Science in body composition

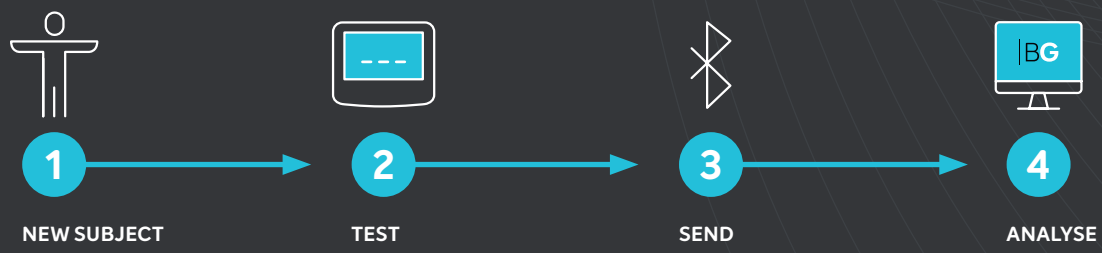
AKERN

BIA101 | BIVA PRO

Double operating modes

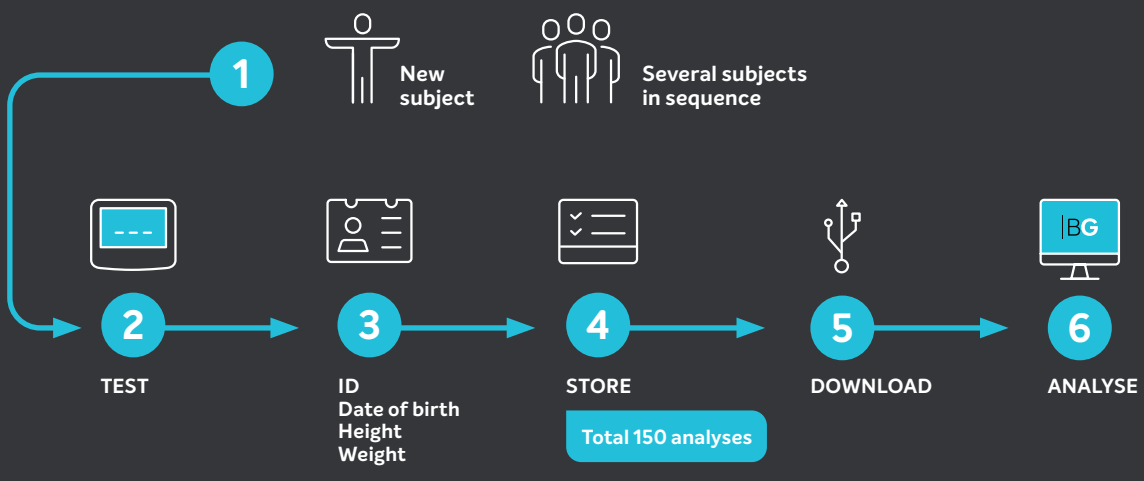
BIA 101 BIVA PRO is designed to ease data collection in different settings.

STUDIO MODE



FIELD MODE

- On-board patient record
- up to 150-analysis database storage
- Swift, secure data import to PC via BIVA PRO MANAGER



Total Body and Regional analysis

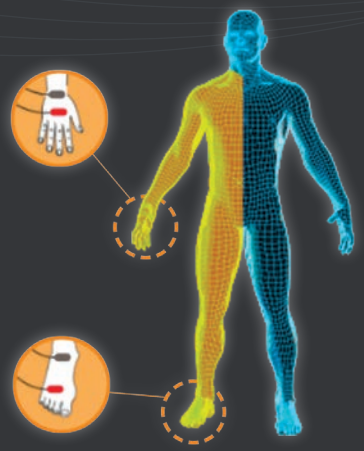
BIA 101 BIVA PRO is a **scalable** system able to perform total body and single anatomical regions analyses.

Total body | BIA

REAL TIME

TOTAL BODY ANALYSIS

Real-Time measurement of Rz, Xc and PhA parameters with 4-pole technique.



