

# HEALTHY WEIGHT

ANALYSIS + REPORT

SAMPLE

PERSON TESTE  
REFERENCE #:  
DATE OF BIRTH:  
REPORT DATE:



HomeDNA™

# YOUR PERSONALIZED REPORT

## CONGRATULATIONS!

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You will receive insights about your body that have never before been available. Healthy Weight uses DNA analysis to provide a roadmap of your genes that are specifically connected to diet and exercise. This report also gives direction on how to potentially optimize your health and well-being with this knowledge. **No more trial and error!**

### BODY TRAITS ANALYZED

This report provides results in four key areas that can affect the way your body looks and feels:

1. **Weight Loss Ability**
2. **Food**
3. **Nutrients**
4. **Response to Exercise**

Your analyzed genotype results are followed by a **detailed explanation** of and **success strategy** for each of these four categories.

Some of the results are directly related to weight loss efforts from diet and exercise. Others are relevant because they can affect how you feel and how your body functions optimally, and so can affect your performance and your efforts to manage your body weight.

### HOW RESULTS ARE DETERMINED

We provide a genetic analysis that indicates which gene combinations you have in each category. You receive a rating based on our calculated score for each trait in a category. Some categories only have one gene associated with that trait; other categories have several genes associated with that trait. Our calculated score reflects the potential combined influences from one or more genes.

### LEVERAGING THE LATEST RESEARCH

We use the largest and most scientifically valid genome-wide association studies to calculate a score for the different genes or gene combinations. Healthy Weight maintains a continually updated research database, and our analyses are modified as new and better research becomes available. We have carefully selected the **best available research** upon which to base our analysis and recommendations.

### THIS REPORT SHOWS YOU:

- What your genotypes suggest about your ability to lose weight and body fat in response to different types of diets and exercise programs.
- Your potential response to a variety of micronutrients
- The likely health-effects you may experience from regular exercise

# YOUR PERSONALIZED REPORT

Our medical team has evaluated your potential response and provides you with concrete success strategies based on the latest research recommendations. This guidance may give you that extra edge in finding the right plan that helps you maximize the results you get from dieting and exercise.

**While we can't change our genes, we can change our behaviors to take advantage of what our genes say about our bodies.**





## WHAT IS A GENE?

A gene is the basic physical and functional unit of heredity. Genes, which are made up of DNA, act as instructions to make molecules called proteins. In humans, genes vary in size from a few hundred DNA bases to more than 2 million bases. The Human Genome Project has estimated that humans have between 20,000 and 25,000 genes.

Every person has two copies of each gene, one inherited from each parent. Most genes are the same in all people, but a small number of genes (less than 1 percent of the total) are slightly different between people. Alleles are forms of the same gene with small differences in their sequence of DNA bases. These small differences can contribute to each person's unique physical features. Keep in mind that genes for certain traits can be present, but might not be "expressed." Whether a gene is turned "on" or "off" to express, or not express, a specific trait often depends on lifestyle behaviors and environmental factors.

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# REPORT SUMMARY

CATEGORY	RATING	GENES
 <b>WEIGHT LOSS ABILITY</b>		
Weight Loss Ability With Diet And Exercise	<b>BELOW AVERAGE</b>	FTO, TCF7L2, MTNR1B, PPARG, BDNF, ABCB11
 <b>FOOD</b>		
Protein Utilization	<b>NORMAL</b>	FTO
Fat Utilization	<b>LOW</b>	PPARG, TCF7L2, APOA5, CRY2, MTNR1B, PPM1K
Carb Utilization	<b>NORMAL</b>	IRS1
 <b>NUTRIENTS</b>		
Vitamin B9 – Folate Tendency	<b>NORMAL</b>	MTHFR
Vitamin A Tendency	<b>NORMAL</b>	BCM01
Vitamin B6 Tendency	<b>LOW</b>	NBPF3
Vitamin B12 Tendency	<b>LOW</b>	FUT2
Vitamin C Tendency	<b>NORMAL</b>	SLC23A1
Vitamin D Tendency	<b>NORMAL</b>	GC, NADSYN1, CYP2R1
 <b>EXERCISE</b>		
Fat Loss Response To Cardio	<b>BELOW AVERAGE</b>	ADRB2, LPL
Fitness Response To Cardio	<b>BELOW AVERAGE</b>	AMPD1, APOE
Body Composition Response To Strength Training	<b>ENHANCED</b>	NRXN3, GNPDA2, LRRN6C, PRKD1, GPRC5B, SLC39A8, FTO, FLJ35779, MAP2K5, QPCTL-GIPR, NEGR1, LRP1B, MTCH2, MTIF3, RPL27A, EC16B, FAIM2, FANCL, ETV5, TFAP2B
Hdl Response To Cardio	<b>ENHANCED</b>	APOE
Insulin Sensitivity Response To Cardio	<b>NORMAL</b>	LIPC
Glucose Response To Cardio	<b>NORMAL</b>	PPARG





# WEIGHT LOSS ABILITY

## SUMMARY

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### Is Your Ability to Lose Weight Normal, Below Average, or Low?

The genes tested in this section relate to your ability to lose weight from a program of regular diet and exercise. Results can provide insights into how you might tweak your approach to diet and exercise to optimize fat-loss results.

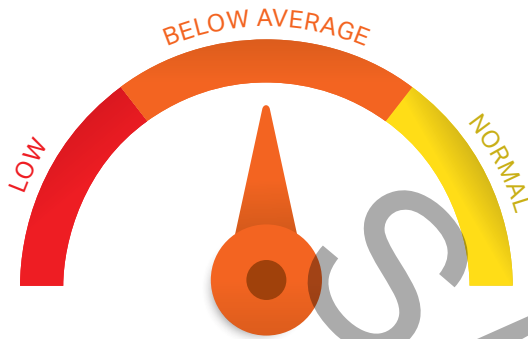
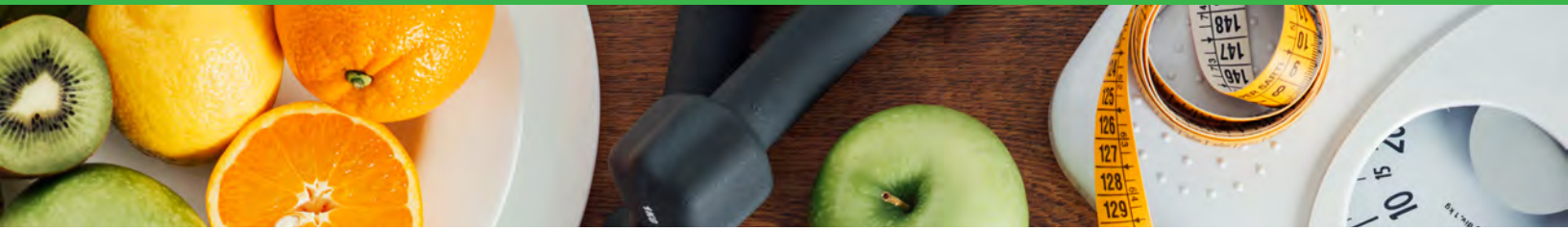
The genes included in this category have all been shown in studies to have statistically significant associations with a person's ability to lose weight and keep it off.

Several large studies showed that people who participated in intensive and long-term diet and exercise programs exhibited significantly different weight loss responses based upon their genetic profile. Those people who carried the most "unfavorable" pairs of these 6 genes lost weight with the diet and exercise program—but, on average, they tended to lose less weight compared to other participants who did not carry, or who have fewer of the "unfavorable" genotypes. Also, after completing the diet and exercise program, people with more of the "unfavorable" genes were, on average, also more likely to regain some of the weight that they had lost.

Our analysis investigated which genotype for each of these 6 genes was present in your DNA. Your rating of either **LOW**, **BELOW AVERAGE**, **NORMAL** or reflects whether your genotypes included those that carried a risk of reduced weight loss ability.



# WEIGHT LOSS ABILITY



## YOUR GENETIC PROFILE INDICATES THAT YOUR WEIGHT LOSS ABILITY IS **BELOW AVERAGE**

*This does not mean that you cannot lose weight for a diet and exercise program. It just means that, compared to other people with a different genotype, you may lose slightly less weight or body fat than those with a more favorable genotype who are following a similar program.*

### WHAT YOUR GENES SAY ABOUT YOU

Your score reflects the fact that among the genes investigated, you had a few of the unfavorable gene combinations that could make you slightly resistant to both losing weight and keeping it off. This means that, compared to someone else with a more favorable genotype, *you might lose less weight than someone else with a different genotype when you make lifestyle changes by cutting calories in your diet and by burning extra calories when you exercise.* This result also suggests that you may be at a slightly higher risk of later regaining the weight you lose compared to someone else with a more favorable genotype.

Does this result mean that you cannot lose weight? Absolutely not! Remember that these results only indicate your **potential** based on genetic factors, but many other factors also affect the outcome. Even if you have the genotypes that may decrease your ability to lose weight, whether those genes are expressed or not depends upon diet, exercise and environmental influences. However, your results do suggest that it may be a good idea to employ strategies that will maximize your results.

### SUCCESS STRATEGIES

Weight loss comes from reducing the number of calories you eat and increasing the number of calories that you burn from exercise. The most powerful—and permanent—weight loss comes when you do both. Choose a plan that is most likely to work for you. Following the Healthy Weight suggestions from the genetic analysis of your **FOOD CATEGORIES** and **EXERCISE** genes can help you identify foods and a fitness plan that may make it easier to lose weight. Different approaches work for different people. Here are some diet and exercise tips that may be helpful.

### TIPS FOR EFFECTIVE DIETING

- *Choose a plan that you will enjoy and that you will be able to stick to. It should include foods that taste good to you and an approach that fits with your lifestyle*
- *Pay attention to influences that make it hard for you to choose the right foods or stick to a diet. For example, if you travel frequently and find it hard to eat well on the road, identify foods you can carry with you and the healthiest fast-food choices you might need to rely on*
- *Identify reasons why you didn't stick to past diets. Develop back-up plans so that you aren't derailed from your diet if the same, or similar, circumstances arise again*



# WEIGHT LOSS ABILITY

*Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist.*

## TIPS FOR MAXIMIZING CALORIE BURN

If you are trying to burn more calories through exercise, favor the kind of exercise that burns the most calories in the amount of time that you spend exercising.

- *Cardio workouts: walking, running, cycling, swimming, aerobics, dancing and any of the cardio machines*
- *Fast-paced, boot camp-style or circuit training with weights*

*NOTE: Slower-paced workouts like yoga and pilates do not burn as many calories, so if you are doing these types of workout on most days of the week, focus on doing more cardio workouts instead.*

- *Intensity is key for most people: the harder you work, the more calories you can burn. But if you are not fit enough to work hard, you'll need to start easy and work up to workouts that last longer and feel harder. Start with 10-20 minute walking sessions and over weeks add more time to the sessions and work at a harder intensity*
- *Weight-training should be a part of your exercise plan. When you lift weights, you can make a diet more effective by preventing or minimizing the loss of muscle that occurs with dieting alone. Plus, certain types of high-intensity weight-lifting (doing circuits with cardio intervals, for example), may help rev your body up to burn a few extra calories in the hours after a workout*
- *Reduce your sitting time! While standing more or moving around throughout the day is not considered exercise, the physical activity does add up and can help you burn more calories all day and also improve health risk factors.*

*If you are inexperienced in cardio/resistance training/power moves, consult with your physician to see if you are healthy enough to begin an exercise program. Also, please consult a fitness trainer to help determine the safest*

*way to incorporate the recommendations into your workout.*

## RELATED GENES / SNPS

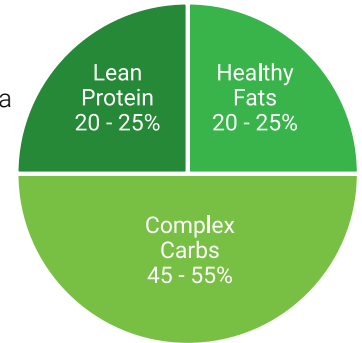
The six genes and their associated SNPs that are included in this category have all been shown in scientifically sound studies to have statistically significant associations with a person's ability to lose weight and keep it off. Several large studies have shown that people who participated in intensive and long-term diet and exercise programs exhibited significantly different weight loss responses based upon their genetic profile. Those people who carried the most 'unfavorable' pairs of genes, or genes, lost weight with the diet and exercise program—but, on average, they tended to lose less weight compared to other participants who had fewer, or who did not carry the 'unfavorable' genotypes. Also, after completing the diet and exercise program, people with more of the 'unfavorable' genes were, on average, also likely to regain some of the weight that they had lost. Keep in mind, however, that great individual variation is seen in research studies like these. The stated results are an average of all those within a group, but there can still be differences even among those with the same genotype.

Our analysis investigated which genotype for each of these 6 genes was present in your DNA. Your rating of either **LOW**, **BELOW AVERAGE**, **NORMAL** reflects whether your genotypes included those that carried a risk of reduced weight loss ability.

## SUMMARY

### WHAT FOODS DO YOU NEED TO EAT?

Your genotype suggests that you may have a better response to a weight-loss diet if daily calories come from the following proportions of fat, carbohydrates, and protein. You can monitor this with a diet log.



Based on your gender, age, height, current weight and current activity level, we recommend a diet of approximately 1,703 calories per day to lose weight. This number was calculated estimating your total energy expenditure, or the number of calories your body needs each day. Since you are interested in losing weight, you will need to eat fewer calories than your total energy expenditure. We suggest a modest calorie reduction of 20 percent. We have calculated this reduction into our calorie recommendation for you, so if you eat around 1,703 calories per day, you can expect to lose weight. This is not a drastic calorie reduction, so you should not feel hungry or like you are denying yourself food if you eat this many calories.

The amount of exercise you get can change your energy requirements. Therefore, you may need to eat more calories than this is if you are performing 45 minutes or more of moderate-to-high intensity cardio exercise on a daily basis.

Here are suggested macronutrient ranges to follow that may optimize the weight loss from your diet.

RECOMMENDATION	PERCENT	GRAMS	CALORIES
<b>PROTEIN</b> Choose a reduced-calorie diet that is between 20-25% protein. Get your protein from mostly plant food sources such as beans, legumes, nuts, seeds, whole grains and vegetables.	20% to 25%	85g to 106g	341 to 426
<b>FAT</b> Choose a diet low in fat and saturated fat. Get your fats mostly from plant foods, but avoid excess added oils.	20% to 25%	38g to 47g	341 to 426
<b>CARBOHYDRATES</b> You can lose weight on a reduced calorie diet that is either moderate or low in carbs. Choose complex carbs for more nutrients (veggies, beans, whole grains, etc.) and avoid simple or processed carbs (fries, chips, crackers, etc.).	45% to 55%	192g to 234g	766 to 937

\* Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist.



