Professional body composition and nutrition analysis:

**BODYSTAT® I500MDD**

Touch Screen

THE SCIENCE BEHIND CLINICAL BODY ASSESSMENT

www.bodystat.com
The importance of weight management has become increasingly topical over recent years. Obesity has been linked to the following diseases:

- Coronary heart disease
- Stroke
- High blood pressure
- Type 2 diabetes
- Cancers, such as endometrial, breast, and colon cancer
- High total cholesterol or high levels of triglycerides
- Liver and gallbladder disease
- Hypertension and respiratory problems
- Degeneration of cartilage and underlying bone within a joint (osteoarthritis)
- Reproductive health complications such as infertility
- Mental health conditions.

The Bodystat 1500MDD offers accurate body composition assessment, early cardiovascular risk detection, as well as being a perfect weight management tool for fitness & health professionals. The Bodystat range of Bio-Impedance Analysis (BIA) devices has been used in many medical research studies and proven to provide excellent levels of accuracy for ongoing health management.

The 1500MDD also boasts new powerful software with upgraded functionality and new early detection tools, covering everything from core cellular health to underlying disease and muscle wastage. Simple to use, the 1500MDD has been created to complement the work of the weight loss and weight management professional.
EARLY DETECTION AND PREVENTION

Although the Bodystat 1500MDD is not a diagnostic device, it does provide early detection of cellular disease or illness within the body. As well as providing necessary information on body composition, the 1500MDD also shows a ‘Wellness Marker™’ or impedance ratio, demonstrating a general status in health:

+ Early detection of cellular health issues
+ Detection of potential underlying disease
+ Detection of muscle wasting
+ Changes in health status
+ Malnutrition, including the clinically obese.

KNOWLEDGE IS POWER

With knowledge comes power. For your patients or clients, knowledge also means the power to inspire change, and that can transform lives – with obvious referral benefits to the health professional and organisation.

The Bodystat 1500MDD gives you increased knowledge through the measurement of:

+ Fat weight
+ Fat-free mass *
+ Total weight ranges **
+ Total body water
+ Dry lean weight **
+ Body mass index
+ Body fat mass index (BFMI)
+ Fat-free mass index (FFMI)
+ Basal metabolic rate
+ Extracellular water
+ Intracellular water
+ Impedance raw data
+ Wellness Marker™
+ Daily kcalorie requirements
+ Waist / hip ratio
+ Resistance
+ Reactance
+ Phase Angle *.

*Directly measured & unique to Bodystat
**Methodolgy is unique to Bodystat
The goal is to foster improvements in global health by using scientific advances for the prevention, early detection and treatment of disease. Only 5% of medical people pay attention to early detection. If you could increase that 5% to 30%, it would extend lives, lower costs and do all sorts of things." (Financial Times, Wealth Quarterly)

The objective of Bodystat's unique Wellness Marker™ is to provide health professionals with a tool for early detection of cellular change before it becomes clinically obvious. By combining the information obtained from the measurement of body fat, fat-free mass and the Wellness Marker, even malnourished obese subjects may be identified.

There is always a danger that high levels of body fat may obscure an underlying serious illness developing, such as cancer or other wasting diseases. By monitoring an individual's unique Wellness Marker it may be possible to detect the advent of a potentially serious medical condition.

Healthy individuals with good cellular status tend to have a lower Wellness Marker while the unhealthy have higher values. The lower the marker, the healthier and more hydrated the body cells, the higher the marker, the less healthy.

Bodystat's unique Wellness Marker, measuring at two frequencies is specifically designed to quickly and non-invasively assess overall cellular health status and the earliest signs of cellular malfunction.

### Phase Angle

Phase Angle (PA) is a direct measurement, (not a calculation using equations) of your cell membrane. It is currently used in hospitals to monitor nutritional assessment; however this measurement has also found its way into the fitness industry with its statistical correlation with muscle strength (lean muscle mass).

Measuring a person's PA is simple, quick and non-invasive, much like measuring body composition.

Recent research has led PA to be accepted as a global health marker. PA provides a quantitative value to establish a base line & track change over time to develop trends of it’s direction of measurement.

A lowering of PA reflects a deterioration of health, whereas an increased PA indicates an improvement of health, often related to an increase in lean mass muscle through strength training, eating healthily or general fitness and wellness.
ADVANCED NUTRITIONAL ANALYSIS

Bioelectrical Impedance Analysis (BIA) is becoming a preferred method to establish and monitor malnutrition. Many research papers have examined the relationship between Phase Angle and malnutrition and have found a correlation between low Phase Angle and higher nutritional risk. Population groups used in both research and clinical practice include nephrology, HIV, oncology and surgical patients.

Alternative methods, such as blood tests, arm circumferences, and skin-fold tests are time consuming, require training and may be affected by other nutritional changes. Traditional methods may also miss subtle changes in body cell mass (intracellular water and metabolic tissue). Malnutrition is characterised by changes in the integrity of the cellular membrane, marked by fluid shifts. Study of Phase Angle, as a reflection of water distribution between ICW/ECW water is an easy, quick, non-invasive way to ascertain nutritional status.

