



Board of Certification, Inc. (BOC) Exam Development Style Guide

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This document is developed to assist BOC item writers and other stakeholders. It provides guidelines/rules to help standardize the development of the BOC exam.

*This is an evolving document and will be reviewed on a regular basis for edits and alterations.

1. General Guidelines

- A. All items must reflect the current classification system that is derived from the most current BOC Role Delineation Study/Practice Analysis.
- B. Individual items will only test one concept at a time.
 - If a stem gives information as to a set of signs and symptoms and asks the candidate to identify the potential condition and what to do next, the item should be rewritten into two items since it is trying to test two concepts (i.e., identification and treatment).
 - Example: “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.
- C. Items should be written for the entry-level athletic trainer and pertinent to assessing minimum competence required for an athletic trainer within two to three years of entry to the profession.
- D. All items should be written clearly and concisely (minimize expressive/descriptive verbiage).
 - If including practice setting, age, gender, sport, etc., it should have a direct bearing on the content of the item.
- E. All items should be written in the form of a question and end in a question mark (?). No fill in the blank or incomplete sentence items.
- F. The item stem should include all information that is relevant and necessary to answer the question. If necessary, bullet points may be added to present the information in a clear & concise manner (i.e. signs and symptoms). Bulleted information should be short & concise (no full sentences).
- G. Construction of items should avoid content where there may be inconsistencies or variations in, accepted / published terminology, local/regional/national/institutional laws, regulations and/or policies & procedures.
- H. Refer to the person first within the item as opposed to the injury/illness.
 - Example: “A patient with a sprained ankle...”
- I. All items will be written in third-person.
 - Example: “An athletic trainer would...” as opposed to “you would...”
- J. All items should be stated positively and avoid the use of statements such as:
 - “All of the following EXCEPT”
 - “Which of the following is NOT true?”

- K. All distractors should be clearly incorrect but plausible and consistent in content.
- “Clearly incorrect but plausible” could include common misconceptions, common errors, familiar but incorrect phrases with some embedded truth or close but incorrect information.
 - “Consistent in content” refers to all distractors being in the same “family”. If the stem is asking about “muscles”, all of the distractors need to be “muscles.”
- L. Items should be written in “active voice.”
- Example: “The student played basketball at school today.” vs. “Basketball was played at school today.”
- M. Referencing exam items:
- All items should have a minimum of two references.
 - Except for seminal references, references will be no more than 5 years old.
 - i. A “Seminal Reference” is typically older than 5 years but has withstood “the test of time” and continues to be used in most ATEPs as per the Program Director Reference Survey.
 - References will be generally found to be utilized within a considerable portion of the field of Athletic Training.
 - References should be publically available, that is, not confidential or of limited release. Publically available may require some cost (e.g., a text book, library subscription).
 - In regards to professional statements, Position Statements will be accepted and used (no “official” or “consensus” statements may be used).
 - All references will be cited from their “primary source.”
 - i. Example: NATA Position Statement should be referenced from the Journal of Athletic Training and **not** the NATA web-site.
 - Peer reviewed journal articles can be used as long as they are either position statements or meta-analyses.
 - The NCAA Handbook or any other professional organization or institutional handbooks are **not** to be used as a reference.

2. Terminology

- A. Patient vs. Athlete vs. Client:
- An individual receiving athletic training service should be referred to as “patient;” the descriptor “athlete” should only be used when a problem is based on participation in a sport.
 - The term “client” should be used for situations where individuals receive athletic training services, usually preventive in nature, on a fee-for-service basis.
- B. If age of the “athlete” or “patient” is a relevant factor in the item, specify the age.
- C. Terminology

Correct Usage	Incorrect Usage
Athletic Trainer	Certified Athletic Trainer
Physician	Doctor
Athletic training “services”	Athletic training “coverage”
BOC	NATABOC or NATA-BOC
Athletic training facility	Athletic training room
Health Care Provider	Allied Health Care Provider
Orthopedic	Orthopaedic

- D. Use “Emergency Cardiac Care (ECC)” as a collective noun. Use “CPR” and “AED” when using an AED or applying CPR.
- E. Use “ligamentous testing,” “manual muscle testing,” and/or “special testing.”
- F. Use “differential diagnosis” and/or “impression.”
- G. All items must have a clear choice when using “best” or “most.” “Best” and/or “Most” implies that the correct choice is optimal for the situation when compared to other choices.

