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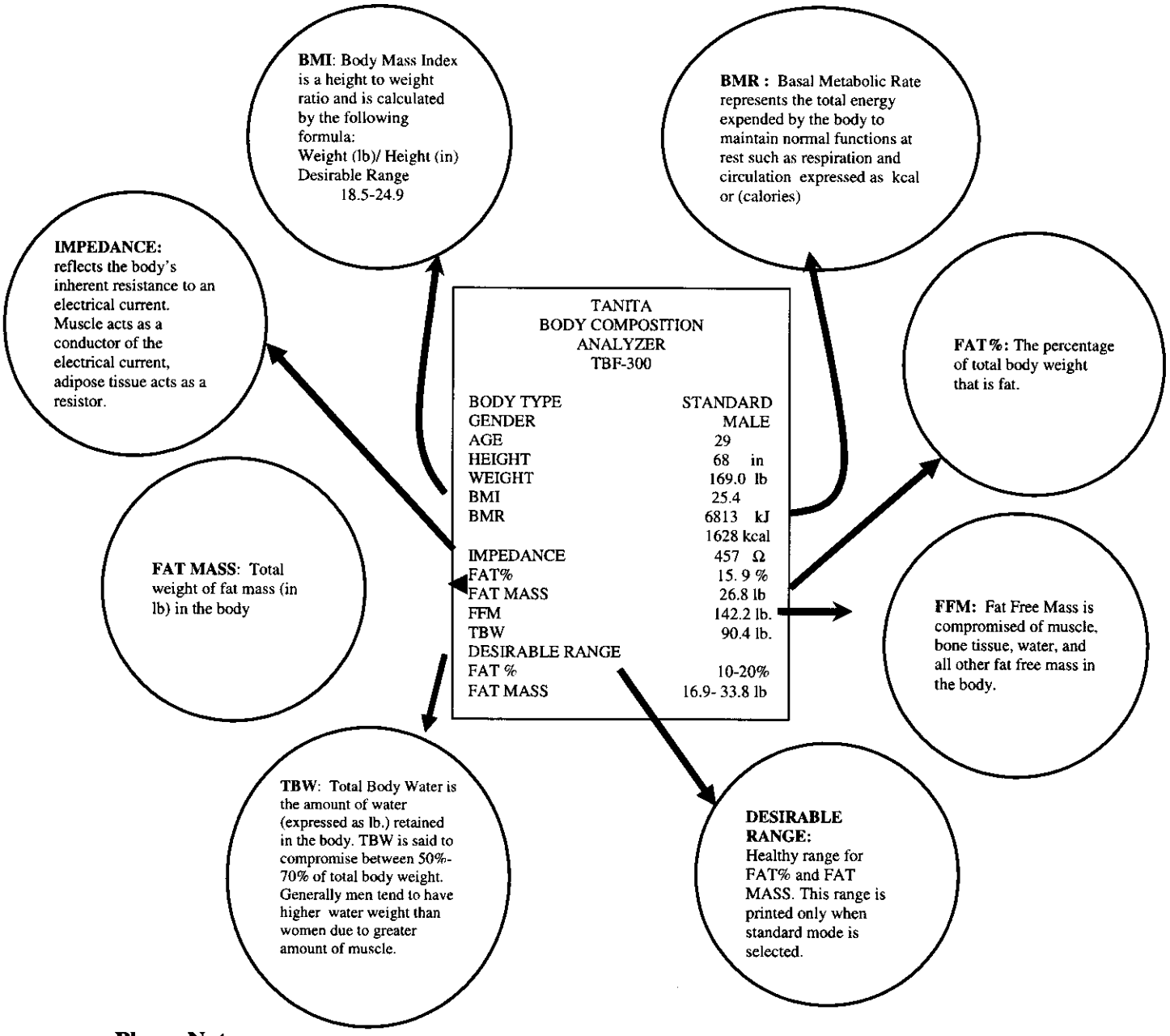
Tanita Body Composition Analysis
Explanation of Print Out



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IMAGING TECHNOLOGY NEWS

CASE STUDY | AUGUST 19, 2007

Body Composition Analyzer Offers Quick, Accurate Monitoring of Body Fat Levels

Bio-electrical impedance analysis enables accuracy.

