

HEALTHY WEIGHT

ANALYSIS + REPORT



PERSON TESTED: Jane Doe
REFERENCE #: 123456
DATE OF BIRTH: 3/7/1998
REPORT DATE: 5/25/17



YOUR PERSONALIZED REPORT

CONGRATULATIONS!

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

BODY TRAITS ANALYZED

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

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

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

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

HOW RESULTS ARE DETERMINED

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

LEVERAGING THE LATEST RESEARCH

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

THIS REPORT SHOWS YOU:

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 PERSONALIZED REPORT

- 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 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	BELOW AVERAGE	FTO, TCF7L2, MTNR1B, PPARG, BDNF, ABCB11
 FOOD		
Protein Utilization	SLIGHTLY ENHANCED	FTO
Fat Utilization	LOW	PPARG, TCF7L2, APOA5, CRY2, MTNR1B, PPM1K
Carb Utilization	ENHANCED	IRS1
 NUTRIENTS		
Vitamin B9 – Folate Tendency	BELOW AVERAGE	MTHFR
Vitamin A Tendency	BELOW AVERAGE	BCMO1
Vitamin B6 Tendency	BELOW AVERAGE	NBPF3
Vitamin B12 Tendency	LOW	FUT2
Vitamin C Tendency	BELOW AVERAGE	SLC23A1
Vitamin D Tendency	BELOW AVERAGE	GC, NADSYN1, CYP2R1
 EXERCISE		
Fat Loss Response to Cardio	BELOW AVERAGE	ADRB2, LPL
Fitness Response To Cardio	BELOW AVERAGE	AMPD1, APOE
Body Composition Response to Strength Training	NORMAL	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	NORMAL	APOE
Insulin Sensitivity Response to Cardio	NORMAL	LIPC
Glucose Response To Cardio	NORMAL	PPARG



WEIGHT LOSS ABILITY

SUMMARY

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

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

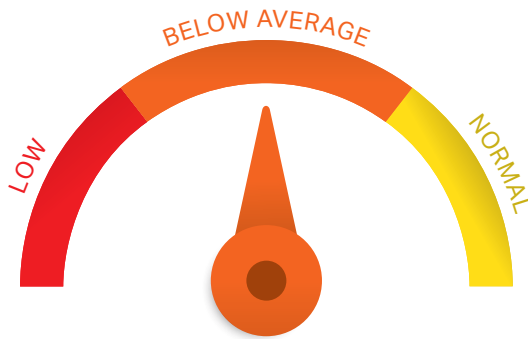
The genes included in this category have all been shown in studies to have statistically significant associations with a person's ability to lose weight and keep it off.

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

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



WEIGHT LOSS ABILITY



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

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

WHAT YOUR GENES SAY ABOUT YOU

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

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

SUCCESS STRATEGIES

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

TIPS FOR EFFECTIVE DIETING

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



WEIGHT LOSS ABILITY

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

TIPS FOR MAXIMIZING CALORIE BURN

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

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

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

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

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

way to incorporate the recommendations into your workout.

RELATED GENES / SNPS

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

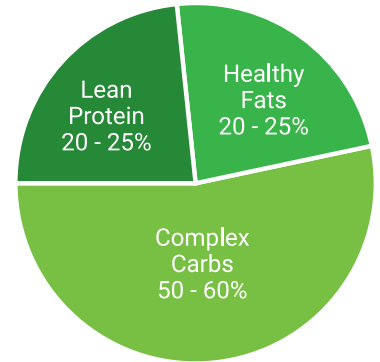
Our analysis investigated which genotype for each of these 6 genes was present in your DNA. Your rating of either **LOW**, **BELOW AVERAGE**, **NORMAL** reflects whether your genotypes included those that carried a risk of reduced weight loss ability.



SUMMARY

WHAT FOODS DO YOU NEED TO EAT?