## SUMMARY

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**CARBOHYDRATES:** You can lose weight on a reduced calorie diet that is either moderate or low in carbs. Choose complex carbs for more fiber and nutrients (veggies, beans, whole grains, etc.) and avoid simple or processed carbs (fries, chips, crackers, etc.).

**FAT:** Choose either a low- or moderate-fat, reduced-calorie diet. Get your fats mostly from plant foods, but avoid excess added oils.

**PROTEIN:** Choose a reduced-calorie diet that is 15-20% protein. Get your protein from mostly plant food sources such as beans, legumes, nuts, seeds, whole grains and vegetables.

The total number of calories or grams from each food category shown represents a recommended amount to consume each day. To determine your percentages from each category, such as the fat or protein content of ALL the foods you eat in a day, you'll need to use a dietary app or online food log. You input what you eat and it will assess your overall breakdown at the end of each day. We provide you with sample menus that can give you an idea of what a menu with your recommended ranges will look like, but still recommend you use these other resources.

SAMPLE





## Your genetic profile indicates your response is **NORMAL**

*This indicates that the amount of weight you lose when you go on a diet is not likely to be affected by the percentage of protein you eat. Choose a diet that is from 10% to 30% protein from plant or animal food sources.*

### WHAT YOUR GENES SAY ABOUT YOU

Your genotype does not carry the allele combinations that seem to influence weight loss and lean body mass loss in response to the percentage of protein in the diet. This suggests that the amount of weight or body fat **that you lose from a diet is not likely to be affected by the percentage of protein that you eat.**

### SUCCESS STRATEGIES

The percentage of protein that you should eat is relative to the total amount of daily calories you take in, and so what is a "low" vs "high" amount can vary depending upon how many calories you ingest overall.

The body must get a certain minimum amount of protein for normal functioning, and that is considered to be around 10% of total daily calories when you are eating enough food to meet your daily energy needs. This minimum amount of protein must be eaten to support processes such as enzyme and hormone production, cell repair and synthesis of skin and hair cells.

If you are dieting and therefore eating a reduced-calorie diet, consuming a "high" percentage of protein is recommended so that you make sure to obtain the minimum amount your body needs. The recommended daily allowance for protein is determined based on your body weight.

- *On average, the recommendation is to obtain between 0.8 and 1 gram of protein per 1 kilogram of body weight. So if you weigh 175 lbs, or 80 kg, it is recommended that you get between 64 and 80 grams of protein per day*
- *If you eat 2,500 calories daily while on a normal food plan, you can get this amount by eating between 10% and 13% protein in your diet*
- *If you go on a calorie-reduced diet and consume only 1,500 calories, to reach your quota you may need to eat a slightly higher percentage of protein, around 17% to 21% protein*



It's a good idea to get a sense of how much you are getting by recording your food intake for at least a week and entering it into a diet app or online nutrition log that can calculate the percentage of each of the food categories you eat.

*Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist.*

## RELATED GENES / SNPS

The genes included in this category have consistently been shown to be associated with body fat mass and BMI (Body Mass Index). One large study found that people with the unfavorable genotype who dieted lost more weight, body fat and fat in the torso if they ate a moderate-to-high protein diet (25% of total daily calories) compared to a lower protein diet (15% of total daily calories), regardless of fat and carbohydrate distribution. However, they also lost more non-fat mass—which includes muscle—with the weight loss, even though they were eating a higher-protein diet and exercising.

Our analysis of your genes investigated which genotype is present in your DNA. Your rating of either **NORMAL**, **SLIGHTLY ENHANCED**, or **ENHANCED** reflects whether your genotype includes those alleles that exhibit protein sensitivity. Their presence can result in increased weight and fat loss on a moderate-to-high protein, reduced-calorie diet.

SAMPLE



## YOUR GENETIC PROFILE INDICATES THAT YOUR PROTEIN UTILIZATION OF FAT IS **LOW**

*You may be sensitive to too much total fat and/or too much saturated fat in your diet. If you are dieting, or reducing calories to create a negative energy balance, you may experience less weight loss with a higher-fat diet.*

### WHAT YOUR GENES SAY ABOUT YOU

For the genes investigated, your genotype includes some of the unfavorable allele combinations. This means that **you may be sensitive to the amount and type of fat in your diet**. Research has shown that people with a similar genotype profile tend to have more body fat when they have more fat in their diet and they lose less weight when they are on a diet that contains a high amount of fat, especially saturated fat. This result also suggests that **you may have a reduced level of fat oxidation, or fat-burning ability, when you eat a high fat diet**.

### SUCCESS STRATEGIES

Since your genes suggest that you may be sensitive to the fat in your diet and that you may be less efficient at burning fat when you eat a high-fat diet, following a low-fat diet and keeping saturated fat to a minimum may help you to control your body weight and body fat, and to lose more weight when you diet.

#### So how much fat should you eat?

There are varying definitions of what is considered "low fat." Studies that look at dietary fat vary in how they quantify fat and there is no clear consensus on what constitutes a "high fat" vs. a "low fat" diet. The Acceptable Macro nutrient Distribution Range (AMDR) for dietary fat that is recommended by the Institute of Medicine is a daily fat intake that is between 20% and 35% of total daily calories and it is recommended to eat fewer than 10% of calories from saturated fats.

- A high-fat diet has a percentage of fat intake on the upper end of the AMDR range, so from 30% to 40% of the day's total calories. People who eat a lot of fast food and animal foods like meat and cheese can have fat intakes that are 50% or greater. However, some people who choose to eat a very low carb diet may consume up to 60% or 70% fat
- A low-fat diet is usually considered to be one consisting of a percentage of fat intake that is on the lower end of the AMDR range, so from 15% to 25% of the day's total calories

Since your genetic profile indicates that you might benefit from a lower-fat diet, it is suggested that you **aim for the lower end of the fat intake range, so from 10% to 20% of total calories**



**coming from fat**, and very little saturated fat.\*

It's tough to know how much fat you get unless you are actively tracking what you eat and entering it into a diet app or online nutrition log. You might find it helpful to first determine how much fat you are currently eating so that you can identify ways to decrease it to desired levels if it is too high. If you are eating more fat than is recommended, analyze what you eat and use the tips below to reduce the fat.

*\*Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist.*

## EASY WAYS TO REDUCE YOUR TOTAL FAT INTAKE

- *Stick to a plant-based diet: Eat fewer animal foods (meat, poultry and dairy foods)*
- *If you eat animal foods, choose leaner or lower-fat versions. Since even lean meats still contain fat, including saturated fat, control portion sizes and avoid eating meat at every meal, or even every day*
- *Substitute plant versions of animal foods: Try almond, soy or coconut-based yogurts, substitute plant milks (soy, almond, rice, etc.) for dairy milk*
- *Identify foods you prepare that you normally add fat to (oil, butter, cream, cheese, meat) and try to find a non-fat substitute*
- *Reduce the amount of oil you use, or omit it completely*

## TO REDUCE SATURATED FAT

- *Try vegan cheeses (such as nut cheeses made from cashews, almonds or macadamia nuts)*
- *Use healthy oils (sunflower, safflower, coconut) instead of butter or cream for cooking or seasoning*

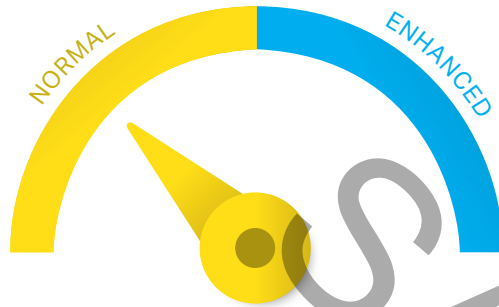
- *Choose plant-based spreads instead of using butter. Use peanut butter, hummus, pesto sauce, avocado, etc.*

*Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist.*

## RELATED GENES / SNPS

The genes included in this category have all been shown in scientifically-sound studies to have statistically-significant associations with the sensitivity people may have to eating a diet high in fat. These studies showed that the amount of fat in the diet affected how much weight individuals lost, depending on their genotype for these genes. One study found that those people with an unfavorable genotype were more likely to have more body fat, a larger waist size, and a higher BMI (Body Mass Index) proportionate to how much fat they ate, compared to others without the same genotypes. Another study found that people with a protective genotype appeared to be able to consume greater amounts of fat but without exhibiting higher BMIs. Another study found that people who went on a higher-fat, low-calorie diet lost weight, but they lost less weight if they had an unfavorable genotype, compared to those with a more favorable genotype.

Our analysis of your genes investigated which genotype for each of these six genes was present in your DNA. Your rating of either **LOW** or **NORMAL** reflects whether your genotypes include some or all of those factors that carry a risk of reduced weight loss ability from a high-fat diet.



## YOUR GENETIC PROFILE INDICATES THAT YOUR UTILIZATION OF COMPLEX CARBOHYDRATES IS **NORMAL**

The percentage of complex carbohydrates in a reduced-calorie diet may not affect your weight loss results—you can expect to lose a similar amount of weight with either a low, moderate or high complex carbohydrate diet.

### WHAT YOUR GENES SAY ABOUT YOU

Your score reflects the fact that your genotype does not appear to produce greater weight loss with a higher complex carbohydrate diet, and **you can expect to lose around the same amount of weight with either a low, moderate or higher complex carb diet.**

Complex carbs provide the most nutrients and fiber and, if you exercise, can provide you with longer-lasting energy.

### SUCCESS STRATEGIES

- To lose weight, your genotype suggests that you can lose weight with any reduced-calorie diet, regardless of food-category proportions, as long as you reduce overall calories to fewer than you burn each day.
- Study your results from the other FOOD CATEGORIES genetic analyses for more guidance on the best type of diet to choose
- If you have certain health conditions, it may be optimal to adapt your eating choices based on established dietary recommendations for specific issues. For example, if you have health conditions like poor cholesterol or hypertension, a lower carb and higher fat diet may not be beneficial. You may experience more health benefits from a plant-based diet that is very low in fat from foods (such as meat, cheese and even avocado) or added fats (like oils and butter)
- To achieve success with any approach, and to keep the weight you lose off for the long term, you must choose a plan that is easy to stick to. It's the long-term adherence that will make a difference in how lean you are over time

*Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist.*

Foods high in carbohydrates that are more processed may have higher GI numbers. So this tool may help you identify foods that may be more or less processed and this may help you make more nutritious food choices. Some people believe that choosing low glycemic foods can aid weight loss, but there is no evidence that glycemic index affects body weight. How many calories you consume, no matter the type, is the best predictor of weight loss:





the fewer you eat, the more weight you will lose.

## RELATED GENES / SNPS

The genes included in this category have been shown to be associated with a person's insulin sensitivity and the potential effects of the amount of carbohydrates and fat in the diet. Insulin is a hormone released by the body that helps cells take in glucose, or sugar, for energy. Glucose is present in the blood after the digestion of carbohydrates from foods like fruit, vegetables, legumes and grains. Insulin is also released in response to eating protein as it helps to shuttle amino acids into cells, as well.

Our body relies on glucose, and this is why blood sugar levels are maintained within a consistent range. In fact, brain cells and red blood cells use glucose as their primary source of energy. Cells also use fat as a fuel source, but to metabolize fat, there must be some glucose present to complete the process. Glucose is a very important nutrient.

But sometimes cells do not respond to the insulin being released, a condition known as insulin resistance. The result is the bloodstream can be overloaded with glucose. Chronic high blood glucose levels can lead to diabetes, or uncontrolled high blood sugar. It is not known exactly what causes insulin resistance, although it appears that increased intake of protein and fat can cause fat buildup in muscle cells that blocks the activity of the insulin receptors. People who are overweight and/or physically inactive are at higher risk of insulin resistance.

Since carbohydrate intake triggers insulin release, many people assume that eating more carbs is not healthy and can lead to body fat and weight gain, as well as diabetes. But the relationship is not that simple: many people who eat a high carbohydrate diet are not overweight and do not have diabetes, and, in fact, my have much lower levels of blood glucose. Several large epidemiological studies have shown that increased carb intake actually leads to a lower risk of diabetes and that, surprisingly, increased protein intake, increases the diabetes risk.

The type of carbs you eat play a role: If you eat mostly processed carbs, you are likely to release greater amounts of insulin and this

could affect your insulin resistance.

The gene in this category seems to influence insulin resistance and the body's response to carbs in the diet. One long term study found that people with a variant of this gene who ate a high carbohydrate, lower fat diet that consisted of high fiber, whole plant foods, as opposed to processed, lower fiber carbs, had greater insulin sensitivity—and lower levels of insulin and insulin resistance—and experienced greater weight loss compared to eating a lower carb, higher fat diet.

Our analysis of your genes investigated which genotype for this gene was present in your DNA. Your rating of either **NORMAL**, or **ENHANCED** reflects whether your genotype included those genes that improved insulin resistance and weight loss from a higher carb, and slightly lower fat diet.



## SUMMARY

### WHAT NUTRIENTS DO I NEED?

NUTRIENTS	TENDENCY	GOOD SOURCES INCLUDE
Folate	NORMAL	Pinto Beans, Asparagus, Broccoli
Vitamin A	NORMAL	Carrots, Kale, Tuna
Vitamin B6	LOW	Pistachios, Watermelon, Potatoes
Vitamin B12	LOW	Lean meat, Seafood, Fortified Dairy Product
Vitamin C	NORMAL	Red Bell Peppers, Strawberries, and Oranges
Vitamin D	NORMAL	Salmon, Egg Yolks, Fortified Dairy Milk

### HOW DO MICRONUTRIENTS AFFECT MY BODY WEIGHT?

Micronutrients have not been shown to have a direct effect on body weight or body fat. So why are they included in this genetic analysis? The vitamins tested play important roles in a variety of functions in the body that may affect your body weight—or your ability to manage it.

Many micronutrients are involved in the body’s metabolism of fat, carbohydrates and protein. When you are eating and exercising, you want your metabolism to function smoothly. The body does find ways to cope when some nutrients are not available. But for optimum performance and energy, you’ll do best when your body has all it needs to work properly.

