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HOW DEXA CAN HELP YOU SMASH CLIENT GOALS

By accurately measuring muscle, fat and bone status, the new generation of affordable DEXA scanning technology can help you train clients more efficiently.

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You can't always eye someone up and tell how much fat and muscle they have. There are some people who look 'fat' but actually carry little fat and a lot of muscle. Others look average or 'normal' but, in fact, carry little muscle and a lot of fat – what is sometimes termed 'skinny fat'.

As a fitness professional, you're paid by your clients to maximise fat loss and muscle gain. You therefore need to train your clients scientifically, and a big part of that is making sure you're getting high quality body composition information that allows you to effectively track and monitor their progress. After all, you can't manage what you can't measure. But what is the best method for assessing body composition?

Enter the DEXA scan, the current champion of body composition assessment.

What is a DEXA scan?

DEXA, short for dual energy x-ray absorptiometry, has been used in clinical settings for decades, but newer versions of the technology have made it quick, easy, cost effective, and accessible to the masses.

A DEXA scan eliminates the guesswork and provides you with a comprehensive breakdown of body composition. As the name implies, two different energy levels of x-ray pass through the body and measure how much fat, muscle, and bone you have. It also gives you specific details about where the fat and muscle are situated on your body.

How can DEXA help you help your clients?

There are a number of benefits to using this technology.

1. Establish a baseline

One of the most important things you can do for a client is recommend they get a DEXA scan before they start on a diet and training regimen. You need to know how much muscle and fat they have at the start so you can accurately compare them to themselves later on into their training.

2. Monitor muscle growth and fat loss

DEXA allows you to track and trend your clients' body composition over time and



answers the all-important question ‘are the diet and exercise programs I’m prescribing helping my clients reach their goals as efficiently as possible?’

There are a multitude of ways you can fool the body into shedding fat and building muscle, but some of them can result in the loss of valuable muscle.

For example, I performed a DEXA scan on a client where, upon comparing his recent scan to his previous one, he was shocked to learn that he’d lost four kilograms of muscle mass with no appreciable reduction in fat mass. I discovered that he was doing CrossFit six days per week, eating excessively high levels of protein, and consuming too few calories for his size. In this case, he was both over-training and under-eating – which was starkly evident when comparing scans.

3. Estimate basal metabolic rate

There are a number of ways to estimate a client’s basal metabolic rate. Since DEXA provides you with an estimate of overall lean muscle mass, you can use formulas that include this parameter.

The Katch-McArdle formula and Cunningham formula both give similar estimates. For example, if you have a male client who is 100 kilograms in total body weight, comprising 80 kilograms of muscle and 20 kilograms of fat, his metabolic rate would be estimated as follows (according to the Katch-McArdle formula):

(BMR) (calories/day):
 $370 + (21.6 \times \text{lean body mass})$
 $370 + (21.6 \times 80) = 2098$ calories per day

4. Monitor visceral fat and health risk

Visceral fat is the deep belly fat that wraps itself around the organs and secretes substances into the bloodstream called adipocytokines, which are known to increase the risk of developing diabetes, hypertension, high cholesterol and triglycerides, as well as heart problems.

DEXA provides an indication of how much fat you have around the trunk, as well as a ratio of upper-to-lower body fat percentage. Taken in conjunction with other biomarkers, lifestyle factors, and family history, this will provide you with a more complete picture of your clients’ relative health risk.

5. Monitor sarcopenia in your older clients

Muscle loss in older adults can contribute to a decline in their functional capacity, i.e. their ability to perform routine activities of daily living. DEXA provides information not just on whole body muscle mass, but also how much muscle tissue is present on the

arms and legs. This gives an indication of how well the person can use their arms and legs to move their body weight. It answers the questions, ‘if grandma falls, can she use her arms to pull herself back to the standing position?’ or ‘can she stand from the sitting position without assistance?’

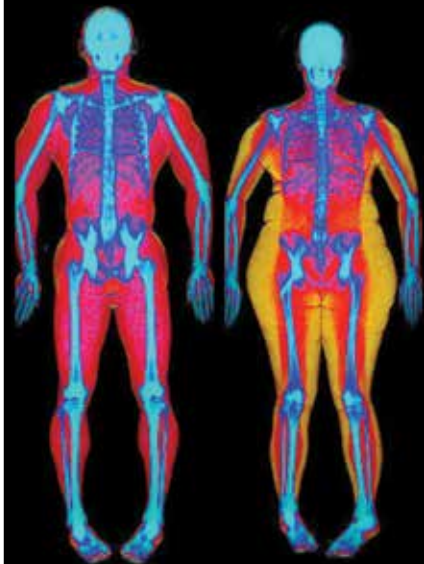
6. Monitor osteopenia and osteoporosis

A DEXA scan can provide information on bone mineral density. Bone thinning is a concern in older adults and can deteriorate into osteoporosis. This condition contributes to falls when the neck of the femur collapses under the weight of the upper body.

