



FITNOME

Precision Genotype
Fitness & Exercise
Assessments



Fitness Benefits
Fitness Profile
Injury Potential
Muscle Characteristics



Thank you for using LifeNome, the personalized nutrition, fitness and wellbeing advice based on your genes.

We are excited to provide you with one of the most comprehensive genome-based nutrition and well-being information reports currently available. The information provided by LifeNome does not constitute medical advice and is provided solely as complementary insight to assist you and your doctor in making more personalized decisions for your nutrition and well being.

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My Genetic Strengths **5**

- Exercise Benefits for Maximal Oxygen Uptake Response ✦
- Aerobic Performance ✦
- Lean Body Mass Potential ✦
- Exercise Benefits for Blood Pressure ✦
- Joint Flexibility ✦

My Genetic Risks **8**

- Heartbeat Reduction Difficulty ✦
- Achilles Tendinopathy ✦
- Joint Injury Risk ✦
- Overall Tendon and Ligament Injury Risk ✦
- Slow Muscle Repair ✦
- Anterior Cruciate Ligament Rupture ✦
- Stress Fracture ✦
- Muscle Strength Loss ✦

My Genetic Strengths Levels

- ✦ Typical
- ✦ Slightly Advantaged
- ✦ Advantaged

My Genetic Risk Levels

- ✦ Low
- ✦ Slightly Elevated
- ✦ Elevated



Have you asked yourself the question of why some people respond to an aerobic workout routine by becoming incredibly fit, whereas others who exercise just as hard for months end up no fitter than the beginning? How much each of us benefits from exercise depends strongly on genetic factors. In this section you can gain insights on what the actual benefits of exercise can be on your unique biology.

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Exercise Benefits for Blood Pressure

**Slightly
Advantaged**

higher than
45%
of the population

MY GENETIC VARIANTS

rs5370 rs62205366

2

MY TOTAL

WHAT IS EXERCISE BENEFITS FOR BLOOD PRESSURE?

For most people, moderate-intensity exercise has been shown to lower blood pressure. In fact, aerobic exercise training is generally recommended as lifestyle therapy to prevent, treat and control hypertension. General guidelines call for at least half an hour of low intensity aerobic exercises, which helps to decrease blood pressure. There is large variability in the individual response to the anti-hypertensive effect of exercise, and much of it is explained by genetic variations. Individuals with predisposition to increased hypertension response, get to lower their blood pressure faster than the average population. For such individuals, the benefits of this 30 minute exercise are more noticeable than for the average population.

YOUR GENETIC VARIANTS

These are 2 genetic variants (SNPs) associated with Exercise Benefits for Blood Pressure out of 4 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ You will probably achieve faster than average improvements in your blood pressure through moderate exercise.
- ♥ Regular exercise of at least 30 minutes per day, together with a healthy diet, will most likely result in lowering your blood pressure over time.
- ♥ Exercises that are useful for lowering your blood pressure include: Brisk walking, Cycling, Swimming, Dancing, Mowing the lawn, Tennis and Jogging.
- ♥ Exercises you should avoid for blood pressure reduction: Weight lifting and sprinting.
- ♥ If you need to lower your blood pressure through exercise, you may want to increase its intensity under the supervision of your physician or trainer.
- ♥ Please note that physical activity will temporarily cause your blood pressure to rise before it lowers your blood pressure over time. So if you have high blood pressure, it is important to increase fitness activities gradually, and not to put too much strain on your heart.
- ♥ If your blood pressure is very high, you should not start any new activity without consulting your doctor.

REFERENCES

Read more about Exercise Benefits for Blood Pressure by checking out the following articles:

[Resource 1](#)

Exercise Benefits for Lowering Cholesterol

Typical

higher than
15%
of the population

MY GENETIC VARIANTS

0
MY TOTAL

WHAT IS EXERCISE BENEFITS FOR LOWERING CHOLESTEROL?

Research has shown that exercise stimulates enzymes that help move bad cholesterol from the blood to the liver, allowing it to be excreted as bile. It is also stipulated that exercise increases the size of the protein particles that carry cholesterol through the blood, reducing the possibility that smaller particles may clog arteries. People with some genetic variants will have good results at increasing levels of good cholesterol by exercise alone, while carriers of other genetic variants are less likely to succeed to lower bad cholesterol levels by exercise alone.

