

# Principles of Test Selection and Administration



# Reasons for Testing

- Can be used to assess athletic talent, identify physical abilities and areas in need of improvement, set goals, and evaluate progress.

# Testing Terminology

- Test: A procedure for assessing ability in a particular endeavor.
- Field test: A test used to assess ability that is performed away from the laboratory and does not require extensive training or expensive equipment.
- Measurement: The process of collecting test data.
- Evaluation: The process of analyzing test results for the purpose of making decisions.

# Testing Terminology

- Pretest: A test administered before the beginning of training to determine the athlete's initial basic ability levels.
- Midtest: A test administered one or more times during the training period to assess progress and modify the program as needed to maximize benefit.
- Formative evaluation: Periodic reevaluation based on midtests administered during the training, usually at regular intervals.
- Posttest: A test administered after the training period to determine the success of the training program in achieving the training objectives.

# Evaluation of Test Quality

- **Validity**
  - The degree to which a test or test item measures what it is supposed to measure
  - The most important characteristic of testing

# Test Quality Terms

- Construct validity: The ability of a test to represent the underlying construct (the theory developed to organize and explain some aspects of existing knowledge and observations).
- Face validity: The appearance to the athlete and other casual observers that the test measures what it is purported to measure.
- Content validity: The assessment by experts that the testing covers all relevant subtopics or component abilities in appropriate proportions.

# Test Quality Terms

- Criterion-referenced validity: The extent to which test scores are associated with some other measure of the same ability.
- Reliability: A measure of the degree of consistency or repeatability of a test

# Evaluation of Test Quality

- Reliability
  - Measurement error can arise from the following:
    - Intrasubject (within subjects) variability
    - Lack of interrater (between raters) reliability or agreement
    - Intrarater (within raters) variability
    - Failure of the test itself to provide consistent results



# Terminology

- Intrasubject variability: The lack of consistent performance by the person tested.
- Interrater reliability: The degree to which different raters agree; also referred to as objectivity or interrater agreement.
- Intrarater variability: The lack of consistent scores by a given tester.

# Test Selection

- **Metabolic Energy System Specificity**
  - Consider the energy demands (phosphagen, glycolytic, and oxidative) of the sport when choosing or designing tests.
  
- **Sport Specificity**
  - The more similar the test is to an important movement in the sport, the better.

# Test Selection

- For a test to be valid, it must emulate the energy requirements and important movements of the sport for which ability is being tested.

# Test Selection

- Experience and Training Status
  - Consider the athlete's ability to perform the technique.
  - Consider the athlete's level of strength and endurance training.
  
- Age and Sex
  - Both may affect athletes' experience, interest, and ability.

# Test Selection

- Environmental Factors
  - High temperature and high humidity can impair performance, pose health risks, and lower the validity of aerobic endurance tests.
  - Temperature fluctuations can reduce ability to compare test results over time.
  - Altitude can impair performance on aerobic endurance tests, although not on tests of strength and power.

# Remember.....

- Athletes' experience, training status, age, and sex can affect test performance, so these factors should be considered in test selection. Environmental factors such as temperature, humidity, and altitude can also influence test performance, so testers should try to standardize environmental conditions as much as possible.

# Health and Safety Considerations

- Be aware of testing conditions that can threaten the health of athletes such as high heat and humidity.
- Be observant of signs and symptoms of health problems that warrant exclusion from testing.
- Be observant of the health status of athletes before, during, and after maximal exertions.

# Temperature Limits at Various Ranges of Relative Humidity

Relative Humidity (%)	Temperature Limit (F)
0	95
1-20	90
21-50	85
51-90	80
91-100	75



# Aerobic Endurance Testing in the Heat

1. During the weeks prior to the test, athletes should engage in enough training to establish a baseline of fitness in the activity being tested.
2. Avoid testing under extreme combinations of heat and humidity.
3. On days when the temperature is high, indoor facilities should be used, or testing should be conducted during morning or early evening hours.

# Aerobic Endurance Testing in the Heat

4. The athletes should be acclimatized to the heat and humidity for at least one week prior to testing.
5. Athletes should make sure they are well hydrated in the 24-hour period preceding aerobic endurance testing in the heat.
6. Athletes should be encouraged to drink during exercise in the heat, ideally 150 to 250 ml (5-9 fluid ounces) every 15 minutes.

# Aerobic Endurance Testing in the Heat

7. Athletes should wear a light-colored, loose fitting tank top and shorts, preferably of a mesh material.
8. Be attentive to possible symptoms of heatstroke or heat exhaustion: cramps, nausea, dizziness, difficulty in walking or standing, faintness, garbled speech, lack of sweat, red or ashen skin, and goose bumps.

# Aerobic Endurance Testing in the Heat

9. Be aware of the symptoms of hyponatremia or water intoxication: extremely dilute urine in combination with bloated skin, altered consciousness, or loss of consciousness, with no increase in body temperature.
10. Athletes should be encouraged to eat foods high in magnesium and potassium.
11. Proficient medical coverage should be readily available.

# Test Administration

- Selection and Training of Testers
  - Provide testers with practice and training. Ensure consistency among testers.
- Recording Forms
  - Prepare scoring forms ahead of time to increase efficiency and reduce recording errors.
- Test Format
  - Consider whether athletes will be tested all at once or in groups. The same tester should administer a given test to all athletes if possible. Each tester should administer one test at a time.

# Test Administration

- Testing Batteries and Multiple Testing Trials
  - Duplicate test setups can be used for large groups.
  - Allow 2 to 3 minutes of rest between attempts that are not close to the athlete's maximum, 3 to 5 minutes between attempts that are close to the maximum, and at least 5 minutes between test batteries.
  - When multiple trials of a test or a battery of tests are performed, allow complete recovery between trials.

# Sequencing of Tests

- Administer Tests in this Order
  1. Nonfatiguing tests
  2. Agility tests
  3. Maximum power and strength tests
  4. Sprint tests
  5. Local muscular endurance tests
  6. Fatiguing anaerobic capacity tests
  7. Aerobic capacity tests

# Preparing Athletes for Testing

- Announce the date, time, and purpose of a test battery in advance.
- Host a pretest practice session.
- Provide clear and simple instructions.
- Demonstrate proper test performance.
- Organize a pretest warm-up.
- Tell athletes their test scores after each trial.
- Administer a supervised cool-down period.