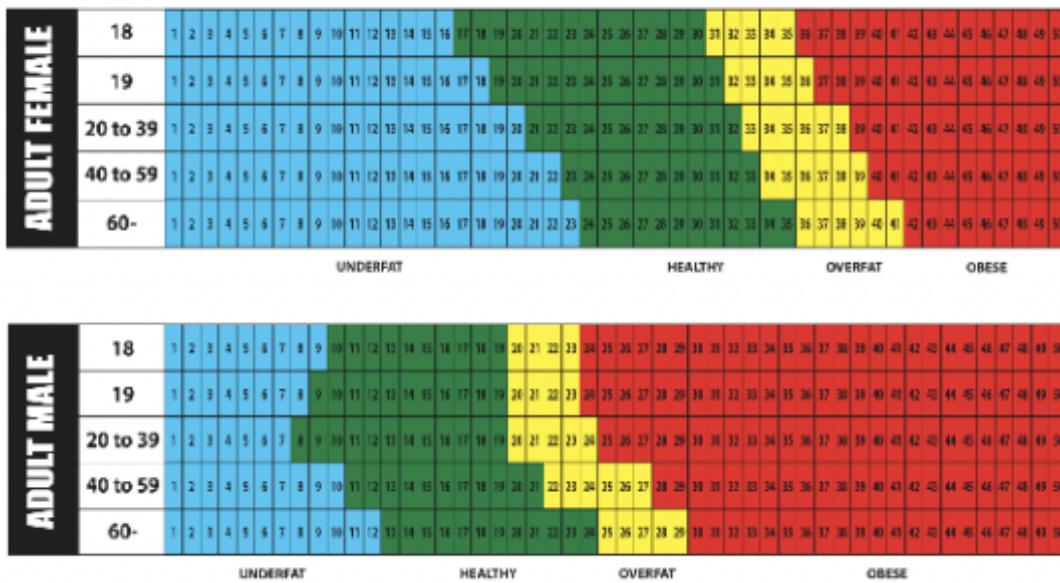


# UNDERSTANDING YOUR MEASUREMENTS



## BODY FAT PERCENTAGE AND BODY FAT MASS

**Body Fat Percentage** is the proportion of fat to the total body weight. **Body Fat Mass** is the actual weight of fat in your body.

Body fat is essential for maintaining body temperature, cushioning joints and protecting internal organs. The energy, or calories, our body needs comes from what we eat and drink. Energy is burned through physical activity and general bodily functions. If you consume the same number of calories as you burn, all the calories are converted into energy. But if you consume more than you burn, excess calories are stored in fat cells. If this stored fat is not converted into energy later, it creates excess body fat.

Too much fat can damage your long-term health. Reducing excess levels of body fat has been shown to directly reduce the risk of certain conditions such as high blood pressure, heart disease, type 2 diabetes and certain cancers. Too little body fat may lead to osteoporosis in later years, irregular periods in women and possible infertility.

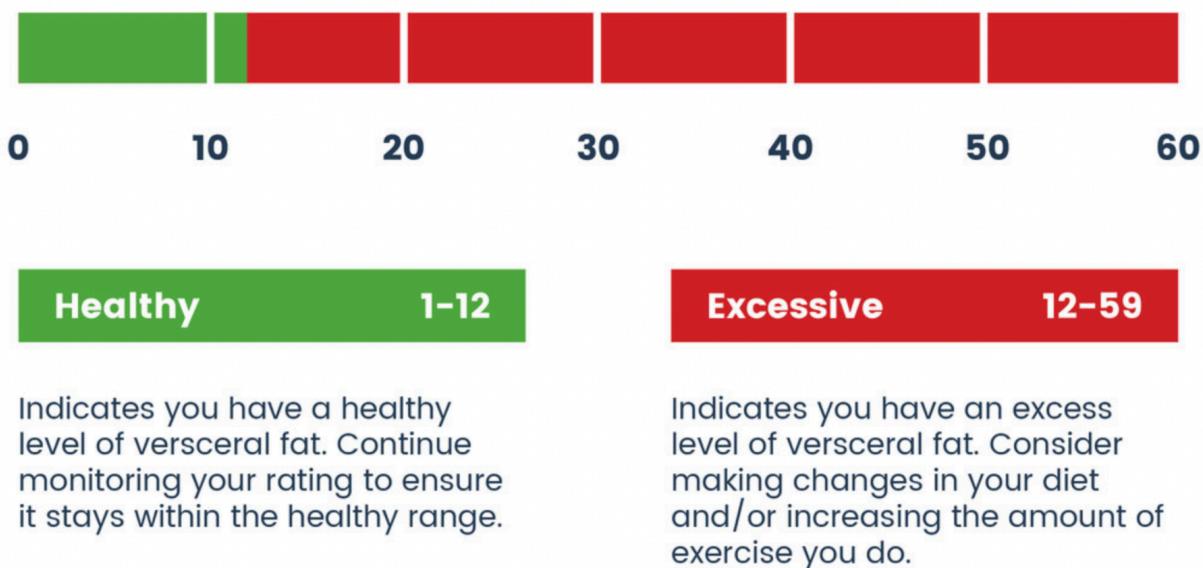
It is important to check your body fat results against the Tanita healthy body fat ranges. These measurements are available for everyone from age five to 99 years.

