If you’re serious about improving your health, fitness or physique, it’s best to have an accurate baseline with which to monitor your progress. A DEXA body composition assessment – along with advice from your personal trainer, dietitian or exercise physiologist – can provide you with the information you need to help you measure, manage and ultimately achieve your goals.

**WHAT IS BODY COMPOSITION?**

Body Composition refers primarily to the distribution of fat, muscle and bone, which are all important factors worth monitoring in order to track changes resulting from diet, exercise, medical conditions and/or medications. Monitoring your training progress by weighing yourself periodically provides feedback on how heavy you are, but offers no insight into changes in your body composition, that is changes in muscle and fat. In contrast, technologies are available to assess changes in body composition, that is changes in body fat and muscle mass – traits important to anyone who takes their health, fitness and performance seriously.

**WHAT IS DEXA?**

DEXA is an advanced technology originally used to assess bone health. In recent years it has become recognised as the preferred method for body composition assessment in research studies where changes in body fat and/or muscle mass are important.

**HOW DOES DEXA WORK?**

DEXA works by passing two (dual) very low dose x-ray beams at differing energy levels through the tissues of the body. Fat, muscle and bone each have different attenuating factors, i.e. different levels of absorption due to their unique densities. It is these attenuating factors that allow the DEXA to calculate relative masses of each tissue type. What’s unique about DEXA technology is that it not only provides detailed reports on whole body composition, but also specific regions of the body like arms and legs, something no other technology can provide.

A whole body composition scan performed by a Medilink DEXA provides feedback on a client’s body fat, muscle and bone mass. It also produces a detailed composition image to visualise subcutaneous and visceral fat within the body.
WHAT MEASUREMENTS DO I RECEIVE?  
WHAT DO THEY MEAN?

A Medilink DEXA scan will give you the following measurements, accurate to one tenth of a gram:

+ **BONE MINERAL DENSITY, MASS & AREA**
+ **MUSCLE - DENSITY, MASS & AREA**
+ **FAT - DENSITY, MASS & AREA**
+ **FAT %, LEAN % & BONE %**
+ **ANDROID/GYNOID RATIO**
+ **FAT MASS INDEX**
+ **ENERGY REQUIREMENTS (BASAL METABOLIC RATE)**

The coloured image (right) will give us a visual representation of the fat distribution with fatty areas shown in the greenish areas appearing more yellow where the fat holds more density. The blue areas represent lean tissue and appear darker where muscle is denser.

The patient’s bone, lean and fat attributes are where densities, weight and area can be monitored regionally.

The patient’s calculated weight and composition percentages will be shown at the base of the report.

HOW CAN THESE RESULTS BE USED?

A DEXA scan will give you a highly accurate baseline to help you achieve your goals. By knowing your body fat and lean tissue percentage, you can make lifestyle changes to improve your health and reduce your risk for various diseases.

The results of your scan, along with RMR and VO₂ testing, can also be used to recommend specific information on your ideal caloric intake and energy expenditure, helping you achieve your goals of fat loss or muscle gain quantitatively, virtually eliminating opinion based feedback.

By having your body composition monitored periodically, you will also be able to objectively track your progress towards goals. Quantifying these changes also helps with updating dietary and activity requirements. Feedback from DEXA scans can also be a powerful motivational tool for this purpose.
In simple terms, a Resting Metabolic Rate (RMR) Test determines the amount of energy (calories) your body is using at rest. This measurement is made by analysing the amount of oxygen your body uses and the amount of carbon dioxide your body produces. An accurate measure of RMR can help you eat the correct amount of calories to reach your health goals.

**WHY MEASURE YOUR RESTING METABOLIC RATE?**

Anyone undergoing fitness activities requires energy proportional to their activities and more importantly according to their goals.

Metabolic rates are commonly estimated from various equations which are well known amongst academics to overshoot and undershoot actual metabolic rates by approximately 200 calories either way. As the technology will measure both oxygen consumption and carbon dioxide disposal, we also have the ability to monitor each client’s percentage of carbohydrates and fat used via a parameter called the respiratory exchange ratio (RER).

