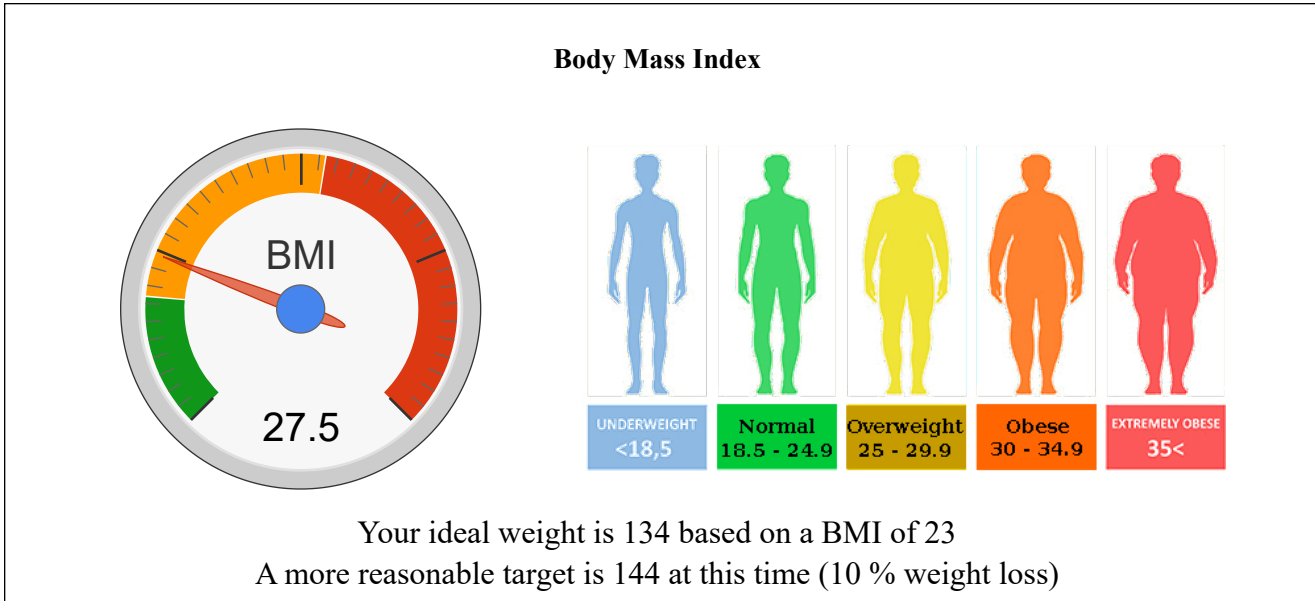# RJL Systems Body Composition Analysis
Time: 10:10 Measurement Units: English

Date	First	Last	Sex	Age	Height	Weight	Activity	Resistance	Reactance	Phase Angle
5/7/2024	J	P	male	53	64	160	very_light	501	64	7.28

RJL Systems Whole Body Analysis

	Weight Pounds			
Weight	160	**% of Weight**		
Fat	49.2	30.8		
Fat Free Mass (FFM)	110.8	69.2	**% of FFM**	
Skeletal Muscle Mass (SMM)	50.8	31.7	45.8	
Lean Dry Mass(LDM)	27.7	17.3	25.0	
Total Body Water (TBW)	83.0	51.9	74.9	**% of TBW**
Extra-Cellular Water (ECW)	33.3	20.8	30.0	40.1
Intra-Cellular Water (ECW)	49.7	31.1	44.9	59.9
Bone Mineral Content (BMC)	7.2	4.5	6.5	
Lean Soft Tissue (LST)	103.6	64.8	93.5	
Phase Angle Measured	7.28	**Normalized**	Work in Prog	

Body Mass Index

Your ideal weight is 134 based on a BMI of 23
A more reasonable target is 144 at this time (10 % weight loss)

Body Fat Analysis

Fat Management % Weight
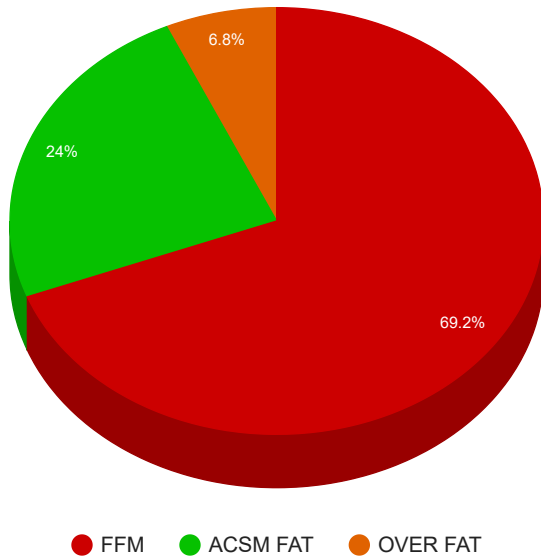
American College of Sports Medicine