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



Based on your gender, age, height, current weight and current activity level, we recommend a diet of approximately 1,513 calories per day to lose weight. This number was calculated estimating your total energy expenditure, or the number of calories your body needs each day. Since you are interested in losing weight, you will need to eat fewer calories than your total energy expenditure. We suggest a modest calorie reduction of 20 percent. We have calculated this reduction into our calorie recommendation for you, so if you eat around 1,513 calories per day, you can expect to lose weight. This is not a drastic calorie reduction, so you should not feel hungry or like you are denying yourself food if you eat this many calories.

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

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

RECOMMENDATION	PERCENT	GRAMS	CALORIES
PROTEIN Choose a reduced-calorie diet that is between 20-25% protein. Get your protein from mostly plant food sources such as beans, legumes, nuts, seeds, whole grains and vegetables.	20% to 25%	76g to 95g	303 to 378
FAT Choose a diet low in fat and saturated fat. Get your fats mostly from plant foods, but avoid excess added oils.	20% to 25%	34g to 42g	303 to 378
CARBOHYDRATES 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.).	50% to 60%	189g to 227g	757 to 908

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



SUMMARY

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

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

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

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



SUMMARY

WHAT NUTRIENTS DO I NEED?

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

HOW DO MICRONUTRIENTS AFFECT MY BODY WEIGHT?

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

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

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

DO MY RESULTS SHOW THAT I AM LOW IN NUTRIENTS?

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

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



SUMMARY

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

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

HOW CAN I MONITOR MY NUTRIENT INTAKE?

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

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

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

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

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

SHOULD YOU TAKE A SUPPLEMENT?

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

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



SUMMARY

HOW MUCH SHOULD YOU EXERCISE?

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

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

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

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

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

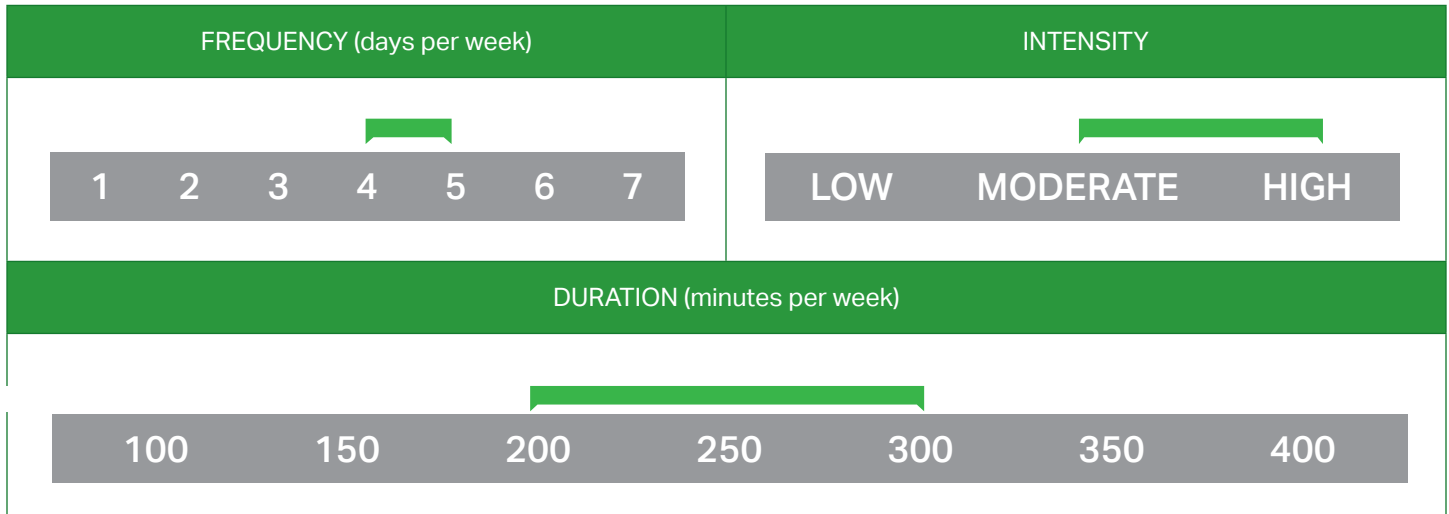
2. **Muscle matters, too.** It keeps you strong and it helps your body stay firm and shapely. You may have a certain genotype that makes you more or less muscular, or that makes you more or less strong, but your muscle response to both dieting and exercise will still be affected by the type and amount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