Some nutrients such as vitamin C and vitamin D may not affect body weight directly, but they play a role in bone health, inflammation and healing. The stresses you put your body under when exercising may be bolstered if you are well nourished in these nutrients.

### DO MY RESULTS SHOW THAT I AM LOW IN NUTRIENTS?

If you scored **LOW** or **BELOW AVERAGE**, your genotype results show that you may have a higher risk for having blood levels of certain nutrients that may be in the lower end of the normal range. For a few nutrients, such as vitamin B12, it may be optimal to be in the mid range of normal, or higher. This genotype risk assessment is based on studies where study participants with certain genotypes for the various nutrients tested were shown to be more likely to be in the lower end of the normal range for a nutrient.

Be careful of assuming these results indicate you are low, or deficient in a certain nutrient. The only way to know for sure if you are in the low end of the normal range for a nutrient, or if you are actually deficient, is to consult with your physician and get a specific blood test designed to assess a specific nutrient. This genetic test can only assess your risk; the blood test is what can assess your actual levels.



## SUMMARY

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### WHICH FOOD CHOICES FOR CERTAIN MACRONUTRIENTS ARE THE BEST FOR ME?

Our genetic testing analyzes your genotype and assesses your potential levels of macronutrients. This testing does not test your individual sensitivity or response to certain foods that may contain these macronutrients. You may have other individualized responses that are not detected in the genetic tests. For example, you may be allergic to the proteins in dairy foods. Or you may have a negative response to the lactose sugars in dairy products. This report cannot inform you about these reactions. Any food recommendations that are suggested to help you obtain certain nutrients should be modified based on other factors that you may already know about.

### HOW CAN I MONITOR MY NUTRIENT INTAKE?

Your body absorbs a certain amount of nutrient as food or supplements are digested. Then your body uses or stores the nutrient as needed. There are many factors that affect how much of a nutrient you take in, how much of a nutrient is absorbed and used by your body, and whether your body stores are in the normal range.

Your genotype for certain nutrients can indicate that you may be at risk for having lower levels of certain nutrients. But since the genotype analysis is not measuring what you eat, the supplements you take, or actually measuring levels in your blood or tissues, the genotype analysis alone cannot relate your true status.

People who are low or deficient in a nutrient may absorb more from food than someone who is not deficient. A person who needs more of a certain nutrient may absorb more of it from a food than someone who has normal levels. There are also other factors that can affect absorption positively or negatively, and that can affect how your body uses what you take in.

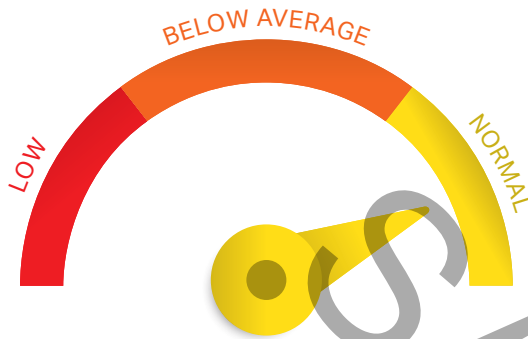
How do you know what your true nutritional status is? A blood test is generally the only way to truly test your true nutritional status. What is in the blood when tested may not always reflect what is in the tissues or how much is being used by the body. But at present, this is the measure used for most nutrients. There may also be different blood tests that monitor the same nutrient.

Keep these factors in mind as you interpret your genotype results and the suggestions given. No one result is going to give you all the information you need. But taken together, the results of your genotype analysis, along with a blood test can help you spot potential areas where you can optimize your nutrition.

### SHOULD YOU TAKE A SUPPLEMENT?

Most nutritionists recommend that nutrients be obtained first through food. Research studies have tended to show more favorable outcomes when research participants obtained nutrients from food sources rather than from supplements. Nutritional experts vary in their opinions about whether people should take supplements or not.

Most supplements are considered safe. But be cautious with dosing because research on appropriate levels has identified ranges for some nutrients beyond which toxic effects can occur. These ranges are known as the Upper Intake Level, or UL. It is difficult to reach the UL by getting the nutrients from food, but it is easy to reach these high risk levels from supplementation. If you do choose to supplement, keep track of the nutrients you get from all foods. Read food labels since some foods that you eat may also be fortified in the supplements you are taking. Use dietary software to input what you eat and supplement with so you can keep an estimate of your total nutrient intake and will be less likely to overdose. Also consult with your doctor if needed. Some supplements, including vitamin A and vitamin B6, can interact with medications you may be taking. For specifics about your nutritional status, contact a medical or dietary professional.



**YOUR GENETIC PROFILE INDICATES THAT YOUR RESPONSE IS NORMAL**

*You appear to be likely to have normal blood levels of folate. To make sure you get enough, make sure to eat plenty of whole plant foods every day.*

**WHAT YOUR GENES SAY ABOUT YOU**

It appears you are likely to have normal blood levels of folate, suggesting you may not have to worry about increased heart-disease risk from higher levels of homocysteine.

**SUCCESS STRATEGIES**

- All women should ensure they get enough folate in their diet. You will get folate that is added to whole grains in cereals and breads, but you should also eat other food sources of folate. The foods highest in folate include legumes, fruits and vegetables, especially greens
- Smoking can also decrease folate levels. You may need to consume more through food and/or supplements if you smoke—or better yet, quit smoking!
- If you eat few vegetables and fruits, your folate intake and blood levels may be low, despite having a more favorable genotype. You may wish to ask your doctor to assess your levels of serum folate with a blood test

*Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist. Eating healthful, vitamin-rich foods is the best way to incorporate micronutrients into your diet. Consult with your physician, dietician, and/or nutritionist before adding over-the-counter supplements to your wellness regimen.*

**RELATED GENES / SNPS**

These genes have been shown to have significant associations with a person's folate, or vitamin B9, status. Folate plays many important roles in the body, including acting as a coenzyme in DNA creation and in energy metabolism reactions. Folate also plays a role in biochemical processes that affect the metabolism of an amino acid: homocysteine. Since homocysteine is a risk factor for heart disease, high levels may be of concern. In child-bearing women, getting sufficient amounts of folate is important because low levels can lead to neural-tube birth defects. As a public health measure, grains are fortified with folate to ensure that women of childbearing age get enough. Low levels of folate can also lead to anemia.



In studies on this gene, people who carried the most unfavorable pairs of genes, or alleles, had only a 10% to 20% efficiency at processing folate. Poor ability to process folate may be fairly common: around 53% of women appear to have these unfavorable genotypes.

## FOLATE-RICH FOODS TO INCLUDE IN YOUR DIET:



Lentils



Pinto Beans

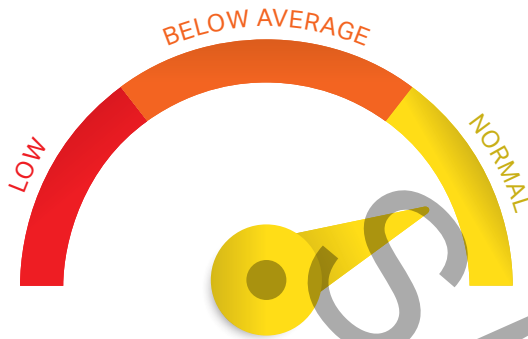


Asparagus



Broccoli





**YOUR GENETIC PROFILE INDICATES THAT YOUR RESPONSE IS NORMAL**

*This suggests that your ability to convert high doses of beta-carotene from a supplement into an active form of Vitamin A is unlikely to be reduced.*

**WHAT YOUR GENES SAY ABOUT YOU**

Your score reflects the fact that, for the gene investigated, your genotype shows few, if any, of the allele combinations that exhibit a diminished response to converting high doses of beta carotene from a supplement into its more active form. This means that if you take a beta-carotene supplement, your ability to convert the nutrient into an active form of Vitamin A is not likely to be reduced. It is unclear what this genotype suggests about converting beta-carotene from food sources, however.

**SUCCESS STRATEGIES**

Vitamin A is needed for good vision and needs may increase in women who are pregnant or lactating. It is easy to get Vitamin A in foods, and the plant forms of beta-carotene also act as a free-radical-fighting antioxidant. Based on this result, it appears that you are unlikely to have problems converting beta-carotene into the active form of Vitamin A. But do make sure to get enough beta-carotene and/or Vitamin A from foods you eat.

*Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist. Eating healthful, vitamin-rich foods is the best way to incorporate micronutrients into your diet. Consult with your physician, dietician, and/or nutritionist before adding over-the-counter supplements to your wellness regimen.*

**RELATED GENES / SNPS**

Genes included in this category have been shown to have statistically significant associations with a person’s blood levels of Vitamin A. Vitamin A promotes good vision, is involved in protein synthesis that affects skin and membrane tissues, and helps support reproduction and growth. The nutrient is found in plant foods in its precursor forms such as beta-carotene. Beta-carotene is converted by the body as it is needed into different active forms of Vitamin A: retinol, retinal and retinoic acid. Animal foods, such as meat and dairy, provide the retinol form of Vitamin A.

Vitamin A in the form of beta-carotene is found in foods such as vegetables, especially leafy greens like spinach and orange foods such as carrots, sweet potatoes, apricots, mango and cantaloupe. Vitamin A is found in its active, retinol, form in dairy and in organ meats such as liver.



# NUTRIENTS | VITAMIN A TENDENCY

## VITAMIN A-RICH FOODS TO INCLUDE IN YOUR DIET:



Broccoli



Swiss Chard



Collard Greens



Kale



Carrots



Butternut Squash



Apricots



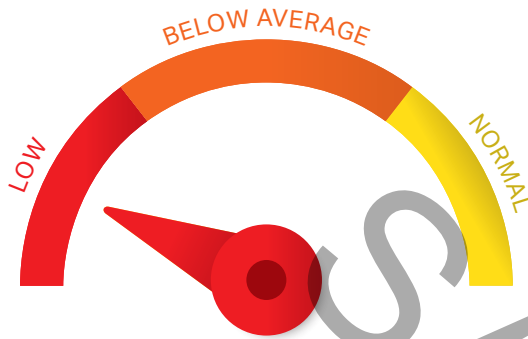
Goat's Cheese



Liver



Tuna



## YOUR GENETIC PROFILE INDICATES THAT YOUR RESPONSE IS **LOW**

You are at risk for having low levels of Vitamin B6. Check your status by asking your doctor for a blood test, and eat more B6-rich foods and supplement if you are low.

### WHAT YOUR GENES SAY ABOUT YOU

Your score reflects that your genotype shows the most unfavorable allele combination. This means there is a risk that your blood levels of B6 may be lower than normal. Keep in mind that increased risk does not mean that your blood levels are low. You can only know this by requesting a blood test from your physician or other healthcare provider.

### SUCCESS STRATEGIES

- Monitor your intake of B6 by keeping a food log and using a dietary app to obtain a nutrient analysis to see how much Vitamin B6 you consume.
- If your blood tests show low levels, you may wish to take a Vitamin B6 supplement. Be sure to avoid high doses, as they can cause nerve damage

*Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist. Eating healthful, vitamin-rich foods is the best way to incorporate micronutrients into your diet. Consult with your physician, dietician, and/or nutritionist before adding over-the-counter supplements to your wellness regimen.*

### RELATED GENES / SNPS

The genes included in this category have been shown to have statistically-significant associations with a person's blood levels of Vitamin B6. In one large study, people who carried the most unfavorable pairs of genes, or alleles, had lower levels of Vitamin B6.

Vitamin B6 is important for nerve-cell function, energy metabolism, and the production of hormones, such as serotonin and epinephrine. Low levels of B6 are also linked to higher levels of homocysteine, which increases heart disease risk. B6 is found in many foods including grains, legumes, vegetables, milk, eggs, fish, lean meat and flour products.

### VITAMIN B6-RICH FOODS TO INCLUDE IN YOUR DIET:



Pistachios



Pinto Beans



# NUTRIENTS | VITAMIN B6 TENDENCY



Wheat Germ



Bananas



Watermelon



Carrots



Spinach



Peas



Squash



Potatoes



Avocados



Yellow-fin Tuna



Sunflower Seeds





## YOUR GENETIC PROFILE INDICATES THAT YOUR RESPONSE IS **LOW**

This suggests that your blood levels of Vitamin B12 may be at the low end of the acceptable range. Ask your doctor to check your Vitamin B12 levels and get them checked on a regular basis. If your levels are low, in addition to getting more Vitamin B12 through foods, you may wish to supplement.

### WHAT YOUR GENES SAY ABOUT YOU

Your genotype shows a higher-risk allele combination and you may have a chance of having blood levels of Vitamin B12 that are at the low-end of the acceptable range. This does not mean that you are likely to be deficient, but even levels at the low end of the normal range have been associated with sub-clinical symptoms. Since Vitamin B12 is stored in the body and is also recycled for reuse, it can take several years before deficiency symptoms may appear.

### SUCCESS STRATEGIES

- Since you may be at risk of having lower Vitamin B12 levels, it is recommended to speak to your doctor about getting periodic blood tests to monitor your levels of Vitamin B12, as well as a related test for methyl malonic acid (MMA)
- A blood test can assess how well nutrients from food and supplements are absorbed. If absorption is impaired, your blood levels may still be low despite an adequate intake. If absorption may be a problem, it is often recommended to bypass the digestive system with either under-the-tongue tablets that are absorbed into the mouth, or injections or a nasal gel which are both available by prescription
- Monitor your intake with a food log using a dietary app that will give you a nutrient analysis of what you eat. If your intake appears to be low, you may wish to supplement or include more fortified foods, especially if you are a vegan

*Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist. Eating healthful, vitamin-rich foods is the best way to incorporate micronutrients into your diet. Consult with your physician, dietician, and/or nutritionist before adding over-the-counter supplements to your wellness regimen.*

### RELATED GENES / SNPS

The genes included in this category have been shown to have significant associations with a person's blood levels of Vitamin B12. In one large study, those women who carried the most unfavorable pairs of genes, or alleles, had slightly lower levels of Vitamin B12 compared to others with more favorable genotypes. However, they were not deficient: their levels were still in the normal range, just on the low end. Around 70% of people have genotypes





that suggest they may be at risk for having blood levels of B12 that are at the lower end of the normal range. There are several reasons why blood levels of B12 can be low. Some people do not get enough in their diet and so they are simply not getting enough of the nutrient. Some other people get enough, but do not absorb it efficiently. A small percentage of people over 50 or those who have had gastrointestinal surgery or GI disorders such as Crohn's disease may also have reduced abilities to absorb it.