## VISCERAL FAT

**Visceral fat is located deep in the core abdominal area, surrounding and protecting the vital organs.**

Even if your weight and body fat remains constant, as you get older the distribution of fat changes and is more likely to shift to the abdominal area. Ensuring you have a healthy level of visceral fat directly reduces the risk of certain diseases such as heart disease, high blood pressure and may delay the onset of type 2 diabetes.

Visceral fat ranges



## MUSCLE MASS

### **The predicted weight of muscle in your body.**

Muscle mass includes the skeletal muscles, smooth muscles such as cardiac and digestive muscles and the water contained in these muscles. Muscles act as an engine in consuming energy.

As your muscle mass increases, the rate at which you burn energy (calories) increases which accelerates your basal metabolic rate (BMR) and helps you reduce excess body fat levels and lose weight in a healthy way. If you are exercising hard your muscle mass will increase and may increase your total body weight too. That's why it's important to monitor your measurements regularly to see the impact of your training program on your muscle mass.

## MUSCLE QUALITY

Indicates the condition (quality) of muscle, which changes according to factors like age and exercise level. The muscle of young people or those who exercise regularly is normally in a good state, but the state of muscle deteriorates in elderly people or those who not have enough exercise. Both Quantity and Quality are important for a healthy muscle! Please make sure you maintain a good balance between muscle mass and quality.

Muscle Quality Judgement Chart

Male	18 – 29	30s	40s	50s	60s	70s	80 and over
High	82 and higher	80 and higher	77 and higher	72 and higher	65 and higher	56 and higher	51 and higher
Average	55 – 81	53 – 79	49 – 76	45 – 71	38 – 64	30 – 55	26 - 50
Low	54 or less	52 or less	48 or less	44 or less	37 or less	29 or less	25 or less
Female	18 – 29	30s	40s	50s	60s	70s	80 and over
High	88 and higher	85 and higher	80 and higher	74 and higher	66 and higher	58 and higher	53 and higher
Average	60 – 87	59 – 84	56 – 79	50 – 73	43 – 65	33 – 57	27 - 52
Low	59 or less	58 or less	55 or less	49 or less	42 or less	32 or less	26 or less

## TOTAL BODY WATER

**Total Body Water is the total amount of fluid in the body expressed as a percentage of total weight.**

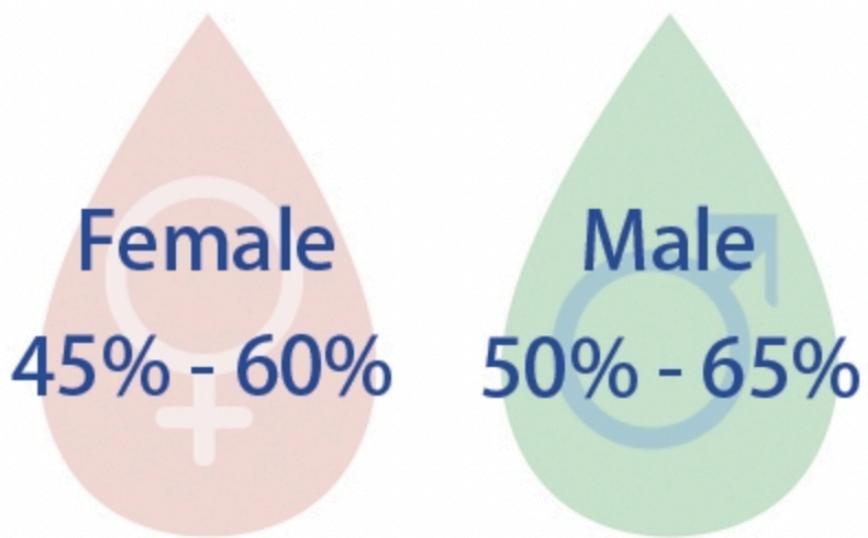
Water is an essential part of staying healthy. Over half the body consists of water. It regulates body temperature and helps eliminate waste. You lose water continuously through urine, sweat and breathing, so it's important to keep replacing it.

