

Presenters

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Objectives

- To provide key information that will help faculty develop technically sound exam items using the psychometric principles that guide the development of BOC exam items
- To provide items that prepare students in the style of the BOC exam



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RD/Practice Analysis

- The RD/Practice Analysis (PA) (6th edition) defines the current entry level knowledge, skills and abilities required for practice in the profession of athletic training
- The PA serves as the blueprint for determining the content of the exam



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Domains

Domain	% of Total Items
Injury/Illness Prevention and Wellness Protection	25
Clinical Evaluation and Diagnosis	22
Immediate and Emergency Care	19
Treatment and Rehabilitation	22
Organizational and Professional Health and Well-being	12



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Exam Content

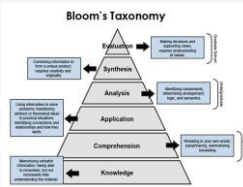
- Pulled from the PA
 - Percent per domain set by this document
- Target we are aiming for:
 - Entry-Level
 - Pertinent for the purpose of public protection
 - Criticality
 - Importance
 - Frequency



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Cognitive Level of Items

- Bloom's Taxonomy
 - Recall
 - Application
 - Analysis
- To assess clinical decision making, need to write to application/analysis
- There is still a place for good recall items



Recall

A whirlpool bath is an example of which of the following?
Choose only one.

- Conduction
- Induction
- Convection
- Evaporation
- Inclusion



Application

An Athletic Trainer is working with a patient that asks how the whirlpool transfers the heat into their body. Which of the following is the **BEST** response? **Choose only one.**

- Conduction
- Induction
- Convection
- Evaporation
- Inclusion



Analysis

A patient walks into a clinic complaining of discomfort. They are three months post-surgery following a total hip replacement. The Athletic Trainer's evaluation reveals:

- Trendelenberg gait
- AROM knee flexion = 125 degrees
- Knee extension = -1 degree
- MMT knee flexion = 5/5 (normal)
- MMT knee extension = 4/5 (good)
- MMT hip flexion = 4/5 (good)
- MMT hip abduction = 3/5 (fair)
- MMT hip extension = 4/5 (good)

Based on the evaluation, damage to which nerve could be causing the athlete's discomfort? **Choose only one.**

- Femoral
- Inferior gluteal
- Obturator
- Sciatic
- Superior gluteal



Item Writing Guidelines - General

- **Entry-Level Content**
- Which Tanner stage of maturation should an athlete indicate before participation in collision and high intensity non-contact sport is recommended? **Choose only one.**
 - Stage one
 - Stage two
 - Stage three
 - Stage four
 - Stage five



Item Writing Guidelines - General

- **Test only one concept at a time.**
- What is the normal pulse rate of an adult and how would each be measured?
- Would need to be split into two separate items. Knowledge of normative values is one concept, and how to assess each is a separate concept.



5-Option Multiple Choice Items

- Have a concise stem phrased in the form of question
- Five options that include one correct answer and four incorrect answers (distractors)
- Distractors are “truly” incorrect, but plausible



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5-Option Multiple Choice Item (Example)

- Weakness of which muscle is associated with Trendelenberg gait? **Choose only one.**
 - Gluteus medius
 - Iliopsoas
 - Gluteus maximus
 - Rectus femoris
 - Tensor fascia lata



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Multi-Select Items

- Have a concise stem phrased in the form of question
- Minimum of five options and a maximum of eight
- Minimum of two correct answers
- Must have more incorrect than correct options
- They are characterized as “choose all that apply” within the item instructions



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Multi-Select Item (Example)

- The men’s crew (rowing) coach at a high school has noticed a dramatic change in an athlete’s behavior and has realized the athlete is withdrawing from his teammates and friends. When the Athletic Trainer talks to the athlete, they discover that the athlete is:
 - Having trouble sleeping.
 - Abnormally fatigued.
 - Losing his hair.
 - Feeling restless and cannot relax.
 - Complaining of abdominal pain.
 - Experiencing a history of stress fractures.
- Given the information, the Athletic Trainer suspects that the athlete may be engaging in disordered eating. Which of the following actions should the Athletic Trainer take at this time? **Choose all that apply.**
 - Allow the athlete to continue sport participation.
 - Call the athlete’s parents/guardians.
 - Facilitate an initial intervention with the athlete and qualified personnel.
 - Refer the athlete to qualified medical personnel.
 - Take the athlete to the emergency room.



