological, cardiopulmonary, neoplastic, and metabolic disorders and conditions.

Reference

American College of Sports Medicine (2010), p. 28

95. Answer: 4

1. Incorrect: Compressive loading does not cause disc migration.
2. Incorrect: Hip extension does not contribute to flexion of the lumbar spine.
3. Incorrect: Muscular contraction of the erectors does not cause flexion of the lumbar spine.
4. **Correct: Repeated or prolonged flexion of the lumbar spine can cause the annulus of the disc to migrate resulting in bulge or herniation.**

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 6. Apply knowledge of pathology of musculoskeletal, neurological, cardiopulmonary, neoplastic, and metabolic disorders and conditions.

Reference

McGill (2007), p. 47

96. Answer: 4

1. Incorrect: Scoliosis is the rotation or lateral deviation of the vertebrae which results in a curvature of the spine. Scoliosis is most often congenital.
2. Incorrect: Thoracic kyphosis is caused by tight intercostals, pectoralis major and pectoralis minor with weak erector spinae, rhomboids and trapezius.
3. Incorrect: Excessive cervical lordosis is caused by a weakness in erector spinae and tightness in levator scapulae.
4. **Correct: Excessive lumbar lordosis is a result of tight hip flexors, tight low back extensors and weak abdominals.**

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 7. Demonstrate an understanding of functional capacity including how structure governs function.

Reference

Houglum (2012), p. 325-327

97. Answer: 2

1. Incorrect: Exercise alone may not expend enough energy to lead to significant weight loss.
2. **Correct: Diet modification is the best way to achieve large energetic deficit.**
3. Incorrect: Exercise alone may not expend enough energy to lead to significant weight loss.
4. Incorrect: The energy requirement of resting muscle is very low and will not lead to significant weight loss.

Classification

Cognitive Level: Theory/Comprehension
Competency Domain: Kinesiology Practical Experience - Services
Competency: 27. Able to design customized exercise prescription for healthy individuals, including but not limited to flexibility; strength, endurance, balance, and cardiopulmonary training; and corrective movement patterning.

Reference

Powers, & Howley (2012), p. 427-430

98. Answer: 2

1. Incorrect: A grade of 1 out of 5 indicates muscle activity but no visible movement.
2. **Correct: A grade of 2 out of 5 indicates a full range of motion (ROM) with gravity eliminated.**
3. Incorrect: A grade of 3 out of 5 indicates a full range of motion (ROM) vs. gravity.
4. Incorrect: A grade of 4 out of 5 indicates a near full range of motion (ROM) and strength.

Classification

Cognitive Level: Application
Competency Domain: Kinesiology Practical Experience - Assessment
Competency: 16. Able to perform physical assessment procedures including but not limited to vital signs, anthropometrics, range of motion, strength, balance, cardiopulmonary fitness, and orthopaedic assessment.

Reference

Houglum, (2010), p. 225
Shultz, Houglum, & Perrin (2010), p. 107

99. **Answer: 1**

1. **Correct: This is a second class lever. Resistance force is closer to the fulcrum.**
2. Incorrect: This is a first class lever.
3. Incorrect: This is a third class lever.
4. Incorrect: This is not a type of lever.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 1. Apply knowledge of anatomy, physiology, biomechanics, and psychomotor learning/neuroscience to human movement and performance.

Reference

Hall (2003), p. 427

100. **Answer: 2**

1. Incorrect: This describes a type I error.
2. **Correct: This describes a type II error.**
3. Incorrect: In a type II error, the null hypothesis is false.
4. Incorrect: In a type II error, the null hypothesis is false.

Classification

Cognitive Level: Theory/Comprehension

Competency Domain: Knowledge

Competency: 12. Demonstrate an understanding of general principles of research ethics, design, methodology, and statistics.

Reference

Vincent, & Weir (2012), p. 143

101. **Answer: 2**

1. Incorrect: 263 calories does not reflect the caloric content based on this amount of macronutrients. This was calculated using protein of 9 kcal/g.
2. **Correct: This is the correct caloric content based on the quantity of macronutrients provided: carbohydrate = 4 kcal/g; protein = 4 kcal/g; fat = 9 kcal/g; 120 kcal/carbs + 44 kcal/protein + 36 kcal/fat = 200 calories.**
3. Incorrect: 350 calories does not reflect the caloric content based on this amount of macronutrients.
4. Incorrect: 180 calories does not reflect the caloric content based on this amount of macronutrients. This was calculated using fat of 4 kcal/g.

Classification

Cognitive Level: Application

Competency Domain: Knowledge

Competency: 10. Demonstrate an understanding of the principles of nutrition related to human movement and performance.

Reference

McArdle, & Katch (2009), p. 112-113

Reference List

To assist applicants in their preparation, the College has prepared a non-exhaustive list of references. Please note that we do not sell or endorse these resources, and cannot suggest a single “best” text for review. We have attempted to include the latest editions in this list; however, newer editions may be available by the time applicants read this.

1. College Study Resources

View the [College's study resources](#). Please also review the Jurisprudence Handbook found once you log in to the [Jurisprudence e-Learning Module](#).

