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Compliance and Regulatory Education:
Best Practices for Athletic Trainer Regulation



AT Exam Overview

Psychometrics and Exam Development

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About Me

- Ian Hembry Ph.D.
 - Educational Psychology: Quantitative Methods
- Professional background
 - Psychometrician
 - Mathematics Teacher
 - High School Varsity Coach
 - Adult Athletic Coach, CF-L1
- Personal Background
 - Loving Husband
 - Father of 3
 - BJJ Enthusiast



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Agenda

- BOC Exams
- Psychometric Principles
 - Validity
 - Reliability
 - Exam Development
- AT Exam: By the Numbers

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BOC Exams



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BOC's AT Exam

AT Exam

- Purpose: The purpose of the BOC exam is to assess your knowledge in the five domains of athletic training as defined by the current BOC Practice Analysis:
- Domain 1: Risk Reduction, Wellness and Health Literacy.
- Domain 2: Assessment, Evaluation and Diagnosis.
- Domain 3: Critical Incident Management
- Domain 4: Therapeutic Intervention
- Domain 5: Healthcare Administration and Professional Responsibility

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Orthopedic Specialty

- Purpose: The purpose of the BOC exam is to assess your knowledge in the three domains of athletic training who specializes in orthopedics as defined by the current BOC Practice Analysis:
- Domain 1: Medical Knowledge
- Domain 2: Procedural Knowledge
- Domain 3: Professional Practice

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Role of Credentialing

- Credentialing and certification serve to validate the qualifications and competence of professionals, ensuring that they meet established standards of practice and thereby safeguarding public trust and safety.
- The value of a certification lies in its ability to verify an individual's expertise and competence.

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Psychometric Principles

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What is a psychometrician?

Definition

- **Psycho-metric**-ian
 - The measurement (metric) of behavior (psycho).
- Expert in designing, administering, and interpreting psychological tests.

Roles and Responsibilities

- Create and validate standardized tests
- Conduct statistical analysis on test data
- Ensure assessments are reliable and valid

Key skills

- Advanced statistical and mathematical expertise
- In-depth understanding of measurement and psychological theories and principles

Applications

- Educational testing and certification
- Clinical psychological assessments
- Professional licensure and credentialing exams

Psychometric Considerations

- Scientifically Sound
- Fairness
- Validity
- Broad Accessibility
- Minimize Bias
- Security

Psychometric Principles

The application of psychometric principles to an assessment program is driven by the decision(s) made on the basis of performance and what is to be measured.

- **Construct:** The trait(s) that cannot be directly observed but are assessed by an examination within a credentialing program. What is it necessary for the certification assessment measure? Constructs provide the basis for decision making about everything else.
- **Construct irrelevant factors:** Anything that affects examination scores or outcomes that is not intended to be part of the assessment (e.g., adverse administration conditions, readability level, or vocabulary).
- **Assessment:** Any standardized process or instrument used to determine whether candidates meet the established criteria as defined by the specifications (e.g., the knowledge or skill associated with competence to practice in a profession, role, or specialty area).
- **Validity** is the degree to which accumulated evidence supports outcome decisions made with respect to all requirements for obtaining a credential (e.g., education, experience, assessment instruments).
- **Reliability** is the degree to which scores and pass/fail outcomes on an examination are replicable or repeatable across forms, administration, or raters.
- **Equating:** Statistical processes used to determine that classification decisions made on multiple forms of an examination are the same by converting scores on two or more alternate forms of an examination to a common scale.

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Principles of Validity

Validity: The degree to which accumulated evidence supports outcome decisions made with respect to all requirements for obtaining a credential (e.g., education, experience, and assessment instruments).

1. Validity Pertains to Test Score Inferences
2. Validity is Not a Characteristic of an Instrument
3. Validity is a Unitary Concept
4. Validity is a Matter of Degree
5. Validation Involves Gathering and Evaluating Evidence Bearing on Intended Test Score Inferences
6. Validation is an Ongoing Endeavor

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Reliability

Common Usage

- Reliability is generally used to describe the quality or dependability of person or thing.