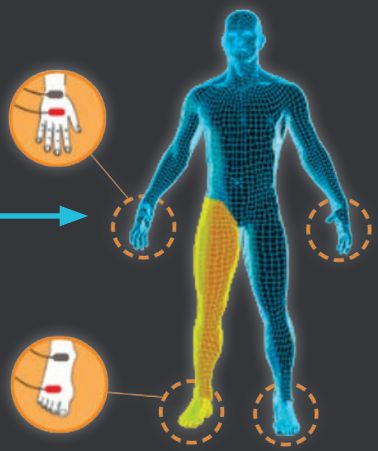
Regional | BIA

1 MIN

REGIONAL ANALYSIS

10 body regions measurements of Rz, Xc and PhA using 8-pole procedure.

Upper right limb
Upper left limb
Right torso
Left torso
Lower right limb
Lower left limb
Upper body
Lower body
Right body
Left body

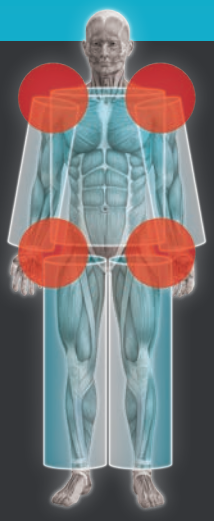


Regional | BIA

The evolution from a geometrical to an anatomical model.

More accurate measurements

Bioimpedance results reliability stricIty depends on the type of electrical model adopted. The new **REGIONAL BIA** measurement model leaves geometrical assumptions behind to follow the **real anatomical path** of the electrical current, providing **more sensitive, more accurate measurements for every region analysed.**



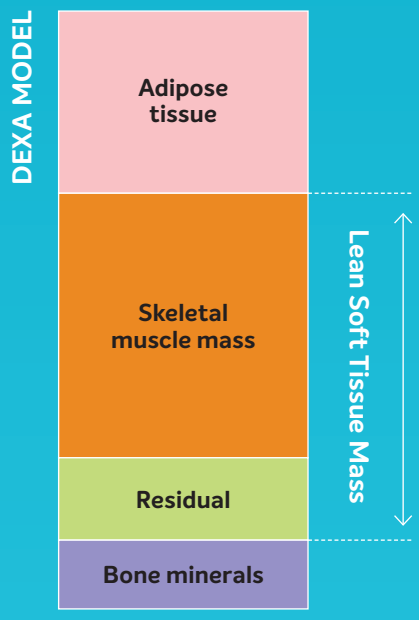
SEGMENTAL BIA

The **Segmental BIA** model assumes that the body is divided into 5 cylinders.

Joint regions between limbs and torso and specific resistivity of different muscle regions are ignored by this geometric approach.

REGIONAL BIA

The new Regional BIA model follows the real distribution of the current through the body and detect 10 different muscular regions defined on the basis of the anatomical and morpho functional characteristics of the tissues.



For better results

Lean Soft Tissue is the largest constituent of body mass free from fat and bone minerals that includes muscles and other components such as skin, tendons and connective tissues.

The new **REGIONAL BIA** model validated vs **DEXA** provides a precise estimate of **Lean Soft Tissue (LST)** and improves minimal detectable changes.

BIA101 | BIVA PRO + | BODYGRAM DASHBOARD

Configurations available

The most advanced and complete body composition analysis system.

- **BIAVECTOR™** nomogram
- **HYDRAGRAM™** and **NUTRIGRAM™** scale for assessing hydration and nutrition status
- Indices for screening and diagnosis of malnutrition and sarcopenia
- Anthropometric assessment
- Analytical assessment of energy expenditure

BIA101 | BIVA PRO

Fields of application

CLINICAL NUTRITION

Nutrigram® is a new prognostic parameter for identifying cancer patients at nutritional risk, who require early nutritional support.

Validation of a new prognostic body composition parameter in cancer patients. Cereda, Emanuele, et al., *Clinical Nutrition* (2020).

CARDIOLOGY

Use of the **HYDRAGRAM™** scale in association with BNP and SBP is a new criterion for risk stratification in acute heart failure patients.

Multiparametric approach to congestion for predicting long-term survival in heart failure. Massari F, et al., *J Cardiol* (2019).

SPORT and FITNESS

BIVA patterns are associated with athletes somatotype and and provides information on both body composition and training adaptations that occurs during competitive season..