- H. Refer to medications by their action.
- Example: “Antibiotic” instead of “Azithromycin” (Z-Pack)
 - Example: “Non-Steroidal Anti-Inflammatory” (NSAID) instead of “Celebrex”
- I. Practice settings will be referred to as the following:
- Clinic/Hospital
 - Health/Fitness Industry
 - Industrial/Corporate
 - Corporate
 - Military/Government/Law Enforcement
 - Professional Sports/Performing Arts
 - Sales/Marketing
 - Secondary School
 - University/College/Community College
 - Youth Sports
- J. Cranial nerves will be expressed as both the roman numeral and the formal name:
- “Cranial Nerve V (Trigeminal)”
 - “Cranial Nerve II (Optic)”
- K. When a term has two commonly accepted forms, both will be used and displayed as the following:
- i.e., “Peroneal (fibularis) tendons”
 - i.e., “External (lateral) rotation”
 - i.e., “Internal (medial) rotation”
 - i.e., “3.0/3.3 MHz”
- L. Deep Tendon Reflexes will be expressed as:
- 0 = Absent
 - 1+ = Hypoactive
 - 2+ = Normal
 - 3+ = Brisk
 - 4+ = Hyperactive with Clonus
- M. When expressing the pain scale, it will be listed as the following:
- “8 on a 10 point scale”
- N. Standard instructions for items:
- Multiple-Choice: *Choose only one*
 - Multi-Select: *Choose all that apply*
- O. Ultrasound parameters will be expressed as the following:
- Frequency = MHz
 - Power = w/cm²
- P. Electrical Modalities
- The use of “Hz” is appropriate when designating the frequency of alternating current (AC) modalities
 - The use of “pps” is appropriate when designating the pulse rate.
 - Duty cycle will be expressed as “10 seconds on/50 seconds off”
- Q. Trademarked, Registered, and Copyrighted Names
- Names that hold the marks TM, ®, © are not to be used in exam items. The generic version to describe the protected term must be used

3. Abbreviations

Abbreviations on the list below may be used without spelling out the entire term. All other abbreviations **NOT** on the list below need to be spelled out: i.e., American Red Cross (ARC). This does not apply when an item is specifically testing the knowledge of commonly accepted abbreviations.

