

# BIOMETRIC SCREENING

## *Understanding Your Results*

<i>Tests</i>	<i>National Reference</i>	<i>Tests</i>	<i>National Reference</i>
Blood Pressure	< 120/80	HDL	Male ≥ 40   Female ≥ 50
Waist Circumference	Male ≤ 40   Female ≤ 35	Total Cholesterol/HDL Ratio	Male ≤ 5   Female ≤ 4.4
Body Composition	Male 8 - 25%   Female 21 - 36%	Triglycerides	45 - 149
Total Cholesterol	100 - 199	Glucose - Fasting	50 - 99
LDL	< 100	Glucose - Random Non-Fasting	50 - 119

### Blood Pressure

Blood pressure is the pressure of the blood on the walls of the arterial blood vessels (blood vessels that carry blood from the heart to other parts of the body). The top number, or systolic pressure, is the peak pressure on the blood vessel. The lower number, or diastolic pressure, occurs when the heart relaxes between beats. Normal blood pressure is less than 120/80 mmHg (millimeters of mercury). Pre-hypertension is defined as a blood pressure in the range of 120-139 over 80-89. High blood pressure is diagnosed when multiple readings are above 140/90 mmHg.

### Waist Circumference

Carrying extra weight around the middle puts people at a higher risk for heart disease, some types of cancer and diabetes. Women should aim for a waist measurement of 35 inches or less, while men should stay at 40 inches or less.

### Body Composition

Body composition, or % body fat, is most commonly expressed as the percentage of total body weight that is composed of fat. Increases in body fat dramatically worsen health and increase the risk for heart disease, diabetes, stroke and cancer. The ideal body fat percentage for men is 8 - 25% and for women is 21 - 36%.

### Cardiovascular Health

Cardiovascular disease is the No. 1 killer in the world. Early detection of risks and appropriate intervention can help prevent the many devastating effects of heart disease. The same intervention techniques can also help prevent other diseases and conditions, such as hypertension, stroke and weight issues.

The lipid panel – the most common blood test for cardiovascular disease – measures the way fats are carried in the blood. It includes total cholesterol, LDL, HDL and triglycerides.

“Lipo” means “lipid,” a general term that refers to all biological fats and oils. Blood is water-based and cholesterol is fat-based. Just like oil and water, the two do not mix. Therefore, in order to travel in the bloodstream, cholesterol is carried in small packages called lipoproteins. These small packages are made of fat (lipid) on the inside and proteins on the outside. Two main types of lipoproteins carry cholesterol throughout your body: HDL and LDL. It is important to have healthy levels of both. HDL has been called “healthy cholesterol” because it can pick up excess fats and carry them back to the liver, thereby disposing of them. LDL has been called “lousy cholesterol” because it can become so overloaded with fats that the fats are deposited on blood vessel walls rather than carried to the cells where they are needed.



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SP-7258 843063 07/10

## Body Mass Index (BMI)

Body mass index is derived from a formula that uses weight and height to estimate body fat and gauge health risks caused by carrying too much weight. BMI does not take into account lean body mass or body frame. Muscular individuals may have an elevated BMI even if they have normal percent body fat, so take into account BMI along with waist circumference.

### Male and Female BMI Ranges

Underweight = < 18.5  
 Normal weight = 18.5 - 24.9  
 Overweight = 25 - 29.9  
 Obesity = BMI of 30 or greater

### To calculate your BMI, use the chart below.

First, find your height in the Height column. Then, move across the row to find your weight in pounds. Finally, look at the top of the column where your height and weight intersect to determine your BMI.

### BODY MASS INDEX TABLE

BMI	Normal					Overweight					Obesity I					Obesity II					Obesity III																																	
	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	50	51	52	53	54																		
Height	Find your height and then move across to your weight (in pounds) to determine your BMI above.																																																					
4'10"	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258																		
4'11"	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267																		
5'	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276																		
5'1"	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285																		
5'2"	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295																		
5'3"	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304																		
5'4"	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314																		
5'5"	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	300	306	312	318	324																		
5'6"	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334																		
5'7"	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344																		
5'8"	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354																		
5'9"	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365																		
5'10"	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376																		
5'11"	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386																		
6'	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397																		
6'1"	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408																		
6'2"	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420																		
6'3"	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431																		
6'4"	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443																		

Source: Adapted from Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report.

## Metabolic Syndrome

Metabolic syndrome is a combination of medical disorders that increase your risk of developing chronic medical conditions. These conditions include cardiovascular diseases - such as heart attacks, strokes, and peripheral vascular disease - and diabetes, along with its associated complications.