Everyone needs a certain amount of body fat to stay healthy. Too little or too much can cause serious health problems. But most patients who put themselves on a diet are seldom aware that part of their weight loss could signal a loss of muscle tissue rather than body fat.

By being able to accurately measure the percentage of body fat in a patient, the clinician can design an appropriate diet and exercise program that leads to the desired results, says Alan Pressman, Ph.D., a New York State certified nutritionist and dietitian whose practice, Gramercy Health Associates, is located in New York City. "It doesn't matter what you weigh," he explained. "It matters what your weight is composed of: How much fat is in your body. How much water is in your body. We want to see a consistent decrease in fat."

For the past eight years Dr. Pressman has been monitoring his patients' body fat with the Tanita TBF-300A Body Composition Analyzer/Scale.

In the past, Dr. Pressman relied on hand-held calipers to gauge a patient's skinfold thickness. But results were often inconsistent. After purchasing the TBF-300A, he discovered that all of his measurements were not only consistent, but that he was measuring exactly what he had observed in his patients. Plus, the device allowed his patients to better understand their own body composition so that they were not as concerned about losing weight as they were about losing body fat. "It's a great tool to show progress or lack of progress," he said. "Now we can regulate how much they're eating and how much they're exercising."

The accuracy of the TBF-300A is largely due to its method of measurement which is bio-electrical impedance analysis (BIA). Unlike skinfold measurements or underwater weighing, BIA uses a small electrical current (50kHz, 500Ma) that passes through the body and is carried by water and fluids. Since impedance is greater in fat tissue, which contains only 10-20 percent water — as compared to fat-free mass, which contains 70-75 percent water — it's easy to calculate the percentage of body fat, fat-free mass and hydration levels.

The system uses two footpad electrodes that are incorporated within the platform of an electronic scale. Built-in software then uses the measured impedance as well as the patient's gender, height, weight, age and fitness level to calculate the body fat percentage.

Although conventional BIA uses underwater weighing as its standard of reference, the Tanita BIA uses dual energy X-ray absorptiometry (DEXA), which, because it uses a whole body scan, is quickly becoming the new gold standard.

Results from the TBF-300A can be obtained within 30 seconds and are digitally displayed on a small monitor. The built-in printer also allows the clinician to share the information with the patient and to facilitate the design
of an appropriate diet/exercise program based on that patient's desirable range and target body fat.

As a portable unit, the TBF-300A weighs only 175 pounds, but has a maximum capacity of 440 pounds.

While the TBF-300A costs around $2,000, Dr. Pressman said, "It paid for itself in a month."

Q: How does the Tanita Body Fat Monitor determine my body fat?
A: Tanita uses it's own proprietary method of Bioelectrical Impedance Analysis (BIA).

Q: Why is it important to monitor body fat percentage?
A: Measuring weight alone is not a completely accurate assessment of health or fitness because it doesn't distinguish pounds that come from fat and pounds that come from lean muscle mass. Everyone needs some body fat, but too much fat results in obesity--one of the most important public health issues in the United States. According to new federal guidelines, more than half of the US adult population are now overweight or obese, and one out of four children and adolescents is too fat.

Q: Are there any illnesses directly linked to obesity?
A: Obesity is directly linked with Diabetes Type II and hypertension, and is a contributing risk factor for many other conditions including heart disease, sleep disorders, arthritis, gall bladder disease, stroke, and several forms of cancer. Awareness and monitoring of body fat percentage can be a motivational tool for a fitness or weight management program. Additionally, with any chronic degenerative disease, monitoring body fat and lean body mass is critical to evaluation, treatment, and management of the condition. This information is helpful in determining a suitable exercise and nutritional program on an individual basis.

Q: Is it possible to have too little body fat?
A: Yes. Both extremes--too much or too little body fat--put an individual at risk for serious medical and/or psychological conditions. Having a very low body fat percentage, particularly for women, can result in musculoskeletal problems and osteoporosis. And it can upset the hormonal balance causing loss of menstruation. Striving for extremely low body fat can also result in severe eating disorders, such as anorexia nervosa, bulimia, and binge-eating which have significant health implications.

Q: How does the Tanita's BIA compare with other methods in terms of accuracy, repeatability, cost, convenience, and length of procedure?
A: There are many methods of estimating body fat. The following is a summary of the most common ones.