ACSM Body Composition (% Body Fat) for Men

Male	AGE				
Fitness Category	**20-29**	**30-39**	**40-49**	**50-59**	**60+**
Essential Fat	2 - 5	2 - 5	2 - 5	2 - 5	2 - 5
Excellent	7.1 - 9.3	11.3 - 13.8	13.6 - 16.2	15.3 - 17.8	15.3 - 18.3
Good	9.4 - 14	13.9 - 17.4	16.3 - 19.5	17.9 - 21.2	18.4 - 21.9
Average	14.1 - 17.5	17.5 - 20.4	19.6 - 22.4	21.3 - 24	22 - 25
Below Average	17.4 - 22.5	20.5 - 24.1	22.5 - 26	24.1 - 27.4	25 - 28.4
Poor	>22.4	>24.2	>26.1	>27.5	>28.5

Body Water (fluids) Analysis

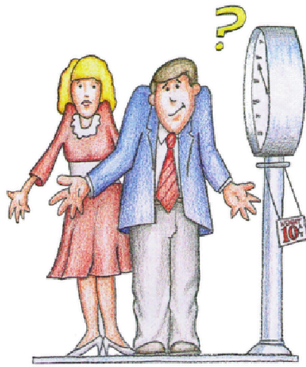### Hydration Management TBW % Weight
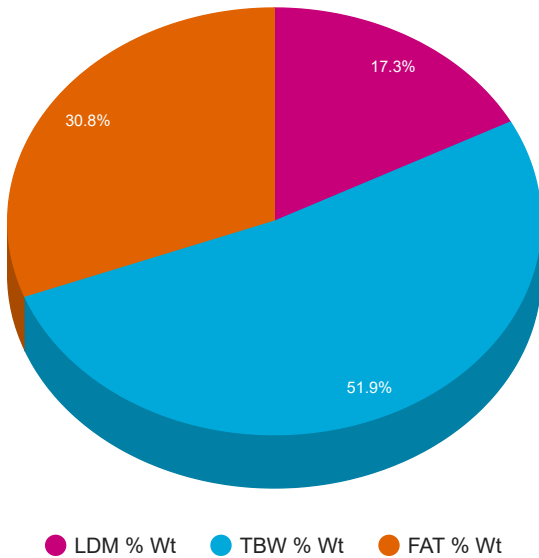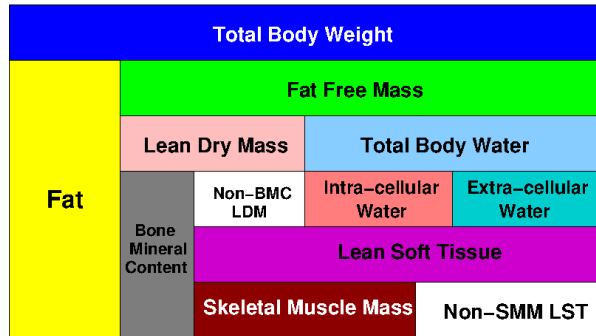