The amount of fluid needed every day varies from person to person and is affected by climatic conditions and how much physical activity you undertake. Being well hydrated helps concentration levels, sports performance and general wellbeing.

Experts recommend that you should drink at least eight 8-ounce glasses of fluid a day, preferably water or other low calorie drinks. If you are training, it's important to increase your fluid intake to ensure peak performance at all times.

The average TBW% ranges for a healthy person are: Female 45 to 60% Male 50 to 65%.

**Average Total Body Water % range for a healthy adult are:**



## BONE MASS

**The predicted weight of bone mineral in your body.**

While your bone mass is unlikely to undergo noticeable changes in the short term, it's important to maintain healthy bones by having a balanced diet rich in calcium and by doing plenty of weight- bearing exercise.

You should track your bone mass over time and look for any long term changes.

**Women: Average of Estimated Bone Mass**

Weight (lb)		
Less than 110 lb	110 lb—165 lb	165 lb and up
4.3 lb	5.3 lb	6.5 lb

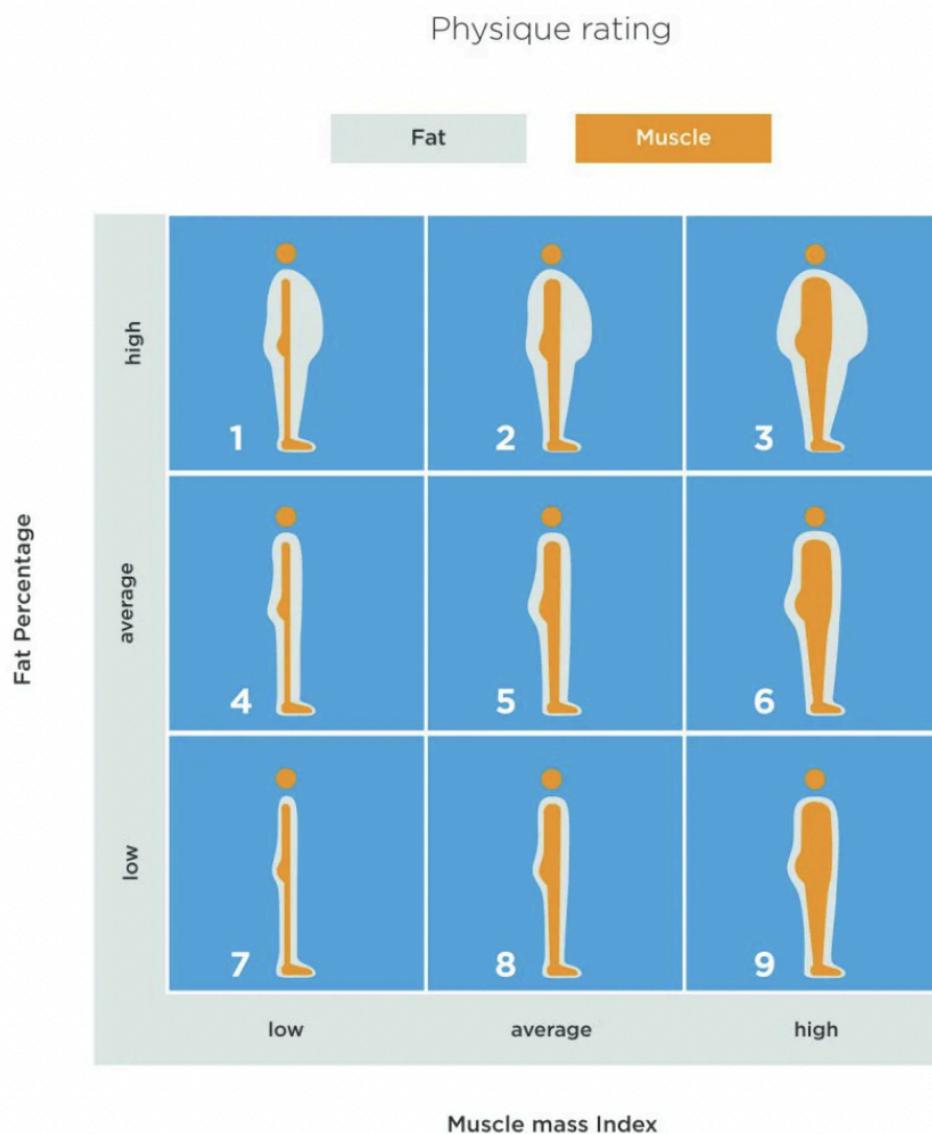
**Men: Average of Estimated Bone Mass**

Weight (lb)		
Less than 143 lb	143 lb—209 lb	209 lb and up
5.9 lb	7.3 lb	8.1 lb

## PHYSIQUE RATING

**Assesses muscle and body fat levels and rates the result as one of nine body types.**

As your activity level changes the balance of body fat and muscle mass will gradually alter, which in turn will affect your overall physique.



