

## How to improve the validity of BIA measurements



This document provides a simple step-by-step guide to using bioelectrical impedance analysis to determine body composition.

### Equipment Requirements:

- Bioelectrical impedance analyser
- Stadiometer
- Digital Weighing Scales

### Athlete's Details:

The following details and anthropometric measures that should be taken from the athlete:

- Height
- Weight
- Current Training Schedule
- Creatine supplementation
- 24-hour diet record

### Standardisation

- Use the same analyser as previous measurements (where applicable).
- Where possible, measure in the morning prior to fluid intake.
- When morning measurements are not practical, fasting for 8 hours is recommended. 2-4 hour fasts may be acceptable for use in applied practice.
- Subject has voided (urinated) prior to the measurement being taken.
- Measurements taken on rest days, or 12 hours following last exercise bout.
- No alcohol consumption within 48 hours of testing.
- No diuretics within 7 days.
- During the same phase of the menstrual cycle.

### Test Procedure:

Test procedure will vary depending on the body position and the use of leg-to-leg, hand-to-hand or hand-to-foot analysers. The following guide is for the use of bioelectrical impedance analysis in the supine position. However, many of the principles apply to the use of bioelectrical impedance scales and handheld devices.

- Participants lie supine on a non-conductive surface in a room with normal ambient temperature.
- Measurements taken from the right-hand side of the body.

- Use alcohol wipes to clean the area of the skin where electrodes are placed.
- Place the proximal sensor electrodes on:
  - The dorsal surface of the wrist
  - The dorsal surface of the ankle
- Place the distal sensor electrodes on:
  - Base of the middle finger, just above knuckle
  - Just above the middle toe (placed sideways so connection point is facing the practitioner)
- Attach the leads to the appropriate electrodes (red leads to wrist and ankle, black leads to hand and foot).
- Ensure participants arms and legs are abducted 45°, no contact between thighs or between arms and trunk.
- Turn on the analyser, ensuring the participant remains still.
- Allow measurements to stabilise, read, and record.
- Remove and dispose of electrodes.

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