2. Anatomy

Delavier, F. *Strength Training Anatomy* (3rd ed.). Human Kinetics, 2012.

Floyd R. T. *Manual of Structural Kinesiology* (6th ed.). McGraw-Hill, 2007.

Moore, K. L., Dalley, A. F., & Aqur, A. M. *Clinically Oriented Anatomy* (6th ed.). Lippincott Williams & Wilkins, 2009.

3. Biomechanics

Chaffin, D. B., Andersson, G., & Martin, B. J. *Occupational Biomechanics*. Wiley-Interscience, 2006.

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4. Clinical

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Ehrman J., Gordon P., Visich P. & Keteyian S. *Clinical Exercise Physiology* (2nd ed.). Human Kinetics, 2009.

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Magee, D. *Orthopedic Physical Assessment*. Elsevier Saunders, 2007.

5. Physiology & Training

Ainsworth, B. E., Haskell, W. L., Whitt, M. C., & Irwin, M. L. Compendium of physical activities: an update of activity codes and MET intensities. *Medicine and Science in Sports and Exercise*. 2000.

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Canadian Society of Exercise Physiology. Position Stands. Retrieved from <http://www.csep.ca/view.asp?ccid=519>

Corbin, Corbin, Welk, & Welk. *Concepts of Physical Fitness* (4th ed.). McGraw-Hill, 2008.

Faney, T., Insel, P., & Roth, W. *Fit & Well*. McGraw-Hill, 2010.

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6. Neuroscience & Psychomotor Learning

Enoka, R. M. *Neuromechanics of Human Movement* (4th ed.). Human Kinetics, 2008.

Schmidt, R., & Donald, T. *Motor Control and Learning: A Behavioral Emphasis*. Human Kinetics, 2011.

7. Musculoskeletal Injuries

Anderson, M. K., Parr, G. P., & Hall, S. J. *Foundations of Athletic Training: Prevention, Assessment, and Management* (4th ed.). Lippincott Williams & Wilkins, 2008.

Anderson M., & Parr G. *Sports Injury Management* (3rd ed.). Lippincott Williams & Wilkins, 2011.

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10. Assessment & Exercise Prescription

American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription* (8th ed.). Lippincott Williams & Wilkins, 2010.

American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription* (7th ed.). Lippincott Williams & Wilkins, 2006.

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12. Statistics

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ANSWER SHEET

(See instructions on reverse)

| | |
|---|---------------------|
| Family Name - Nom de famille | First Name - Prénom |
| Writing Centre Code - Code de centre d'examen | |
| Date of Writing - Date de l'examen | |
| DY - JR | MO / YR - AN |
| Test - Examen | |

PRINT the test form number from the test book cover.

INSCRIVEZ le numéro du formulaire qui apparaît sur la couverture du cahier d'examen.

| Test Form Formulaire | |
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Place CANDIDATE LABEL here.

Apposer l'AUTOCOLLANT DU CANDIDATE ici.

FEUILLE-RÉPONSES

(Voir les instructions au verso)

ONLY fill in if no candidate label provided.
REPLISSEZ seulement si vous n'avez pas d'autocollant.