Body Water Compartments % TBW
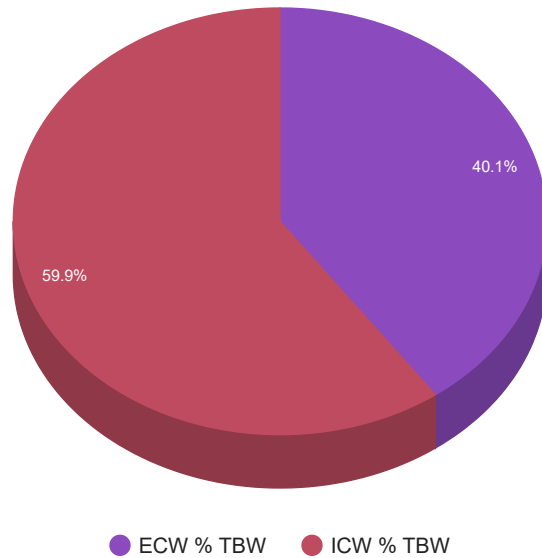
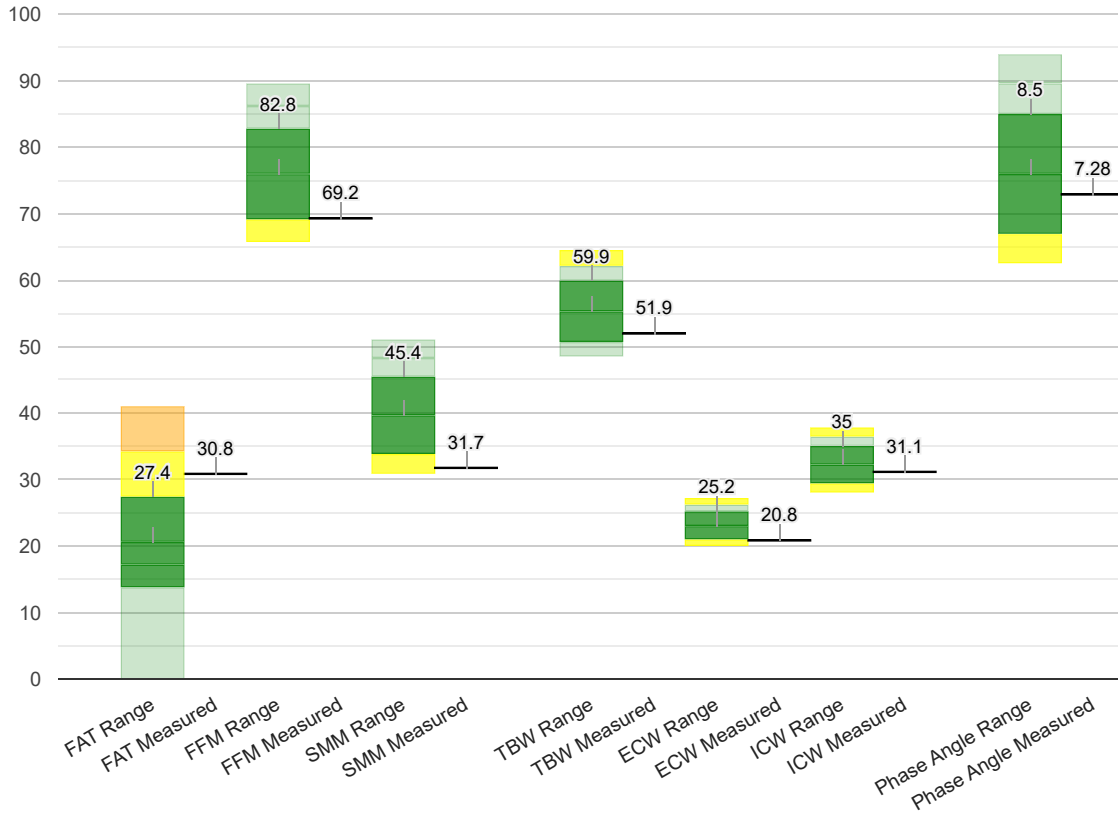# Body Composition Comparison for the Average American (NHANES)