Oxford Dictionary Definition

- *“The quality of being trustworthy or of performing consistently well.”* – Oxford Dictionary

APA, AERA, NCME Standards Definition

- *Reliability is the consistency of scores across instances of testing procedures* – APA, AERA, NCME Standards

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Reliability continued

Two typical forms

- Reliability coefficients – correlation between scores derived from replications of testing procedures on a sample of test takers
- Decision consistency – the extent to which the observed classifications of examinees would be the same across replications

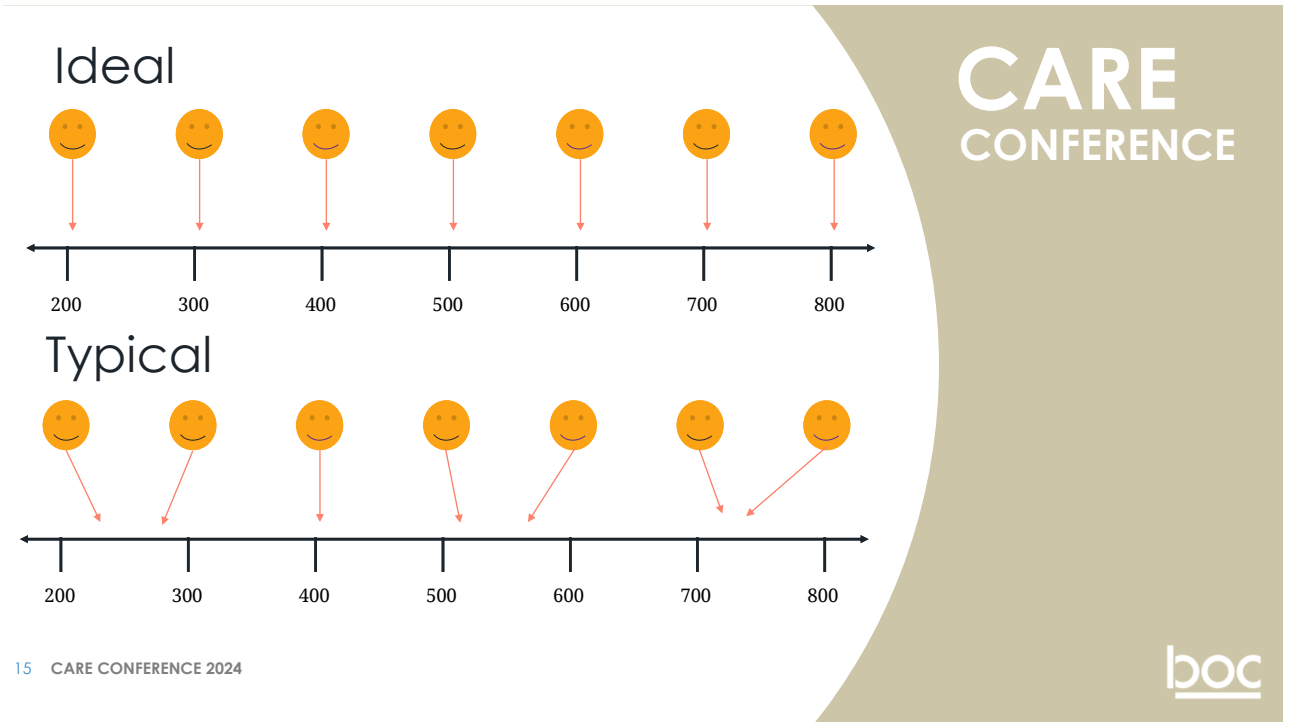
Relationship with validity

- Reliability is a necessary component of validity.