YOUR GENETIC VARIANTS

You don't have any genetic variants (SNPs) associated with Exercise Benefits for Lowering Cholesterol out of 4 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ While you may not have genetic predispositions for cholesterol reduction benefits through exercise, you can still achieve better cardiovascular health by engaging in regular exercise and keeping a low-cholesterol diet. Check your NutriNome report to see if you have predispositions that affect your fat consumption and fat processing.
- ♥ The AHA suggests at least 150 minutes of moderate exercise or 75 minutes of vigorous exercise per week. If you mix and match the two, you can count every minute of vigorous activity as two minutes of moderate activity.
- ♥ Moderate exercises (where you can easily maintain a conversation) include: Walking briskly (3 miles per hour or faster), Bicycling (10 miles per hour or slower), and gardening.
- ♥ Vigorous exercises (where you breathe heavily) include Racewalking, running, swimming laps, playing tennis, aerobic dancing, professional biking and hiking uphill.
- ♥ Consult with a fitness professional before engaging in strenuous exercise.

Exercise Benefits for Maximal Oxygen Uptake Response

Advantaged

higher than
90%
of the population

MY GENETIC VARIANTS

rs10500872 rs12115454 rs12538806

14

MY TOTAL

WHAT IS EXERCISE BENEFITS FOR MAXIMAL OXYGEN UPTAKE RESPONSE?

VO2 max (also maximal oxygen consumption, maximal oxygen uptake, peak oxygen uptake or maximal aerobic capacity) is the maximum rate of oxygen consumption as measured during incremental exercise, most typically on a motorized treadmill. One of the exercise benefits is improvement in maximal oxygen uptake response. When you exercise your muscles are working harder than normal and, as a result, they require more energy than normal. Since the ATP energy used by your muscles is generated with the aid of oxygen, it follows that an increase in exercise intensity will result in an increase in muscular oxygen demands. Therefore, increased exercise intensity ultimately corresponds to an increased VO2. This is the reason that your breathing gets progressively faster and deeper as your exercise intensity increases, your body is trying to provide more oxygen to your working muscles so that they can generate enough ATP energy to keep you moving. People with differences in genetics, gender, age and fitness state respond differently to the same exercise training program. At least 50% of these differences have been found to be due to genetic variations.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Exercise Benefits for Maximal Oxygen Uptake Response out of 32 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ Your higher than average benefits likelihood for VO2max means you can increase your breathing capacity faster than the average individual by exercising.
- ♥ To estimate your current VO2 Max as a baseline and measure its improvements as you exercise, click here to use any of the four following calculators (external link).
- ♥ To improve your VO2 Max, you can engage in consistent aerobic conditioning.
- ♥ For more serious athletes and under the supervision of a trainer you can also choose a faster way to improve your VO2 max which is to run intervals at the fastest speed you can maintain for about five minutes, followed by 10 minutes of rest, starting with once and increasing it to four times in one hour.
- ♥ Consult with your trainer before changing anything in your exercise regimen.

Heartbeat Reduction Difficulty

Elevated

higher than
95%
of the population

MY GENETIC VARIANTS

rs10932380 rs12612034 rs12692388

11
MY TOTAL

WHAT IS HEARTBEAT REDUCTION DIFFICULTY?

Heart rate response is commonly used as a measurable marker to guide exercise intensity and to monitor progress with the expectation that the heart rate at a given intensity and load will decrease substantially with regular exercise. Exercise training improves cardiac function and several cardiovascular risk factors, including ability to perform physical tasks at a given workload with a lower heart rate. However, the cardiovascular benefits of regular physical activity are not equally distributed among individuals, as some exhibit marked improvements while others may show little or no changes. If you have higher predisposition to reduced heart response to exercise, the expected decrease in exercise heart rate may not occur. You or your fitness specialist may (falsely) assume that the exercise prescription was insufficient and may try to increase the exercise training load. Genetic variation explains large proportion of this difference. It is important to know this to make sure that the exercise does not cause undue heart strain.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Heartbeat Reduction Difficulty out of 17 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- You may see slower improvements in your heart beat as you exercise than the average population. You may want to try to exercise more to lower your heart beat rate below your maximum heart beat rate.
- The maximum heartbeat rate can be calculated by subtracting your age from 220. For example, if you are 45 years old, subtract 45 from 220 to get a maximum heart rate of 175. This is the maximum number of times your heart should beat per minute during exercise.
- The goal is however for your heartbeat rate to be between 50 and 70 percent of your maximum heart rate for moderate exercise and 70 to 85 percent of your maximum heart rate for vigorous exercise.
- To calculate your optimal/target heart rate during exercise use this calculator.(Opens new window)
- Always consult with your fitness trainer on any strenuous exercise.

REFERENCES

Read more about Heartbeat Reduction Difficulty by checking out the following articles:

[Resource 1](#)

Lower Exercise Benefits for Heart Pump Function

Typical

higher than
35%
of the population

MY GENETIC VARIANTS

0
MY TOTAL

WHAT IS LOWER EXERCISE BENEFITS FOR HEART PUMP FUNCTION?