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



SUMMARY

CARDIO EXERCISE



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

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

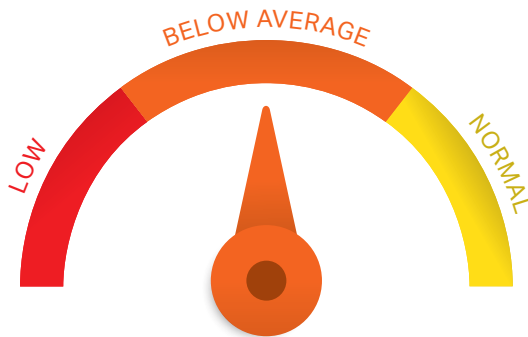
STRENGTH TRAINING



Lift weights 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.



EXERCISE | FAT LOSS RESPONSE: CARDIO



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

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

WHAT YOUR GENES SAY ABOUT YOU

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

SUCCESS STRATEGIES

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

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

RELATED GENES / SNPS

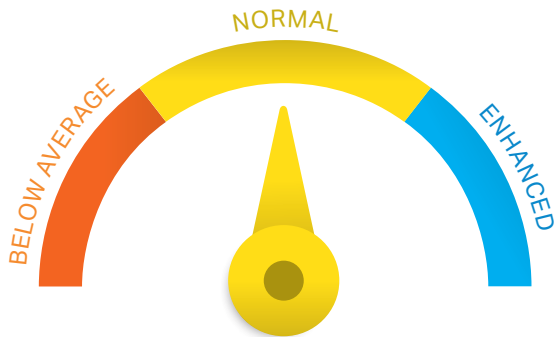
The genes included in this category have been shown in a study to have significant associations with a person’s ability to lose fat from a regular program of three (3) days per week of cardio exercise. A large study investigating these genes put sedentary men and women on a 20-week cardio exercise program.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



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 YOUR BODY COMPOSITION RESPONSE TO STRENGTH TRAINING IS **NORMAL**

For optimal weight and fat loss results, make sure to include cardio workouts on most days of the week, along with challenging resistance training sessions 2-3 days per week.

WHAT YOUR GENES SAY ABOUT YOU

Your genotype shows a few of the “unfavorable” gene combinations. This means that you are likely to experience some weight loss and reduced body fat from weight training, but not as much as someone with a more favorable genotype might. Since cardio exercise results in greater amounts of weight and fat loss, make sure to include it in your weekly routine.

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
- 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

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

RELATED GENES / SNPS

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

Although resistance training alone has not been shown to



EXERCISE | RESISTANCE TRAINING

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.



CUSTOM MEAL PLAN

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

DAY 1

BREAKFAST - OATMEAL TOP W/ CIN, NUTS, FRUIT

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Strawberries, raw	0.75	cup, halves	0.76g	0.34g	8.76g	36.48
Nuts, walnuts, english	0.25	ounce (14 halves)	1.07g	4.56g	0.96g	45.78
Almond Breeze, unsweetened vanilla almond milk	0.5	cup	0.5g	1.5g	1.0g	20.0
Dry steel cut oats	1.0	cup	10.0g	5.0g	54.0g	300.0
Cinnamon	0.5	teaspoon	0.15g	0.1g	2.7g	9.0

