

# DXA Images Can Motivate Weight-Loss Patients

BY BARBARA J. RUTLEDGE  
Contributing Writer

TAMPA, FLA. — Dual-energy x-ray absorptiometry is an excellent method to measure and monitor body composition changes in obese patients undergoing weight loss and to assess body composition in athletes. Dr. Mary K. Oates reported at the annual meeting of the International Society for Clinical Densitometry.

Although this application is not reimbursable by medical insurance, many patients concerned about fitness and weight loss are willing to pay out of pocket to have a direct measurement of their percent lean mass and percent fat, said Dr. Oates, who is board certified in physical medicine and rehabilitation and has private clinics in Santa Maria and Pismo Beach, Calif.

Unlike other methods for assessing body composition, dual-energy x-ray absorptiometry (DXA) "can give you regional values, not just total body fat," she said. "Olympic athletes and professional athletes want to know, 'How much muscle do I have in my leg?' 'How much muscle did my injured quarterback lose in his throwing arm after his injury?'" DXA also provides a dramatic total body image of the skeleton and soft tissue.

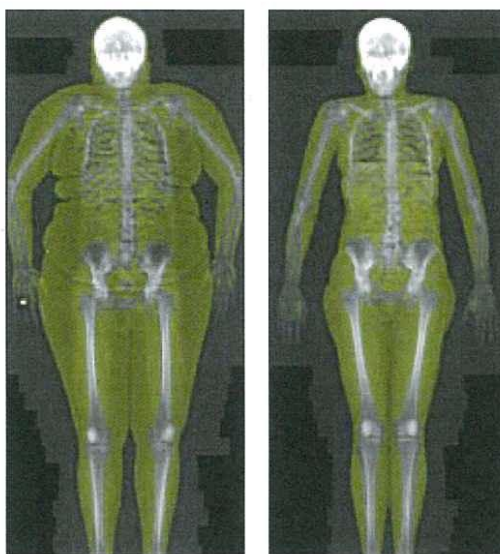
DXA is being used by the Green Bay Packers pro football team and at the U.S. Olympic Training Center in Colorado Springs, Colo., to provide benchmarks for performance enhancement, she said.

Most methods that have been widely used to estimate body composition are indirect. Epidemiology studies usually rely on measurement of waist and hip circumferences and calculation of waist:hip ratio,

as well as body mass index. Determination of BMI is often used to define obesity, although BMI does not account for percent body fat. A nonobese, muscular individual may have a BMI score in the obese range.

Digital scales use bioelectrical impedance analysis to estimate percent body fat. Another indirect method that is widely used in health clubs is skin-fold measurement, in which calipers measure the skin at the back of the upper arms or the stomach ("pinch test"). Calculation of total body fat is based on the assumption that the amount of subcutaneous fat is proportional to the total body fat. "It is assumed that about one-third of the total fat is located subcutaneously, but we all know that it varies with sex, age, ethnicity, and individual fat distribution," Dr. Oates said.

The "dunk tank" has traditionally been considered the most accurate way to determine body composition, although it is technically difficult for the subject to perform. The Bod Pod is similar to the "dunk tank," but it works through air displacement, rather than water displacement.



Left DXA scan shows 105-kg woman with 53.2% total body fat before she undertook an aggressive diet and exercise program. Right scan shows same woman after 8-month diet and exercise program at 57.2 kg and 17.7% total body fat.

then double the results to get whole-body estimates, Dr. Oates said. The new Lunar iDXA by GE has a larger table size and weight capacity that allows direct full-body measurement of patients up to 450 pounds and 6'5".

Individuals who have undergone body fat assessment by another method may be reluctant to accept the DXA results: The percent fat may generally be a little higher with DXA than with other methods. "I think that's because we are really measuring three compartments—we are measuring fat, we are measuring muscle, we are measuring bone," said Dr. Oates, a medical consultant to GE Healthcare Lunar. "The other methods are just estimating from body density."

To demonstrate the usefulness of DXA in monitoring body composition changes, Dr. Oates offered to work with the producers of "The Biggest Loser," an NBC television reality show in which morbidly obese contestants compete to lose weight through aggressive diet and exercise. DXA provided a graphic visual image of the weight loss and changes in percent body fat of the contestants.

