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STUDY GUIDE
BCRPA/NFLA FITNESS THEORY EXAM

Congratulations on your initiative in preparing to write the BCRPA Fitness Theory Exam. The Exam is based on the Fitness Theory Performance Standards as recommended by the National Fitness Leadership Alliance (NFLA).

This Study Guide contains the following valuable information:

a) Resources and suggested readings
b) Specific Theory Exam topics and their weighting
c) Sample exam questions and answers
d) Nine assumptions about Adult Learning

The Study Guide will help focus your preparation on the more pertinent areas for the exam, and dispel any apprehension you may have regarding the exam.

GOOD LUCK!

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EXAM QUESTION WEIGHTING

Health-Related Benefits of Physical Activity	3.5%
Holistic Approach to Physical Activity and Lifestyle	3.5%
Anatomy	15%
Movement Mechanics	25%
Physiology	21.5%
Principles of Conditioning	10%
Exercise Analysis and Risk Management	8%
Basic Nutrition/Body Composition	7%
Program Planning	5%
Leadership Skills	1.5%
	100%

A. Health-Related Benefits of Physical Activity (3.5%)

- Summarize health-related benefits of physical activity.
- Demonstrate an ability to provide an atmosphere that values individual choices and diversity relating to physical activity.
- Identify lifestyle behaviors that can and cannot be modified and how they increase or decrease health risks.

B. Holistic Approach to Physical Activity and Lifestyle (3.5%)

- Define Active Living
- Describe the features and benefits of holism, give an example of each and how to impart this knowledge in a fitness leadership setting.
- Explain intrinsic and extrinsic factors of motivation for adults in a fitness leadership setting.
- Describe different approaches a leader could take to encourage participants to make a commitment and to take responsibility for their own health and well-being.

C. Anatomy (15%)

- Identify the major bones and joints and describe how bone structure influences joint function.
- List and describe the different types of connective tissue and their role in human movement.
- Locate the major muscle groups on another person or diagram.
- Identify the major antagonist muscle pairs of the major muscle groups.
- Identify and describe the anatomical limitations to joint flexibility.
- Describe the stretch reflex and how it influences range of motion and joint flexibility.

D. Movement Mechanics (25%)

- Demonstrate and define the joint actions at the major joints.
- In a given exercise, discuss the joint action and identify the agonist and the antagonist muscle group.
- Design exercises for the major joints which will provide a balanced conditioning to the muscles surrounding the joint area.
- Describe the various types of muscle contractions.
- In a given exercise, identify the prime mover during the concentric and eccentric phases of the movement.
- Using the principle of levers, explain how to vary the intensity of an exercise.
- Select the most stable and state which of the following three factors has provided the increased stability: a) widening the base of support, b) lowering the centre of gravity, c) moving the centre of gravity over the base of support.

E. Physiology (21.5%)

- Identify the average range for resting heart rate as well as the range for target exercise heart rate for an individual of a stated age and gender.
- List techniques to control and self-monitor pacing to prevent doing too much exercise too soon or too vigorously.
- Describe the acute responses to aerobic/anaerobic exercise for each of the following systems: a) cardiovascular, b) respiratory, c) musculoskeletal.
- Summarize the key elements of the three energy systems and when they are used in the muscle contractions.
- Describe the oxygen transport system and how a trained individual differs from an untrained individual.
- Describe the relative contribution of anaerobic and aerobic energy during the following: warm-up, aerobic workout, muscular strength/endurance, and selected physical activities.

F. Principles of Conditioning (10%)

- Identify the components of physical fitness and describe the importance of each to overall well-being.
- Describe the frequency, intensity, time (duration), and type of exercise (FITT) capable of improving each of the following fitness components: a) flexibility, b) cardiovascular conditioning (aerobic/anaerobic), c) muscular strength, d) muscular endurance.
- Compare and contrast different techniques to improve joint flexibility.
- Describe and demonstrate an exercise that is designed to assist in the performance of daily activities (functional movements).
- Explain the specific order to the performance of the components of fitness and the recommended period of time to be spent on each.

- Compare the training effects of the following: continuous; intermittent; aerobic; anaerobic; isometric; isotonic strength training; static/dynamic stretching; weight-bearing; non-weight bearing; progressive overload ; specific adaptation to imposed demands (SAID).
- Demonstrate a competent use of Canada's Physical Activity Guide.
- Describe techniques to monitor intensity for all components of physical fitness.

G. Exercise Analysis and Risk Management (8%)

- Give precautionary measures for beginning exercise participants that are designed to prevent injury and increase safety for all components of fitness.
- Analyze the suitability of an exercise for general safety, by modifying it, avoiding it or maintaining the exercise.
- Identify potential risky exercises to joint structures.
- Compare and contrast the signs and symptoms of acute and chronic physical distress with respect to overtraining and high intensity exercise.
- Identify and describe three environmental factors that can affect the body's response to sustained physical activity.
- Know the set of emergency procedures for the facility and the employer. (i.e. first aid, support procedures, medical referral procedures and follow-up).
- Explain the RICE principle (i.e. rest, immobilize, cold and elevation).
- Describe responsibilities (i.e. pre-screening methods) and liabilities associated with the instructor and the facility.