## BASAL METABOLIC RATE (BMR)

**The daily minimum level of energy or calories your body requires when at rest (including sleeping) in order to function effectively.**

Increasing muscle mass will speed up your basal metabolic rate (BMR). A person with a high BMR burns more calories at rest than a person with a low BMR.

About 70% of calories consumed every day are used for your basal metabolism. Increasing your muscle mass helps raise your BMR, which increases the number of calories you burn and helps to decrease body fat levels.

Your BMR measurement can be used as a minimum baseline for a diet program. Additional calories can be included depending on your activity level. The more active you are the more calories you burn and the more muscle you build, so you need to ensure you consume enough calories to keep your body fit and healthy.

As people age their metabolic rate changes. Basal metabolism rises as a child matures and peaks at around 16 or 17, after which point it typically starts to decrease. A slow BMR will make it harder to lose body fat and overall weight.



### BMR Normal Range



Age Range	Gender	BMR Range (kcal/day)
18-29	Male	1,800-2,400
18-29	Female	1,400-2,000
30-59	Male	1,600-2,200
30-59	Female	1,200-1,800
60+	Male	1,400-2,000
60+	Female	1,200-1,600

## **DAILY CALORIC INTAKE (DCI)**

An estimate of how many calories you can consume within the next 24 hours to maintain your current weight.

Daily Calorie Intake (DCI) is the sum of calories for basal metabolism (BMR), daily activity metabolism (activities including daily household chores), and diet-induced thermogenesis (energy used in connection with digestion, absorption, metabolism, and other eating activities). Use this as a guideline in your daily meal planning. Consuming fewer calories than your predicted DCI value will help you lose weight, be sure to maintain good physical activity so you don't lose muscle mass.

## **METABOLIC AGE**

**Compares your BMR to an average for your age group.**

This is calculated by comparing your basal metabolic rate (BMR) to the BMR average of your chronological age group. If your metabolic age is higher than your actual age, it's an indication that you need to improve your metabolic rate. Increased exercise will build healthy muscle tissue, which in turn will improve your metabolic age. Stay on track by monitoring regularly.

## **SEGMENTAL MUSCLE MASS**

**Muscle mass rating for five body segments: the core abdominal area, arms and legs.**

Monitoring the muscle mass of each of your arms and legs and core abdominal area will help you see and understand the impact of your training program over time. You can also use this information to correct muscle imbalances and avoid injury.

## SEGMENTAL BODY FAT PERCENTAGES

**Body fat percentages for five body segments: the core abdominal area and each arm and leg.**

Monitoring the body fat percentage of each of your arms and legs and core abdominal area will help you see and understand the impact of your training program over time.

## BODY MASS INDEX

**A standardized ratio of weight to height, used as a general indicator of health.**

Your BMI can be calculated by dividing your weight (in kilograms) by the square of your height (in meters).

BMI is a good general indicator for population studies but has serious limitations when assessing on an individual level.

