

# HEALTHY WEIGHT

## DNA ANALYSIS

### PERSONAL REPORT



**PERSON TESTED:** JANE DOE  
**REFERENCE #:** 123456  
**DATE OF BIRTH:** 7/12/1968  
**REPORT DATE:** 6/1/17



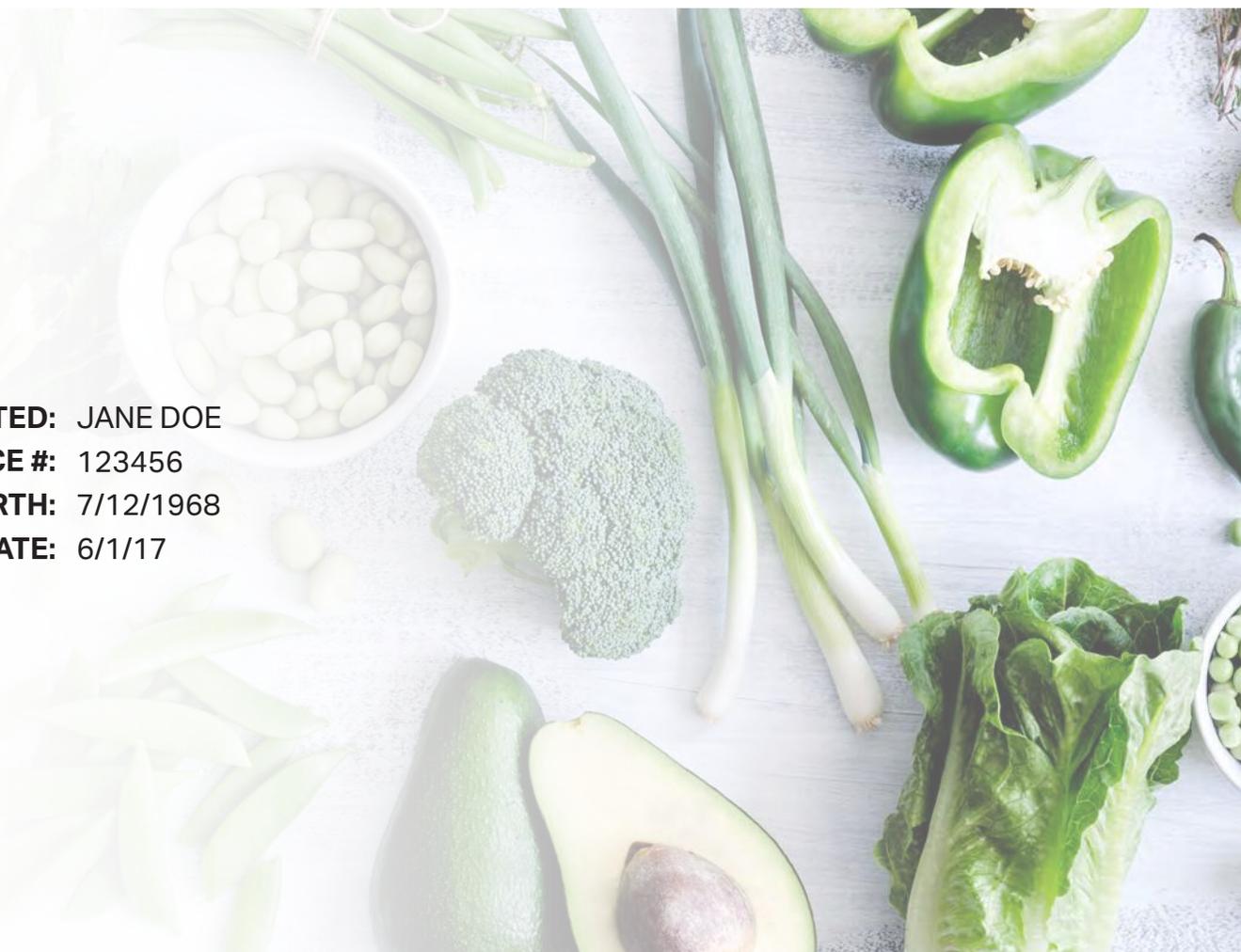
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# YOUR PERSONALIZED REPORT

## CONGRATULATIONS!

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You are about to 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 Categories**
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:

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.

- 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

Our medical team has evaluated your potential response and provides you with concrete success strategies based on the latest

# YOUR PERSONALIZED REPORT

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

 WEIGHT LOSS ABILITY		
Weight Loss Ability with Diet and Exercise	LOW	FTO, TCF7L2, MTNR1B, PPARG, BDNF, ABCB11

 FOOD		
Protein Utilization	ENHANCED	FTO
Fat Utilization	LOW	PPARG, TCF7L2, APOA5, CRY2, MTNR1B, PPM1K
Carb Utilization	NORMAL	IRS1

 NUTRIENTS		
Folate Tendency	LOW	MTHFR
Vitamin A Tendency	LOW	BCMO1
Vitamin B6 Tendency	LOW	NBPF3
Vitamin B12 Tendency	LOW	FUT2
Vitamin C Tendency	LOW	SLC23A1
Vitamin D Tendency	LOW	GC, NADSYN1, CYP2R1

 EXERCISE		
Fat Loss Response to Cardio	LOW	DRB2, LPL
Fitness Response To Cardio	LOW	AMPD1, APOE
Body Composition Response to Strength Training	BELOW AVERAGE	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	BELOW AVERAGE	APOE
Insulin Sensitivity Response to Cardio	BELOW AVERAGE	LIPC
Glucose Response To Cardio	BELOW AVERAGE	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.

