

understanding body composition analysis

mass and fluid compartments



Body composition analysis is the clinical assessment of tissue and fluid distribution in the human body. The body is modeled as a series of tissue and fluid compartments.

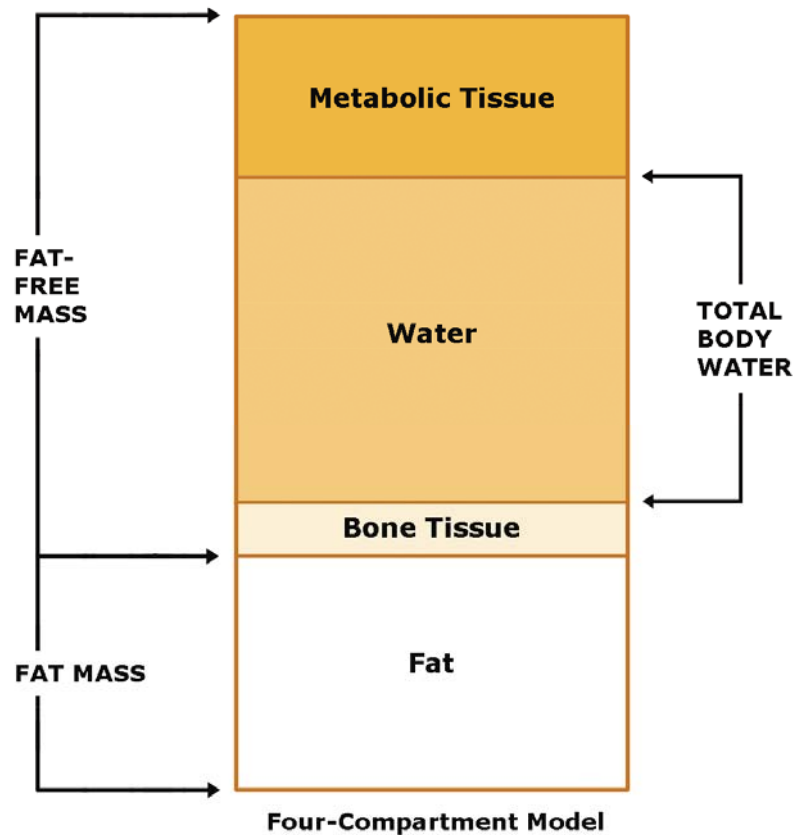
Fat Body Weight (or Fat Mass) is the total amount of stored lipids in the body and consists of the following types of fat:

Subcutaneous Fat is located directly beneath the skin. Subcutaneous fat serves as an energy reserve and as insulation against outside cold.

Visceral Fat is located deeper within the body. Visceral fat serves as an energy reserve and as a cushion between organs.

Lean Body Weight (or Fat-Free Mass) is the total amount of lean (nonfat) parts of the body. It consists of approximately 73% water, 20% protein, 6% mineral, and 1% ash.

The figure below provides a graphical representation of the compartments in the human body.



interpreting test results

understanding the printout



Percent Body Fat

The amount of fat in the body expressed as a percentage of total body weight.

Fat Body Weight (or Fat Mass)

Fat body weight is the total weight of all fat in the body. It consists of all the extractable lipids from adipose and other tissues.

Lean Body Weight (or Fat-Free Mass)

Lean body weight is the total amount of lean (nonfat) parts of the body. It consists of approximately 73% water, 20% protein, 6% mineral, and 1% ash. Lean body weight contains virtually all the body's water, all the metabolically active tissues, and is the source of all metabolic caloric expenditure.

Basal Metabolic Rate (BMR)

Basal metabolic rate is the number of calories consumed at a normal resting state over a 24-hour period. BMR is based solely on an individual's lean body weight.

Total Body Water (TBW)

Total body water is the amount of water contained in the body expressed in liters.