Cardiac output is the volume of blood being pumped by the heart in a minute. It is equal to the heart rate multiplied by the stroke volume. So if there are 70 beats per minute, and 70 ml blood is ejected with each beat of the heart, the cardiac output is 4900 ml/minute. A large family study reported that a 20 weeks endurance training program resulted in a mean increase of 3.9 ml/beat in stroke volume measured during steady-state exercise at 50 W (SV50) . Interestingly, the individual training responses ranged from a decrease of 41 ml/beat to an increase of 45 ml/beat. Carriers of a genetic variant in the kinesin heavy chain (KIF5B) gene had lower SV50 training response than carries of the more common allele.

YOUR GENETIC VARIANTS

You don't have any genetic variants (SNPs) associated with Lower Exercise Benefits for Heart Pump Function out of 1 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ Your heart pump volume and efficiency should increase as expected as you exercise more.
- ♥ Prolonged aerobic exercise training may also increase stroke volume, which frequently results in a lower resting heart rate.
- ♥ Exercise can help strengthen your heart and improve how well it pumps blood to the rest of the body. All it takes is 30 minutes a day of activity, even if that activity is walking.
- ♥ Exercises best for your heart health include brisk walking, running, interval training, cycling and swimming.
- ♥ Talk to your physician before engaging in strenuous exercise or changing routines.

REFERENCES

Read more about Lower Exercise Benefits for Heart Pump Function by checking out the following articles:

[Resource 1](#)

Overall Fitness Benefits

Typical

higher than
30%
of the population

WHAT IS OVERALL FITNESS BENEFITS?

The health benefits of regular exercise and physical activity are hard to ignore. Everyone benefits from exercise, regardless of age, sex or physical ability. Exercise can help prevent excess weight gain or help maintain weight loss. Regular exercise helps prevent or manage a wide range of health problems and concerns, including stroke, metabolic syndrome, type 2 diabetes, depression, a number of types of cancer, arthritis and falls. Exercise delivers oxygen and nutrients to your tissues and helps your cardiovascular system work more efficiently. And when your heart and lung health improve, you have more energy to tackle daily chores. Some people show quick and strong benefits, while others need more exercise and changes to their diets too. For people with some genetic variants, active lifestyle was shown to produce quick results to lower levels of cholesterol, triglycerides, and blood pressure.

MY GENETIC VARIANTS

rs4082919

rs5370

rs62205366

3

MY TOTAL

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Overall Fitness Benefits out of 8 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ You may not see quick benefits from moderate exercise on your health, in particular if you have issues with cholesterol, triglycerides, and hypertension.
- ♥ You may need to boost your exercise frequency and perhaps intensity in combination to a healthy diet to see a significant impact on your cholesterol, triglycerides, and blood pressure levels.
- ♥ Regular exercise of at least 45 minutes per day, together with a healthy diet, will most likely result in improved vitals over time.
- ♥ Exercises that are useful for your overall health include; Brisk walking, Cycling, Swimming, Dancing, Mowing the lawn, Tennis and Jogging.
- ♥ Always consult with your physician before changing the intensity and frequency of your workouts.



Should you do power exercises, endurance exercises or both? Do you have genetic predispositions that would allow you to become an elite athlete? What is your potential in having a leaner body mass? Find out more about how your genetic makeup impacts your fitness in this section.

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Aerobic Performance

Advantaged

higher than
95%
of the population

MY GENETIC VARIANTS

rs12587221 rs17279341 rs4786183

4
MY TOTAL

WHAT IS AEROBIC PERFORMANCE?

VO2 max (maximal aerobic capacity) is the maximum rate of oxygen uptake as measured during incremental exercise, most typically on a motorized treadmill. Maximal oxygen uptake reflects the aerobic physical fitness of the individual, and is an important determinant of their endurance capacity during prolonged, submaximal exercise. Just a few of the benefits of aerobic fitness are lower blood pressure, lower cholesterol and less risk of obesity, Type II diabetes and heart disease. Aerobic performance measured as the maximal rate of oxygen consumption (VO2max) is an important determinant of the endurance capacity during prolonged exercise. VO2 max (V - volume, O2 - oxygen, max - maximum) is measured during incremental exercise. Overall, maximal oxygen consumption reflects the aerobic physical fitness of the individual, and it is widely accepted as the single best measure of cardiovascular fitness and maximal aerobic power. Absolute values of VO2 max are typically 40-60% higher in men than in women. Starting at about the age of 30, our lung capacity begins to decrease. By the time we are 50 our lung capacity may be half of what it was in our youth. Decreased lung capacity means respiratory function is impaired and less oxygen is getting into our cells. This explains why shortness of breath, decreased endurance, and susceptibility to respiratory illness commonly increases with age. We check for several genetic variants that are associated with aerobic performance.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Aerobic Performance out of 7 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ You have a slightly elevated advantage likelihood for this trait. This means your lung capacity may be higher than an average adult. As such you may be able to do more strenuous exercises than the average population. However, before changing any part of your fitness routine, always consult with a certified personal trainer.
- ♥ To improve your aerobic fitness even further, exercise intensity needs to be between 70 and 85 percent of your target heart rate. In order to calculate your target heart rate, you must first determine your maximum heart rate, which is 220 minus your age in years.
- ♥ If you are new to exercise you should aim for 10 to 20 minutes of aerobic exercise per session. Over time, gradually increase your exercise time until you can exercise continuously for 60 minutes.
- ♥ This will allow you to do more strenuous exercises with the same amount of oxygen uptake capacity.