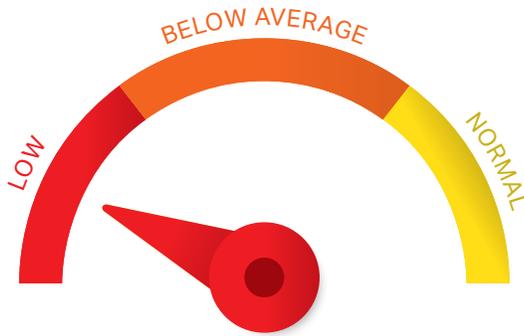
The genes included in this category have all been shown in studies to have statistically significant associations with a person's ability to lose weight and keep it off.

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 **LOW**

*You may lose less weight or fat than you expect from a lifestyle change in diet and exercise, and/or you may regain weight back if you do not stick to the program.*

### WHAT YOUR GENES SAY ABOUT YOU

Your score reflects the fact that among the genes investigated, your genotypes included many of the unfavorable gene combinations. What this means is that you may find it tougher to lose weight and to keep it off compared to other people who do not have the same genetic profile as you.

The good news is that this does NOT mean that you will not or cannot lose weight. You can lose weight, but you just may not lose as much as you expect, or you may have to work a little harder to lose it and keep it off. Remember that these results only indicate your potential ability to lose weight based on genetic factors, but they are not a guarantee of how your body will respond to diet and exercise. Even if you carry genotypes that potentially reduce your ability to lose weight, your lifestyle and environmental choices affect whether those genes are expressed or not. However, your results suggest that it is smart to choose the most effective program for you and to adopt behaviors that help you to stick to the lifestyle changes.

### SUCCESS STRATEGIES

Weight loss comes from reducing the number of calories you eat and increasing the number of calories that you burn. The most powerful—and permanent—weight loss comes when you do both. Study your Healthy Weight results in **FOOD CATEGORIES** and **EXERCISE**. They will give you more insight into what could be the best type of diet and exercise plan that may make it easier for you to lose weight. Keep in mind that different approaches work for different people and your personality and the logistical factors in your life affect what works best. Here are some tips that can help.

### DIET TIPS

- Pay special attention to the number of calories that you consume since any weight loss resistance may be overcome by making sure that you are maintaining a caloric deficit that leads to weight loss
- Based on your reported body weight and estimated activity level, our recommendations include a calorie target highlighting how much you should eat each day
- Tracking your calorie intake on paper or with a dietary app can help you monitor whether you are meeting your goals
- Identify the influences that make it hard for you to choose the right foods or to stick to a diet. Develop back-up plans so that you aren't derailed from your diet if the same, or similar, circumstances arise again.

### EXERCISE TIPS

Exercise can significantly bump up your calorie burn to help you lose more weight and greater amounts of body fat, especially deep fat around your belly. You are more likely to see optimal results by exercising at least **5 and up to 7 days per week, or from 200 minutes up to 300 minutes per week.**



# WEIGHT LOSS ABILITY

- *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.*

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.

## 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,



# 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 specific proportions of the basic food categories: carbohydrates, fat, and protein. You can monitor this with a diet log.



Based on your gender, age, height and current weight, we recommend a diet of approximately [XXXX] calories per day to lose weight. This number was calculated by estimating your total energy expenditure, or the number of calories your body needs each day. Since you are interested in losing weight, you need to eat fewer calories than your total energy expenditure. We suggest a modest calorie reduction of 20%. We have calculated this reduction into our calorie recommendation for you, so if you eat around [XXXX] 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 macro nutrient 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 25-30% protein from primarily plant food sources.	25% to 30%	133g to 160g	534 to 640
	<b>FAT</b> Choose a diet low in fat and saturated fat.	10% to 15%	24g to 36g	213 to 320
	<b>CARBOHYDRATES</b> Choose a plant-based diet that is high in complex carbs (veggies, beans, whole grains, etc.), and avoid simple or processed carbs (fries, chips, crackers, etc.).	65% to 70%	347g to 373g	1,387 to 1.494

**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.).



## SUMMARY

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**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.