Vitamin B12 is important for many processes in the body, including red blood cell formation, neurological function and cognitive performance. Deficiencies of B12 can cause pernicious anemia, and is also associated with high levels of homocysteine, which may impair arteries and increase risk of heart disease. There is some evidence that sub-clinical symptoms may be associated with being in the low end of the normal range.

Vitamin B12 is produced by microorganisms found in soil and water, and in both the guts of animals and humans. In the modern world, highly-sanitized food processing systems have eliminated many naturally occurring sources of Vitamin B12-providing bacteria in plant products. Vitamin B12 is typically obtained from animal foods such as meat, or fortified foods such as dairy and plant milks. Certain mushrooms and seaweed may provide some Vitamin B12, but are not considered to be reliable sources.



Fortified Nutritional Yeast



Fortified Plant Milks

## VITAMIN B12-RICH FOODS TO INCLUDE IN YOUR DIET:



Lean Meat



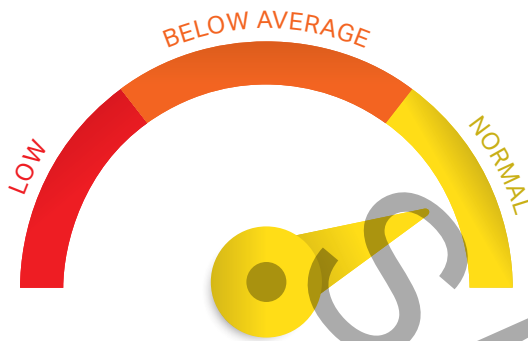
Seafood



Dairy Products



Eggs



## YOUR GENETIC PROFILE INDICATES YOUR RESPONSE IS **NORMAL**

You eat enough Vitamin C-rich foods, you should have normal levels in your blood.

### WHAT YOUR GENES SAY ABOUT YOU

For the gene investigated, your genotype did not show the unfavorable allele combinations. This means that if you consume enough Vitamin C in the foods you eat, blood levels of L-ascorbic acid should be in the normal range. If you smoke, however, you may deplete some of your Vitamin C and may need more.

### SUCCESS STRATEGIES

- To ensure your body gets the Vitamin C it needs, make sure to include a wide variety of plant foods, including citrus in your diet
- If you wish to supplement with Vitamin C, avoid very high doses because they can cause diarrhea and gastrointestinal distress

*Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist. Eating healthful, vitamin-rich foods is the best way to incorporate micronutrients into your diet. Consult with your physician, dietician, and/or nutritionist before adding over-the-counter supplements to your wellness regimen.*

### RELATED GENES / SNPS

The genes included in this category have been shown to have statistically-significant associations with a person's blood levels of L-ascorbic acid, or Vitamin C. People who carry more unfavorable pairs of genes, or alleles, are more likely to have lower blood levels of the nutrient compared to those with different genotypes, although they are not necessarily deficient in Vitamin C.

Vitamin C is a nutrient that has many functions in the body, including acting as an antioxidant. It is also needed for skin and membrane tissues. Low levels have also been associated with diseases such as heart disease and cancer; deficiencies cause scurvy. Vitamin C also helps with the absorption of iron.

This nutrient must be obtained from foods since the human body cannot make its own (as some other animals can). Vitamin C can be found in citrus fruits, but is also in many fruits, vegetables and legumes.



## VITAMIN C-RICH FOODS TO INCLUDE IN YOUR DIET:



Broccoli



Red Bell Peppers



Kiwi Fruit



Brussels Sprouts



Strawberries



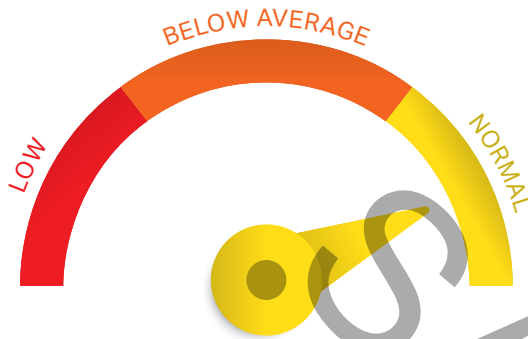
Oranges



Watermelon



Pinto Beans



**YOUR GENETIC PROFILE INDICATES YOUR RESPONSE IS NORMAL**

Make sure to get enough sunlight each week to keep Vitamin D levels in the acceptable range.

**WHAT YOUR GENES SAY ABOUT YOU**

For the genes investigated, your genotype showed few, if any, of the unfavorable allele combinations. This means that, assuming you get adequate sun exposure or Vitamin D from dietary sources, your risk of being deficient in Vitamin D is low.

**SUCCESS STRATEGIES**

- Get at least 10 to 15 minutes (30 to 50 minutes if you have naturally dark skin) of sun exposure several times a week. Spend more time outdoors in winter months or if you live in northern latitudes.
- Get a blood test from your doctor to determine your nutrient levels. If you are deficient in Vitamin D, do a nutrient analysis to determine how much Vitamin D you consume, then eat more foods containing Vitamin D or take supplements

*Before making changes to your diet, consult with your physician, registered dietician, and/or nutritionist. Eating healthful, vitamin-rich foods is the best way to incorporate micronutrients into your diet. Consult with your physician, dietician, and/or nutritionist before adding over-the-counter supplements to your wellness regimen.*

**RELATED GENES / SNPS**

The genes included in this category have been shown to have statistically significant associations with a person's blood levels of Vitamin D (which is actually a hormone). People who carry unfavorable pairs of genes, or alleles, have a higher risk of having low levels of Vitamin D, and those who carry several unfavorable pairs have a much higher chance of being deficient in Vitamin D.

Vitamin D has been proven in research to be crucial for your bone health. It is unclear how it affects other aspects of your health, although research has shown that low levels of Vitamin D are associated with a variety of conditions, including heart disease, diabetes, depression, and cancer.

A blood test from your doctor can determine your blood levels of Vitamin D. There is debate among scientists about what levels of Vitamin D are optimal, but the general consensus is that a large





percentage of people have blood levels that are too low.

Vitamin D is primarily produced by the body from exposure to ultraviolet rays from sunlight, and this is considered to be the optimal source since Vitamin D generated by the body lasts longer in the body than Vitamin D taken in supplement form. Your levels are likely to be higher if you live in the southern latitudes and during the summer. However, it is not uncommon for people with lots of exposure to the sun to still have low levels of Vitamin D. In general, only 10 to 15 minutes of sun exposure to bare skin per day during the summer months is needed for a Caucasian to produce the Vitamin D he or she needs. Darker skinned people will need to spend 2-5 times more time in the sun. Since Vitamin D is stored in the body, stores can be built up during warmer months and may compensate for less sun exposure during winter months.

Vitamin D can be obtained through foods such as oily fish and egg yolks, as well as fortified dairy and plant milks. Vitamin D can also be taken in supplements. If you test low and choose to take a Vitamin D supplement, be careful of taking higher doses because there can be adverse effects.

### VITAMIN D-RICH FOODS TO INCLUDE IN YOUR DIET:



Almond, Soy, or Other Plant Milk



Fortified Dairy Milk



Salmon



Mackerel



Sardines



Egg Yolk



## SUMMARY

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### HOW MUCH SHOULD YOU EXERCISE?

Your body weight and body fat levels are the direct result of how much you eat as well as how much and how you move. Certain genes can play a role in your response to what you eat and how you exercise.

Traditionally, most people focus on dieting to lose weight, but exercise is a key part of losing weight effectively and it's been proven in research to be crucial for keeping the weight you lose off.

### THERE ARE TWO MAJOR THINGS YOU SHOULD KNOW ABOUT EXERCISING TO LOSE WEIGHT?

- 1. Any regular exercise can enhance weight loss from dieting.** If you have a certain genotype, you may experience a greater or lesser response compared to others, but your response still depends on the type and amount of exercise that you do. For weight loss and fat loss, the more calories you burn through exercise, the better your results will be.

Achieve a greater calorie burn by focusing on cardio exercise such as walking, running, swimming, cycling, or cardio machines. When you move, you can increase your calorie burn in one of two ways: you can exercise harder at a higher intensity, or you can keep your intensity easier and exercise at a moderate pace, but for longer sessions. We'll explain how to monitor and manipulate your intensity in greater detail later in your report.

- 2. Muscle matters, too.** It keeps you strong and it helps your body stay firm and shapely. You may have a certain genotype that makes you more or less muscular, or that makes you more or less strong, but your muscle response to both dieting and exercise will still be affected by the type and amount of exercise that you do.

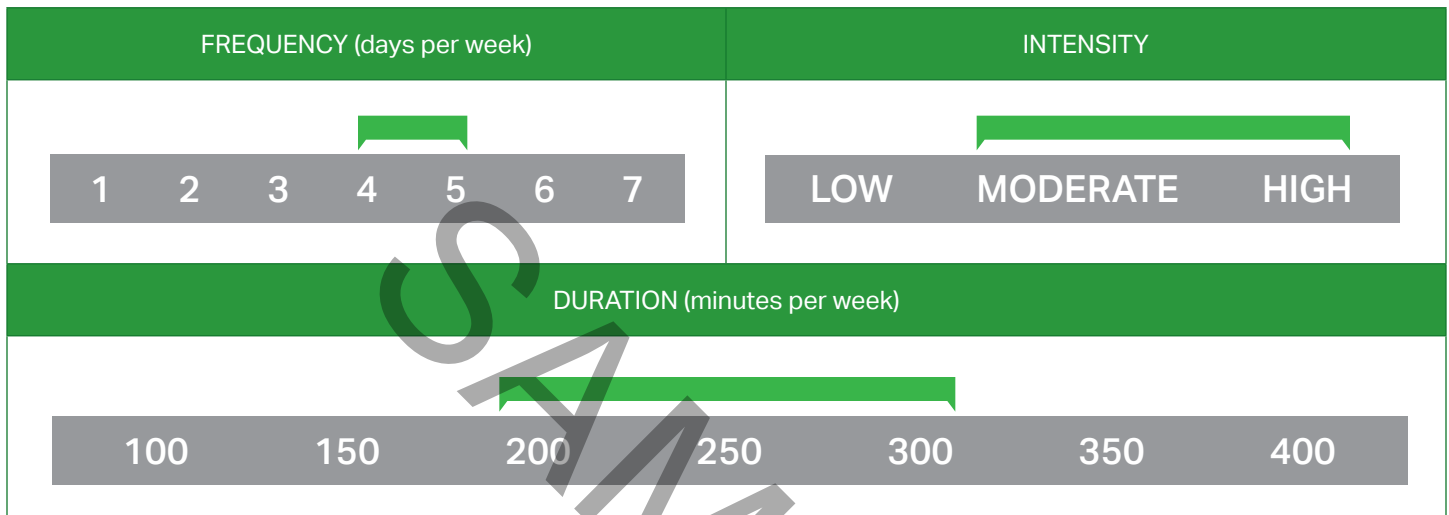
When you are dieting, it is very important to include exercise that helps to strengthen muscle. When a person loses weight by only dieting and not exercising, they are likely to lose muscle mass along with the pounds of fat that are lost. If you exercise, especially if you do resistance training (lift weights), you can prevent or minimize the loss of muscle mass that can occur with weight loss.





## SUMMARY

### CARDIO EXERCISE



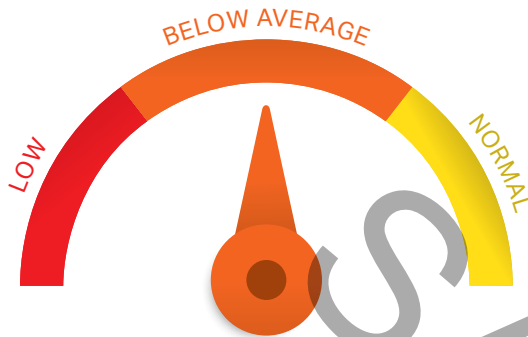
*If you are inexperienced in cardio/resistance training/power moves, consult with your physician to see if you are healthy enough to begin an exercise program. Also, please consult a fitness trainer to help determine the safest way to incorporate the recommendations into your workout.*

Perform moderate to vigorous intensity cardiovascular exercise 4 to 5 days a week for a minimum of 200-300 minutes per week. You can achieve greater results by lengthening the duration of moderate intensity cardio, focusing on endurance activities like biking or running.

### STRENGTH TRAINING



Lift weights 2 to 3 days per week using weights that are heavy enough to challenge you at the end of each of 2 to 3 sets of 8 to 15 reps. If by the end of each set of repetitions, you feel like you could keep performing the exercise, the weight you are using is too light to provide a sufficient muscle-strengthening stimulus. As you near the end of the exercise, you should feel like the last 2 to 3 reps are difficult to complete while maintaining good form.



**YOUR GENETIC PROFILE INDICATES YOUR FAT LOSS RESPONSE TO CARDIO IS **BELOW AVERAGE****

You should experience fat loss when performing cardio for 90 to 150 minutes three (3) days per week, but you may experience greater benefits by doing more: make each session longer, exercise at a higher intensity and aim for at least five (5) days a week.

**WHAT YOUR GENES SAY ABOUT YOU**

Among the genes investigated, you have a few of the “unfavorable” gene combinations. This means that, based on your genes, you have a greater chance of showing a slightly diminished fat loss response to doing a minimal cardio routine three days per week, compared to others with a more favorable genotype. This does not mean that you will not or cannot lose fat, however. This result only suggests that you may have a slightly more difficult time losing as much as someone else with a more favorable genotype. Genetic predisposition plays a role, but other factors also affect how much fat you lose.