REFERENCES

Read more about Aerobic Performance by checking out the following articles:

[Resource 1](#) [Resource 2](#)

Elite Endurance Athletes

Typical

higher than
45%
of the population

MY GENETIC VARIANTS

rs11091046 rs11894252 rs12587221

13

MY TOTAL

WHAT IS ELITE ENDURANCE ATHLETES?

Elite endurance athletes, such as distance runners, road cyclists and triathletes, excel in aerobic performance. They are more likely to have higher proportion of slow-twitch (type I) muscle fibers. In addition, elite endurance athletes have a superior cardiovascular system that maintains optimal control of heart rate, stroke volume, and blood pressure. Elite athletes are likely to have increased fat oxidation capacity and higher lactate threshold that ensures their muscles can function for longer periods of time. Assuming proper nutrition and training, athletic endurance is, in the simplest terms, limited by a human's ability to extract oxygen from the environment and deliver it to muscle cells that use it to generate energy. LifeNome computes genetic predisposition likelihood for elite endurance based on 23 genetic variants, taking into account genetics-based endurance and aerobic performance scores.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Elite Endurance Athletes out of 23 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- While you do not seem to have genetically advantaged predispositions for elite endurance athletes, you can still enhance your endurance capacity through aerobic exercises.
- Aerobic exercises that you can include in your daily routine include stair climbing or stair master, elliptical trainer, indoor rower, stationary bicycles, treadmills, fast walking, cycling, running and skiing.
- Start with a run/walk plan that gradually and safely allows you to build up to an hour of steady aerobic running.

REFERENCES

Read more about Elite Endurance Athletes by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)

Endurance

Typical

higher than
18%
of the population

MY GENETIC VARIANTS

rs11549465 rs1815739 rs4253765

7

MY TOTAL

WHAT IS ENDURANCE?

Your muscle endurance measures your ability to repeat an activity for an extended period of time without getting tired. If your muscle structure favors endurance you have the potential to thrive in exercises that leverage your endurance. Cross-country skiing and push-ups are examples of endurance exercises. The intrinsic capacity to perform endurance exercise is influenced by a number of factors. First of all, endurance depends on the proportion of slow-twitch fibers in the skeletal muscle. Studies have identified a number of genetic variants associated with higher proportion of slow-twitch fibers, and higher oxygen supplies to muscle tissues. Slow twitch fibers are also called red fibers because they contain more blood-carrying myoglobin. The red muscles provide their own source of energy using oxidative phosphorylation to obtain ATP. Therefore, slow-twitch fibers can sustain force for an extended period of time.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Endurance out of 12 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ Check out your power trait predisposition to explore if you may be more of a power athlete.
- ♥ While you may not have a genetic advantage for endurance, you can still include aerobic exercises in your daily routine, including stair climbing or stair master, elliptical trainer, indoor rower, stationary bicycles, treadmills, fast walking, cycling, running and skiing.
- ♥ Start with a run/walk plan that gradually and safely allows you to build up to an hour of steady aerobic running.
- ♥ Consult with your fitness trainer on how to leverage this advantage to improve your fitness routines. As always, keep in mind that any substantial changes to your fitness routines may affect other parts of your well-being and should be done with proper oversight. Make sure to check your injury reports.

REFERENCES

Read more about Endurance by checking out the following articles:

[Resource 1](#) [Resource 2](#)

Exercise Aversion

Typical

higher than
5%
of the population

MY GENETIC VARIANTS

rs10889568 rs10946904 rs11011172

6

MY TOTAL

WHAT IS EXERCISE AVERSION?

Your motivation for physical activity is partly influenced by your genetics. How your body feels during a workout (e.g oxygen transportation and lung capacity), and how you are predisposed to respond mentally to the challenge all come down to your genetic makeup. Studies indicate that up to 50% of your like or dislike for exercise comes down to your DNA. There is a difference between exercise aversion and a lack of motivation, where the former is a stronger inhibition factor. If you have specific genetic variations, it may result in a lower biological desire to engage in physical activity making exercise your least favorite activity.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Exercise Aversion out of 16 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ You do not have any genetic impulse not to engage in exercise, so if you are not exercising regularly, there is little excuse other than your own conscious decision. Yes, there are a variety of reasons such as lack of interest, lack of energy or self-esteem issues that make it tough to stick with a routine, but if you do you will thank yourself later.
- ♥ List the benefits of a regular exercise program, such as increased energy, weight loss, better sleep, reduced stress, improved mood, reduced risk of conditions like diabetes and heart disease, and a more satisfying sex life (Mayo Clinic).
- ♥ If you don't like the gym, practice yoga, take a dance class, go roller skating, take the dog on a hike or just dance in your living room to your favorite music for 30 minutes.
- ♥ Find an exercise partner who will hold you accountable and make workouts more fun. Plan a workout schedule so you know in advance when you'll be working out. Make a commitment with your friend to adhere to the schedule and keep each other motivated.