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

*This indicates that you may lose more weight from dieting if you eat a moderate-to-high percentage of protein. Aim for 25% to 30% of your total calories to come from plant or animal-based protein.*

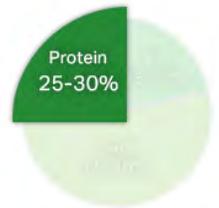
### WHAT YOUR GENES SAY ABOUT YOU

Your genotype includes the allele combination that results in greater weight loss when a higher percentage of protein is eaten as part of a diet. Studies that investigated this genotype found that a **diet consisting of 25% of protein resulted in optimal weight loss**. This suggests that **the amount of weight or body fat that you lose from a diet is very likely to be affected by the percentage of protein you eat**.

This genotype also results in the loss of more lean body mass from dieting compared to those without this genotype. Lifting weights during dieting is an effective way to minimize or prevent the loss of muscle that can occur with weight loss.

### SUCCESS STRATEGIES

Consuming a diet that is moderate-to-high in protein when you diet may help you to optimize your weight loss. Since you have a higher risk of losing muscle mass when you lose weight, it is important to include regular resistance training during your weight loss period.



### DIET

The body needs a certain minimum amount of protein to meet its needs to produce muscle, hormones, enzymes, skin and for other functions. 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.

- *If you weigh 175 lbs, or 80 kg, it is recommended that you get between 64 and 80 grams of protein per day. That means 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. Your genotype suggests that, while dieting, you may benefit from an even higher percentage of protein—from 25% to 30%*
- *Protein in your foods should contain all of the essential amino acids. Animal foods contain all of the essential amino acids in one food item, such as meat, fish or dairy products*
- *You can also obtain all of the essential amino acids in many single plant foods, including grains such as quinoa, seeds such as shelled hemp hearts (hemp seeds), and beans*



*such as edamame or tofu. Or you can consume several complementary plant foods in the same day and obtain the essential amino acids that your body needs (brown rice and black beans; nuts, grains and beans; veggies, beans and grains, etc.)*

- If your genetic profile suggests you should reduce your intake of total fat or saturated fat, choose leaner versions of animal foods or, best, opt for plant-based protein foods*

To track the percentage of protein you get, record your food intake for at least a week and enter it into a diet app or online nutrition log that can calculate the percentage of each of the macro nutrients that you eat.

## EXERCISE

- Since these genes are also associated with reduced lean body mass from dieting (which can include the loss of muscle tissue), it is recommended that you include exercise, especially heavier weight training, as part of your plan when you are losing weight. This may help minimize or prevent the loss of lean body mass that can occur with weight loss*
- Study your results for your genetic analysis for exercise-related genes for a more specific exercise prescription. But for optimal muscle strengthening, you should do exercises with weights targeting your major muscle groups. On two to three non-consecutive days per week, do three (3) sets of 12 reps with weight heavy enough to feel "hard" or "very hard" by the end of each set*

## 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.



## 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.

## 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.*

## 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

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

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### WHAT NUTRIENTS DO I NEED?

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

### HOW DO MICRONUTRIENTS AFFECT 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 YOUR RESULTS SHOW YOU ARE LOW IN NUTRIENTS?

If you scored **LOW** or **BELOW AVERAGE**, your genotype results show that you may have a higher risk for certain nutrients that may be in the lower end of the normal range. Note that this does not necessarily suggest that you are at risk of being deficient, but merely that you are at risk of being at 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.

**To know for sure whether you are deficient, 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 BEST FOR YOU?

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 YOU MONITOR YOUR NUTRIENT INTAKE?

Your body absorbs a certain amount of each 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.

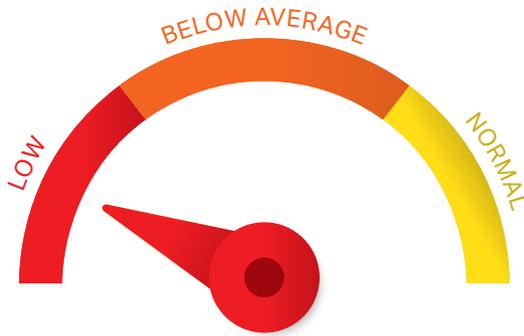
People who are low or deficient in a nutrient may absorb more from food than someone who is not deficient. A person who needs more of a certain nutrient may absorb more of it from a food than someone who has normal levels. There are also other factors that can affect absorption positively or negatively, 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. Most research studies 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.



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

You may have a high risk of having lower blood levels of folate. Getting enough by eating extra whole plant foods at every meal and supplementing with folate if your levels are found to be low in a blood test may be beneficial. Getting folate, Vitamin B12 and homocysteine levels checked in a blood test regularly is recommended.

### WHAT YOUR GENES SAY ABOUT YOU

Your score reflects that your genotype showed a higher risk allele combination. This means that your body may be at risk of having lower blood levels of folate. As a result, you may be at higher risk for anemia and for higher levels of homocysteine, which is a risk factor for heart disease.