DEXA (Dual Energy X-ray Absorptiometry)
Today, this method is considered a gold standard because of its reliability, precision, and the fact that it is based on three body components (fat, muscle, bone) rather than two (fat and muscle) as in most other methods including hydrostatic weighing. It allows fat distribution throughout the entire body to be read in a single scan. The equipment used is very expensive and a person must lie perfectly still for 10-20 minutes while the scan is taken. DEXA is found mainly in research facilities.

Hydrostatic Weighing
Done correctly, this method is also quite accurate and considered a gold standard. However, the test is somewhat subjective because it relies upon the subject's ability to expel all oxygen from their lungs while submerged in a tank of water. Oxygen remaining in the lungs will skew the results. In clinical settings, this procedure is repeated a number of times, and an average is taken. The "tank" is expensive and the inconvenience to the user is considerable. Because of the cost, lengthy testing process, and physical burden to the subject, this method is more suitable for research studies.

Conventional BIA
Bioelectrical impedance analysis uses a very small electrical signal to measure body impedance. The signal is conducted through the water contained in the body. Lean muscle has much more water than fat tissue and allows the signal to pass easily. Fat causes impedance or resistance to the signal. Conventional Bioelectrical Impedance Analysis methods are accurate, though not as convenient as the Tanita BIA method, and may be somewhat subjective based on the placement of electrodes. The user must be in a horizontal position while electrodes and conductive jelly are placed on a wrist and ankle. This procedure is usually performed in a physician's office or clinic. Most conventional BIA manufacturers use hydrostatic weighing as the reference method.

Tanita BIA
Tanita's leg-to-leg version of BIA produces very accurate results that are highly correlated with both DEXA (Tanita's reference method) and hydrostatic weighing. Measurements are very repeatable when tests are performed under consistent conditions. The equipment is not expensive, making Tanita a professionally-

accepted method that can be adapted easily for home use. There is no physical imposition to the user; no need for a trained technician to operate the equipment; and the entire procedure takes less than one minute.

Calipers
Skinfold measurements taken by calipers are easy to do, inexpensive, and the method is portable. However, results can be very subjective depending on the skill of the technician and the site(s) measured. The quality of the calipers is also a factor. Inexpensive models sold for home use are usually less accurate than those used by an accredited technician. Additionally, the more obese the subject, the more difficult to "pinch" the skin correctly. Many people find calipers to be uncomfortable and invasive.

NIR
(Near Infra-Red) A fiber optic probe measures tissue composition at various sites on the body. This method has become popular because it is simple, fast, non-invasive, and the equipment is relatively inexpensive. However, studies have produced mixed results, and a high degree of error has occurred with very lean and very obese people. Numerous sources report that more research is needed to substantiate this method.More in-depth comparisons can be found in our recent publication, "Understanding Body Fat Analysis."

Q: How accurate and reliable are Tanita's Body Fat Monitor/Scales?
A: Independent research at several major universities (including Columbia University in New York City) has confirmed that in clinical settings, the Tanita Body Fat Monitor is accurate within +/- 5 percentage of the institutional standard of body composition analysis--Dual Energy X-ray Absorptiometry (DEXA). It should be made clear that there is only one method of calculating body composition that is close to 100% accurate, and that is an autopsy. Tanita believes its method to be the most convenient and accessible to accurately predict body composition. Tanita's Body Fat Monitor Series results are repeatable to within +/- 1 percent variation when used under consistent conditions.

Q: Are there optimal conditions for determining body fat percentage using Tanita's products?
A: Yes, there are:

- Select a consistent time of day, and stick to it.
- With an empty bladder
- When normally hydrated
- Unclean foot pads may interfere with conductivity.
- Nylons interfere with conductivity. If it is absolutely necessary to measure in nylons, use a drop of isopropyl (rubbing) alcohol on the foot pads to act as a conductor.
- Early morning is not recommended because the body is often dehydrated after a night's sleep. Once you have established your baseline, monitor body fat weekly. Checking body fat more frequently is not beneficial as changes occur slowly over time.