DXA scans can be a powerful motivational tool for patients in weight-loss programs. One advantage of DXA in monitoring weight loss is illustrated by the case of a contestant whose apparent fat loss was greater than the 30-pound weight loss indicated by the scales. DXA results showed that he had gained 16.5 pounds of muscle.

"Muscle weighs more than fat," Dr. Oates said. "We now can see the breakdown of total weight loss." The contestant eventually went from 39% body fat to 5.8% body fat.

## Prevention of Weight Gain Is as Important as Weight Loss

BY SHERRY BOSCHERT  
San Francisco Bureau

SAN FRANCISCO — Helping patients—even overweight patients—to avoid gaining more weight is an important therapeutic goal by itself, Dr. Robert Baron said at a diabetes update sponsored by the University of California, San Francisco.

"It's very, very hard to get people to lose weight. Therefore, our priority in a large number of our patients should be to prevent further weight gain," said Dr. Baron, professor of medicine at the university. "In our society, the default position is to gain weight. You need to have a strategy even to maintain your weight, and that's especially true as you age."

Recent data support the classic goals of being as fit as possible at one's current weight, preventing weight gain, and then considering attempts at weight loss, he emphasized.

Being overweight by itself is

not necessarily a risk factor for mortality, other data show. The presence or absence of metabolic syndrome plays a key role in level of risk.

A 2005 meta-analysis of three National Health and Nutrition Examination Surveys (NHANES I, II, and III) found no increased risk for mortality in people who fit the conventional definition of overweight for white people—a body mass index of at least 25 kg/m<sup>2</sup> but less than 30—although the mortality risk did increase among the obese (those with higher BMI scores). The findings suggest that a wider range of weights should be considered "normal" and associated with best healthy outcomes, Dr. Baron said.

"This is controversial, but I think it creates a need for some humility and diagnostic uncertainty about people who are overweight," he added.

Although the prevalence of obesity has been exploding, the mortality risk associated with

obesity decreased between the first of the three surveys (NHANES I) and the more recent NHANES III, although this could be because of methodologic differences.

The presence of metabolic syndrome doubled the risk for mortality in normal-weight people, added about 50% in absolute risk for death in overweight people, and increased risk for death by 13% in obese people, a separate 2005 study of 19,173 men found.

Patients who are overweight may not be at increased risk if they are metabolically normal, but the presence of metabolic syndrome or other signs of insulin resistance changes the clinical picture.

"Your BMI is your initial screening test, if you will, and evaluation of metabolic syndrome becomes your more accurate, second-level test to sort out which patients in the overweight category and Class I obese [BMI of at least 30 but lower

than 35] need more particularly aggressive interventions," he said.

Eating less and exercising are still the mainstays of weight loss strategies but must be pursued with greater intensity than many people realize if weight loss is to be the result.

Exercise alone won't do it, and casually "watching what you eat" won't work for most patients. Weight loss requires a diet of "low calories, low calories, low calories" that usually must be monitored quantitatively by the dieter, Dr. Baron advised. Combining calorie restriction with exercise and behavioral therapy traditionally offers the best approach.

Patients who diet and exercise drop a mean of 8% of their original body weight in the first year, although some patients lose more and some gain weight instead, he added.

In addition, patients who have lost weight need a disciplined strategy to maintain that weight loss, data suggest.

Data on 3,000 successful dieters (mostly white women) who enrolled in the National Weight Control Registry and maintained a 30-pound or greater weight loss for 1 year showed three key steps to keeping the pounds off: high levels of physical activity, diets low in fat and high in fiber, and regular self-monitoring of weight.

Most of these patients pursued an hour a day of moderately intense exercise, 6-7 days a week, to burn calories at an average of 2,545 kcal/week for women or 3,293 kcal/week for men. A majority checked their weight daily or weekly.

The patients' "grazing" diets consisted of five meals or snacks per day, providing 1,381 kcal/day from foods consisting of 24% fat, 19% protein, and 56% carbohydrates.

The calorie levels of their weight maintenance diets were similar to the calories they consumed while they were losing weight.