**SUCCESS STRATEGIES**

- For you, three days of exercise per week may not be enough to experience optimal fat and weight loss results. You may get results from more exercise because you will burn more calories. Aim to get at least 4 to 5 days per week of cardio exercise for a total of 200 to 300 minutes per week
- Include muscle-strengthening exercises 2 to 3 days per week
- You may benefit from the increased calorie burn of resistance interval training, where you alternate high-intensity resistance training exercises followed by low-to-moderate cardio intervals. Warmup with light cardio movement such as marching in place for 10 minutes, then do a one minute burst of fast resistance activity—squats while holding moderately heavy weights, for example. Then follow that burst with another 3 to 5 minutes of easy cardio movements such as stepping up and down off a step, and repeat the sequence

*If you are inexperienced in cardio/resistance training/power moves, consult with your physician to see if you are healthy enough to begin an exercise program. Also, please consult a fitness trainer to help determine the safest way to incorporate the recommendations into your workout.*

**RELATED GENES / SNPS**

The genes included in this category have been shown in a study to have significant associations with a person’s ability to lose fat from a regular program of three (3) days per week of cardio exercise. A large study investigating these genes put sedentary men and women on a 20-week cardio exercise program. The study subjects exercised on a bike three times per week, starting



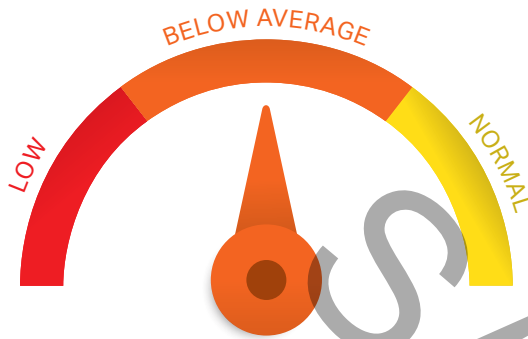
## EXERCISE | FAT LOSS RESPONSE: CARDIO

at a moderate intensity for 30 minutes per session over the first few weeks. They built up to a longer, slightly harder workout that lasted 50 minutes for the last 6 of the 20 weeks.

Men in the study did not appear to have a different response based on their genotype. However, women who carried the most “unfavorable” genotypes had a slightly lesser fat loss response. In other words, they did lose fat from the exercise program—but they tended to lose less fat compared to other study participants who did not carry the “unfavorable” genotypes.

Our genetic analysis investigated which genotype for each of these genes was present in your DNA. Your rating of either **LOW**, **BELOW AVERAGE** or **NORMAL** reflects whether your genotypes included those that carried a risk of experiencing a reduced fat loss response from a regular program of cardio exercise.

SAMPLE



**YOUR GENETIC PROFILE INDICATES THAT YOUR FITNESS RESPONSE TO MODERATE-TO-HIGH-INTENSITY CARDIO IS BELOW AVERAGE**

*You may be less likely to experience optimal cardiovascular fitness improvements from high-intensity cardio compared to others with a more favorable genotype.*

**WHAT YOUR GENES SAY ABOUT YOU**

Your genotype shows the “unfavorable” gene combinations. This means you have the potential to not see the same improvements in fitness from high-intensity cardio workouts as someone else with a more favorable genotype would. The good news is that you might be able to attain the same cardiovascular benefits by working at lower intensities.

**SUCCESS STRATEGIES**

- Your genotype suggests you might benefit most from sticking to moderate intensity workouts. Therefore, you might see better fitness results from longer endurance workouts.
- Aim for more moderate-intensity cardio workouts on four (4) or more days per week that last longer over time. Start with 20 to 30 minute sessions and work up to 60 to 90 minutes. You may want to consider training for an endurance event like a charity bike race or a 10K, half-marathon, or even a full marathon.

*If you are inexperienced in cardio/resistance training/power moves, consult with your physician to see if you are healthy enough to begin an exercise program. Also, please consult a fitness trainer to help determine the safest way to incorporate the recommendations into your workout.*

**RELATED GENES / SNPS**

The genes included in this category have been shown to have significant associations with a person’s cardiovascular fitness response to moderate-to-high intensity exercise.

The more you exercise, the fitter you become. This allows you to work harder and longer—and to continue developing higher levels of fitness. The more exercise you can handle, the more calories you can burn because you can work at higher intensities. Getting fitter is a key aspect that affects your ability to manage your body weight with exercise.

Many factors play a role in being able to push hard without feeling overly fatigued when exercising. One indication of fitness is oxygen capacity, also known as VO2 Max. As a person becomes fitter, their ability to take in more oxygen improves, which helps them to work out harder and longer. The greater one’s VO2 Max, the more exercise they can handle since they can take in more

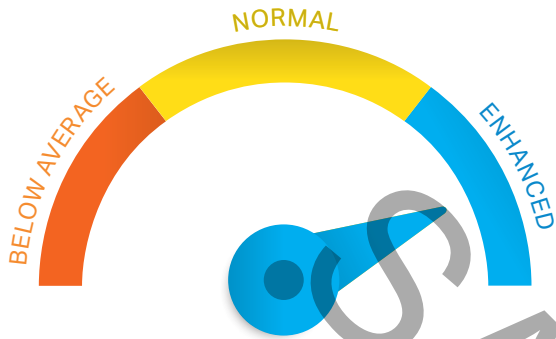


oxygen that working muscles need during intense physical activity.

Several large studies investigating these genes had sedentary men and women perform cardio exercise 3-4 days per week for 5-6 months. They used a variety of cardio machines (bike, treadmill, rowing machine, step-climber, etc.) for up to 50 minutes. Those people with the unfavorable genotype experienced smaller gains in their cardiovascular fitness from the training. They seemed to show a decreased ability to perform at higher effort levels, suggesting that their optimal fitness response may be better achieved at a lower intensity of exercise.

Our analysis investigated which genotype for these genes was present in your DNA. Your rating of either **LOW**, **BELOW AVERAGE** OR **NORMAL** reflects whether your genotypes included those that carried a risk of reduced cardiovascular fitness response from moderate-to-higher-intensity exercise.

EXAMPLE



## YOUR GENETIC PROFILE INDICATES YOUR BODY COMPOSITION RESPONSE TO STRENGTH TRAINING IS ENHANCED

*In addition to strength improvements, you are more likely to see reductions in your body fat percentage from weight training. Make sure to include resistance exercise 2-3 times a week.*

### WHAT YOUR GENES SAY ABOUT YOU

Your genotype shows the “favorable” gene combinations. This means that, in addition to improvements in strength and muscle mass, you are likely to experience weight loss and a reduction in your body-fat percentage through weight training.

### SUCCESS STRATEGIES

- Make sure to lift weights that are heavy enough to work at a moderate-to-hard intensity, performing 2-3 sets of 8-15 repetitions of each exercise. When the exercises become easy, add more weight to continue obtaining benefit
- You will experience greater fat and weight loss by incorporating cardio workouts on most days of the week, aiming to accumulate 150 to 300 minutes or more of physical activity per week

*If you are inexperienced in cardio/resistance training/power moves, consult with your physician to see if you are healthy enough to begin an exercise program. Also, please consult a fitness trainer to help determine the safest way to incorporate the recommendations into your workout.*

### RELATED GENES / SNPS

**Body composition** is the proportion of muscle mass you have as well as the amount of body fat you have in relation to the muscle. The genes included in this category all have been shown to have significant associations with a person’s ability to improve their body composition and decrease their body fat percentage through resistance exercise. Resistance (weight) training improves strength and the amount of muscle a person has. Weight training can also reduce the percentage, and sometimes the total amount, of body fat. In some people it can also lead to weight loss. An improved body composition contributes to a leaner look and, potentially, a greater number of calories burned each day.

Although resistance training alone has not been shown to produce clinically-significant amounts of weight loss in most studies (because weights workouts do not burn as many calories as cardio), people with the more “favorable” genotype in one large study improved more than just their strength and muscle mass



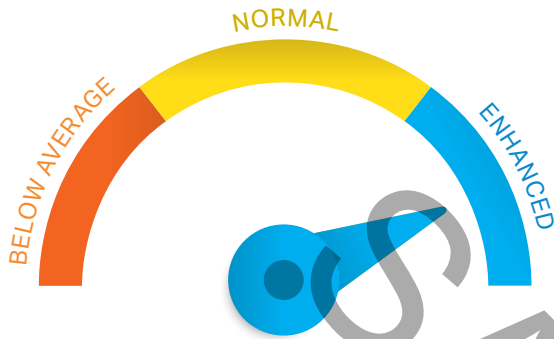


from a year-long program of intense resistance training. Those with the more favorable genotype also experienced weight loss and body fat reduction from the resistance training. Those with the “unfavorable” genotypes showed a decreased ability to lose weight and reduce body fat percentage by resistance training.

Regardless of the weight loss that might occur from weight training, when you are trying to lose weight, it is very important to include resistance training in your routine. Resistance training can minimize or prevent loss of muscle mass that occurs with weight loss when you are dieting.

Our analysis investigated which genotype for these genes is present in your DNA. Your rating of either **BELOW AVERAGE**, **NORMAL** or **ENHANCED** reflects whether your genotypes includes those that carry a risk of an enhanced or reduced body-composition response to resistance training.

SAMPLE



**YOUR GENETIC PROFILE INDICATES YOUR HDL RESPONSE TO CARDIO IS ENHANCED**

For optimal results, do cardio five (5) or more days per week.

### WHAT YOUR GENES SAY ABOUT YOU

Your genotype shows the “favorable” gene combinations. This suggests that you are likely to experience a substantial beneficial boost to your HDL levels from a regular cardio exercise program.

### SUCCESS STRATEGIES

- Your genotype suggests that you can successfully raise your HDL levels with regular cardio. To obtain this benefit, the key is consistency. Every workout you do will boost HDL levels, but to maintain the effect you need to exercise on a regular basis, at least 3-4 days per week
- Higher intensities may give you a greater boost. Aim to push past your comfort zone by moving a little harder or faster during your cardio workout
- What you eat is crucial to help normalize all of your cholesterol levels. A diet high in fiber-filled plant foods and low in saturated animal fats will help lower your total cholesterol, LDL cholesterol and triglyceride values

*If you are inexperienced in cardio/resistance training/power moves, consult with your physician to see if you are healthy enough to begin an exercise program. Also, please consult a fitness trainer to help determine the safest way to incorporate the recommendations into your workout.*

### RELATED GENES / SNPS

The gene included in this category has been shown to have significant associations with a person’s HDL (High-Density Lipoprotein) cholesterol response to cardio exercise. HDL is a protein particle in the blood that carries cholesterol to the liver, helping to clear it from the blood. Excess cholesterol lingering in the blood can contribute to plaque that causes heart disease. If you eat a diet high in saturated fat or cholesterol, having higher levels of HDL is beneficial—which is why it’s considered “good” cholesterol. Even one session of cardio exercise can boost HDL, and regular exercisers tend to have higher HDL.

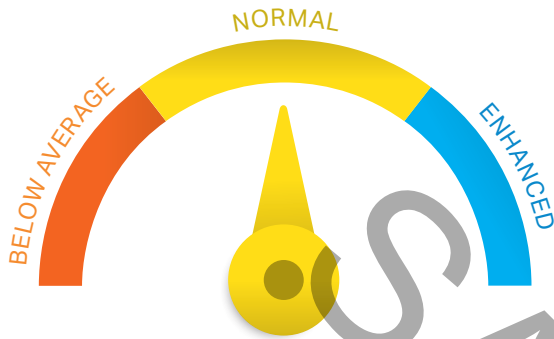
This gene plays a role in the HDL response to cardio. One large study had men and women exercise for 30 to 50 minutes, three (3) times a week for five (5) months. Those people with the more “favorable” genotype



experienced greater than average boosts to their HDL levels. Those with the “unfavorable” genotypes showed a diminished response: They did see increases in HDL, but they were smaller improvements.

Our analysis investigates which genotype for this gene is present in your DNA. Your rating of either **BELOW AVERAGE**, **NORMAL** or **ENHANCED** reflects whether your genotypes include those that carry a predisposition to an enhanced or reduced HDL response to cardio exercise.

SAMPLE



## YOUR GENETIC PROFILE INDICATES YOUR INSULIN SENSITIVITY RESPONSE TO CARDIO IS **NORMAL**

Your improvement from three (3) days a week of cardio exercise is likely to be small. You can maximize the effects by working out more often. Aim to exercise most days of the week and include both resistance training and higher-intensity cardio work during your workouts.

### WHAT YOUR GENES SAY ABOUT YOU

Your genotype showed some of the “unfavorable” gene combinations. This means that, while you may see improvements in insulin sensitivity from cardio, they are more likely to be small. But you should be able to improve your insulin response with workouts that are done more often and at a higher intensity.

### SUCCESS STRATEGIES

- Exercise frequently. The effects of exercise on glucose uptake are short-lived and the effects of a workout may wear off within two (2) days of your last workout. Once or twice-a-week workouts aren't enough to reap this benefit from exercise. Do cardio on at least 4-5 days per week, but preferably on most, or all, days of the week for optimal results
- The more in-shape you are, the better your insulin response will be. That means if you stick to regular cardio exercise, you will fine-tune your body's response and are likely to see long-term improvements over time. It's important to identify habits you can adopt that help you to stick to your weekly workouts. Identify triggers that cause you to skip workouts and figure out how to overcome these obstacles
- Resistance training has been shown to improve insulin sensitivity. Include some form of resistance training 2-3 times per week targeting all the major muscle groups as part of your weekly routine
- Weight and/or fat loss from exercise can also enhance insulin sensitivity. Follow the nutrition suggestions in the other areas of this report and aim to get in at least 300 minutes of moderate-to-high intensity cardio exercise per week

w

### RELATED GENES / SNPS

Insulin is a hormone that plays a crucial role in delivering glucose, a form of sugar, in the blood to cells in the body that use it for energy. The gene included in this category has been shown to have significant associations with a person's insulin sensitivity in response to cardio exercise. In a healthy person, cells are sensitive to this action of insulin,



## EXERCISE | INSULIN SENSITIVITY: CARDIO

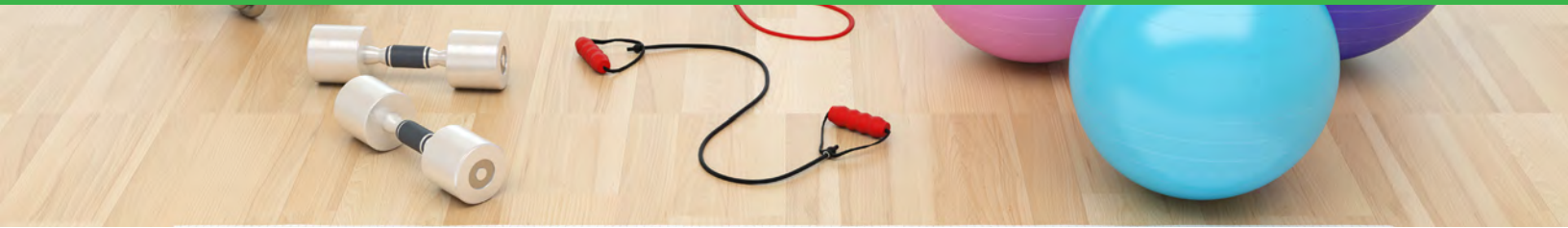
and blood glucose levels are kept in their optimal range. If insulin sensitivity declines, a person may become insulin-resistant. This keeps blood glucose levels high and diabetes can develop.