Things that can affect hydration include:

- strenuous exercise
- recent food intake
- diuretics such as caffeine, alcohol, certain medications

Q: Why does my body fat percent fluctuate?
A: The Tanita Body Fat Monitor/Scales use state of the art technology, BIA (Bioelectrical Impedance Analysis). This method of body fat analysis is very accurate and easy to use; however, changes in hydration levels can affect readings. If your body is dehydrated, you will likely experience a higher than normal reading. If you are over-hydrated, you could experience a slightly lower reading. To obtain the greatest accuracy and repeatability from our product, Tanita suggests the following protocol.

- Take readings at least 3 hours after rising, eating a large meal, or exercising.
- Take readings once a week at the same time of day under the same conditions. (Note: Taking readings more than once per week is not beneficial since body fat does not change from day to day.)
- Average your readings for the month.
- Compare averages from month to month.

By following this format, hydration fluctuations throughout the month will average out, and you will be able to better assess any real change in your body fat percentage over time.

Q: Why do Tanita Monitor/Scales have different modes? And what are they?
A: Please refer to the User Modes Explained page within this Website.

Q: Are there people for whom the monitor is not appropriate?
A: People with pacemakers are advised not to use the monitors. Although there are no known health risks, this is a precaution that is advocated by all manufacturers of BIA. Accuracy is an issue for certain categories of people, but the units may still be used to monitor trends and accurately show degree of change. They include:

- Pregnant women
- People who exceed the weight capacity of the scale (models vary) and/or exceed 75% body fat
- Professional athletes and bodybuilders.

Q: Is the Body Fat monitor safe to use for women who are pregnant?
A: There is no known health risks associated with pregnant woman using the Tanita Body Fat Monitor/Scales. Since research has not been done on this population extensively we advise women who are pregnant to use the Body Fat Monitors for weight purposes only. Since there are dynamic physiological changes that occur during pregnancy, a pregnant woman cannot expect an accurate body fat reading. Since obtaining an accurate reading during pregnancy is not possible, it would not be recommended to monitor your body fat until after delivery

Q: Is the Body Fat Monitor safe to use if you have a medical device or implant?
A: Persons with pacemakers or other electronic medical implants should not use the monitor. Persons with non-electronic medical implants may safely use the monitor. Any metallic implant in your body could affect the body fat reading, giving a slightly lower than normal reading. However, since the metal will continue to have the same affect on the reading each time you use the monitor; you can still use the monitor to successfully track the relative change in body fat over time.

Q: Why are your scales FDA cleared?
A: All bioelectric impedance analysis (BIA) scales sold by Tanita have been cleared by FDA for sale in the US. BIA scales are medical devices that are regulated by the United States Food, Drug and Cosmetic Act, Section 510(k). This includes review and clearing an application for a BIA scale prior to its sale to ensure the scale is safe and effective. The FDA also subjects Tanita to periodic inspections to make sure that we comply with their manufacturing regulations as well. Other scale manufacturers bypass this clearance process, Tanita does not compromise, your confidence is our priority.

Q: Why is there an "Athlete Mode"?
A: The Athlete mode was developed to provide a more accurate reading for athletic body types. Athletic body types are physiologically different than standard adult body types, due to muscle mass and hydration level differences. Athletes tend to have greater muscle mass and tend to be more dehydrated. These differences would skew the body fat reading high, when taken with the standard Adult mode.

- Tanita defines "athlete" as a person involved in intense physical activity for approximately 12 hours per week or more.
- Those who belong to a sport team or a sport organization with the aim of participation in competition, etc.
- Those who exercise to build up muscles like a bodybuilder
- Those who are professional athletes

Q: What conditions might cause skewed results or an "Error" reading in the display?
A: Hydration fluctuations which may result from alcohol or food consumption, sleep, intense exercise, medication or pre-menstruation.

- A very full bladder.
- Severe calluses on heels or soles of feet (about 1/400 people tested).
- Unclean foot pads may interfere with conductivity.
- Nylons interfere with conductivity. If it is absolutely necessary to measure in nylons, use a drop of isopropyl (rubbing) alcohol on the foot pads to act as a conductor.

Q: How long will this monitor/scale last me? Is there a warranty?
A: The product's length of durability, accuracy, and reliability is measured by the amount of times it is used, not calendar time. All of Tanita's consumer monitor/scales are extremely reliable, providing up to 10,000 uses or more. Warranty periods vary by product(refer to the warranty card that came with your product).

Q: What type of maintenance is necessary?
A: There is simply no maintenance other than the use of alcohol to wipe the foot pads clean and glass cleaner to keep them shiny-always apply to a cloth first and then to the product; avoid soaps.