AAROM	Active Assistive Range of Motion
ACL	Anterior Cruciate Ligament
ADL	Activities of Daily Living
AED	Automated External Defibrillator
AIDS	Acquired Immune Deficiency Syndrome
AMA	American Medical Association
AROM	Active Range of Motion
BESS	Balance Error Scoring System
BID	Twice a Day
BMI	Body Mass Index
BOC	Board of Certification, Inc.
BP	Blood Pressure
bpm	Beats Per Minute
CAATE	Commission on Accreditation of Athletic Training Education
CDC	Centers for Disease Control and Prevention
COPD	Chronic Obstructive Pulmonary Disease
CPM	Continuous Passive Motion
CPR	Cardiopulmonary Resuscitation
CT Scan	Computed Tomography Scan
DIP	Distal Interphalangeal
DSM IV	Diagnostic and Statistical Manual of Mental Disorders - 4th Ed.
EAP	Emergency Action Plan
ECC	Emergency Cardiac Care
ECG/EKG	Electrocardiogram
EMG	Electromyogram
EMS	Emergency Medical Services
EPA	United States Environmental Protection Agency
FERPA	Family Educational Rights and Privacy Act
FDA	U.S. Federal Drug Administration
HIPAA	Health Insurance Portability and Accountability Act
HIV	Human Immunodeficiency Virus
HMO	Health Maintenance Organization
HOPS	History, Observation, Palpation, Special Tests
HR	Heart Rate
LCL	Lateral Collateral Ligament <ul style="list-style-type: none"> • need to specify which body part (knee, elbow, etc.)
MCL	Medial Collateral Ligament <ul style="list-style-type: none"> • need to specify which body part (knee, elbow, etc.)
MCP	Metacarpophalangeal
MMT	Manual Muscle Test
MRI	Magnetic Resonance Imaging
MRSA	Methicillin Resistant Staph Aureus
MTP	Metatarsophalangeal
NATA	National Athletic Trainers' Association
NCAA	National Collegiate Athletic Association
NOCSAE	National Operating Committee on Standards for Athletic Equipment
NSAID	Non-Steroidal Anti-Inflammatory Drugs
OSHA	Occupational Safety and Health Administration
OTC	Over-the-Counter
PCL	Posterior Collateral Ligament
PIP	Proximal Interphalangeal
PNF	Proprioceptive Neuromuscular Facilitation

PPE	Pre Participation Examination
PPO	Preferred Provider Organization
pps	Pulse Per Second
PRN	As Needed
PROM	Passive Range of Motion
QD	Per Day
QID	Four Times a Day
ROM	Range of Motion
RROM	Resistive Range of Motion
SLAP	Superior Labral Tear from Anterior to Posterior
SOAP	Subjective, Objective, Assessment, Plan
STD	Sexually Transmitted Disease • when referring to STD, need to mention STI in parentheses
STI	Sexually Transmitted Infection • when referring to STI, need to mention STD in parentheses
TBI	Traumatic Brain Injury
TENS	Transcutaneous Electrical Nerve Stimulation
TID	Three Times a Day
WGBT	Wet-Bulb Globe Temperature
WNL	Within Normal Limits
X Ray	Radiographs

4. Numbers

- A. Numbers less than 10 will be spelled out.
- Example: 7 = seven
- B. Insert a leading zero if the decimal number is less than one.
- Example: 0.4 meters instead of .4 meters
- C. Age will be displayed as the following:
- Example: 17 year(s) old, Nine year(s) old
- D. Refer to spinal segments with no hyphens or spaces.
- Example: **C4** instead of C 4 or C-4

5. Measurements

- A. All measurements (results and inanimate objects) will be displayed in English Customary Units with the Metric System equivalent in parentheses to one decimal point.
- Example: 160 lbs (72.5 kg)
- B. All temperatures will be displayed in Fahrenheit with the Celsius equivalent in parentheses.
- Example: 98 degrees F (36.7 degrees C)

Inch = in	Millimeter = mm	1 in = 2.54 cm	1 tsp = 5 ml
Foot = ft	Centimeter = cm	1 ft = 30.48 cm = 0.305 m	1 c = 236 ml
Yard = yd	Meter = m	1 yd = 0.914 m	1 qt = 0.946 l
Mile = mi	Kilometer = km	1 mi = 1.609 km	1 gal = 3.785 l
Ounce = oz	Gram = g		
Pound = lb	Milliliter = ml	1 oz = 28.350 g	
Tablespoon = tbsp	Liter = l	1 lb = 0.453 kg	
Teaspoon = tsp	Celsius = C		
Cup = c	Fahrenheit = F	1 degree C = (F - 32) * 0.5555556	
Quart = qt	Millimeters of mercury = mmHg		

6. Time

- A. When referring to “after” something, it will be referred to as “post.”
 - Example: “post-practice” vs. “after practice” and “post-surgery” or “post-surgical” vs. “after surgery”
- B. When referring to “before” something, it will be referred to as “pre.”
 - Example: “pre-practice”
- C. Specific time-of-day will be expressed as:
 - 9:00 a.m., 12:00 p.m. (noon), 5:00 p.m., 12:00 a.m. (midnight)

7. Hyphenation

- A hyphen will be used when grammatically indicated.