By putting to use the same method used by hospitals and universities, having your metabolic rate measured directly via gas analysis technology is the best way to remove the guess work and give your body exactly what it needs rather than an estimation.

**HOW DOES RESTING METABOLIC RATE (RMR) TESTING WORK?**

Indirect calorimetry (a measurement of metabolic rate) is a technique that measures how much oxygen your body consumes. Because there is a relationship between how much oxygen you consume and the number of calories burnt, we can accurately determine your metabolic rate.

**+ INDIRECT CALORIMETRY RELIES ON THE FACT THAT BURNING ONE CALORIE REQUIRES 208.06 MILLILITERS OF OXYGEN.**

Our equipment precisely measures the volume of air you breath out and the difference in concentration of oxygen in the inspired and expired air. We also account for factors such as temperature, pressure, and humidity in order to get the most accurate results possible.
HOW DO I PREPARE FOR MY METABOLIC TEST?

From a 10 minute resting breath sample we are able to measure your body’s daily energy requirements. The test is a very simple process.

Please ensure you:

+ FAST FOR 4 HOURS AND AVOID EXERCISE BEFORE THE TEST
+ AVOID BEVERAGES WITH CAFFEINE OR OTHER STIMULANTS
+ AVOID DIETARY SUPPLEMENTS WHICH MIGHT INCREASE METABOLISM

WHAT DO THE RESULTS MEAN?

Once the test is complete, we can then apply them to your goal based eating plan. This will give a scientifically based prescription of your body’s energy requirements which can then be used to form a macro-nutrient ratio (distribution of Fat, Carbohydrates and Protein) that is suitable for your goals, whether they be to maintain, lose fat or build muscle.

The metabolic data can also be used alongside your DEXA results to form an even greater basis of dietary recommendation whilst accurately monitoring fat loss and muscle gain.

YOUR RESULTS CAN BE USED TO FORM A MACRO-NUTRIENT RATIO (DISTRIBUTION OF FAT, CARBOHYDRATES AND PROTEIN) SUITABLE FOR YOUR GOALS.
Getting your nutrition right is paramount for overall health and body composition goals. Food provides nutrients to keep your body functioning optimally. A healthy diet can reduce your risk of developing lifestyle-related diseases like type 2 diabetes, obesity, and heart disease or may also improve your performance if you are an athlete. Trying to build bigger muscles or drop a few kilos? No problem, we can develop a plan to suit you.

**WHO CAN BENEFIT FROM A NUTRITION CONSULTATION?**

We can help the recreational and professional athlete, who has the need to change body composition for performance. We also do pre-competition and race day eating. We provide a range of advice on supplementation and appropriate training loads for various sports including: triathlon, bodybuilding, body sculpting, dance, swimming, cycling, running and team sports.

We also treat people with a range of lifestyle-related chronic illnesses such as type 2 diabetes, heart disease, PCOS, cholesterol, IBS (irritable bowel syndrome), eating disorders and hypertension.

**WHAT DOES A NUTRITION CONSULTATION ENTAIL?**

Each nutrition consultation is performed in an interview style. You will be asked structured questions about your lifestyle, eating and activity patterns. This will help our nutritionist to give you the best-tailored, individual advice needed to accomplish your goals. You will receive feedback about areas of your diet that are sabotaging your efforts and how you can fix it.

All nutrition consultations are 30-60 minutes in length. Accountability and support is available via various online platforms. Our consultations address eating behaviours that trigger your eating patterns and emotional eating. We develop strategies and an easy to follow plan to overcome common physical and mental barriers.

You will receive detailed instructions on what to eat and a meal plan, including tips, tricks and targets to reach your goals. No quirky foods, unrealistic fad diets, or weird training programs, just things that can put into practice quickly, effectively and get great results.