Somatotype and Bioimpedance Vector Analysis: A New Target Zone for Male Athletes. Campa, Francesco, et al., *Sustainability* (2020).

PAEDIATRICS

90% of studies conducted on the paediatric and adolescent population aged 0-17 refer to the BIA 101 sensor line.

Critical factors and their impact on bioelectrical impedance analysis in children: a review. Brantlov, Steven, et al., *Journal of medical engineering & technology* (2017).

PREGNANCY

Bioelectrical impedance is a fast, simple, noninvasive way to assess the TBW content during pregnancy. Bioimpedance helps to identify early in gestation patients at risk of developing different clinical phenotypes of hypertensive disease of pregnancy and SGA fetuses.

Longitudinal changes and correlations of bioimpedance and anthropometric measurements in pregnancy: Simple possible bed-side tools to assess pregnancy evolution. Piuri, Gabriele, et al., *The Journal of Maternal-Fetal & Neonatal Medicine* (2017).

40 YEARS 1980 • 2020

Regional | BIA

GERIATRIC SCREENING AND PREVENTIVE CARE

Regional muscle mass assessment minimizes age-related muscle loss thanks to the development of preventive and rehabilitation strategies.

Validation of bioelectrical impedance analysis for estimating limb lean mass in free-living Caucasian elderly people. De Rui, Marina, et al., *Clinical Nutrition* (2017).

LYMPHOEDEMA

Single-limb BIA analysis is a simple method of assessing the efficacy of lymph drainage therapy.

Role of Bioelectrical Impedance Analysis in the Evaluation of Patients with Upper Limb Lymphedema Merli, Piera, et al., *Lymphatic Research and Biology* (2020).

REHABILITATION

Single-region BIA analysis is a practical method for in-the-field assessment of muscle injuries and for monitoring during functional recovery programmes.

Localized bioimpedance to assess muscle injury, L. Nescolarde et al., *Physiological Measurement* (2015)

Science in body composition

AKERN

BIA101 | BIVA PRO

Technical specifications

DEVICE CLASSIFICATION	Class IIa Medical Device – 93/42/EEC
MEASUREMENTS	**Total Body BIA Analysis:** Measurement of Total Body Rz, Xc and PhA with 4-pole technique. **Regional BIA Analysis** 10 body regions measurements of Rz, Xc and PhA using 8-pole technique.
DISPLAY	5-inch capacitive touch screen
BATTERY CHARGE DURATION	4 hours of continuous use, real-time display of battery charge and recharge status
DIMENSIONS	600 grams, dimensions 20.5 x 15 x 4 cm
MEASURING CURRENT	250 μA
FREQUENCY	50 kHz ±1%, can be used with pace-makers and during pregnancy
RESOLUTION AND ACCURACY	RESISTANCE (Rz): Resolution 0.1 Ohm – Accuracy 1% REACTANCE (Xc): Resolution 0.1 Ohm – Accuracy 1%
DATA TRANSMISSION TO THE PC	Bluetooth 4.0 communication protocol – USB
SYSTEM ALERTS	Infographics and error codes activated automatically when necessary
AUTOTEST	Performed at each power-up for: Sensor calibration, Battery status, Internal functions.
BIOELECTRIC DATA QUALITY	Signal Quality Manager (SQM). Real time check on the quality of measured bioelectrical data according to physiological acceptability ranges.
ZAGE-RANGE	From paediatric to elderly
DATABASE	Up to 150 analysis records
SOFTWARE	BODYGRAM™ dashboard for Total BIA analyses Regional APP™ for Regional BIA analyses

Certifications

The entire **AKERN** solution is compliant and certified under Medical Devices Directive 93/42/EEC and is produced in accordance with the requirements of the ISO 13485 quality system standard for medical device producers.

CE 1370 BIA101 | BIVA PRO — **CE Medical Device CLASS IIA**

| BODYGRAM DASHBOARD — **CE Medical Device CLASS IA**

Safety

Thanks to **specific validation studies,** the **AKERN** technology is able to perform body composition analysis safely on any category of subject.

- **PACEMAKER CARRIERS**
- **PREGNANT WOMEN**
- **CHILDREN**
- **METAL PROSTHESES CARRIERS**