Even one session of exercise can improve insulin sensitivity. Exercise also helps keep blood glucose levels low because exercising muscles can absorb glucose without needing insulin to do so. Exercise over time can prevent diabetes—and it can help those who already have it.

This gene seems to play a role in the insulin sensitivity response to cardio. One large study had men and women perform cardio exercise at a moderate-to-high intensity for 30 to 50 minutes, 3 times a week. People with the more “favorable” genotype experienced greater than average improvements in their insulin sensitivity. Those with the “unfavorable” genotype were less likely to improve their insulin sensitivity from this amount of exercise.

Our analysis investigates which genotype for this gene is present in your DNA. Your rating of either **BELOW AVERAGE**, **NORMAL** or **ENHANCED** reflects whether your genotypes include those that carry a risk of an enhanced or reduced HDL response to three (3) days a week of cardio exercise.





## YOUR GENETIC PROFILE INDICATES YOUR GLUCOSE RESPONSE TO CARDIO IS **NORMAL**

You are likely to experience minimal decreases in blood glucose from cardio exercise. However, you can boost your response by exercising four (4) or more days per week, by working out at higher intensities, and by adding resistance training to your routine.

### WHAT YOUR GENES SAY ABOUT YOU

Your genotype shows the “unfavorable” gene combinations. This means you are likely to experience smaller decreases in glucose from doing cardio exercise at least 2-3 times per week.

### SUCCESS STRATEGIES

- Increasing the amount and intensity of exercise you do will help to improve your glucose regulation. Perform cardio five (5) or more days a week
- Rather than just performing moderate-intensity workouts, after you are fit enough to push a little harder, include more high-intensity minutes into your cardio workouts. Aim to work at an intensity level that leaves you slightly breathless and feels “hard.” After a few minutes, recover by continuing to move at an easier pace. Then pick up the intensity for a harder interval, again followed by an easier recovery interval
- Incorporate resistance training 2-3 days per week to enhance your blood glucose response
- What you eat also affects your blood glucose level. Increase the amount of fiber you eat by eating more whole plant foods at every meal. But make sure that these foods are unprocessed so that you obtain more nutrients and experience a lower glycemic response from the food.

*If you are inexperienced in cardio/resistance training/power moves, consult with your physician to see if you are healthy enough to begin an exercise program. Also, please consult a fitness trainer to help determine the safest way to incorporate the recommendations into your workout.*

### RELATED GENES / SNPS

The genes included in this category have been shown to have significant associations with a person’s glucose response to cardio exercise. Glucose is one of the body’s main sources of energy and it comes from the breakdown of carbohydrates in the diet. Brain and nerve cells (as well as red blood cells) exclusively use glucose for energy. That’s why blood glucose is maintained



## EXERCISE | GLUCOSE RESPONSE: CARDIO

at constant levels—so that all the cells in the body that need it can access it. If blood glucose levels rise and stay high, eventually insulin resistance and diabetes can develop. Exercise helps regulate blood glucose levels because every session of exercise uses glucose in the muscle for energy, and the blood glucose supply is then tapped into to replenish the muscle reserves.

This gene seems to play a role in the glucose response to cardio and appears to be a reliable indicator of whether exercise will have beneficial effects on insulin resistance. Several studies involved a variety of individuals, both diabetics and non-diabetics, performing regular cardio for 2-3 days per week for up to five (5) months. People with the more “favorable” genotype experienced greater-than-average clearance of blood glucose. Those with the “unfavorable” genotype showed a decreased response, or smaller drop in glucose levels. People with this genotype also had a decreased weight-loss ability—they lost less weight from the cardio exercise compared to people with different genotypes.

Our analysis investigates which genotype for this gene is present in your DNA. Your rating of either **NORMAL** or **ENHANCED** reflects whether your genotypes include those that carried a predisposition for an enhanced or reduced glucose response to cardio exercise.



# CUSTOM MEAL PLAN

The following custom meal plan was created by combining a variety of healthy recipes with the appropriate macronutrient percentages for your genetic profile. Due to the nature of recipe sizes, the total suggested calories for each day will have some variation above or below the specific number of calories recommended for your diet, but the average daily calories for the week will approximate your suggested daily caloric intake.

## DAY 1

### BREAKFAST - OATMEAL TOP W/ CIN, NUTS, FRUIT

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Strawberries, raw	1.0	cup, halves	1.02g	0.46g	11.67g	48.64
Nuts, walnuts, english	0.25	ounce (14 halves)	1.07g	4.56g	0.96g	45.78
Almond Breeze, unsweetened vanilla almond milk	0.5	cup	0.5g	1.5g	1.0g	20.0
Dry steel cut oats	1.0	cup	10.0g	5.0g	54.0g	300.0
Cinnamon	0.5	teaspoon	0.15g	0.1g	2.7g	9.0

### MORNING SNACK - FRUIT & CHEESE

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Cheese, goat, soft type	0.25	ounce(s)	1.31g	1.49g	0.0g	18.71
Apple - medium with peel	1.0	each	0.3g	0.5g	21.0g	81.0

### LUNCH - SPINACH SALAD TOP W/ VEG & BEANS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Mushrooms, white, raw	0.5	cup, pieces	1.08g	0.12g	1.14g	7.7
Chickpeas	0.66	cup	9.59g	2.8g	29.68g	177.51
Lentils, mature seeds, cooked, boiled, without salt	0.66	cup	11.79g	0.5g	26.31g	151.59
Spinach, raw	4.0	cup	3.43g	0.47g	4.36g	27.6
Olives, ripe, canned (small-extra large)	3.0	large	0.11g	1.41g	0.83g	15.18
Salad dressing, home recipe, vinegar and oil	1.0	tablespoon	0.0g	8.02g	0.4g	71.84
Cucumber, raw, slices	0.5	cup	0.4g	0.0g	1.4g	7.0
Pepper, sweet bell, all colors, chopped	0.33	cup	0.4g	0.07g	3.04g	12.54
Lemon juice	0.5	tablespoon	0.05g	0.0g	0.65g	2.0



# CUSTOM MEAL PLAN

## DAY 1

### AFTERNOON SNACK - USE GROUND FLAXSEED TO MIX IN YOGURT

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Nuts, almonds	10.0	almond	2.12g	4.99g	2.15g	57.9
Yogurt, plain, skim milk, 13 grams protein per 8 ounce	1.0	container (8 oz)	13.01g	0.41g	17.43g	127.12
Blueberries, raw	0.75	cup	0.8g	0.36g	15.76g	61.99
Seeds, flaxseed	0.5	tablespoon	1.1g	2.53g	1.73g	32.04

### DINNER - SHRIMP, COUSCOUS; MIX TOM, ZUCC AND OIL

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Couscous, cooked	0.5	cup, cooked	2.98g	0.13g	18.23g	87.92
tomato, diced	0.5	cup	0.76g	0.3g	4.18g	19.0
zucchini, boiled, drained	0.75	cup	0.86g	0.07g	5.31g	21.6
Shrimp - boiled or steamed	3.5	ounce(s)	20.72g	1.05g	0.0g	98.0
Garlic powder	0.5	tablespoon	0.7g	0.05g	3.05g	14.0
Olive oil, pure	0.5	tablespoon	0.0g	7.0g	0.0g	65.0

### EVENING SNACK- FRUIT, PROTEIN SHAKE

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Kiwifruit, green, raw	1.0	fruit, without skin (medium)	0.87g	0.4g	11.14g	46.36
Protein powder	1.0	scoop	15.0g	1.0g	0.0g	70.0

### DAY 1 TOTALS

**100.12g**    **45.29g**    **238.12g**    **1697.02**



# CUSTOM MEAL PLAN

## DAY 2

### BREAKFAST - YOGURT W/ HONEY & ALMONDS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Grapefruit, raw, pink and red and white, all areas	0.5	large (approx 4-1/2 dia)	1.05g	0.17g	13.41g	53.12
Yogurt, plain, low fat, 12 grams protein per 8 ounce	1.0	cup (8 fl oz)	12.86g	3.8g	17.25g	154.35
Seeds, flaxseed	0.5	tablespoon	1.1g	2.53g	1.73g	32.04
Honey	0.5	tablespoon	0.05g	0.0g	8.65g	32.0
Slivered almonds	0.25	tablespoon	0.25g	0.88g	0.25g	10.0

### MORNING SNACK - FRESH FRUIT, PROTEIN SHAKE

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Strawberries, raw	1.0	cup, halves	1.02g	0.46g	11.67g	48.64
Protein powder	0.5	scoop	7.5g	0.5g	0.0g	35.0

### LUNCH - TUNA SALAD

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Beans, black turtle, mature seeds, cooked, boiled with salt	1.25	cup	18.92g	0.81g	56.31g	300.62
Cheese, feta	0.25	cup, crumbled	5.33g	7.98g	1.53g	99.0
Olives, ripe, canned (small-extra large)	6.0	large	0.22g	2.82g	1.65g	30.36
Spinach, raw	4.0	leaf	1.14g	0.16g	1.45g	9.2
Salad dressing, italian dressing, reduced calorie	1.0	tablespoon	0.04g	2.8g	0.94g	28.0
tomato, diced	0.25	cup	0.38g	0.15g	2.09g	9.5
Tuna, White Albacore in water	4.0	ounce(s)	20.0g	1.33g	0.0g	120.0





# CUSTOM MEAL PLAN

## DAY 2

### AFTERNOON SNACK - FRUIT & SEEDS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Seeds, sunflower seed kernels, dry roasted, without salt	0.25	ounce(s)	1.35g	3.49g	1.68g	40.74
Plum - fresh, 2.25 diam	1.0	each	0.5g	0.4g	8.6g	36.0

### DINNER - MIX SPAG W/ BEAN, BROCC, TOM, & GARLIC

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Broccoli, cooked, boiled, drained, without salt	0.75	cup, chopped	2.78g	0.48g	8.4g	40.95
Beans, white, mature seeds, cooked, boiled, with salt, without salt	1.25	cup	21.77g	0.78g	56.14g	311.01
Spaghetti, whole-wheat, cooked	0.66	cup	4.92g	0.5g	24.52g	114.58
Cheese, parmesan, grated	0.5	tablespoon	0.71g	0.7g	0.35g	10.5
tomato, diced	0.165	cup	0.25g	0.1g	1.38g	6.27
Garlic powder	0.33	tablespoon	0.46g	0.03g	2.01g	9.24
Olive oil, pure	0.75	tablespoon	0.0g	10.5g	0.0g	97.5

### EVENING SNACK- VEGGIES & HUMMUS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Peppers, sweet, green, raw	10.0	strips	0.23g	0.05g	1.25g	5.4
Hummus, commercial	1.0	tablespoon	1.11g	1.34g	2.0g	23.24
Cele y - raw stalk, trimmed	4.0	each	2.0g	0.0g	8.0g	40.0

**DAY 2 TOTALS** **105.94g** **42.76g** **231.26g** **1697.26**



# CUSTOM MEAL PLAN

## DAY 3

### BREAKFAST - SCRAMBLED EGGS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Potatoes, hash brown, frozen, plain, prepared, pan fried	0.25	cup	1.03g	4.52g	11.12g	85.41
Egg whites, scrambled/boiled	4.0	each	14.0g	0.0g	1.2g	68.0
2% milkfat cheddar cheese	0.2	ounce(s)	1.4g	0.4g	0.2g	10.0
Onion, chopped	1.0	tablespoon	0.1g	0.0g	0.9g	4.0

### MORNING SNACK - FRESH FRUIT TOPPED WITH PEANUT BUTTER

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Apple - medium with peel	1.5	each	0.45g	0.75g	31.5g	121.5
Peanut Butter	0.5	tablespoon	2.0g	4.08g	1.75g	47.5

### LUNCH - BURGER W/ AVOC, VEGGIES, DRESSING

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Avocados, raw, all commercial varieties	0.2	cup, sliced	0.58g	4.28g	2.49g	46.72
Spinach, raw	2.0	leaf	0.57g	0.08g	0.73g	4.6
Lettuce, butterhead (includes boston and bibb types), raw	3.0	leaf, large	0.61g	0.1g	1.0g	5.85
Veggie burgers or soyburgers, unprepared	2.5	patty	27.48g	11.03g	24.97g	309.75
Salad dressing, italian dressing, reduced calorie	1.0	tablespoon	0.04g	2.8g	0.94g	28.0
tomato, diced	0.25	cup	0.38g	0.15g	2.09g	9.5
Sweet potato, baked in peel, large	1.0	each	4.0g	0.0g	37.0g	160.0



# CUSTOM MEAL PLAN

## DAY 3

### AFTERNOON SNACK - FRUIT, PROTEIN SHAKE

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Kiwifruit, green, raw	1.0	fruit, without skin (medium)	0.87g	0.4g	11.14g	46.36
Protein powder	1.0	scoop	15.0g	1.0g	0.0g	70.0

### DINNER - GRILLED SALMON, ASPARAGUS TOP W/ FETA AND OIL

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Squash, winter, acorn, cooked, baked, with salt	1.5	cup, cubes	3.44g	0.43g	44.83g	172.2
Fish, Salmon, Atlantic, wild, cooked, dry heat	3.0	ounce(s)	21.62g	6.91g	0.0g	154.7
Asparagus, fresh - boiled	1.5	cup	6.9g	0.9g	11.4g	66.0
Olive oil, pure	0.25	tablespoon	0.0g	3.5g	0.0g	32.5

### EVENING SNACK- FRUIT & GRAIN (CAN BE MOVED TO DINNER MEAL)

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Amaranth grain, cooked	0.66	cup	6.17g	2.57g	30.35g	165.61
Blueberries, raw	1.0	cup	1.07g	0.48g	21.01g	82.65

### DAY 3 TOTALS

**107.71g**   **44.38g**   **234.62g**   **1690.85**



# CUSTOM MEAL PLAN

## DAY 4

### BREAKFAST - QUINOA TOP W/ FRUIT, CINN, WALNUTS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Blueberries, raw	1.0	cup	1.07g	0.48g	21.01g	82.65
Quinoa, cooked	1.33	cup	10.83g	4.72g	52.41g	295.26
Nuts, walnuts, english	0.66	ounce (14 halves)	2.81g	12.05g	2.53g	120.86
Milk - skim, no fat	0.25	cup	2.1g	0.1g	2.98g	21.5
Cinnamon	0.5	teaspoon	0.15g	0.1g	2.7g	9.0