H. Basic Nutrition/Body Composition (7%)

- Using Canada's Guide to Healthy Eating, identify the food groups, describe the guiding principles of the guide, and state for adults the recommended number of servings per day from each food group.
- Identify the recommended daily percentage of calories required and metabolic breakdown from carbohydrates, fat and protein for healthy living.
- Explain the concept of energy balance as it relates to healthy body composition including reference to energy-in and energy-out. Describe one limitation to the energy balance concept.
- Explain how changes in body composition influence basal metabolic rate and subsequent energy balance.
- Demonstrate an awareness of Body Mass Index (BMI).

I. Program Planning (5%)

- Within a program plan, demonstrate pre-screening methods, progressive overload by indicating when adjustments in activity intensity variations can be made.

- Describe ways to evaluate the effectiveness of a physical activity program.
- Describe different methods which will create or sustain a positive exercise climate for participants.
- Apply the principles in Canada's Physical Activity Guide to program planning.

J. Leadership Skills (1.5%)

- Describe the principles of adult learning and how they relate to the exercise environment.
- Demonstrate effective communication skills in working with a variety of participants.
- Describe and apply the principles of effective leadership.
- Describe a variety of intrinsic and extrinsic motivational factors relating to exercise adherence.

SAMPLE EXAM QUESTIONS

1. A benefit of regular participation in physical activity is:

a) increases the rate of physiological aging.
b) guarantees that you never gain excess body weight.
c) strengthens your bones and muscles.
d) increases calcium absorption in your teeth.

2. Which of the following is not an agonist/antagonist muscle pair?

a) Subscapularis/Infraspinatus.
b) Rectus Abdominus/Erector Spinae.
c) Gastrocnemius/Soleus.
d) Gluteus Maximus/Iliopsoas.

3. The primary muscle or muscle group responsible for extension of the hip joint is the:

a) Sartorius.
b) Gluteus Maximus.
c) Gluteus Medius.
d) Iliopsoas.

4. Rank the following exercises in order from least to most stable:

1. Seated calf raises, 2. Standing one-leg calf raises, 3. Standing calf raises.

a) 1, 3, 2.
b) 3, 2, 1.
c) 2, 3, 1.

5. The normal physiological response to an aerobic exercise session is:

a) an increase in heart rate and decrease in stroke volume.
b) an increase in O2 consumption and ventilation.
c) a decrease in cardiac output.
d) a decrease in blood flow to the working muscles.

6. Fitness components to consider when planning a fitness program are :

a) muscular strength and endurance, flexibility, power, and body composition.
b) aerobic and anaerobic capacity, muscular strength and endurance, and body composition.
c) body composition, aerobic and anaerobic capacity, power, and flexibility.
d) flexibility, cardiovascular endurance, muscular strength, and muscular endurance.

7. Based on Canada's Food Guide to Healthy Eating, an eating plan for an average active healthy adult should include:

a) increasing the amount of protein in his/her diet.
b) eating a balanced diet consisting of all food groups.
c) increasing the amount of vitamin C in his/her diet.
d) eating 1900 kilocalories per day.

8. Two individuals who weigh exactly the same and follow an identical exercise program will:

a) lose the same amount of weight in a 4-week period.
b) respond differently to the program.
c) probably eat the same amount of calories per day.
d) gain the same amount of muscle mass.

Answer Code: 1 - (c); 2 - (c); 3 - (b); 4 - (c); 5 - (b); 6 - (d); 7 - (b); 8 – (b)

NINE ASSUMPTIONS ABOUT ADULT LEARNING

ASSUMPTION # 1 **Personal Meaning**

Adult learning is enhanced when learners perceive that the learning process and its results have personal meaning to them and are relevant to their own purpose.

ASSUMPTION # 2 **Learning Climate**

Adults learn best in environments that are supportive and free from threats, and in a learning climate that fosters self-esteem, freedom of expression, acceptance of differences, and an acknowledgment that mistakes are necessary.

ASSUMPTION # 3 **Emerging Needs and Interests**

Adults learn best when learning is viewed as an evolutionary process and when the structure of a learning design can adapt to the emerging needs and interests of a maturing group.

ASSUMPTION # 4 **Self Responsibility**

Adult learning is enhanced when learners are encouraged to take responsibility for their own learning by participating actively in the decision making, planning, and implementation of the learning activities.

ASSUMPTION # 5 **Group Settings**

Adult learning is enhanced when learners can work in group settings, sharing and building on the experiences and resources of others in the group.