### SUCCESS STRATEGIES

- Since you appear to be at high risk to have lower levels of folate, it may be a good idea to get regular blood tests to check for anemia, as well as folate, Vitamin B12 and homocysteine status. Your genes only predict your risk, but a blood test can give you concrete information about your body levels of this nutrient
- All women should ensure they get enough folate in their diet. Monitor your intake by keeping a food log using a dietary app. Because you are at risk of having lower levels, you may want to eat greater amounts of folate than the minimum recommended daily allowance. You will get folate that is added to whole grains in cereals and breads, but you should also eat food sources of folate. The foods highest in folate include legumes, fruits and vegetables, especially greens
- Some of the folate in foods is lost with heat from cooking or oxidation during storage. To minimize potential losses, eat plant foods at every meal to make sure you get enough, eat fresh produce quickly after purchase, and incorporate some raw plant foods into your meals.
- You can also supplement your diet with folate. However, since low levels of Vitamin B12 can mask anemia if folate is taken, it is a good idea to supplement with both folate and Vitamin B12
- Smoking can also decrease folate levels. You may need to consume more if you smoke — or better yet, quit smoking!

### 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.

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



Lentils



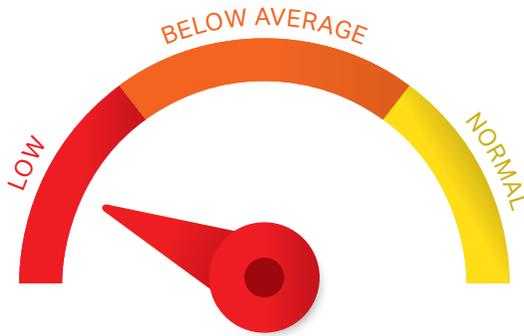
Pinto Beans



Asparagus



Broccoli



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

*This suggests that your ability to convert high doses of beta-carotene from a supplement into an active form of Vitamin A is reduced compared to others with a different genotype.*

### WHAT YOUR GENES SAY ABOUT YOU

If you take a beta-carotene supplement, your ability to convert the nutrient into an active form of Vitamin A is likely to be reduced. It is unclear how your body might respond to food sources of beta-carotene, but it might show a reduced conversion ability as well.

### SUCCESS STRATEGIES

- *If you take supplemental forms of beta-carotene in fortified foods or supplements, or if you have any signs of poor vision, you may want to request a blood test assessing your levels of Vitamin A from your doctor. If your body is deficient, vision and other aspects of health can be affected, so you may want to increase your intake of beta-carotene and Vitamin A-rich foods, and perhaps take low-dose Vitamin A supplements if you are low or deficient.*
- *Vitamin A is needed for good vision and needs may increase in women who are pregnant or lactating*
- *Make sure not to exceed recommended levels of supplemental beta-carotene or Vitamin A, as toxicity can occur*
- *Be aware that some medications, alcohol or health conditions may interact with Vitamin A supplements and cause adverse effect*

### 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



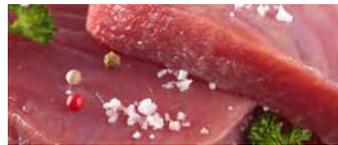
Apricots



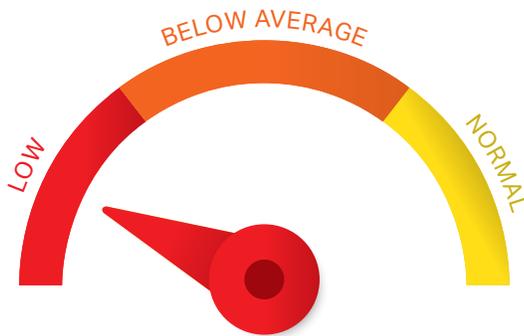
Goat's Cheese



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

### 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



Wheat Germ



Bananas



# NUTRIENTS | VITAMIN B6 TENDENCY



Watermelon



Carrots



Spinach



Peas



Squash



Potatoes



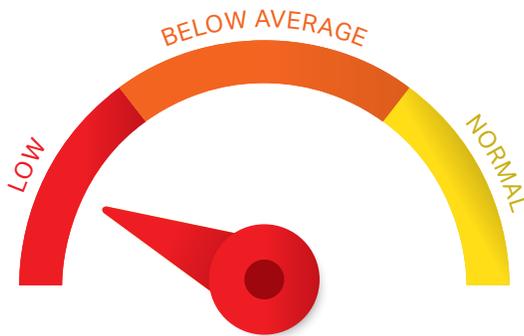
Avocados



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*

### 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.

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



Lean Meat



Seafood



Dairy Products



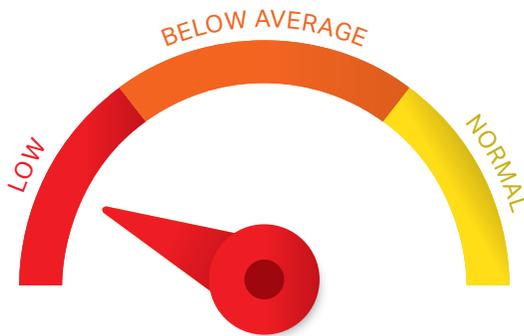
Eggs



Fortified Nutritional Yeast



Fortified Plant Milks



## YOUR GENETIC PROFILE INDICATES YOUR CIRCULATING LEVELS OF VITAMIN C ARE LIKELY TO BE **LOW**

*This level is when compared to others with a more favorable genotype. This does not mean that you are likely to be deficient. But you may wish to check your levels with a blood test and eat more Vitamin-C rich foods and/or supplement if your blood levels are low.*