### MORNING SNACK - FRUIT & NUTS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Nuts, pistachio nuts, raw	5.0	kernel	0.71g	1.59g	0.96g	19.67
Pear	1.0	each	0.7g	0.0g	25.1g	98.0

### LUNCH - LENTIL SALAD

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Mushrooms, white, raw	0.5	cup, pieces	1.08g	0.12g	1.14g	7.7
Broccoli, frozen, chopped, cooked, boiled, drained, without	1.25	cup	7.13g	0.28g	12.3g	64.4
Lentils, mature seeds, cooked, boiled, without salt	1.66	cup	29.65g	1.25g	66.16g	381.27
Tomatoes, sun-dried	0.5	cup	3.81g	0.8g	15.06g	69.66
Olive oil, pure	0.66	tablespoon	0.0g	9.24g	0.0g	85.8



# CUSTOM MEAL PLAN

## DAY 4

### AFTERNOON SNACK - FRUIT & SEEDS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Raspberries, raw	1.0	cup	1.48g	0.8g	14.69g	63.96
Seeds, flaxseed	0.25	tablespoon	0.55g	1.26g	0.87g	16.02

### DINNER - CHICKEN, EGGPLANT & VEGGIES TOP W/ CHEESE

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Squash, summer, zucchini, includes skin, cooked, boiled	0.625	cup, slices	1.28g	0.41g	3.03g	16.88
Eggplant, cooked, boiled, drained, without salt	1.5	cup (1 cubes)	1.23g	0.34g	12.96g	51.98
Cheese, parmesan, grated	1.0	tablespoon	1.42g	1.39g	0.7g	21.0
Chicken breast, white meat	3.5	ounce(s)	22.75g	1.4g	0.0g	108.5
Olive oil, pure	0.33	tablespoon	0.0g	4.62g	0.0g	42.9

### EVENING SNACK- FRUIT & NUTS, PROTEIN SHAKE

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Nuts, almonds	5.0	almond	1.06g	2.5g	1.08g	28.95
Plum - fresh, 2.25 diam	1.0	each	0.5g	0.4g	8.6g	36.0
Protein powder	1.0	scoop	15.0g	1.0g	0.0g	70.0

### DAY 4 TOTALS

**105.31g**    **44.85g**    **244.28g**    **1711.96**





# CUSTOM MEAL PLAN

## DAY 5

### BREAKFAST - EGGS COOKED IN AVOCADO HALF

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Grapefruit, raw, pink and red and white, all areas	0.5	large	1.05g	0.17g	13.41g	53.12
Avocados, raw, all commercial varieties	0.5	fruit	1.33g	10.48g	5.88g	113.56
Cooked egg white	4.0	each	16.0g	0.0g	0.0g	60.0

### MORNING SNACK - USE GROUND FLAXSEED TO MIX IN YOGURT

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Yogurt, plain, skim milk, 13 grams protein per 8 ounce	1.0	container (8 oz)	13.01g	0.41g	17.43g	127.12
Strawberries, raw	1.25	cup, halves	1.27g	0.57g	14.59g	60.8
Seeds, flaxseed	0.33	tablespoon	0.72g	1.67g	1.14g	21.15

### LUNCH - SOUP W/ HUMMUS & CRACKERS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Hummus, commercial	0.25	cup	4.94g	6.0g	8.93g	103.75
Soup, minestrone, canned, prepared with equal volume	2.5	cup (8 fl oz)	10.66g	6.27g	28.08g	204.85
Cele y - raw stalk, trimmed	4.0	each	2.0g	0.0g	8.0g	40.0
Wasa Crackers, light rye	3.0	each	3.0g	0.0g	21.0g	90.0



# CUSTOM MEAL PLAN

## DAY 5

### AFTERNOON SNACK - FRESH FRUIT

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Orange, medium	1.0	each	1.1g	0.3g	17.4g	69.0

### DINNER - TURKEY, BEANS, COUSCOUS & VEGGIES

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Beans, white, mature seeds, cooked, boiled, with salt, without salt	1.25	cup	21.77g	0.78g	56.14g	311.01
Couscous, cooked	0.75	cup, cooked	4.46g	0.19g	27.34g	131.88
tomato, diced	0.5	cup	0.76g	0.3g	4.18g	19.0
Pepper, sweet bell, all colors, chopped	0.66	cup	0.79g	0.13g	6.07g	25.08
Turkey breast, white meat	2.5	ounce(s)	21.25g	0.5g	0.0g	95.0
Olive oil, pure	0.66	tablespoon	0.0g	9.24g	0.0g	85.8

### EVENING SNACK- SEEDS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Seeds, sunflower seed kernels, dry roasted, without salt	0.5	ounce(s)	2.71g	6.97g	3.37g	81.48

### DAY 5 TOTALS

**106.82g**   **43.98g**   **232.96g**   **1692.6**



# CUSTOM MEAL PLAN

## DAY 6

### BREAKFAST - OATMEAL TOP W/ CIN, NUTS, FRUIT

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Strawberries, raw	1.0	cup, halves	1.02g	0.46g	11.67g	48.64
Nuts, walnuts, english	0.33	ounce (14 halves)	1.41g	6.03g	1.27g	60.43
Dry steel cut oats	1.0	cup	10.0g	5.0g	54.0g	300.0
Milk - skim, no fat	0.25	cup	2.1g	0.1g	2.98g	21.5
Cinnamon	0.5	teaspoon	0.15g	0.1g	2.7g	9.0

### MORNING SNACK - FRESH FRUIT, PROTEIN SHAKE

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Apple - medium with peel	1.0	each	0.3g	0.5g	21.0g	81.0
Protein powder	0.5	scoop	7.5g	0.5g	0.0g	35.0

### LUNCH - VEGGIE BURGER

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Mushrooms, white, raw	1.0	cup, pieces	2.16g	0.24g	2.28g	15.4
Avocados, raw, all commercial varieties	0.25	cup, sliced	0.73g	5.35g	3.11g	58.4
Veggie burgers or soyburgers, unprepared	2.5	patty	27.48g	11.03g	24.97g	309.75
Garlic powder	0.5	tablespoon	0.7g	0.05g	3.05g	14.0
Onion, chopped	2.0	tablespoon	0.2g	0.0g	1.8g	8.0



# CUSTOM MEAL PLAN

## DAY 6

### AFTERNOON SNACK - VEGGIES & HUMMUS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Peppers, sweet, green, raw	10.0	strips	0.23g	0.05g	1.25g	5.4
Hummus, commercial	1.0	tablespoon	1.11g	1.34g	2.0g	23.24
Cucumber, raw, slices	0.75	cup	0.6g	0.0g	2.1g	10.5
Baby carrots	3.0	each	0.3g	0.3g	2.4g	12.0

### DINNER - HALIBUT, BROCC AND CAUL W/ OIL

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Cauliflower, cooked, boiled, drained, without salt	1.125	cup (1 pieces)	2.57g	0.63g	5.73g	32.09
Broccoli, cooked, boiled, drained, without salt	1.125	cup, chopped	4.18g	0.72g	12.6g	61.42
Beans, navy, mature seeds, cooked, boiled	1.12	cup	16.78g	1.26g	53.1g	285.38
Fish, Halibut, Atlantic and Pacific, cooked, dry heat	3.75	ounce(s)	23.95g	1.71g	0.0g	117.94
Olive oil, pure	0.5	tablespoon	0.0g	7.0g	0.0g	65.0

### EVENING SNACK- FRUIT, POPCORN

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Raspberries, raw	1.0	cup	1.48g	0.8g	14.69g	63.96
Snacks, popcorn, air-popped	2.0	cup	2.07g	0.73g	12.44g	61.92

### DAY 6 TOTALS

**107.02g**      **43.9g**      **235.14g**      **1699.97**



# CUSTOM MEAL PLAN

## DAY 7

### BREAKFAST - HOT BARLEY TOP W/ CIN, NUTS, FRUIT

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Barley, pearled, cooked	1.25	cup	4.44g	0.86g	55.38g	241.39
Mangos, raw	0.25	cup, pieces	0.34g	0.16g	6.18g	24.75
Nuts, coconut meat, dried (desiccated), not sweetened	0.125	ounce(s)	0.23g	2.2g	0.8g	22.45
Almond Breeze, unsweetened vanilla almond milk	1.0	cup	1.0g	3.0g	2.0g	40.0

### MORNING SNACK - FRESH FRUIT, PROTEIN SHAKE

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Kiwifruit, green, raw	2.0	fruit, without skin (medium)	1.73g	0.79g	22.28g	92.72
Protein powder	1.25	scoop	18.75g	1.25g	0.0g	87.5

### LUNCH - SALMON, QUINOA & SALAD

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Hummus, commercial	0.25	cup	4.94g	6.0g	8.93g	103.75
Quinoa, cooked	1.25	cup	10.18g	4.44g	49.26g	277.5
Salad dressing, italian dressing, reduced calorie	1.0	tablespoon	0.04g	2.8g	0.94g	28.0
Fish, Salmon, pink, canned, drained solids, without skin	3.75	ounce(s)	26.16g	4.47g	0.0g	144.5
Green salad with raw vegetables	2.25	cup	3.88g	0.22g	10.0g	49.5





# CUSTOM MEAL PLAN

## DAY 7

### AFTERNOON SNACK - VEGGIES & GUAC

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Peppers, sweet, green, raw	10.0	strips	0.23g	0.05g	1.25g	5.4
Cucumber, raw, slices	0.75	cup	0.6g	0.0g	2.1g	10.5
Baby carrots	3.0	each	0.3g	0.3g	2.4g	12.0
Wasa Crackers, light rye	2.0	each	2.0g	0.0g	14.0g	60.0
guacamole	1.0	ounce(s)	0.5g	3.75g	2.0g	42.5

### DINNER - SHRIMP, MIX SPAG W/ CHEESE, OIL, TOM, ZUCCHINI

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Spaghetti, whole-wheat, cooked	0.66	cup	4.92g	0.5g	24.52g	114.58
Cheese, parmesan, grated	1.0	tablespoon	1.42g	1.39g	0.7g	21.0
Garlic, raw	1.0	teaspoon	0.19g	0.01g	0.99g	4.47
tomato, diced	0.5	cup	0.76g	0.3g	4.18g	19.0
zucchini, boiled, drained	0.5	cup	0.58g	0.05g	3.54g	14.4
Shrimp - boiled or steamed	3.25	ounce(s)	19.24g	0.97g	0.0g	91.0
Olive oil, pure	0.5	tablespoon	0.0g	7.0g	0.0g	65.0

### EVENING SNACK- FRUIT & CHEESE

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Cheese, goat, soft type	0.5	ounce(s)	2.63g	2.99g	0.0g	37.42
Apple - medium with peel	1.0	each	0.3g	0.5g	21.0g	81.0

**DAY 7 TOTALS** **105.36g** **44.0g** **232.45g** **1690.33**



## AN EXERCISE PLAN GENETICALLY DESIGNED JUST FOR YOU

Your exercise genotype suggests that you may benefit from the following exercise prescription. You can personalize your plan according to the facilities and equipment you have. Below are 5 examples of what your weekly workout plan might look like. These are simple examples based on your personalized exercise recommendation. Look at your synopsis in the top boxes and choose the type of workouts that best suit you to create a weekly plan. For example, if you work out at a health club or you have cardio machines at home, you can design a plan that looks like Gym – Cardio Machines. If you belong to a club that offers fitness classes (or if you have fitness DVDs at home), you can design your weekly workouts to look something like Gym – Fitness Classes. If you like to keep it simple by walking and using minimal equipment, use some dumbbells or exercising resistance bands and walk outside with a routine that looks like Home - Walk. If you want a higher intensity workout at home, try Home – Run+Bike. If you alternate your workouts between exercising at home and at the gym, format your workout week to look something like Mix – Home+Gym. The activities shown in each week are only suggestions. If Zumba or Kickboxing classes are not for you, then substitute another cardio workout that you would enjoy. You can (and should) choose activities that you love to do and that are suited for your personal needs and preferences. But also, be adventurous and try new activities on occasion.

- These sample plans are based on attaining at least the minimum number of recommended minutes of exercise per week that is indicated in your personalized exercise prescription. If your prescription suggests that you need to get at least 150 minutes per week, one sample week may list workouts that total 150 cardio exercise minutes, another week may add up to 165 minutes. You can modify as needed - remember to build up to greater amounts of exercise slowly if you are new to exercise. For optimal results, this amount of exercise can (and should) be increased as you get fitter and when you have extra time to exercise. The more exercise minutes you perform, the greater your weight loss potential. To increase the number of exercise minutes you get in each week, add in extra sessions or make your sessions longer (or both!)
- Perform at the recommended intensity by adjusting your speed, incline, level of resistance, etc. If your prescription says to exercise at a moderate-to-vigorous intensity, for example, you might alternate effort levels within one workout (walk faster, then slower in one session), or you might have one moderate-intensity day where you workout at a moderate level on the elliptical trainer and then have a vigorous intensity workout on another session where you walk fast uphill or you take a spin class (indoor cycling tends to be intense.)
- The 2008 DHHS Physical Activity Guidelines recommend to perform moderate or high intensity muscle-strengthening moves that target all major muscle groups (shoulders, arms, chest, abdomen, back, rear end, thighs and calves) on 2 or more days a week. Use weights that are heavy enough to fatigue you by the end of each set. Perform the recommended number of reps and sets during your strength workouts. For example, when using dumbbells at home or weight machines at the gym, choose exercises that target your major muscles in your upper and lower body and do 2 to 3 sets of 8 to 15 reps.
- Incorporate the special types of workouts indicated in your exercise recommendation. For example, you might be recommended to try HIIT (high-intensity interval training) or to use kettlebells or to follow a barbell-based muscle strength and endurance workout. HIIT, or high intensity interval training, is a training technique in which you give all-out, one hundred percent effort through quick, intense bursts of exercise, followed by short, sometimes active, recovery periods. This type of training gets and keeps your heart rate up and burns more fat in less time.