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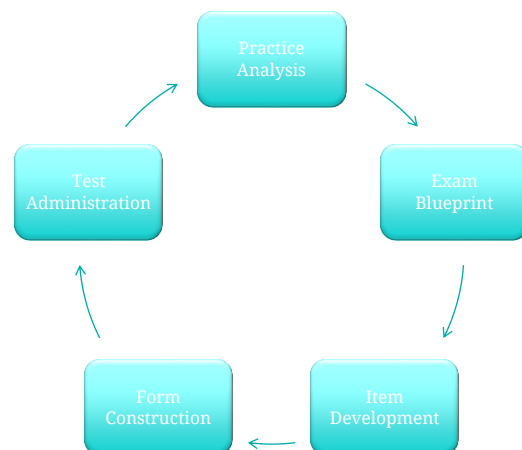


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BOC Exam Development Cycle

- **Practice Analysis** - a process that identifies and documents essential tasks, knowledge, and skills required for competent performance as an AT.
- **Exam Blueprint** - a detailed framework that outlines the content areas, weightings, and structure of an examination based on the critical tasks and competencies identified during the practice analysis.
- **Item Development** - the process of creating, reviewing, and validating test questions (items) to ensure they accurately measure the knowledge, skills, and abilities required for a specific credential or certification.
- **Form Construction** - the process of assembling individual test items into a complete, balanced examination form that accurately reflects the exam blueprint and meets psychometric criteria for validity, reliability, and fairness.
- **Test Administration** - the process of managing and overseeing the delivery of an examination, ensuring standardized procedures, security, and accessibility for all candidates.



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AT Exam

By the Numbers

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First Time and Retake Pass Rates

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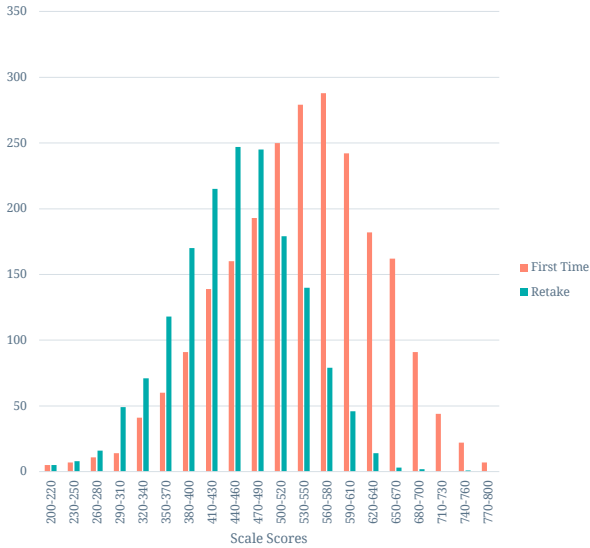


Year	First-time	Pass	% Pass	Retake	Pass	% Pass	All	Pass	% Pass
PA7									
2021-2022*	2,625	2,027	77.2%	1,495	611	40.9%	4,120	2,638	64.0%
2022-2023*	2,427	1,799	74.1%	1,317	477	36.2%	3,744	2,276	60.8%
PA8									
2023-2024*	2,285	1,569	68.7%	1,591	463	29.1%	3,876	2,032	52.4%

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Scaled Score Distribution



Cohort	N	Mean	Median	Std Dev	Min	Max
All 2023-24	3,866	502.0	500	100.4	200	800
First-time	2,282	537.1	540	98.9	200	800
Retake	1,584	451.4	450	78.7	200	750
All 2022-23	3,738	525.0	530	100.0	200	800
First-time	2,424	556.6	570	96.8	200	800
Retake	1,314	466.8	470	77.1	200	710
All 2021-22	4,118	532.6	540	107.7	200	800
First-time	2,624	568.4	580	102.9	200	800
Retake	1,494	469.8	480	84.8	200	710

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For more information, FAQs and updates, visit the BOC website at BOCATC.org.

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