

## Your body composition measurement... How it works and why it is so reliable!

### Single Site Measurement -- How Does It Work?

Futrex offers the only method of measuring body fat that uses completely safe, Near-Infrared light to directly measure percent body fat. U.S. Government research has determined that the midpoint of the biceps has a direct correlation with the body's overall fat level.



During operation, the Futrex sends a safe, Near-Infrared light beam into the triceps at specific wavelengths that fat will absorb and lean mass will reflect. The light absorption is measured to determine body fat -- it's that simple!

Test results, which are traceable to underwater weighing, are instantly displayed, for you to see.

### Compare the Technologies

	FUTREX	Under Water Weighing	Skin Fold Calipers	Bio-Electrical Impedance
Need For Fasting	No	Yes - 2 Hours	No	Yes - 4 hours especially caffeinated products  Avoid Alcohol for 48 Hours
Need For Disrobing	No	Yes	Yes	Yes - socks or stockings must be removed
Measure After Exercise	Yes	No	No	No - avoid intense exercise 12 hours prior to test
Need For Voiding*	No	Yes - Within 30 minutes of test	No	Yes - Within 30 minutes of test
Accuracy	Excellent	Excellent	Moderate	Excellent, if above criteria is followed
Repeatability	Excellent	Moderate	Depends On Operator	Excellent, if above criteria is followed
Possible Risks	None	None	None	Yes, for those with pacemakers or internal defibrillators; unknown during early pregnancy

### Limitations of Using Skinfold Calipers

Skinfold calipers were developed as a low-cost alternative to hydrostatic weighing. The measurement is performed by pinching the skin and measuring its thickness at either three or five sites on the body. These "pinch thicknesses" are entered into mathematical equations that calculate the percent body fat.

In developing the equations, researchers used a large group of typical college students as the test subjects. In this population it was properly assumed that the subcutaneous fat (the amount

measured by pinching the skin) is approximately equal to the intramuscular fat. This assumption is true for most of the population. However, it is not valid for bodybuilders where intramuscular is typically five times or larger than the subcutaneous fat. Therefore, using calipers to estimate the percent body fat of bodybuilders yields results that are much too low.

### **The FUTREX Approach**

About 20 years ago, the U.S. Government's research laboratories in Beltsville, Maryland, demonstrated that percent body fat can be accurately measured using harmless low energy light. The research proved that the amount of fat in a body part could be accurately determined by analyzing the change in the light as it went through the body part.

The government researchers made one other fundamental discovery:

There were specific sites on the human body where the local percent fat is directly proportional to the percent fat of the total body. They further proved it didn't matter whether you were a super-athlete, a bodybuilder, or a couch potato, that a measurement using light on just one of those body sites provided the same percent body fat as the official hydrostatic test.

Futrex uses this accurate, yet harmless light to measure the combination of the subcutaneous and the intramuscular fat, thus providing accurate total percent body fat. Over 100,000 of similar light interactance instruments are currently being used by professional sports teams, law enforcement agencies, college sports teams, etc.