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Item Writing Guidelines - Stem

- Clear and concise
- Use of practice setting, age, gender, sport, etc. only if has a direct bearing on the concept being tested
- Written in the form of a question (must end with “?”)
- Should include all info necessary to answer item
- Should be stated “positively”



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Item Writing Guidelines - Options

- Identify the correct answer (KEY)
- Distractors clearly incorrect, but plausible
- Distractors consistent in content with stem
- Distractors consistent in length
- Must have clear choice when using “Best,” “Most” or “First” in stem



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Referencing Exam Items

- Minimum of two references (i.e., texts) no older than five years
- Generally accepted and available
- Position statements are acceptable
- Meta-analysis articles are acceptable



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Style Guide – Do's and Don'ts

[BOC Style Guide](#)



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Multiple Forms of Commonly Accepted Terms

- If only two exist, list them both.
 - Peroneal (fibularis) tendon
- If more than two exist, must reconsider content.



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Medications

- Refer to medications by their action
 - Antibiotic vs. Azithromycin
 - Non-Steroidal Anti-Inflammatory vs. Celebrex



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Item Writing Guidelines - Abbreviations

- BOC allows a condensed list of abbreviations
- If not on list, must be spelled out
- If all options are not on abbreviation list, all must be written out



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Item Writing Guidelines - Measurements

- English as standard, Metric in parentheses
 - 33 ft (10m)
 - 165 lbs (75kg)
- Fahrenheit as standard, Celsius in parentheses
 - 98 degrees F (36.7 degrees C)



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Numbers

- Numbers less than 10 spelled out
 - 7 = seven
- Insert leading zero if the decimal number is less than 1
 - 0.4 meters, not .4 meters



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Trademarked, Registered and Copyrighted Names

- Must use generic version of a protected term
 - Splint v Sam Splint™
 - Elastic bandage v Ace Wrap™



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Scoring FAQs

- Multiple Choice, Hot Spot
 - Zero or 1 (Correct or Incorrect)
- Multi-select, Drag and Drop
 - Zero to 1, partial credit, can't go into negative points
- Focused Testlet (FT)
 - Each item in FT scored independently



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Now it's your turn

- The following items are from commonly available exam prep materials*

* *The questions are presented as they appear in the text – without editing or spellchecking*



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Example #1

- Which of the following is NOT an appropriate step to take when initiating treatment for cold injury to the feet?
Choose only one.
 - Remove any wet clothing and have the individual elevate the feet to reduce swelling.
 - Have the individual place the feet near a space heater to help gradually thaw the feet.
 - Avoid rubbing the feet because this may damage the tissue.
 - Put cotton between the toes to avoid friction.
 - Call for emergency medical services immediately if there is evidence of deep cold injury.



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Example #2

A whirlpool bath is an example of: **Choose only one.**

- Conduction
- Induction
- Convection
- Evaporation
- Inclusion



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Example #3

_____ activities are less intense than _____.
Choose only one.

- Anaerobic, aerobic
- Aerobic, anaerobic
- Cardiovascular, weight lifting
- Weight lifting, cardiovascular fitness
- Walking, running



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Small Group Work on Preselected Items

MULTIPLE CHOICE AND MULTI-SELECT ITEMS



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Next Steps

- Now that you know the principles of items, are your exams measuring what you want to measure?
- Do you have stats available to back that up?
- Resources – [Statistics Primer](#)



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Questions?



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**If you are interested in writing for the BOC,
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