8. Range of Motion (values)

- A. Must include joint/motions assessed.
- B. Must include a number range.
 - Example: 0–60 degrees of elbow flexion

9. Severity of Injury (grades)

The following injury severity grading will be utilized for all items:

- A. **Grade I (mild)** = little or no damage to tissue, normally no loss of function.
- B. **Grade II (moderate)** = partial tearing or damage to tissue with some loss of function noted.
- C. **Grade III (severe)** = complete or near complete tear or rupture of tissue with complete loss of function usually noted.

10. Muscle Testing

- A. The following manual muscle testing grading scale will be utilized for all items:

Normal	5	Complete ROM against gravity with maximal resistance
Good	4	Complete ROM against gravity with moderate resistance
Fair +	3 +	Complete ROM against gravity with minimal resistance
Fair	3	Complete ROM against gravity with no resistance
Fair -	3 -	Some, but not complete, ROM against gravity
Poor +	2 +	Initiates motion against gravity
Poor	2	Complete ROM with some assistance and gravity eliminated
Poor -	2 -	Initiates motion if gravity is eliminated
Trace	1	Evidence of slight muscular contraction; no joint motion
Zero	0	No muscle contraction palpated

- B. Manual muscle testing will be expressed in this manner:
 - The patient tested 3/5 (Fair) upon a manual muscle test of the biceps brachii

11. Cultural Sensitivity

- A. Items must be written to be sensitive to differences in gender, ethnicity and religious beliefs of the candidate. We will strive to balance these differences by the inclusion of all gender/ethnic groups within exam items.
- B. When writing a problem for a certification exam, item writers need to be vigilant about producing work that is fair — avoiding bias and stereotyping. Bias and stereotyping in testing are two different concepts.
- **Bias:** No problem should have characteristics that result in differential performance for individuals of the same ability but from different ethnic, gender, cultural or religious groups. Problems also can have characteristics that may cause bias against individuals with disabilities.
 - **Stereotyping:** Tests should be free of material that may be offensive, demeaning or emotionally charged. While the presence of such material may not make the problem more difficult for the candidate, it may cause her or him to become “turned off” or emotional and result in lowered performance.

12. Sports/Activities

- When constructing items, all types of activities need to be represented within the exam. Therefore, we will not lean heavily on any given sport/activity when writing items (i.e., basketball, industrial worker, recreational participant, etc.)

13. Emergency Cardiac Care (ECC) Items

- Only items that refer to when to utilize CPR/AED or that give information about the status of CPR/AED are applicable to the exam. Items pertaining to the specifics of CPR/AED application (i.e., compression ratio, number of respirations, etc.) are not needed. All candidates have to submit a current ECC card to the BOC in order to become certified upon passing the exam.

14. Images, Audio, & Video Files

- A. All submitted media must be free of copyrights. This includes releases from models used in the images or from artists who created the images.
- a. If needed, the BOC will handle all copyright issues with files used for exam items..
- B. Specific requirements:

<i>Digital Imagery</i>	<i>Diagrams and Other Non-Photographic Images</i>	<i>Scanned Imagery</i>	<i>Videos</i>	<i>Audio (stand alone)</i>
Original source file should be 1600 x 3200 dpi (largest setting on most digital cameras). If file is too large to submit via I-Dev, please compress and submit via email to the project manager.	Original source file should be 1600 x 3200 dpi. If file is too large to submit via I-Dev, please compress and submit via email to the project manager.	Images should be no less than 256 colors and 1200 dpi.	Files should be in MPEG format with 10,005 Kbit/second streaming video and 44,100 Hz * 320 Kbit/second audio channel.	Files should be non-compressed .wav files.