REFERENCES

Read more about Exercise Aversion by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)

Joint Flexibility

**Slightly
Advantaged**

higher than
70%
of the population

MY GENETIC VARIANTS

rs12722 rs970547

2

MY TOTAL

WHAT IS JOINT FLEXIBILITY?

While flexibility and range of motion can be improved with regular stretching, some people have inherent joint flexibility that is a highly heritable trait. Genetic variants in several collagen genes alter amino acid sequence and change the amount of collagen proteins being produced affecting architecture and bio mechanical properties of some tissues, including ligaments. Therefore, people with these genetic variants in general have higher range of motion and better joint laxity and flexibility. Interestingly, the research has shown that violinists, flutists, and pianists with lax finger joints suffer less pain than their less flexible peers. An opposite spectrum of this is risk of non-contact soft tissue injuries while doing very active sports. Other genetic variants in the collagen genes reduce joint flexibility and potentially protect from crucial ligament, shoulder dislocation, and anterior cruciate ligament ruptures.

YOUR GENETIC VARIANTS

These are 2 genetic variants (SNPs) associated with Joint Flexibility out of 3 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ Your slightly increased predisposition for joint flexibility will probably mean that you can do a wider range of motions than the rest of the population.
- ♥ You may enjoy and excel in yoga or other workouts that require more flexibility.
- ♥ To build further on your advantage, try the Hip Flex or exercise: Assume a kneeling position and move one foot out to the front. Roll your hips forward and maintain an upright position with your upper body. You will feel this stretch in your back leg. Hold the stretch for around a minute and repeat on the other side.
- ♥ Assume a kneeling position and move one foot out to the front.
- ♥ Roll your hips forward and maintain an upright position with your upper body.
- ♥ You will feel this stretch in your back leg.
- ♥ Hold the stretch for around a minute and repeat on the other side.
- ♥ Do watch out for potential soft tissue injuries that can happen in more active sports.

REFERENCES

Read more about Joint Flexibility by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)

Lean Body Mass Potential

Advantaged

higher than
65%
of the population

MY GENETIC VARIANTS

rs1056513 rs12439003 rs2066470

9

MY TOTAL

WHAT IS LEAN BODY MASS POTENTIAL?

Your lean body mass is the portion of your weight that is not fat. Your lean body mass is actually composed of your muscle and bone tissue as well as the water in your body and your organs everything except the fat beneath the surface of your skin. Leaner body mass has a strong genetic component. If you are predisposed to having a higher lean body mass, you have a better chance of attaining a muscular body through fitness exercises than the average population. Higher lean body mass also decreases the likelihood of excessive body weight, obesity, impaired protein balance, osteoporosis and sarcopenia.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Lean Body Mass Potential out of 16 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ Given you do seem to have a slight genetic advantage for leaner body mass, you can maximize your muscle content by engaging in more power exercises.
- ♥ You can calculate your lean body mass using this calculator
- ♥ The closer your weight is to your actual lean body mass while building muscles, the fitter you are.
- ♥ To build a leaner body, try the following tips: Consume a high-protein meal in the early evening. Use a combination of heavier weights with few repetitions or if that is strenuous use lighter weights with higher repetitions. In all cases consult with your trainer. Try short, high-intensity cardio workouts. Make sure you are getting enough Vitamin D, particularly if your LifeNome Vitamin D report indicates a slightly elevated or elevated likelihood of Vitamin D inadequacy.
- ♥ Consume a high-protein meal in the early evening.
- ♥ Use a combination of heavier weights with few repetitions or if that is strenuous use lighter weights with higher repetitions. In all cases consult with your trainer.
- ♥ Try short, high-intensity cardio workouts.
- ♥ Make sure you are getting enough Vitamin D, particularly if your LifeNome Vitamin D report indicates a slightly elevated or elevated likelihood of Vitamin D inadequacy.
- ♥ Please make sure to explore your other fitness characteristics to avoid any injury or cardiac stress potential when selecting a proper exercise routine.
- ♥ If you wish to attain a higher lean body mass through rigorous exercise, you may want to discuss your options with a fitness professional.