CLINICAL PRACTICE APPLICATIONS

A low PA is indicative of diminished cellular integrity and thus a reduced survival time. Equally, a higher PA suggests larger quantities of intact cell membranes and thriving health.

The PA reflects the relative contribution of body fluid (resistance) and cellular membrane integrity (reactance). Malnutrition reduces cellular membrane mass and integrity and promotes shifts in fluid balance. As a consequence of these changes the PA decreases. Conversely, a higher PA implies larger body cell mass and preserved membrane integrity.

The greater the cell’s capacitance, the greater the difference in phase shift between voltage and the current. Consequently the higher the PA.

Refer to Articles section of our website for supportive scientific publications.

PHASE ANGLE

+ DIABETICS – Overweight and obesity are associated with the development of type 2 diabetes. Thus, it is important for clinicians to accurately measure and monitor the body composition of at-risk individuals and patients with diabetes. Stolarczyk, Lisa M et al. (September 1 1999) “Assessing body composition of adults with diabetes” Diabetes Technology & Therapeutics Vol 30: 289-296


+ HIV/AIDS – Body composition testing can be used to monitor lipodystrophy and wasting, two problems associated with HIV. Loss of BCM (5% loss within 6 months) is a significant contributor to the morbidity and mortality associated with wasting diseases. Cichock, M (2007) American Heart Association


+ OBESITY – Severe obesity is accompanied by large increases in fat-mass and alterations in the composition of fat-free mass, in particular total body water and its extra-cellular compartment. Das SK. (2005) Current Opinion in Clinical Nutrition and Metabolic Care Vol 8 No.6: 602-606


Further research publications are available from our website with continuous updates.
**MEASUREMENT Technology**

**Bio-Impedence Analysis (BIA)**

**Impedance Measuring Range**

20 - 1300 ohms

**Accuracy**

- Impedance 2-3 Ω
- Resistance (50 kHz): +/- 2 Ω
- Reactance (50 kHz): +/- 1 Ω
- Phase Angle (50 kHz): +/- 0.2º

**Test Current**

620 Micro-Amps RMS (Root Mean Square)

**Frequencies**

5 & 50 (KiloHertz)

**Calibration**

A calibrator is supplied for independent verification from time to time.

**Configuration**

2 LEMO lead wires (removable)

**Computation Time**

3 seconds

**PC Communication**

USB interface

**GENERAL**

**Operating Temperature**

+ 5 ºC to + 40 ºC

**Storage Temperature**

0 ºC to + 60 ºC

**Relative Humidity**

70% less up to +60 ºC non-condensing. It should not be used in an area where condensation could form on the inside of the unit housing.

**Atmospheric Pressure**

860 hPa to 1060 hPa

**Internal Power Source**

Duracell MN1500 alkaline batteries, 6 x AA (LR6) 1.5v non-rechargeable

**Dimensions**

241mm L x 155mm W x 30mm H (5” Colour Touch Screen)

**Weight**

Unit weight - 410 grams

**Low Battery**

A battery power bar can be seen in the top right corner of the display. If the unit has been switched ON and no data has been entered for 2 minutes, an alarm signal sounds to warn that the unit is still on and the battery is in use. Automatic shut off if left unattended for 3 minutes.

**Service**

There are no servicable parts other than the need for periodic battery replacement.

**Quality Standards**

Manufactured to strict ISO 13485:2003 quality standards. Fully accredited by the Medical Devices Directive (MDD) with its CE0120 marking and for EN60601, also FDA cleared.

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**SPECIFICATION**

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**BODY MANAGER PRO SOFTWARE**

The included Body Manager Pro software is ideal for use when subsequent repeat tests are performed in order to track an individual's progress. The software includes four main features:

- **Body Composition** - Providing detailed analysis of the whole body. These reports comprise of the Body Composition Professional and Simplified Reports.
- **Trends** - This tracks the results over a period of time to assess change and progress.
- **Health Report** - Based on the Framingham Study, this gives a general health report including smoking, diabetes, blood pressure and Cholesterol.
- **Weight Loss Report** - this unique programme enables a selection of varying intensity exercises and their duration, calculating the calories burned and the number of weeks required to achieve target weight.

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**BODYSTAT® PRINTER**

- Portable thermal printer fitted with blue-tooth offering clear, immediate print out of results at point of measurement
- battery operated and light weight

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The Bodystat®1500MDD Touch screen is not a Diagnostic Device.
ABOUT BODYSTAT®

Bodystat Ltd, based on the Isle of Man (British Isles), has been established since 1990 and is a registered ISO 13485:2003 company. We specialise solely in BIA Technology and are dedicated to expanding the knowledge of this technology to improve health and well-being. We have an extensive range of research papers dedicated solely as non-commercial, free materials for educators.

Our devices are manufactured in the U.K. Made to the highest specifications and use only the best electrical components. The high quality of our devices ensures accurate results that are both reproducible and reliable.

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See the validation papers at: www.bodystat.com/articles