- Fit in your strength workouts on the same day or different days as your cardio workouts. Although the minutes that you spend doing strength exercises do add up and can count towards total exercise minutes, strength workouts tend not to burn as many calories as a cardio workout. For optimal weight loss results, we have counted only cardio exercise minutes as minutes that meet your exercise prescription quota
- At the gym, you may want to lift free weights, use weight machines or take a weights class. At home, you may want to use dumbbells or bands by following a fitness video.
- You can also try other forms of strength workouts at the gym or at home (kettlebells, barbell classes, circuit training, etc.). Your exercise recommendation may suggest some specific workout activities. If you have access to these (i.e., if you have the equipment at home or in a gym, or if you have access to the class types at a club or by DVD), try them. If you do not, substitute with a similar activity if you can.
- Your home workouts can be designed based on the equipment you have: treadmill, bike, elliptical trainer, dumbbells, bands, etc.

SAMPLE



# CUSTOM EXERCISE PLAN

## CARDIO EXERCISE

## STRENGTH TRAINING

FREQUENCY	INTENSITY	FREQUENCY	SETS & REPS
More than or equal to 4-5 days per week	Moderate to vigorous	2-3 days per week	2-3 sets; 8-15 reps per muscle group
DURATION		MUSCLE GROUPS	
More than or equal to 200-300 minutes per week		Chest, back, legs, shoulders, core (abs and low back), arms	

## GYM MACHINES

\* description included

Day 1	Rowing Machine - 45 minutes	
Day 2	Bike - 60 minutes	Weight Machines - 2-3 sets; 8-15 reps
Day 3		
Day 4	Bike - 60 minutes	
Day 5	Treadmill Walk - 30 minutes	Weight Machines - 2-3 sets; 8-15 reps
Day 6		
Day 7	Eliptical Trainer - 30 minutes	

If you are inexperienced in cardio/resistance training/power moves consult with your physician to see if you are healthy enough to begin an exercise program  
 Also please consult a fitness trainer to help determine the safest way to incorporate the recommendations into your workout



# CUSTOM EXERCISE PLAN

## CARDIO EXERCISE

## STRENGTH TRAINING

FREQUENCY	INTENSITY	FREQUENCY	SETS & REPS
More than or equal to 4-5 days per week	Moderate to vigorous	2-3 days per week	2-3 sets; 8-15 reps per muscle group
DURATION		MUSCLE GROUPS	
More than or equal to 200-300 minutes per week		Chest, back, legs, shoulders, core (abs and low back), arms	

## GYM FITNESS CLASSES

\* description included

Day 1	* Zumba Class - 60 minutes	
Day 2	Treadmill Walk - 30 minutes	Weight Class - 2-3 sets; 8-15 reps
Day 3	* Zumba Class - 60 minutes	
Day 4		
Day 5	Spin Class - 45 minutes	
Day 6	Treadmill Walk - 45 minutes	Weight Class - 2-3 sets; 8-15 reps
Day 7		

If you are inexperienced in cardio/resistance training/power moves consult with your physician to see if you are healthy enough to begin an exercise program  
Also please consult a fitness trainer to help determine the safest way to incorporate the recommendations into your workout



# CUSTOM EXERCISE PLAN

## CARDIO EXERCISE

## STRENGTH TRAINING

FREQUENCY	INTENSITY	FREQUENCY	SETS & REPS
More than or equal to 4-5 days per week	Moderate to vigorous	2-3 days per week	2-3 sets; 8-15 reps per muscle group
DURATION		MUSCLE GROUPS	
More than or equal to 200-300 minutes per week		Chest, back, legs, shoulders, core (abs and low back), arms	

## HOME WALK

\* description included

Day 1	Walk - 60 minutes	
Day 2	Walk - 45 minutes	Dumbbells - 2-3 sets; 8-15 reps
Day 3		
Day 4	Walk - 45 minutes	Dumbbells - 2-3 sets; 8-15 reps
Day 5		
Day 6	Walk - 45 minutes	Dumbbells - 2-3 sets; 8-15 reps
Day 7		

If you are inexperienced in cardio/resistance training/power moves consult with your physician to see if you are healthy enough to begin an exercise program  
Also please consult a fitness trainer to help determine the safest way to incorporate the recommendations into your workout





# CUSTOM EXERCISE PLAN

## CARDIO EXERCISE

## STRENGTH TRAINING

FREQUENCY	INTENSITY	FREQUENCY	SETS & REPS
More than or equal to 4-5 days per week	Moderate to vigorous	2-3 days per week	2-3 sets; 8-15 reps per muscle group
DURATION		MUSCLE GROUPS	
More than or equal to 200-300 minutes per week		Chest, back, legs, shoulders, core (abs and low back), arms	

## HOME RUN + BIKE

\* description included

Day 1	Run - 30 minutes	
Day 2	Run - 45 minutes	Dumbbells - 2-3 sets; 8-15 reps
Day 3		
Day 4	Bike - 60 minutes	Dumbbells - 2-3 sets; 8-15 reps
Day 5		
Day 6	Bike - 60 minutes	
Day 7	Run - 45 minutes	

If you are inexperienced in cardio/resistance training/power moves consult with your physician to see if you are healthy enough to begin an exercise program  
 Also please consult a fitness trainer to help determine the safest way to incorporate the recommendations into your workout



# CUSTOM EXERCISE PLAN

## CARDIO EXERCISE

## STRENGTH TRAINING

FREQUENCY	INTENSITY	FREQUENCY	SETS & REPS
More than or equal to 4-5 days per week	Moderate to vigorous	2-3 days per week	2-3 sets; 8-15 reps per muscle group
DURATION		MUSCLE GROUPS	
More than or equal to 200-300 minutes per week		Chest, back, legs, shoulders, core (abs and low back), arms	

## MIX HOME + GYM

\* description included

Day 1	Spin Class - 45 minutes	Weight Class - 2-3 sets; 8-15 reps
Day 2	Walk - 60 minutes	
Day 3		
Day 4	Eliptical Trainer - 45 minutes	Weight Class - 2-3 sets; 8-15 reps
Day 5		
Day 6	Run - 45 minutes	Dumbbells - 2-3 sets; 8-15 reps
Day 7		

If you are inexperienced in cardio/resistance training/power moves consult with your physician to see if you are healthy enough to begin an exercise program  
Also please consult a fitness trainer to help determine the safest way to incorporate the recommendations into your workout



## DEFINITIONS

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### WHAT IS ZUMBA?

Zumba is a dance-based low-impact cardio class. It features music and dance styles from a variety of cultures including Latin-based rhythms such as salsa and merengue. Many health clubs offer low-impact, dance-based classes that are similar to Zumba.

SAMPLE

# LINKS TO RELATED STUDIES

## WEIGHT LOSS ABILITY

Hum Hered 2013;75(2-4) 160-74 do 10.1159/000353181 Epub 2013 Sep 27

**Human cardiovascular disease IBC chip-wide association with weight loss and weight regain in the look AHEAD trial**

<http://www.ncbi.nlm.nih.gov/pubmed/?term=24081232>

McCaffery JM Papandonatos GD Huggins GS Peter I Erar B Kahn SE Knowler WC Loken EW Kibach AE Wagenknecht LE Wong RR Genetic Subgroup of Look AHEAD Look AHEAD Research Group

Diabetes 2012 Nov;61(11) 3005-11 do 10.2337/db11-1799 Epub 2012 Aug 13

**FTO genotype and 2-year change in body composition and fat distribution in response to weight-loss diets**

<http://www.ncbi.nlm.nih.gov/pubmed/?term=22891219>

Zhang X Q Q Zhang C Smith SR Hu FB Sacks FM Bray GA Q L

Int J Obes (Lond) 2013 Dec;37(12) 1545-52 do 10.1038/ijo.2013.54 Epub 2013 Apr 3

**FTO predicts weight regain in the Look AHEAD clinical trial**

<http://www.ncbi.nlm.nih.gov/pubmed/?term=23628854>

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Diabetes 2010 Mar;59(3) 747-50 do 10.2337/db09-1050 Epub 2009 Dec 22

**Gene variants of TCF7L2 influence weight loss and body composition during lifestyle intervention in a population at risk for type 2 diabetes**

<http://www.ncbi.nlm.nih.gov/pubmed/?term=20028944>

Haupt A Thamer C Henning M Ketterer C Machann J Schick F Machicao F Stefan N Caussens CD Häring HU Fruticke A Staiger H

Am J Clin Nutr 2012 Nov;96(5) 1129-36 do 10.3945/ajcn.112.038125 Epub 2012 Oct 3

**TCF7L2 genetic variants modulate the effect of dietary fat intake on changes in body composition during a weight-loss intervention**

<http://www.ncbi.nlm.nih.gov/pubmed/?term=23034957>

Matte J Q Q Hu FB Sacks FM Q L

Am J Clin Nutr 2014 Feb;99(2) 392-9 do 10.3945/ajcn.113.072066 Epub 2013 Dec 11

**Variants in glucose- and circadian rhythm-related genes affect the response of energy expenditure to weight-loss diets**

<http://www.ncbi.nlm.nih.gov/pubmed/?term=24335056>

Mrazek K Xu M Q Q de Jonge L Bray GA Sacks F Q L

# LINKS TO RELATED STUDIES

Diabetes Care 2012 Feb;35(2) 363-6 doi: 10.2337/dc11-1328 Epub 2011 Dec 16

Genetic predictors of weight loss and weight regain after intensive lifestyle modification, metformin treatment, or standard care in the Diabetes Prevention Program

<http://www.ncbi.nlm.nih.gov/pubmed/?term=22179955>

Deahty LM Pan Q Jabonska KA Watson KE McCaffery JM Shudner A Kahn SE Knowler WC Foretz JC Franks PW Diabetes Prevention Program Research Group

Diabetes 2002 Aug;51(8) 2581-6

Association of the Pro12Ala polymorphism in the PPAR-gamma2 gene with 3-year incidence of type 2 diabetes and body weight change in the Finnish Diabetes Prevention Study

<http://www.ncbi.nlm.nih.gov/pubmed/?term=12145174>

Lind VI Uusitupa MI Lindström J Louheranta A Eriksson JG Valle TT Häme A Hämäläinen H Ilanne-Parikka P Keinänen-Kiukka S Laakso M Tuomi T Finnish Diabetes Prevention Study

Clin Genet 2003 Feb;63(2) 109-16

The PPAR-gamma P12A polymorphism modulates the relationship between dietary fat intake and components of the metabolic syndrome

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Robitaille J Després JP Pérusse L Vohl MC

Clin Genet 2003 Feb;63(2) 109-16

Interaction between a peroxisome proliferator-activated receptor gamma gene polymorphism and dietary fat intake in relation to body mass

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## FOOD – PROTEIN UTILIZATION

Int J Obes (Lond) 2013 Dec;37(12) 1545-52 doi: 10.1038/ijo.2013.54 Epub 2013 Apr 3

FTO predicts weight regain in the Look AHEAD clinical trial

<http://www.ncbi.nlm.nih.gov/pubmed/?term=23628854>

McCaffery JM1 Papandonatos GD Huggins GS Peter I Kahn SE Knowler WC Hudnall GE Lpkin EW Kitabchi AE Wagenknecht LE Wing RR Genetic Subgroup of Look AHEAD Look AHEAD Research Group

# LINKS TO RELATED STUDIES

## FOOD – FAT UTILIZATION

Diabetes Care 2012 Feb;35(2) 363-6 doi: 10.2337/dc11-1328 Epub 2011 Dec 16

Genetic predictors of weight loss and weight regain after intensive lifestyle modification, metformin treatment, or standard care in the Diabetes Prevention Program

<http://www.ncbi.nlm.nih.gov/pubmed/?term=23628854>

Deahant LM Pan Q Jabonson KA Watson KE McCaffery JM Shudner A Kahn SE Knowler WC Foretz JC Franks PW Diabetes Prevention Program Research Group

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Association of the Pro12Ala polymorphism in the PPAR-gamma2 gene with 3-year incidence of type 2 diabetes and body weight change in the Finnish Diabetes Prevention Study

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The PPAR-gamma P12A polymorphism modulates the relationship between dietary fat intake and components of the metabolic syndrome

<http://www.ncbi.nlm.nih.gov/pubmed/?term=12630956>

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Interaction between a peroxisome proliferator-activated receptor gamma gene polymorphism and dietary fat intake in relation to body mass.

<http://www.ncbi.nlm.nih.gov/pubmed/?term=14506127>

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Am J Clin Nutr 2012 Nov;96(5) 1129-36 doi: 10.3945/ajcn.112.038125 Epub 2012 Oct 3

TCF7L2 genetic variants modulate the effect of dietary fat intake on changes in body composition during a weight-loss intervention.

<http://www.ncbi.nlm.nih.gov/pubmed/?term=23034957>

Matte J Q Q Hu FB Sacks FM Qi L



# LINKS TO RELATED STUDIES

Circulation 2006 May 2;113(17):2062-70. Epub 2006 Apr 24.

Dietary intake of n-6 fatty acids modulates effect of apolipoprotein A5 gene on plasma fasting triglycerides, remnant lipoprotein concentrations, and lipoprotein particle size: the Framingham Heart Study.

<http://www.ncbi.nlm.nih.gov/pubmed/?term=16636175>

La CQ, Core a D, Dem ss e S, Cupp es LA, Ad con s X, Zhu Y, Parne LD, Tucker KL, Ordovas JM

Clin Genet 2005 Aug;68(2):152-4.

A polymorphism in the apolipoprotein A5 gene is associated with weight loss after short-term diet.

<http://www.ncbi.nlm.nih.gov/pubmed/?term=15996212>

Aber e J, Evans D, Be FU, Seedorf U

J Mol Med (Berl) 2007 Feb;85(2):119-28. Epub 2007 Jan 9.

APOA5 gene variation modulates the effects of dietary fat intake on body mass index and obesity risk in the Framingham Heart Study.

<http://www.ncbi.nlm.nih.gov/pubmed/?term=17211608>

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J Nutr 2011 Mar;141(3):380-5. doi: 10.3945/jn.110.130344. Epub 2011 Jan 5.

APOA5 gene variation interacts with dietary fat intake to modulate obesity and circulating triglycerides in a Mediterranean population.

<http://www.ncbi.nlm.nih.gov/pubmed/?term=21209257>

Sánchez-Moreno C, Ordovás JM, Sm th CE, Baraza JC, Lee YC, Garau et M

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Variants in glucose- and circadian rhythm-related genes affect the response of energy expenditure to weight-loss diets: the POUNDS LOST Trial.

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<http://www.ncbi.nlm.nih.gov/pubmed/?term=23446828>

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## NUTRIENTS – VITAMIN B9 – FOLATE TENDENCY

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