HEIGHT	UNDERWEIGHT															NORMAL															PRE-OBESE															OBESITY CLASS I															OBESITY CLASS II															OBESITY CLASS III														
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49																																																							
BMI →	69	74	79	83	88	92	97	102	106	111	116	120	125	129	134	139	143	148	152	157	162	166	171	176	180	185	189	194	199	203	208	213	217	222	226																																																							
4' 9"	72	77	81	86	91	96	100	105	110	115	120	124	129	134	139	144	148	153	158	163	167	172	177	182	187	191	196	201	206	211	215	220	225	230	234																																																							
4' 10"	74	79	84	89	94	99	104	109	114	119	124	129	134	139	144	149	153	158	163	168	173	178	183	188	193	198	203	208	213	218	223	228	233	238	243																																																							
4' 11"	77	82	87	92	97	102	108	113	118	123	128	133	138	143	148	154	159	164	169	174	179	184	189	195	200	205	210	215	220	225	230	236	241	246	251																																																							
5' 0"	79	85	90	95	101	106	111	116	122	127	132	138	143	148	153	159	164	169	175	180	185	191	196	201	206	212	217	222	228	233	238	243	249	254	259																																																							
5' 1"	82	87	93	98	104	109	115	120	126	131	137	142	148	153	159	164	169	175	180	186	191	197	202	208	213	219	224	230	235	241	246	252	257	262	268																																																							
5' 2"	85	90	96	102	107	113	119	124	130	135	141	147	152	158	164	169	175	181	186	192	198	203	209	215	220	226	231	237	243	248	254	260	265	271	277																																																							
5' 3"	87	93	99	105	111	117	122	128	134	140	146	151	157	163	169	175	181	186	192	198	204	210	216	221	227	233	239	245	251	256	262	268	274	280	285																																																							
5' 4"	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294																																																							
5' 5"	93	99	105	112	118	124	130	136	143	149	155	161	167	173	180	186	192	198	204	211	217	223	229	235	242	248	254	260	266	273	279	285	291	297	304																																																							
5' 6"	96	102	109	115	121	128	134	140	147	153	160	166	172	179	185	192	198	204	211	217	223	230	236	243	249	255	262	268	275	281	287	294	300	306	313																																																							
5' 7"	99	105	112	118	125	132	138	145	151	158	164	171	178	184	191	197	204	210	217	224	230	237	243	250	256	263	270	276	283	289	296	303	309	316	322																																																							
5' 8"	102	108	115	122	129	135	142	149	156	163	169	176	183	190	196	203	210	217	223	230	237	244	251	257	264	271	278	284	291	298	305	311	318	325	332																																																							
5' 9"	105	112	118	125	132	139	146	153	160	167	174	181	188	195	202	209	216	223	230	237	244	251	258	265	272	279	286	293	300	307	314	321	328	335	342																																																							
5' 10"	108	115	122	129	136	143	151	158	165	172	179	186	194	201	208	215	222	229	237	244	251	258	265	272	279	286	293	300	307	314	321	328	335	341																																																								
5' 11"	111	118	125	133	140	147	155	162	170	177	184	192	199	206	214	221	229	236	243	251	258	265	273	280	288	295	302	310	317	324	332	339	347	354	361																																																							
6' 0"	114	121	129	136	144	152	159	167	174	182	189	197	205	212	220	227	235	243	250	258	265	273	280	288	296	303	311	318	326	334	341	349	356	364	371																																																							
6' 1"	117	125	132	140	148	156	164	171	179	187	195	203	210	218	226	234	241	249	257	265	273	280	288	296	304	312	319	327	335	343	350	358	366	374	382																																																							
6' 2"	120	128	136	144	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	280	288	296	304	312	320	328	336	344	352	360	368	376	384	392																																																							
6' 3"	123	131	140	148	156	164	173	181	189	197	205	214	222	230	238	246	255	263	271	279	288	296	304	312	320	329	337	345	353	361	370	378	386	394	403																																																							
6' 4"	126	135	143	152	160	169	177	186	194	202	211	219	228	236	245	253	261	270	278	287	295	304	312	320	329	337	346	354	363	371	379	388	396	405	413																																																							
6' 5"	130	138	147	156	164	173	182	190	199	208	216	225	234	242	251	260	268	277	286	294	303	312	320	329	337	346	355	363	372	381	389	398	407	415	424																																																							
6' 6"	133	142	151	160	169	178	186	195	204	213	222	231	240	249	257	266	275	284	293	302	311	320	328	337	346	355	364	373	382	391	399	408	417	426	435																																																							
6' 7"	137	146	155	164	173	182	191	200	209	218	228	237	246	255	264	273	282	291	300	309	319	328	337	346	355	364	373	382	391	401	410	419	428	437	446																																																							
6' 8"	140	149	159	168	177	187	196	205	215	224	233	243	252	261	271	280	289	299	308	317	327	336	345	355	364	373	383	392	401	411	420	429	439	448	457																																																							
6' 9"	151	161	171	181	191	201	211	221	231	241	251	261	271	281	291	301	311	321	331	341	351	361	371	381	391	401	411	422	432	442	452	462	472	482	492																																																							

## **SMI (SKELETAL MUSCLE INDEX)**

The ratio of the muscle in your arms and legs to your height.

As we age we lose muscle mass. This can lead to a condition known as sarcopenia. In older people this has substantial tolls in terms of morbidity, disability, and increased costs of healthcare. A SMI value of 7.23 or higher is desired for men, and 5.67 is desired for women. Maintaining an active lifestyle along with specialized dietary strategies may prevent or delay the onset of this condition.

## **LEG MUSCLE SCORE (LSMI)**

The ratio of muscle mass in your legs to your total body weight.

A score is given for your physical condition, and plotted against average healthy values for gender and age. The score is based on your leg muscle mass divided by your body weight. A healthy 20-25 year old should achieve a score of 100.

Refer to the chart to analyze your score. Maintaining an active lifestyle along with healthy dietary habits will improve your score.