Q: How will I know if my Tanita Monitor needs recalibrating?(Professional Monitor Only)
A: An "Error" or "Sub" code might appear on the readout; the digital display might not "zero out" after your last measurement; or the results might be erratic and non-repeatable. Call customer service at 1-847-640-9241

Q: What is the difference between UltimateScales™ and Body Fat Monitor/Scales?
A: Unlike Tanita's Body Fat Monitors, the new UltimateScales™ have no memory feature for storing personal data. Instead, users enter necessary information whenever they wish to use the scale as a body fat monitor. This takes less than 30 seconds, and makes an UltimateScale perfect for the person who wants to monitor occasionally.

Q: Why do "st-lb" or "kg" appear when taking a measurement?
A: The unit's "Weight Mode" has been set to measure your weight in units of stone-pounds or kilograms. Tanita's Body Fat Monitors and the UltimateScales can measure weight in three different modes: lb (pounds), kg (kilograms) or st-lb (British stone-pounds). Refer to your manual for instructions on changing the units.

Q: I can receive my weight and body fat % but I can't get any of the other readings on the Innerscan Body Composition Monitor.
A: Once you have obtained your weight and body fat% step off of the scale. After stepping off of the scale you can press any of the other buttons to see your readings. The trick is to be off of the scale before pressing the other buttons.

Q: How does age effect body fat percent?
A: Research has determined that as we age there is a tendency to increase body fat and decrease muscle mass. This is a natural progression unless you increase exercise as you age. The age equations now being utilized on the latest Tanita products are designed to provide greater accuracy in the estimation of body fat. Previous models did not have this data and therefore were not as accurate as the current models.

Q: What are the Body Fat ranges for children?
A:Appropriate body fat ranges for children under eighteen can be found on this chart.

Q: Are the Body Fat Monitors intended for Body Builders or professional athletes? Who is considered an athlete vs. standard adult?
A: If you are an adult who has approximately 12 hours of intense physical activity and have a resting heart rate of approximately 60 beats per minute or less, you probably need to use the Athlete Mode.
Tanita uses a mathematical formula to determine body fat percentage based upon these variables: height, weight, gender, age group and resistance (impedance). The Athlete Mode uses a mathematical formula that is different than that used in the Adult Mode. The Athlete Mode was designed through population studies of individuals meeting the above criteria.

At this time, populations of professional athletes and body builders have not been studied to establish a separate mode for this unique group. Professional athletes and body builders are advised that since the models have not been designed with them specifically in mind, they may obtain a higher than normal body fat reading. Despite this fact, many of these elite athletes have used the Tanita Body Fat Monitor/Scales successfully to gauge their progress of losing body fat. The great repeatability of the product enables one to establish a baseline and use the product for "trending purposes" to assess loss or gain in body fat over time.

Q: What is BMR & DCI?
A: Basal Metabolic Rate is the minimum level of energy need at rest to function effectively. A person with a high BMR can burn more calories at rest than a person with a low BMR. BMR is based on the level of muscle mass. Daily Caloric Intake is the amount of calories you can consume within 24 hours and still maintain your current weight. Our Ironman scales give the BMR feature and the Innerscan scales give DCI readings.

Q: Why do I get different readings when I change the gender or height information?
A: At this time, there is no absolute measurement of body fat other than an autopsy. Other body fat measurement methods (i.e. Calipers, Underwater Weighing, BIA, etc.) will indirectly measure body fat. In order to determine body fat, an estimate is made from known measurements. Tanita uses the variables: height, weight and impedance to determine body fat percentage. These variables are used in a highly researched, proprietary

formula to make the body fat assessment. If any of the variables are changed, the resulting body fat reading will also change. By artificially altering your height or weight, you will also alter the resulting reading. Because of the physiological differences between men and women, the monitors must be calibrated for men differently than women. Women will receive an incorrect low reading on the male mode and men will receive an incorrect high reading on the female mode. To obtain accurate readings, it is imperative that one use the proper gender mode. It is recommended that one monitor their body fat once a week, average the results for the month and then compare monthly averages to determine if there is a gain or loss of body fat over time. By eating right, exercising and monitoring your body fat, you are making the right steps for a healthier life.