REFERENCES

Read more about Lean Body Mass Potential by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)

Low Resting Metabolic Rate

Typical

higher than
65%
of the population

MY GENETIC VARIANTS

rs1549060 rs166988 rs2075577

4

MY TOTAL

WHAT IS LOW RESTING METABOLIC RATE?

Body weight depends on the balance between energy intake and energy expenditure. Energy intake comes from calories consumed, and energy expenditure is the energy that body uses to maintain normal body temperature and essential processes such as metabolism, breathing, brain functioning. Individual differences in the energy cost of self-maintenance (resting metabolic rate, RMR) are substantial, and depend on age, weight, environment, and genetics. The heritability of RMR is 40-50% of the variance remaining after adjustment for age, gender, and fat-free mass. Uncoupling proteins, UCP1 and UCP3, play important roles in regulating body temperature and energy expenditure: these proteins are found in brown fats and they are involved in metabolic process by which energy is dissipated as heat in response to excess of caloric intake and cold stress. People with genetic variations in the UCP genes tend to have lower RMR.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Low Resting Metabolic Rate out of 10 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ Given your normal/fast resting metabolic rate (RMR) you should be able to burn your calories efficiently, provided you are on a healthy diet and do not have issues with fat or carb processing.
- ♥ Calculate your RMR/BMR and the calories you need eat for a particular weight using the USDA Supertracker Calculator.
- ♥ As the RMR tends to decrease with age, most people need to monitor their calorie intake and incorporate physical activities in their daily lives to maintain healthy energy balance.
- ♥ To ensure you are eating the right kind of foods, check your NutriNome report to see if you have carb or fat processing predispositions.

Power

Typical

higher than
35%
of the population

MY GENETIC VARIANTS

rs1800795 rs1815739 rs4253765

5

MY TOTAL

WHAT IS POWER?

Your muscle power measures the maximum amount of force you can exert in a limited period of time. When your muscle structure favors power exercises, you have the potential to exert substantial force in a short period of time. Olympic weight lifting is an example of a power exercise. The heritability of power/strength has been estimated to be up to 80% depending on the specific muscle type (isometric knee strength, handgrip strength, elbow flexion). Fast-twitch (Type II) fibers generate a relatively high amount of force in a short period of time. They are characterized by high force/power/speed, like the take-off motion in a sprint, but the fast-twitch muscle fibers experience fatigue faster. Power fibers have lower mitochondrial density, lower myoglobin levels but higher levels of stored glycogen as they primarily rely on glycolysis (anaerobic respiration) to fuel muscle contractions. The glycolysis process is very quick yet it is also quite inefficient at producing ATP. Another drawback of glycolysis is that it produces lactic acid as a byproduct, which leads to muscle fatigue. This explains why fast twitching muscles tire out quicker. To evaluate your power profile predisposition likelihood Lifenome uses the most reliable genetic biomarkers that have been found to be associated with power/strength-related sports.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Power out of 11 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- Check your endurance or elite endurance predispositions to see if you might be more of an endurance athlete.
- If you want to increase your power you may want to consider sports and exercises such as aerobics, high impact step, basketball, Martial Arts: judo, karate, kickboxing, downhill skiing and Tennis.
- Under the supervision of a trainer, you may build on this advantage further by doing ballistic training where you lift, accelerate, and then release weights, rather than slowly lowering it as in other forms of weight training.
- As always, only change your fitness exercises under the supervision of a professional trainer.

REFERENCES

Read more about Power by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)



While we all realize that exercise has tremendous benefits for our health, we also need to be aware of injury risks that come with doing the wrong kinds of exercises. Our tendons and joints are structured differently. Explore how your unique genetic makeup makes you more or less vulnerable to tendon and/or joint injury risks and get recommendations on what exercises and routines to engage in or avoid.

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Stress Fracture	25

Achilles Tendinopathy

Elevated

higher than
95%
of the population

MY GENETIC VARIANTS

rs2104772 rs331085 rs7212662

3

MY TOTAL

WHAT IS ACHILLES TENDINOPATHY?

Achilles tendon injury includes degenerative and painful conditions that affect athletes in a wide range of sports, including up to 20% of runners. This is a multi factorial condition for which various genetic risk factors have been identified. Genetic variants in the FBGN2, TNC and ADAMTS14 (metallopeptidase with thrombospondin) gene contribute to the risk of achilles tendinopathy, while genetic variant in the MMP3 has been found to be protective.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Achilles Tendinopathy out of 7 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ Your genetic risk for Achilles tendon injury seems to be higher than average so you may need to extra measures to protect your tendons.
- ♥ Try the following exercise to strengthen your calf muscles: Use a resistance loop band or tie a long band into a loop 12 to 15 or 30 to 40 cm in diameter. Then, loop the resistance band around your foot with your toes pointed up toward the ceiling. Holding the band tight, push your foot and ankle down against the band as far as comfortable. Hold the position for a second, then return to your starting position slowly. Do 10 repetitions, then switch to your other foot.
- ♥ Use a resistance loop band or tie a long band into a loop 12 to 15 or 30 to 40 cm in diameter. Then, loop the resistance band around your foot with your toes pointed up toward the ceiling. Holding the band tight, push your foot and ankle down against the band as far as comfortable.
- ♥ Hold the position for a second, then return to your starting position slowly. Do 10 repetitions, then switch to your other foot.
- ♥ Avoid an abrupt change of exercise intensity.
- ♥ Try to minimize high-impact sports, such as running which pose a higher risk for Achilles tendon injury.
- ♥ Switch to low-impact sports, such as walking, biking or swimming, which can both strengthen your muscles and pose less of an injury risk.