### 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

- *Discuss getting a blood test to assess your Vitamin C status with your doctor*
- *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*
- *Vitamin C can be destroyed by heat and oxygen, so include fresh, raw fruits and vegetables in your meals every day*
- *If you smoke, you may require more Vitamin C through foods and/or supplements*
- *If you wish to supplement with Vitamin C, avoid very high doses because they can cause diarrhea and gastro-intestinal distress*

### 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.



# NUTRIENTS | VITAMIN C TENDENCY

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



Broccoli



Red Bell Peppers



Kiwi Fruit



Brussels Sprouts



Strawberries



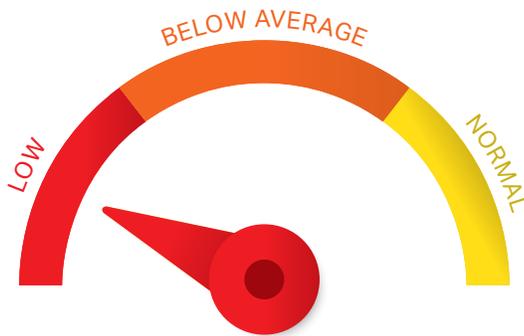
Oranges



Watermelon



Pinto Beans



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

Your levels of Vitamin D may be extremely low or even deficient. Get your blood tested for Vitamin D on a regular basis. Increase your sun exposure and add more Vitamin D-rich foods or supplements, if your levels are low.

### WHAT YOUR GENES SAY ABOUT YOU

For the genes investigated, your genotype showed many of the unfavorable allele combinations that increase your risk of having extremely low levels of Vitamin D. This does not mean you definitely are deficient, but you should speak to your doctor and get tested to monitor your status. If you get inadequate sun exposure, take in small amounts through natural or fortified foods, or have trouble with absorption of the Vitamin D you do get from foods, you could be at greater risk of being low.

### SUCCESS STRATEGIES

- Get tested regularly since you are at high risk of having low levels of Vitamin D
- Getting outside on most days of the week for a few minutes is crucial to generate your body's production of Vitamin D. Most people do not get Vitamin D through food; sunlight is considered to be the best source
- 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.
- Sunscreen can block the rays that trigger your Vitamin D production. Spending a short amount of time outside without sunscreen may be beneficial. If you have any doubts, discuss the best approach with a dermatologist
- If you are deficient in Vitamin D, do a nutrient analysis to determine how much Vitamin D you consume, then eat more foods that contain Vitamin D, including natural foods or fortified foods, or take a supplement
- If you take a Vitamin D supplement, avoid overly-high doses, unless by prescription through your doctor, as they may cause adverse effects

### 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



# NUTRIENTS | VITAMIN D TENDENCY

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.



Almond, Soy, or Other Plant Milk



Fortified Dairy Milk

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



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

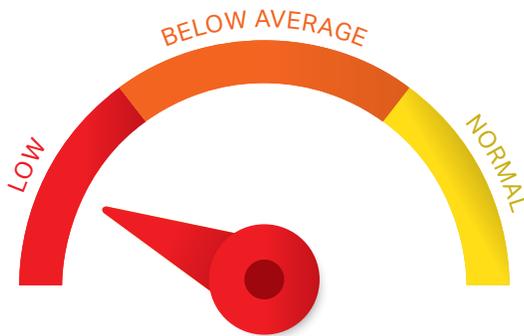


Perform moderate to vigorous intensity cardiovascular exercise 3 days a week for a minimum of 150 minutes per week. You can achieve greater results with increased frequency, intensity and through High Intensity Interval Training (HIT).

### STRENGTH TRAINING



Lift weights 3 days per week using weights that are heavy enough to challenge you at the end of each of 3 sets of 12 reps. Try barbell and kettlebell workouts, as well. 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 EXERCISE THREE (3) DAYS PER WEEK WHILE WORKING OUT AT A MODERATE-TO-HIGH INTENSITY IS **LOW**

*This does not mean you cannot lose fat from this amount of Cardio, but your fat loss may be minimal. You are likely to get optimal fat loss by exercising more. Aim for at least 200 to 300 minutes per week.*

### WHAT YOUR GENES SAY ABOUT YOU

Among the genes investigated, you have the “unfavorable” gene combinations. This means that, based on your genes, you have a greater chance of showing a reduced fat loss response to doing cardio exercise for 30 to 50 minutes 3 days per week. Thus, you may lose only a little fat if you follow a similar cardio exercise program.