Metabolic syndrome diagnosis is based on having 3 out of 5 of the following risk factors:

1. Waist circumference:
  - Greater than or equal to 40 inches for males
  - Greater than or equal to 35 inches for females
2. Fasting Triglyceride levels equal or above 150mg/dl (also known as hypertriglyceridemia)
3. HDL levels:
  - Below 40 mg/dl in males
  - Below 50 mg/dl in females
4. Blood pressure equal or greater than 130/85
5. Fasting blood glucose levels equal or greater than 100 mg/dl (our baseline for non-fasting results is 120 mg/dl)

If you currently have 3 or more risk factors, you have Metabolic Syndrome. If you only have 2 risk factors, you may be at increased risk.



## **Cholesterol (Total)**

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Cholesterol is a waxy, fat-like substance that is found in all cells of the body. Manufactured by the liver, cholesterol is an essential component of cell membranes and nerve fiber insulation. Cholesterol is important for the metabolism and transport of fatty acids, and in the production of hormones and vitamin D. Excess cholesterol in your blood can build up in the walls of your arteries. This buildup of cholesterol is called plaque. Over time, plaque can cause narrowing of the arteries. This is called atherosclerosis or “hardening of the arteries.” Some plaques have a thin covering and can rupture, releasing fat and cholesterol into the bloodstream, which can result in a clot. A clot can block the flow of blood. This blockage can cause angina (tightening feeling in the chest) or a heart attack. Lowering your cholesterol level decreases your chance of having a plaque burst, causing a heart attack. Lowering cholesterol may also slow down, reduce or even prevent plaque from building up. Plaque and its resulting health problems can also occur in arteries anywhere in the body. It’s important to remember that Total Cholesterol is a useful but incomplete gauge of risk. Therefore, pay particular attention to your LDL and HDL levels.

*Normal ranges for Total Cholesterol are 100-199. If your level is higher than this range, talk with your health care provider about ways to lower it.*

## **LDL (Low-Density Lipoprotein)**

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LDL is referred to as “lousy cholesterol.” High levels of LDL cholesterol can lead to a build-up of plaque in arteries. The higher the LDL level in your blood, the greater your chance of getting heart disease. Low LDL levels have been shown to offer protection from arterial disease and damage. Nutritional and pharmaceutical measures that reduce high levels of LDL cholesterol typically reduce the number of circulating LDL particles, and have been proven to decrease risk for hardening of the arteries. In addition to the drugs commonly used for controlling cholesterol -- statins, cholestyramine, high-dose niacin, etc., -- certain nutrients and phytochemicals can be helpful. Diets very low in saturated and trans fats, especially diets that emphasize fiber and soy products, often produce dramatic reductions in LDL cholesterol. Decreasing abdominal fat and participating in regular aerobic exercise will also help.

*Normal ranges for LDL are  $\leq 100$ . If your level is higher than this range, talk with your health care provider about ways to lower it.*

## **HDL (High-Density Lipoprotein)**

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HDL is referred to as “healthy cholesterol” because it carries cholesterol from other parts of your body back to your liver, where it is removed from your body. The higher your HDL cholesterol level, the lower your chance of getting heart disease. A low HDL cholesterol level may have little significance, however, if Total Cholesterol is also low. Decreased HDL cholesterol is a common feature of “insulin resistance syndrome,” a risk factor of diabetes and heart disease. Increased exercise can increase your HDL level. Exercise creates HDL from LDL by removing fat from LDL particles for use as energy.

*Normal ranges for HDL are males  $\geq 40$  and females  $\geq 50$ . If your level is lower than this, talk with your health care provider about ways to increase it.*

## **Triglycerides**

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Triglyceride is the technical name for things we call fat. Triglycerides are fats that contain three fatty acids. Triglycerides are the main carriers of fatty acids from fat cells to other parts of the body. They are one of the two main components of body fat and are associated with increased cardiovascular risk. Measures that tend to lower elevated triglycerides (high-dose niacin, fish oil or omega-3 fatty acids, gemfibrozil, pantethine, exercise training and weight loss) are also likely to reduce your risk for heart disease and diabetes.

*Normal ranges for triglycerides are 45-149. If your level is higher than this range, talk with your health care provider about ways to lower it.*

## **Blood Sugar or Glucose**

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Blood glucose is a simple blood sugar, the body’s main source of energy. A blood test measuring glucose can be used to diagnose diabetes, monitor diabetic control, or for screening purposes.

*Normal ranges for fasting blood glucose (nothing but water for at least 8 hours before the test) are 50-99. If your fasting blood sugar reading is above this, you should consult your health care provider for further consultation. Non-fasting or random glucose is 50-119.*

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