Scale weight is not the answer

BIA is objective body composition management

Body Composition Comparison - Percent of Weight and Phase Angle

FAT Measured: 27.4, FAT Measured label 30.8
FFM Range: 82.8, FFM Measured: 69.2
SMM Range: 45.4, SMM Measured: 31.7
TBW Range: 59.9, TBW Measured: 51.9
ECW Range: 25.2, ECW Measured: 20.8
ICW Range: 35, ICW Measured: 31.1
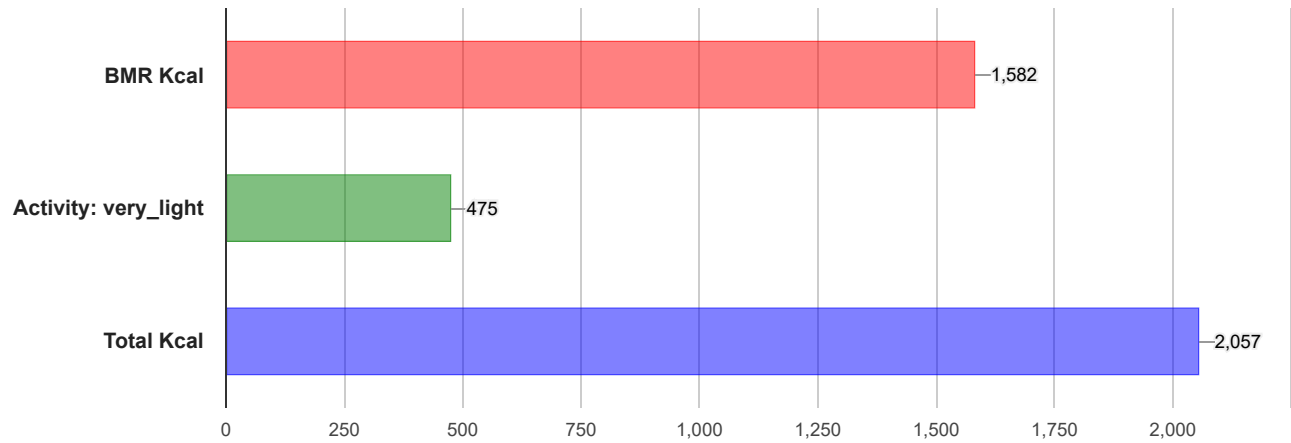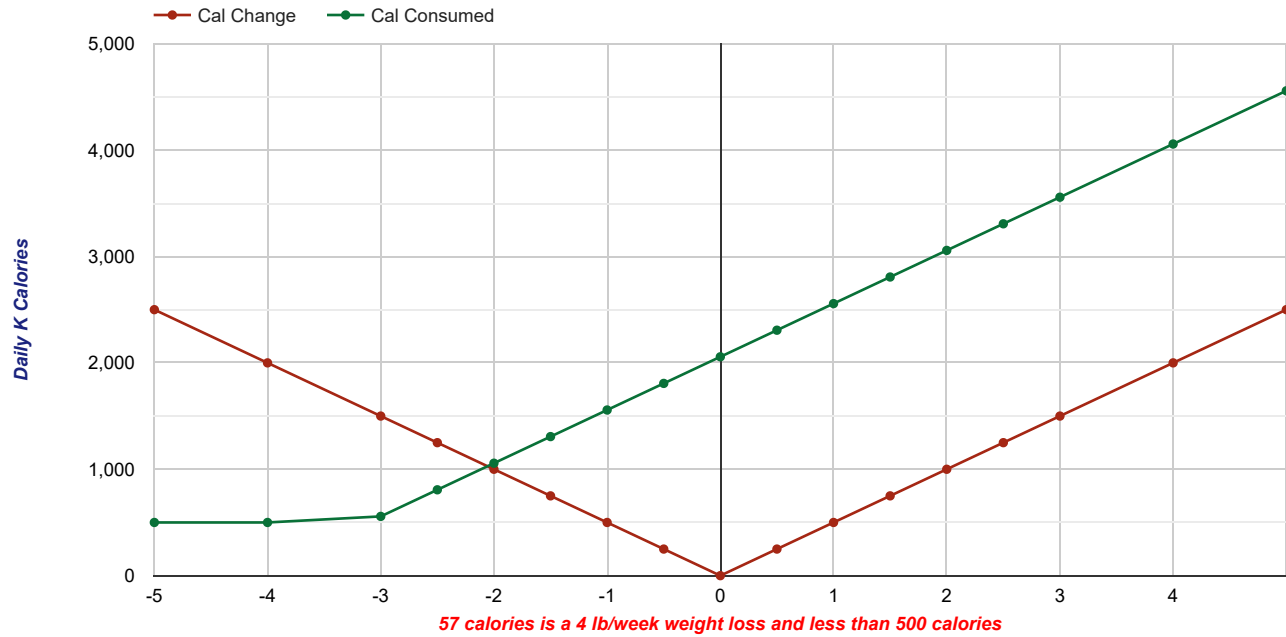Phase Angle Range: 8.5, Phase Angle Measured: 7.28

See reference below [1]

We are a Result of What We Eat and What We Do

Calories based on Fat Free Mass (FFM) and daily activity level

Summary of Daily Calories consumed

weight loss - gain based on calories consumed and daily activity

57 calories is a 4 lb/week weight loss and less than 500 calories

Use Activity Level above and resubmit to change Acivity (left green bar) and move the cursor over the green or red line of the graph to determine a calorie reduction plan.

RJL Systems body composition software definitions

The terms below, as well as the graphical representation at the right, will help describe the general breakdown of what RJL Systems body composition software assess.