Keep in mind that having an “unfavorable” genotype does not mean that you cannot lose body fat; it only suggests that you may have a more difficult time losing as much as someone else with a more favorable genotype. Genetic predisposition plays a role in fat loss, but other factors also affect how much fat you

lose. However, your results suggest that you may have to do more and work harder to experience greater amounts of fat loss.

### SUCCESS STRATEGIES

- Official exercise recommendations suggest that exercising three (3) days per week for 150 or fewer minutes is not enough to manage body weight. For optimal fat loss and weight loss results from exercise, increase one or all of the following: the number of days per week you exercise, the length of time of your exercise session, and/or the intensity of your exercise session
- For optimal fat and weight loss results from exercise, aim for five (5) or more days per week of cardio exercise for a total of at least 300 minutes per week
- Incorporate cardio interval training where you alternate very intense bursts of activity with intervals of exercise at a more moderate intensity. You can do this by doing cardio only or with weight training. During cardio, you might walk for 10 minutes at an easy pace to warm up, then jog or run for 30 seconds to two minutes. Then return to an easy pace walk for 3-5 minutes and then jog or run again for 30 seconds to two minutes. As you get fitter, you can lengthen the high-intensity intervals and shorten the recovery intervals
- Make sure to include muscle-strengthening exercises 2-3 days per week
- While it is possible to lose fat and weight from exercise alone, you will experience faster fat loss if you focus on sticking to a reduced-calorie diet, in addition to exercise. Follow the tips from the HomeDNA™ Healthy Weight analysis of your Weight

### RELATED GENES / SNPS

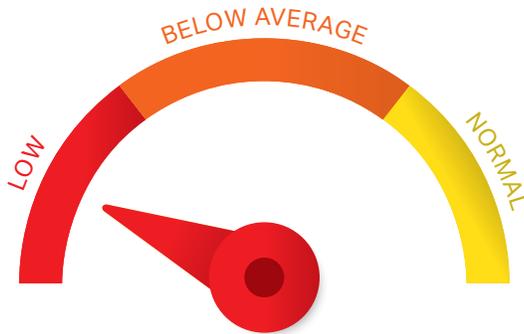


## EXERCISE | FAT LOSS RESPONSE: CARDIO

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 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.



## YOUR GENETIC PROFILE INDICATES THAT YOUR FITNESS RESPONSE TO MODERATE-TO-HIGH-INTENSITY CARDIO IS **LOW**

To see significant improvements to your cardiovascular fitness, you may need to increase the frequency of cardio to at least 5 days a week.

### WHAT YOUR GENES SAY ABOUT YOU

Your genotype shows the “unfavorable” gene combinations. This means that you may have the potential for your oxygen capacity to respond sub-optimally during continuous, moderate-to-high intensity cardio workouts performed 3-4 days per week. This does not mean that you cannot improve your fitness with this exercise prescription—you most likely can. And you are likely to experience other fitness benefits from exercise as well.

### SUCCESS STRATEGIES

- There are many ways to “overload” the cardiovascular system to improve fitness. Your genotype suggests you might benefit most from increasing the frequency of workouts to five (5) days or more if you are doing moderate intensity cardio. Or you might try High Intensity Interval Training (HIIT) that gives your body bursts of hard effort followed by short

recovery intervals. • For optimal fat and weight loss results from exercise, aim for five (5) or more days per week of cardio exercise for a total of at least 300 minutes per week

- You may also benefit from a resistance-based approach to cardio. Endurance-based resistance training involves lifting weights at a faster pace, followed by recovery efforts. Endurance-based resistance training such as kettlebell workouts involve whole body moves with little rest in between. Circuit-training with weights workouts have you lift heavy weights quickly with little rest in between. Or some approaches insert cardio intervals in between sets of weights. You overload the muscle to obtain improvements in strength and endurance, but you also get a cardiovascular benefit.

### 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.

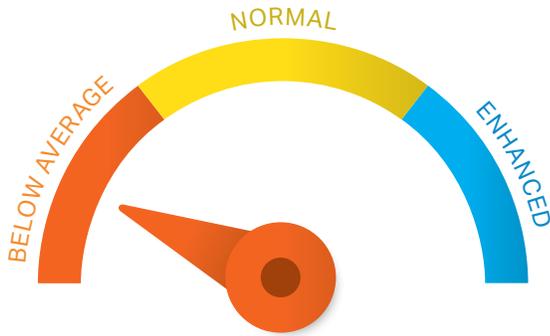
Several large studies investigating these genes had sedentary



# EXERCISE | FITNESS RESPONSE: CARDIO

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.



## YOUR GENETIC PROFILE INDICATES YOUR BODY COMPOSITION RESPONSE TO STRENGTH TRAINING IS **BELOW AVERAGE**

*This is in comparison to others with a more favorable genotype. For optimal weight and fat loss results, include cardio on most days of the week, stick to a healthy, lower-calorie diet and include heavy weight-training sessions three (3) days per week.*

### WHAT YOUR GENES SAY ABOUT YOU

You are likely to experience a reduced ability to lose weight and to decrease your body fat from weight training alone.