Total Body Water as a Percentage of Body Weight

The amount of water contained in the body expressed as a percentage of total body weight. Men generally have between 50 and 60 percent water to body weight and women have between 45 and 60 percent.

Total Body Water as a Percentage of Lean Weight

The amount of water contained in the body expressed as a percentage of lean body weight. Normal percentages (or hydration levels) indicate that lean body weight contains approximately 69 to 74 percent water.

Bioresistance (R)

Bioresistance (or resistance) is the effect on an alternating current that is caused by resistivity or the energy dissipating characteristics of the body. Resistance is measured directly from the human body by the bioimpedance analyzer.

A low resistance is consistent with large amounts of lean body weight. A high resistance is consistent with low amounts of lean body weight.

Recommendations

After a test, the analyzer automatically provides target recommendations based on the following optimal body-fat values which are stored in the analyzer's memory:

<u>Patient's Age</u>	<u>Optimal Fat Levels</u>	
	<u>Male</u>	<u>Female</u>
< 20	15	19
20 - 29	16	20
30 - 39	17	21
40 - 49	18	22
50 - 59	19	23
60 +	20	24

Initial recommendations are based on target fat values equal to either the subject's current percent fat or the optimal percent fat value, whichever is smaller. Adjustments may be made to the recommendations by the practitioner to better meet the subject's body composition and weight management goals.

NORMAL REFERENCE VALUES

MALES

Age	15-24	25-34	35-44	45-54	55-64	65-74	75-84	>85	
Anthropometric¹									
Height (in)	69.9	70.0	69.6	68.5	68.2	67.6	67.2	65.2	
Weight (lb)	154.6	163.8	166.3	163.2	165.8	167.4	160.1	157.9	
Body Mass Index (kg/m ²)	22.3	23.5	24.1	24.4	25.1	25.7	24.9	26.1	
Mass Distribution									
Fat Body Weight (% wt)	11.6	15.2	17.6	19.7	22.2	24.6	26.3	31.4	
Lean Body Weight (% wt)	88.4	84.8	82.4	80.3	77.8	75.4	73.7	68.6	
Basal Metabolic Rate (cals/day)	1934	1966	1938	1853	1825	1785	1669	1532	
Water Compartments									
Total Body Water (% wt)	64.1	61.4	59.7	58.0	56.0	54.2	52.8	49.7	
Total Body Water (% ffm)	72.4	72.4	72.5	72.2	72.0	71.9	71.6	72.5	
Impedance¹									
Resistance (ohms)	484	474	470	469	468	466	482	486	
Reactance (ohms)	61.9	62.1	59.4	58.8	54.3	49.9	45.1	39.1	

FEMALES

Anthropometric¹									
Height (in)	65.6	65.2	64.5	64.2	63.4	62.7	62.0	60.3	
Weight (lb)	128.6	129.4	129.4	133.4	138.5	144.6	138.0	130.3	
Body Mass Index (kg/m ²)	21.0	21.4	21.9	22.7	24.2	25.8	25.2	25.2	
Mass Distribution									
Fat Body Weight (% wt)	21.6	22.5	23.9	25.8	29.1	34.3	35.8	37.6	
Lean Body Weight (% wt)	78.4	77.5	76.1	74.2	70.9	65.7	64.2	62.4	
Basal Metabolic Rate	1426	1420	1395	1401	1388	1345	1254	1151	
Water Compartments									
Total Body Water (% wt)	56.8	56.2	55.2	53.4	50.6	48.0	47.4	46.9	
Total Body Water (% ffm)	72.4	72.5	72.5	71.9	71.5	73.2	73.8	75.0	
Impedance¹									
Resistance (ohms)	601	582	572	557	563	555	569	570	
Reactance (ohms)	69.3	66.8	66.8	63.3	58.7	52.6	47.7	44.7	

¹Kyle UG, et al. Fat-Free and Fat Mass Percentiles in 5225 Healthy Subjects Aged 15 to 98 Years. *Nutrition*, 17:534-541, 2001.