ASSUMPTION # 6 **Respect For Individuality**

Adults learn best when they are prized and respected for their unique model of reality and their individual experiential history.

ASSUMPTION # 7 **Cognitive and Affective Learning**

Adult learning is enhanced when learning activities are designed to appeal to both the cognitive (thinking) and affective (feeling) processes of knowing - when learners are encouraged to trust their affective responses cognitive material, and vice versa.

ASSUMPTION # 8 **Ongoing Evaluation and Reflection**

Adults learn best when they are part of an ongoing evaluative process which includes time to reflect on their learning, to give and receive feedback, and to implement change as a result of their learning.

ASSUMPTION # 9 **Facilitator as Role Model**

Adult learning is enhanced in the presence of a facilitator who is reflective, is involved in active learning projects, maintains self-esteem, acknowledges mistakes in a positive framework, values group members as co-learners, lives a healthy lifestyle.

Based upon the work of Dr. Virginia Griffin, Ontario Institute for Studies in Education as reported by Strachan (1982, p. 28-29) in A Handbook for Trainers of Fitness Leaders.

RESOURCES AND SUGGESTED READING FOR FURTHER STUDY

Your Fitness Theory Course and Manual will prepare you for the exam. Nevertheless, you may wish to supplement or update your knowledge by accessing several of these resources:

1. American College of Sports Medicine, Guidelines for Exercise Testing and Prescription, Sixth Edition; 2004.

2. American Council on Exercise, Aerobics Instructor Manual; San Diego, 1997.

3. Behnke, Robert S. Kinetic Anatomy, Champagne, Illinois: Human Kinetics. 2001.

4. Clark, N. Sports Nutrition Guidebook (2nd Edition) Champaign, Illinois: Human Kinetics, 1997.

5. Franks, D. and E. Howley, Fitness Facts: The Healthy Living Handbook; Human Kinetics, Champaign, Illinois, 1989.

6. Franks, D. and E. Howley, Health and Fitness Instructors Handbook, Fourth Edition; Human Kinetics, Champaign, Illinois, 2003.

7. Franks, D., E. Howley, and Iyrviboz, Y. Health Fitness Handbook; Human Kinetics, Champaign, Illinois, 1999.

8. Getchell, B., Physical Fitness - A Way of Life, Third Edition; New York, 1983.

9. Greenberg, J. and D. Pargman, Physical Fitness: A Wellness Approach; Prentice Hall Inc., Englewood Cliffs, New Jersey, 1989.

10. Hall, Susan Basic Biomechanics (2nd Edition) St. Louis: Mosby Yearbook Inc. 1996.

11. Health Canada, Canada's Food Guide to Healthy Eating; Ottawa, 2002. www.hc-sc.gc.ca

12. Hockey, R., Physical Fitness: The Pathway to Healthy Living, Sixth Edition: Times Mirror Mosby, Toronto, 1989.

13. McArdle, W., F. Katch and V. Katch, Exercise Physiology: Energy, Nutrition and Human Performance, Fourth Edition: Philadelphia, 1996.

14. Rejeski, W.J. & Kenney, E.A. Fitness Motivation Preventing Participant Dropout Champaign, Illinois: Human Kinetics, 1988.

15. Sharkey, B. Fitness and Health (5th Edition) Champagne, Illinois: Human Kinetics, 2002.

16. Wilmore, J. & Costill, D. L. Physiology of Sports & Exercise, (3rd Edition) Champaign, Illinois: Human Kinetics, 2004

Course Manuals available through the BCRPA (www.bcrpa.bc.ca/resources_fitness)

Fitness Theory Course Manuals

CFES Fitness Knowledge Course Student Manual, 7th edition

Canadian Online Fitness Education Inc., Fitness Theory Manual; Isachsen, S. & Dr. Bill Luke

Body Blueprint Fitness Theory Manual; Truscott, C. Hardy, T.

Lifeworks Theory Manual; LifeWorks, Inc.

Fitness Group Theory Manual

Group Fitness Course Manuals

CFES Group Exercise Instructor Course Student Manual, 5th edition

Fitness Group Exercise to Music Manual

Lifeworks Exercise to Music Manual; LifeWorks, Inc.

Weight Training Course Manuals

CFES Weight Training Instructor Level 1 Course Student Manual, 6th edition

CFES Advanced Weight Training Instructor Course Student Manual, 4th edition

Canadian Online Fitness Education Inc., Weight Training Manual; Dr. Bill Luke & Andrew Heming

Fitness Group Weight Training Manual

Lifeworks Strength Training Manual; LifeWorks, Inc.

Aquatic Fitness Course Manuals

Aquatic Fitness Manual; Starrett, S.

Personal Training Course Manuals

NSCA's Essentials of Personal Training

ACE Personal Training Manual; ACE

Adapted Fitness Course Manuals

Adapted Fitness Leadership Manual; Paterson, G. Cheetham, M. Eustace, C.