Clinical Oncology Society of Australia

HOW TO GUIDE

Bioelectrical Impedance Analysis (BIA)

BIA uses the resistance to a single frequency electrical current (impedance) to estimate fat-free mass.

Materials required:

- Bioelectrical impedance analysis scale or device (+ electrodes)
- Alcohol swabs
- Exam table

Procedure:

- Ask participant to remove all jewellery/watch.
- For accurate measurements, participants should refrain from moving or talking during the measurement.

Foot-to-foot

- Measure height and weight.
- Enter participants characteristics into the scale.
- Participant should stand on the scale with hands and feet on the corresponding electrode pads ensuring that arms are not in contact with the torso.

Hand-to-foot

- Measure height.
- Participant should lie on exam table with legs straight and arms by side but no body parts touching.
- Prepare skin to receive electrodes by cleaning it with an alcohol swab.
- Place electrodes on wrist, hand, ankle and foot (on same side of body) and connect clips to electrodes.
- Take resistance measurement (in Ohms) and plug into appropriate equation.

Example Cut Points:

	Males	Females
Appendicular skeletal muscle index (ASMI)* for BIA	< 7 kg/m2	< 5.7 kg/m2
Fat-free mass index (FFMI)	< 17 kg/m2	< 15 kg/m2
Appendicular lean mass adjusted for BMI* (ALM/BMI)	< 0.725	< 0.591

* These cut points are examples of currently published cut points; however, it is important to consider the cut point most appropriate for the population you are assessing.

Frequently asked questions:

Q: Do I need to ask participants to empty their bladder prior to taking the measurement?
A: No. The amount of fluid held in the bladder is relatively small and will have an insignificant effect on the measurement output.

Q: Should I take repeat measurements at the same time of day as previous measurements?
A: Yes, it is good practice where feasible to take repeated measurements at a similar time of day, particularly if you want to compare measurements over time.

Key references:

Sheean P et al., American Society for Parenteral and Enteral Nutrition Clinical Guidelines: The Validity of Body Composition Assessment in Clinical Populations. Journal of Parenteral and Enteral Nutrition 2020; 44(1): 12 – 43.

Price K, Earthman C. Update on body composition tools in clinical settings: computed tomography, ultrasound, and bioimpedance applications for assessment and monitoring. European Journal of Clinical Nutrition 2019; 73: 187 – 193.

Cederholm T, et al. GLIM criteria for the diagnosis of malnutrition - A consensus report from the global clinical nutrition community. Clin Nutr. 2019; 38(1): 1 - 9.