REFERENCES

Read more about Achilles Tendinopathy by checking out the following articles:

[Resource 1](#)

Anterior Cruciate Ligament Rupture

Slightly Elevated

higher than
82%
of the population

MY GENETIC VARIANTS

rs1800012 rs331085 rs495366

4

MY TOTAL

WHAT IS ANTERIOR CRUCIATE LIGAMENT RUPTURE?

Anterior cruciate ligament (ACL) ruptures are considered to be the most severe joint injury in sports and is very common in a sporting population. Athletes who participate in high demand sports like soccer, football, and basketball are more likely to injure their anterior cruciate ligaments. Athletes are involved with sudden deceleration of the body from jumping and forward running while the knee is in a shallow flexion angle. On the other hand, ACL injuries are not common among athletes involved in endurance sports, such as running, swimming, biking. About half of all injuries to the anterior cruciate ligament occur along with damage to other structures in the knee, such as articular cartilage, meniscus, or other ligaments.

Injured ligaments are considered "sprains" and are graded on a severity scale.

- Grade 1 Sprains. The ligament is mildly damaged in a Grade 1 Sprain. It has been slightly stretched, but is still able to help keep the knee joint stable.
- Grade 2 Sprains. A Grade 2 Sprain stretches the ligament to the point where it becomes loose. This is often referred to as a partial tear of the ligament.
- Grade 3 Sprains. This type of sprain is most commonly referred to as a complete tear of the ligament. The ligament has been split into two pieces, and the knee joint is unstable.

There are some genetic variations that are commonly found in individuals with higher risk of ACL ruptures.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Anterior Cruciate Ligament Rupture out of 8 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- You are at a slightly higher genetic risk for anterior cruciate ligament (ACL) ruptures than the average population, so you may benefit from exercises that require balance, power and agility.
- Jumping and balance exercises help improve neuromuscular conditioning and muscular reactions and decrease the risk of ACL injury.
- It has also been suggested that drinking water before and after exercise may be beneficial for ACL injury prevention.
- Some simple tips to reduce the risk of ACL ruptures: Always warm up before playing. Get blood circulating to your muscles and joint before you start your game or practice. Stretch. Being flexible enough to move freely can help you maintain ideal form. Include stretches for your thighs, calves, and hips, and pay particular attention to any areas that are especially tight. Strengthen. Having adequate strength in your hips and thighs is key to providing support for your knees and preventing ACL injuries. Squats and lunges are just a couple of exercises that can build strength. Balance. Many injuries occur when an athlete is off-balance. Like anything, balance gets better with practice. Your gains in stability will pay off on the playing field. Agility-Changing Direction: Run to a line or cone, plant your outside foot without letting your knee collapse inward to change direction. Move in patterns that take you front to back, side to side and diagonally. Start by running slowly so you can concentrate on good position. Pick up the pace and maintain good technique.
- Always warm up before playing. Get blood circulating to your muscles and joint before you start your game or practice.
- Stretch. Being flexible enough to move freely can help you maintain ideal form. Include stretches for your thighs, calves, and hips, and pay particular attention to any areas that are especially tight.
- Strengthen. Having adequate strength in your hips and thighs is key to providing support for your knees and preventing ACL injuries. Squats and lunges are just a couple of exercises that can build strength.
- Balance. Many injuries occur when an athlete is off-balance. Like anything, balance gets better with practice. Your gains in stability will pay off on the playing field.
- Agility-Changing Direction: Run to a line or cone, plant your outside foot without letting your knee collapse inward to change direction. Move in patterns that take you front to back, side to side and diagonally. Start by running slowly so you can concentrate on good position. Pick up the pace and maintain good technique.
- Run to a line or cone, plant your outside foot without letting your knee collapse inward to change direction.
- Move in patterns that take you front to back, side to side and diagonally. Start by running slowly so you can concentrate on good position.
- Pick up the pace and maintain good technique.
- As always consult with a personal trainer before changing your exercise routines.

REFERENCES

Read more about Anterior Cruciate Ligament Rupture by checking out the following articles:

[Resource 1](#)

Joint Injury Risk

Elevated

higher than
95%
of the population

MY GENETIC VARIANTS

rs10948172 rs111177 rs12974139

8

MY TOTAL

WHAT IS JOINT INJURY RISK?