Resistance training does not typically burn enough calories to cause clinically significant weight loss or fat loss. If muscle mass is increased by the use of heavy weights and eating enough to fuel the growth of new muscle tissue, body composition can be changed to increase the percentage of muscle compared to the percentage of body fat. But for weight loss, you may experience better results from incorporating more cardio exercise, which does typically result in weight loss and/or fat loss.

### SUCCESS STRATEGIES

- *Although resistance training does improve strength and the amount of muscle mass a person has, it does not typically burn enough calories to cause clinically significant weight loss or fat loss. For optimal body composition with less body fat, you should include 200 to 300 minutes of cardio on most days of the week and adhere to a healthy, reduced-calorie diet*
- *For optimal results from resistance training, it is important to provide your muscles with a stimulus sufficient enough that they are pushed to change. Many women, especially, do not lift heavy enough weight to either build muscle or get stronger. Make sure that you feel challenged by the last few reps of every set of an exercise that you do*
- *You may also benefit from trying different forms of resistance training. Barbell-type workouts that focus on challenging weights with high reps may produce a greater calorie burn that results in more fat loss. Kettlebell workouts may provide a more endurance-based approach that leads to a greater calorie burn*
- *Include at least one day of power training with significantly heavier weight. Power training entails doing fewer repetitions of heavier weights. Instead of doing three (3) sets of 8-15 repetitions, you might choose a heavier weight and do 1-3 sets of 5-8 reps with 2-3 minutes of rest in between sets. If you participate in power training, build up a base level of strength following a traditional resistance-training program for at least 6-8 weeks before you start power training. Give yourself 2-3 days of recovery between power training sessions*
- *Make sure to stick to a healthy, reduced-calorie diet for optimal fat loss.*



## 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.



## 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.*

### RELATED GENES / SNPS

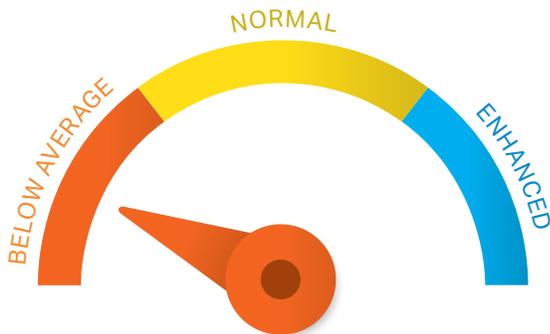
The genes included in this category have been shown to have significant associations with a person’s glucose response to cardio exercise. Glucose is one of the body’s main sources of energy and it comes from the breakdown of carbohydrates in the diet. Brain and nerve cells (as well as red blood cells)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



# EXERCISE | GLUCOSE RESPONSE: CARDIO

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.



## YOUR GENETIC PROFILE INDICATES YOUR HDL RESPONSE TO CARDIO IS **BELOW AVERAGE**

You may see only small increases in HDL from regular cardio exercise. You may be able to boost your response if you perform longer and/or higher intensity cardio sessions at least five (5) days per week. Keep other cholesterol levels in check by eating plenty of beans, nuts and other plant foods.

### WHAT YOUR GENES SAY ABOUT YOU

Your genotype shows the “unfavorable” gene combinations. This means that you are likely to see a boost in HDL levels from exercise, but it may be a small improvement.

### SUCCESS STRATEGIES

- Aim to perform cardio exercise at least 5-7 days per week for 300 minutes or more
- Include high exercise intensities. You should feel breathless and as if you are working out ‘hard’, or even ‘very hard.’ But work up gradually to working out at harder levels. If you are working out seven (7) days per week, you may want to do 1-2 days at an easier effort level

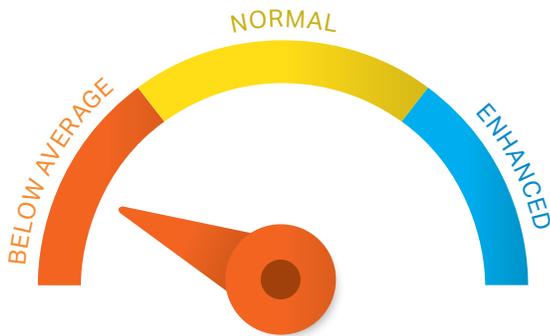
- You may benefit from keeping other cholesterol levels, such as LDL, low. Reducing your intake of saturated fat may help, especially if your genotype was rated High Sensitivity to Fat. Limit or avoid animal foods such as meat, poultry, eggs and dairy, or choose lean or lower-fat versions
- What you 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. Incorporate more beans, nuts, fruits and vegetables into your diet, as all have been shown to improve cholesterol

### 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.



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

Your improvement from three (3) days a week of cardio exercise is likely to be minimal. You can maximize the effects by working out on most days of the week and including both resistance training and higher-intensity work during your workouts. Weight and/or fat loss from both exercise and diet can also improve your body's response to insulin.