Resistance training and a healthy diet containing adequate calcium and vitamin D work together to help strengthen bones, or at least minimise the decline in bone mineral density.

DEXA – the picture of health

In the image on the left we can see a very lean and muscular man with a very low percentage of body fat (around 8 per cent). In the image on the right we can see a woman with very low muscle mass and a very high body fat percentage. The woman will have a more difficult time losing fat because she has less metabolically active muscle tissue.



How long does a scan take?

A DEXA scan is a quick and painless procedure. You simply lie down on the scanning table, a technician will position your body to ensure you’re within the scan zone and remain still for the duration of the scan, which is usually between three



The 30-second article

- A DEXA scan provides the most accurate data on body composition
- By allowing you to gauge muscle, fat and bone status, you can track clients’ training progress
- DEXA is quicker, and more accurate and practical than other body composition techniques
- Scans are generally affordable, safe and suitable for a wide range of individuals.

and five minutes depending on the DEXA machine used.

DEXA vs other body composition methods

As an exercise physiologist, I have had the opportunity to administer most body composition tests, including hydrostatic weighing, skinfolds, bioimpedance analysis (BIA), and DEXA.

Hydrostatic weighing can be cumbersome, time consuming, and impractical for most people with a busy schedule.

The skinfold method is a quick field measure for estimating overall body fat from subcutaneous fat (the fat just below the skin), but it does not give an indication of potentially dangerous visceral fat. Moreover, this method is highly susceptible to measurement errors.

Bioimpedance analysis measures total body water and then estimates body composition, so the test results can be affected by an individual’s hydration status.

Of all these, DEXA is one of the quickest and most practical methods of body composition, and provides you with the most comprehensive assessment of muscle, fat, and bone status.

Who should use a DEXA scan?

In my experience, the three largest demographics making use of DEXA scans are active gym-going people, athletes training for an event (i.e. triathlon), and those with a focus on general wellness looking to get a gauge on their visceral fat and bone health.

Are there any health risks associated with a DEXA scan?

A DEXA scan emits very low-dose x-ray beams, even less than a chest x-ray. It poses

no significant health risk. You would receive a similar amount of background radiation on a return flight from Sydney to Melbourne.

General precautions are that you should not have a DEXA scan if you're pregnant or potentially pregnant, if you've had any other more powerful imaging (such as an MRI or CT scan) with contrasts like iodine.

How often should a DEXA scan be performed?

I would suggest waiting at least three months for your follow-up scan. This will give your body enough time to experience detectable physiological changes in muscle and fat mass which can be picked up by the DEXA scanner.

Once you've met your goal and you're in a maintenance phase, I would say once a year is enough.

How much body fat should my clients have?

My answer to this is always the same: it depends. Body composition should not be a one-size-fits-all approach. There are so-called 'norm tables' for body fat percentage classification (Table 1), but it's still important to interpret these values in a way that has the client's best interests in mind.

For example, two women may both have 15 per cent body fat, but one may experience a loss of menstrual cycle and feel completely run-down and exhausted, while the other woman may have no ill effects.


Moreover, as health professionals, we need to remember that the emaciated swimsuit models on the covers of 'health' magazines do not necessarily represent what constitutes healthy on the inside.

TABLE 1: BODY FAT 'NORMS'

Norms	Male	Female
Athletic	5-10%	8-15%
Healthy	11-14%	16-23%
Acceptable	15-20%	24-30%
Overweight	21-24%	31-36%
Obese	>24%	>37%

Adapted from: Sport Nutrition, 2nd Ed. Jeukendrup & Gleeson

How much does a DEXA scan cost?

Rates will vary from provider to provider but, on average, you can expect to pay around \$80 to \$150 per scan, depending on the level of service and consultation. 

For a detailed breakdown of the data provided by DEXA scans, read this article at fitnessnetwork.com.au/resource-library/dexa-scan

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