Height - in inches (in) or centimeters (cm)

Weight - in pounds (lbs) or kilograms (kg).

Resistance - the opposition to the flow of an electrical current. Higher TBW and LDM yield a lower Resistance, and higher Fat and dehydration yield a higher Resistance.

Reactance - measures the body's opposition to changes in the flow of an electrical current. Reactance is related to the capacitance of the cell membranes, and reflects integrity, function, and composition.

Phase Angle (PA) - PA reflects the relative contributions of fluid (resistance), and cellular membranes (capacitive reactive). It is calculated as the arc-tangent of Reactance over resistance, measured in degrees. Typical Phase Angles (NHANES human data) range between 4-9.

Fat - provides insulation, warmth, and energy storage, and is necessary for the absorption of many vitamins.

Fat Free Mass (FFM) - is also called Lean Body Mass, and is everything in the body, except Fat. Lean Soft Tissue

Lean Dry Mass (LDM) - is what is left after subtracting all of the water from Fat Free Mass.

Total Body Water (TBW) - is all of the water throughout the body, both inside and outside of the cells.

Intra-Cellular Water (ICW) - represents the amount of water inside cells.

Extra-Cellular Water (ECW) - represents the amount of water outside of the cells.

Bone Mineral Content (BMC) - Bones are dynamic organs that include cells, blood vessels, collagen and mineral deposits. BMC is only an estimate of the minerals in the bones and does not represent the total weight of the skeleton. It is part of Fat-Free Mass.

Lean Soft Tissue (LST) - In the same way that LDM is the result of removing all water from Fat-Free Mass. Lean Soft Tissue is the result of subtracting Bone Mineral Content from Fat-Free mass. This includes organs, muscles, connective and supportive tissues, as well as all of Total Body Water.

Skeletal Muscle Mass (SMM) - SMM are the muscles responsible for posture and movement.

Basal Metabolic Rate (BMR) - The caloric energy required to sustain life in a sedentary state for 24 hours.

Daily Energy Expenditure (DEE) - DEE adjusts the BMR value based on the selected activity level. The caloric energy required to sustain life, plus daily activities.

Body Mass Index (BMI) - BMI is derived by dividing total weight (kg) by height (meters) squared. BMI is a general measure typically used to determine if someone is overweight, but knowing actual body composition is much more accurate.

Fat Mass Index (FMI) - FMI relates fat mass to height in the same way that BMI relates total weight to height. Because it takes into account only the fat mass, it is a superior indicator of obesity compared to BMI.

Fat Free Mass Index (FFMI) - FFMI relates fat-free mass to height in the same way that FMI does to fat. Fat + FFM - Weight, FMI + FFMI = BMI.

References All equations are from peer review literature that used RJL Systems BIA analyzers

[1] The United States Center for Disease Control (CDC) has an ongoing series of studies called the National Health and Nutrition Examination Survey, or NHANES. The NHANES_III data set contains records for 33,994 individuals, although not all participants took part in every section of the survey. Eliminating all records that do not have BIA data reduces the data pool to 17,660 records of men and women that were used to create the average and variance (standard deviation) of the ranges in this chart, except for body fat where the standards of the American College of Sports Medicine are used for a more ideal fat distribution.

Total Body Water (TBW) and Fat Fee Mass (FFM)

Body composition estimates from NHANES-III bioelectrical impedance data. WC Chumlea, SS Guo, et. al. International Journal of Obesity (2002) 26, 1596-1609

Development of bioelectrical impedance analysis prediction equations for body composition with the use of a multicomponent model for use in epidemiologic sutudies Shumei S Sun, et. al. American Journal of Clinical Nutrition (2003) 77, 331-40

Extracellular Water (ECW)

Accuracy of Bioelectrical Impedance Analysis in Estimation of Extracellular Sp Healthy Subjects and in Fluid Retention States Giuseppe Sergi, et. al. Annals of Nutrition and Metabolism (1994) 38, 158-165

Skeletal Muscle Mass (SMM)

Validation of a bioelectrical impedance analysis equation to predict appendicular skeletal muscle mass (ASMM) U. G. KYLE, L. GENTON, D. HANS, C. PICHARD Clinical Nutrition (2003) 22(6): 537–543

Disclaimer

The statements made within this body composition application have not been evaluated by the Food and Drug Administration. These statements and the products of RJL Systems are not intended to diagnose, treat, cure or prevent any disease.

RJL Systems

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