### WHAT YOUR GENES SAY ABOUT YOU

Your genotype shows the "unfavorable" gene combinations. This means that, while you may see improvements in insulin sensitivity from cardio, they are more likely to be minimal. But you should be able to boost your body's insulin response with strategic workouts.

### SUCCESS STRATEGIES

- Exercise frequently. The effects of exercise on glucose uptake are short-lived. So the effects of a workout may wear off within two (2) days of your last workout. That means that once or twice a week workouts aren't enough to reap this benefit from exercise. Do cardio at least 3-5 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
- High-intensity workouts may produce a more powerful response. Once you are fit enough to do so, push to work out at higher intensities during cardio workouts. Also, try circuit training or high-intensity interval training where you alternate powerful high-energy bursts with short recovery intervals
- 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

### 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, 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.



# EXERCISE | INSULIN SENSITIVITY: CARDIO

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.



# CUSTOM MEAL PLAN

## A MEAL PLAN GENETICALLY DESIGNED JUST FOR YOU

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

*\* recipes included*

BREAKFAST	PROTEIN	FAT	CARBS	CALORIES
*Omelette (1 1/2 Serving)	24g	17g	14g	299
Red New Potato (1/2 Cup)	2g	0g	12g	54
Mixed Berries (5/8 Cup)	1g	1g	11g	51
LUNCH	PROTEIN	FAT	CARBS	CALORIES
*Quinoa stuffed Tomato (1 Serving)	10g	10g	46g	299
DINNER	PROTEIN	FAT	CARBS	CALORIES
*Cornbread crusted turkey (1 1/4 Serving)	36g	8g	36g	356
*Side salad #1 (1 1/2 Serving)	6g	5g	23g	153
Sweet potato (medium) (1 7/8 Each)	4g	0g	45g	193
SNACKS	PROTEIN	FAT	CARBS	CALORIES
Apple (medium) (2 Each)	0g	0g	66g	276
Air popped popcorn (4 1/8 Cup)	4g	0g	25g	128
Pear (medium) (1 3/8 Each)	1g	0g	37g	154
Pea Protein (1/4 Scoop)	6g	1g	0g	30

### DAY 1 TOTALS

**94g**

**42g**

**315g**

**1993**



## OMELETTE

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### Ingredients

- 1 whole egg
- 2 egg whites
- 2 Tbsp onions
- 1/4 C green peppers
- 1/4 C mushrooms
- 1/4 avocado

## QUINOA STUFFED TOMATOES

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### Ingredients

- 4 medium (2 1/2 inches) tomatoes, rinsed
- 1 Tbsp olive oil
- 2 Tbsp red onions, peeled and chopped
- 1 C cooked mixed vegetables - such as peppers, corn, carrots, or peas leftover friendly)
- 1 C quinoa, rinsed
- 1 C low-sodium chicken broth
- 1/2 ripe avocado, peeled and diced
- 1/4 tsp ground black pepper
- 1 Tbsp fresh parsley, rinsed, dried, and chopped (or 1 tsp dried)

### Directions

1. Preheat oven to 350 degrees F.
2. Cut off the tops of the tomatoes and hollow out the insides. (The pulp can be saved for use in tomato soup or sauce, or salsa. Set tomatoes aside.
3. Heat oil in a saucepan over medium-high heat. Add onions, and cook until they begin to soften, about 1-2 minutes.
4. Add cooked vegetables, and heat through, about another 1-2 minutes.
5. Add quinoa, and cook gently until it smells good, about 2 minutes.
6. Add chicken broth, and bring to a boil. Reduce the heat and cover the pan. Cook until the quinoa has absorbed all of the liquid and is fully cooked, about 7-10 minutes
7. When the quinoa is cooked, remove the lid and gently fluff quinoa with a fork. Gently mix in the avocado, pepper, and parsley.
8. Carefully stuff about 3/4 cup of quinoa into each tomato.
9. Place tomatoes on a baking sheet, and bake for about 15-20 minutes, or until tomatoes are hot throughout (tomatoes may be stuffed in advance and baked later). Serve immediately.



# CUSTOM EXERCISE PLAN

## 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*



# CUSTOM EXERCISE PLAN

*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.*



# CUSTOM EXERCISE PLAN

## CARDIO EXERCISE

## STRENGTH TRAINING

FREQUENCY	INTENSITY	FREQUENCY	SETS & REPS
More than or equal to 5 days per week	Moderate to vigorous	2-3 days per week	2-3 sets; 8-15 reps per muscle group

DURATION	FAT	CARBS	CALORIES
More than or equal to 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	Rowing Machine - 60 minutes	Weight Class - 2-3 sets; 8-15 reps
DAY 3		
DAY 4	*Zumba Class - 60 minutes	
DAY 5	Spin Class - 45 minutes	
DAY 6	Elliptical Trainer - 45 minutes	Dumbbells - 2-3 sets; 8-15 reps
DAY 7	Rowing Machine - 30 minutes	