Language - Langue

English

Français

Candidate Number
Numéro d'identité

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| 1 | 1 | 2 | 3 | 4 | 31 | 1 | 2 | 3 | 4 | 61 | 1 | 2 | 3 | 4 | 91 | 1 | 2 | 3 | 4 | 121 | 1 | 2 | 3 | 4 | 151 | 1 | 2 | 3 | 4 |
| 2 | 1 | 2 | 3 | 4 | 32 | 1 | 2 | 3 | 4 | 62 | 1 | 2 | 3 | 4 | 92 | 1 | 2 | 3 | 4 | 122 | 1 | 2 | 3 | 4 | 152 | 1 | 2 | 3 | 4 |
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| 9 | 1 | 2 | 3 | 4 | 39 | 1 | 2 | 3 | 4 | 69 | 1 | 2 | 3 | 4 | 99 | 1 | 2 | 3 | 4 | 129 | 1 | 2 | 3 | 4 | 159 | 1 | 2 | 3 | 4 |
| 10 | 1 | 2 | 3 | 4 | 40 | 1 | 2 | 3 | 4 | 70 | 1 | 2 | 3 | 4 | 100 | 1 | 2 | 3 | 4 | 130 | 1 | 2 | 3 | 4 | 160 | 1 | 2 | 3 | 4 |
| 11 | 1 | 2 | 3 | 4 | 41 | 1 | 2 | 3 | 4 | 71 | 1 | 2 | 3 | 4 | 101 | 1 | 2 | 3 | 4 | 131 | 1 | 2 | 3 | 4 | 161 | 1 | 2 | 3 | 4 |
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| 13 | 1 | 2 | 3 | 4 | 43 | 1 | 2 | 3 | 4 | 73 | 1 | 2 | 3 | 4 | 103 | 1 | 2 | 3 | 4 | 133 | 1 | 2 | 3 | 4 | 163 | 1 | 2 | 3 | 4 |
| 14 | 1 | 2 | 3 | 4 | 44 | 1 | 2 | 3 | 4 | 74 | 1 | 2 | 3 | 4 | 104 | 1 | 2 | 3 | 4 | 134 | 1 | 2 | 3 | 4 | 164 | 1 | 2 | 3 | 4 |
| 15 | 1 | 2 | 3 | 4 | 45 | 1 | 2 | 3 | 4 | 75 | 1 | 2 | 3 | 4 | 105 | 1 | 2 | 3 | 4 | 135 | 1 | 2 | 3 | 4 | 165 | 1 | 2 | 3 | 4 |
| 16 | 1 | 2 | 3 | 4 | 46 | 1 | 2 | 3 | 4 | 76 | 1 | 2 | 3 | 4 | 106 | 1 | 2 | 3 | 4 | 136 | 1 | 2 | 3 | 4 | 166 | 1 | 2 | 3 | 4 |
| 17 | 1 | 2 | 3 | 4 | 47 | 1 | 2 | 3 | 4 | 77 | 1 | 2 | 3 | 4 | 107 | 1 | 2 | 3 | 4 | 137 | 1 | 2 | 3 | 4 | 167 | 1 | 2 | 3 | 4 |
| 18 | 1 | 2 | 3 | 4 | 48 | 1 | 2 | 3 | 4 | 78 | 1 | 2 | 3 | 4 | 108 | 1 | 2 | 3 | 4 | 138 | 1 | 2 | 3 | 4 | 168 | 1 | 2 | 3 | 4 |
| 19 | 1 | 2 | 3 | 4 | 49 | 1 | 2 | 3 | 4 | 79 | 1 | 2 | 3 | 4 | 109 | 1 | 2 | 3 | 4 | 139 | 1 | 2 | 3 | 4 | 169 | 1 | 2 | 3 | 4 |
| 20 | 1 | 2 | 3 | 4 | 50 | 1 | 2 | 3 | 4 | 80 | 1 | 2 | 3 | 4 | 110 | 1 | 2 | 3 | 4 | 140 | 1 | 2 | 3 | 4 | 170 | 1 | 2 | 3 | 4 |
| 21 | 1 | 2 | 3 | 4 | 51 | 1 | 2 | 3 | 4 | 81 | 1 | 2 | 3 | 4 | 111 | 1 | 2 | 3 | 4 | 141 | 1 | 2 | 3 | 4 | 171 | 1 | 2 | 3 | 4 |
| 22 | 1 | 2 | 3 | 4 | 52 | 1 | 2 | 3 | 4 | 82 | 1 | 2 | 3 | 4 | 112 | 1 | 2 | 3 | 4 | 142 | 1 | 2 | 3 | 4 | 172 | 1 | 2 | 3 | 4 |
| 23 | 1 | 2 | 3 | 4 | 53 | 1 | 2 | 3 | 4 | 83 | 1 | 2 | 3 | 4 | 113 | 1 | 2 | 3 | 4 | 143 | 1 | 2 | 3 | 4 | 173 | 1 | 2 | 3 | 4 |
| 24 | 1 | 2 | 3 | 4 | 54 | 1 | 2 | 3 | 4 | 84 | 1 | 2 | 3 | 4 | 114 | 1 | 2 | 3 | 4 | 144 | 1 | 2 | 3 | 4 | 174 | 1 | 2 | 3 | 4 |
| 25 | 1 | 2 | 3 | 4 | 55 | 1 | 2 | 3 | 4 | 85 | 1 | 2 | 3 | 4 | 115 | 1 | 2 | 3 | 4 | 145 | 1 | 2 | 3 | 4 | 175 | 1 | 2 | 3 | 4 |
| 26 | 1 | 2 | 3 | 4 | 56 | 1 | 2 | 3 | 4 | 86 | 1 | 2 | 3 | 4 | 116 | 1 | 2 | 3 | 4 | 146 | 1 | 2 | 3 | 4 | 176 | 1 | 2 | 3 | 4 |
| 27 | 1 | 2 | 3 | 4 | 57 | 1 | 2 | 3 | 4 | 87 | 1 | 2 | 3 | 4 | 117 | 1 | 2 | 3 | 4 | 147 | 1 | 2 | 3 | 4 | 177 | 1 | 2 | 3 | 4 |
| 28 | 1 | 2 | 3 | 4 | 58 | 1 | 2 | 3 | 4 | 88 | 1 | 2 | 3 | 4 | 118 | 1 | 2 | 3 | 4 | 148 | 1 | 2 | 3 | 4 | 178 | 1 | 2 | 3 | 4 |
| 29 | 1 | 2 | 3 | 4 | 59 | 1 | 2 | 3 | 4 | 89 | 1 | 2 | 3 | 4 | 119 | 1 | 2 | 3 | 4 | 149 | 1 | 2 | 3 | 4 | 179 | 1 | 2 | 3 | 4 |
| 30 | 1 | 2 | 3 | 4 | 60 | 1 | 2 | 3 | 4 | 90 | 1 | 2 | 3 | 4 | 120 | 1 | 2 | 3 | 4 | 150 | 1 | 2 | 3 | 4 | 180 | 1 | 2 | 3 | 4 |