

H2O and your BIA

Bio Electrical Impedance

Bio electrical impedance uses ELECTRICITY that travels through your body at different frequencies to provide data called IMPEDANCE.

- The IMPEDANCE is used to calculate your actual body composition into relevant information.
- Depending on the machine, there are anywhere from 2-6 frequencies collecting data.
- Each frequency penetrates your cell wall differently, providing the most accurate data possible.
- SEGMENTAL bio impedance analyzers collect data from the different body segments, providing specific data on the mass in your arms, legs and trunk.
- Bio Electrical Impedance has a 3-5% accuracy depending on how well the subject prepares for the test.

Other Types of Body Composition

Bio Electrical Impedance is by far the most accurate and cost effective way to get a body composition reading.

- DEXA (Dual-energy X-ray absorptiometry) uses X-ray (radiation). It is very accurate, but very expensive (\$100k+). It also does not measure water mass and has a large footprint.
- BOD POD uses pressure (air displacement) and is expensive (\$50k +). While accurate, it has a large footprint. It is quickly becoming considered outdated technology.
- HYDROSTATIC WEIGHING uses water displacement. Accuracy is highly dependent on how much air the subject can push out of their lungs. It also requires a pool in addition to the hydrostatic weighing equipment.

How H2O Impacts Results

The BIA results are ALWAYS accurate. Because most of your body is water, small changes in water can make the results confusing.

- Testing NO MORE THAN ONCE A MONTH allows for a more relevant COMPARISON because your body water can swing up to 7 pounds in one day-- based on hormones, diet, exercise and other factors.
- The weight of your body water is included in your LEAN TISSUE or FAT FREE MASS (FFM). It is then extrapolated into body water alone and further into extra cellular water (water outside the cells) and intra cellular water (water inside the cells). The balance of extra/intra cellular water is important for good health.
- If you have, for example, 3 extra pounds of water on day one vs. day two, than your LEAN TISSUE or FFM increases by 3 pounds. However you have the SAME amount of fat. Since your LEAN/FFM has increased but your BODY FAT has stayed the same, your percentage body fat will go down. This is because you have more TOTAL WEIGHT as the denominator.

How Do We Decrease This Variable

Lean Tissue/FFM can change from day-to-day due to fluctuations in your body water, but body fat only changes with the actual loss of fat, which only comes from lifestyle changes like diet and exercise.

- The best way to make sure your results are a VALID COMPARISON is to do BIA tests no more than once a month.
- Make sure the subject has properly prepared for the test using the recommended protocol.
- For women, test at the same time in the menstrual cycle.
- REMEMBER: Each test is correct; the COMPARISON may be invalid if you are measuring change in body fat and not enough time has passed to allow for body fat to change.

When Does A BIA Provide Useful Data Otherwise?

It is important for endurance athletes to monitor body water.

- Large fluctuations in body water and an imbalance in extra to intracellular water can indicate dehydration before any symptoms appear.
- Measure no more than twice a week ONLY for the purpose of monitoring water. NOT FOR FAT/LEAN TISSUE COMPARISON.