MORNING SNACK - FRUIT & CHEESE

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

LUNCH - SPINACH SALAD TOP W/ VEG & BEANS

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Mushrooms, white, raw	0.5	cup, pieces	1.08g	0.12g	1.14g	7.7
Chickpeas	0.66	cup	9.59g	2.8g	29.68g	177.51
Lentils, mature seeds, cooked, boiled, without salt	0.55	cup	9.82g	0.41g	21.92g	126.32
Spinach, raw	4.0	cup	3.43g	0.47g	4.36g	27.6
Olives, ripe, canned (small-extra large)	3.0	large	0.11g	1.41g	0.83g	15.18
Salad dressing, home recipe, vinegar and oil	1.0	tablespoon	0.0g	8.02g	0.4g	71.84
Cucumber, raw, slices	0.5	cup	0.4g	0.0g	1.4g	7.0
Pepper, sweet bell, all colors, chopped	0.33	cup	0.4g	0.07g	3.04g	12.54
Lemon juice	0.5	tablespoon	0.05g	0.0g	0.65g	2.0



CUSTOM MEAL PLAN

DAY 1

AFTERNOON SNACK - USE GROUND FLAXSEED TO MIX IN YOGURT

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Nuts, almonds	5.0	almond	1.06g	2.5g	1.08g	28.95
Yogurt, plain, skim milk, 13 grams protein per 8 ounce	1.0	container (8 oz)	13.01g	0.41g	17.43g	127.12
Blueberries, raw	0.5	cup	0.54g	0.24g	10.51g	41.33
Seeds, flaxseed	0.5	tablespoon	1.1g	2.53g	1.73g	32.04

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

INGREDIENT	QTY	MEAS.	PROTEIN	FAT	CARBS	CAL.
Couscous, cooked	0.5	cup, cooked	2.98g	0.13g	18.23g	87.92
tomato, diced	0.5	cup	0.76g	0.3g	4.18g	19.0
zucchini, boiled, drained	0.5	cup	0.58g	0.05g	3.54g	14.4
Shrimp - boiled or steamed	3.5	ounce(s)	20.72g	1.05g	0.0g	98.0
Garlic powder	0.5	tablespoon	0.7g	0.05g	3.05g	14.0
Olive oil, pure	0.25	tablespoon	0.0g	3.5g	0.0g	32.5

EVENING SNACK- FRUIT

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

DAY 1 TOTALS

81.29g **37.95g** **222.73g** **1500.28**



CUSTOM EXERCISE PLAN

CARDIO EXERCISE

STRENGTH TRAINING

FREQUENCY	INTENSITY	FREQUENCY	SETS & REPS
More than or equal to 4-5 days per week	Moderate to vigorous	3 days per week	3 sets; 12 reps per muscle group
DURATION		MUSCLE GROUPS	
More than or equal to 200-300 minutes per week		Chest, back, legs, shoulders, core (abs and low back), arms	

GYM MACHINES

* description included

Day 1	Step Machine - 60 minutes	
Day 2	Treadmill Walk - 60 minutes	Weight Machines - 3 sets; 12 reps
Day 3		
Day 4	Run - 30 minutes	
Day 5	Treadmill Walk - 30 minutes	* Barbell Class - 3 sets; 12 reps
Day 6		
Day 7	Eliptical Trainer - 60 minutes	Weight Machines - 3 sets; 12 reps

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

LINKS TO RELATED STUDIES

WEIGHT LOSS ABILITY

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

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

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

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

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

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

FTO predicts weight regain in the Look AHEAD clinical trial

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

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

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

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

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

Haupt A, Thamer C, Heni M, Ketterer C, Machann J, Schick F, Machicao F, Stefan N, Claussen CD, Häring HU, Fritsche A, Staiger H.

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

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

Mattei J, Qi Q, Hu FB, Sacks FM, Qi L.

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

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

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

Mirzaei K, Xu M, Qi Q, de Jonge L, Bray GA, Sacks F, Qi L.