**WHAT ARE THE BENEFITS OF SEEING A NUTRITIONIST?**

A nutritionist can help you sort out messy head syndrome. We take all that information and your goals and put it into simple terms that will get you to your goals. Having a plan and an accountability structure with a practitioner that is there to support you through the journey is the key to long-term success.
DEXA BONE MINERAL DENSITY SCAN

Bone density testing is a medical procedure used to determine bone density or strength. It can identify osteoporosis (when bones become less dense, lose strength and break more easily due to calcium loss) or osteopaenia, a milder form of bone loss. Dual energy x-ray absorptiometry (DEXA) is the most popular technique as it is fast and highly accurate.

WHY CHOOSE MEDILINK?

The Medilink MedixDR DEXA system produces the highest image resolution out of the four major brands. It has 256 detector elements, compared with Lunar with 64 and Hologic with 128. Medilink elements are also stacked, which allows multiple focal depths, meaning better sensitivity.

Higher resolution images increase the accuracy of compartmental differentiation and visual representation of adipose tissue. This is evident by the images produced by the Medilink Medix DR.

DEXA COMPARISONS

Some DEXA brands are prone to beam hardening, where the machine is unable to detect the smaller lower density fatty deposits within the higher density muscle/lean tissue*

Lower resolution scanners produce a simplified composition image, where entire regions are ‘painted’ with colours and fail to show any detail or fat deposits.


HOW DO YOU MEASURE BONE DENSITY?

A DEXA scan is the most widely accepted test for osteoporosis and osteopenia (bone thinning). Or, simply put, DEXA determines how rich your bones are in minerals such as calcium and phosphorus. The higher the mineral content, the denser and stronger your bones are, and less likely they are to break under normal daily circumstances.

HOW DO I GET A BONE DENSITY TEST?

Your general practitioner (or other medical practitioner) will review your risk factors for osteoporosis such as your family history, vitamin D and calcium levels, medical history (i.e., meds, hormone levels, or other conditions that might lower bone strength), and lifestyle factors (i.e., smoking, physical inactivity). If you’re at risk, then your GP may refer you for a bone density test.
WHAT DOES THE BONE DENSITY TEST INVOLVE?
During a bone density test, you will be asked to lie on your back on the DEXA scanner. The technician will position your body for scans on your hip (femoral neck) and lower back (lumbar region). If there are any medical reasons for which a reliable scan cannot be taken at the hip and/or lower back, then a wrist scan will be performed. It is a relatively quick procedure and should be complete within 10 to 15 minutes. Your results will be read by a medical practitioner and a report sent to your doctor.

WHAT DO MY BONE DENSITY TEST RESULTS MEAN?
The DEXA results you receive will be expressed as a T-score and fall into one of three classifications:

+ **NORMAL** T-SCORE = 1 TO -1
  Continue to eat a healthy diet rich in calcium and vitamin D and maintain regular exercise.

+ **LOW BONE DENSITY** T-SCORE = -1 TO -2.5
  At risk for the development of osteoporosis with a low to medium fracture risk. You should work with your doctor on strategies to minimise further reductions in bone density.

+ **OSTEOPOROSIS** T-SCORE = -2.5
  Your fracture risk is high. You should work closely with your doctor to determine which treatment options are best for you.

IS A BONE DENSITY TEST COVERED BY MEDICARE?
If you meet certain criteria, your bone density test might be covered by Medicare. Alternatively, your private health fund might provide reimbursement depending on your individual level of coverage. If no coverage is available, you may pay for your scan out of pocket.

Medicare rebates may apply for those:

+ PREVIOUSLY DIAGNOSED WITH OSTEOPOROSIS
+ AGED 70 YEARS OR OVER
+ WITH ONE OR MORE PREVIOUS FRACTURES
+ TAKING CORTICOSTEROIDS (COMMON FOR ASTHMA)
+ WOMEN WITH EARLY MENOPAUSE
+ MEN WITH LOW TESTOSTERONE
+ INDIVIDUALS WITH COELIAC DISEASE, THYROID OR PARATHYROID CONDITIONS, RHEUMATOID ARTHRITIS, LIVER OR KIDNEY DISEASE)