Many sports-related injuries involve damage to the joints. Common joint injuries include a twisted ankle, sprained wrist, overextended elbow, and damaged knee ligaments. When exercising you can be more at risk for overuse injuries. But you can build strength in your joints and avoid joint injuries by stretching and exercising correctly. The risk of joint injury is associated with higher genetic predisposition to osteoarthritis. Knowing about this risk is important in adjusting duration and intensity of training sessions. Sports and high-impact activities lead to cartilage lesions, and may lead to joint injuries. Your risk for the joint injury is computed based on 13 genetic variations that were found to be associated with joint problems.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Joint Injury Risk out of 13 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ Your genetic joint injury risk is higher than the average population so it may be wise to take some extra measures to prevent injuries from happening.
- ♥ Reduce the risk of joint injury by taking simple steps. Avoid doing too much, too soon. Never increase the length of your workouts by more than 10 percent from one week to the next, and never increase both the length and intensity of your workout at the same time. Maintain strength in the muscles surrounding the joint area. To strengthen the knees, do calf raises, lunges, squats, and leg lifts. For the shoulders, do simple moves such as push-ups, lateral lifts with light weights, and bench dips. Train smart by cross-training. Repetitive-motion injuries caused by doing just one sport or workout are some of the most common. You can prevent them by doing different sports or activities that work different muscles. For example, if you mostly ride a bike, take a core-strengthening class once a week. Never skip your warm-up or cool down. Tight or stiff muscles around a joint will make the area more prone to injury. This is especially important in sports that require quick movements, such as basketball and tennis. Always use proper technique and body mechanics when playing sports involving repetitive motion, such as tennis and golf.
- ♥ Avoid doing too much, too soon. Never increase the length of your workouts by more than 10 percent from one week to the next, and never increase both the length and intensity of your workout at the same time.
- ♥ Maintain strength in the muscles surrounding the joint area. To strengthen the knees, do calf raises, lunges, squats, and leg lifts. For the shoulders, do simple moves such as push-ups, lateral lifts with light weights, and bench dips.
- ♥ Train smart by cross-training. Repetitive-motion injuries caused by doing just one sport or workout are some of the most common. You can prevent them by doing different sports or activities that work different muscles. For example, if you mostly ride a bike, take a core-strengthening class once a week.
- ♥ Never skip your warm-up or cool down. Tight or stiff muscles around a joint will make the area more prone to injury. This is especially important in sports that require quick movements, such as basketball and tennis.
- ♥ Always use proper technique and body mechanics when playing sports involving repetitive motion, such as tennis and golf.
- ♥ As always consult with a fitness professional on how to best strengthen your joints.

REFERENCES

Read more about Joint Injury Risk by checking out the following articles:

[Resource 1](#) [Resource 2](#)

Overall Tendon and Ligament Injury Risk

Elevated

higher than
95%
of the population

MY GENETIC VARIANTS

rs11126836 rs1800012 rs2011616

8

MY TOTAL

WHAT IS OVERALL TENDON AND LIGAMENT INJURY RISK?

Non-contact tendon or ligament injury is an overuse injury associated with sports, and are a common cause of disability. Most major tendons, such as the Achilles, patellar, rotator cuff and forearm extensor tendons (amongst others) are vulnerable to overuse, which induces pathological changes in the tendon. Knowing your genetic susceptibility to specific injury will help in customization of exercise recommendations, choosing the right prevention strategies like avoidance of weight-bearing and high-impact sports for individuals who have risk profile genotypes would take advantage of this information.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Overall Tendon and Ligament Injury Risk out of 16 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ Your risk for overall tendon or ligament injury is higher than the average population, so we suggest taking extra measures to protect yourself and avoid high-impact sports to the extent possible.
- ♥ You may also have more specific risks associated with Achilles tendons or ACL, so do check those traits in this section of the report.
- ♥ To reduce your chance of getting tendon injury we recommend including stretching to increase flexibility, plus eccentric strengthening of the gastrocnemius and soleus muscles.
- ♥ We recommend gastrocnemius/soleus eccentric strengthening, calf and Achilles stretches.
- ♥ It is also recommended shifting to running on softer surfaces.
- ♥ As always, consult with a personal trainer before making any changes to your routines.

REFERENCES

Read more about Overall Tendon and Ligament Injury Risk by checking out the following articles:

[Resource 1](#)

[Resource 2](#)

Stress Fracture

**Slightly
Elevated**

higher than
80%
of the population

MY GENETIC VARIANTS

rs227584 rs3801387 rs395032

10
MY TOTAL

WHAT IS STRESS FRACTURE?

Stress fractures are small cracks in a bone. Stress fractures are caused by the repetitive application of repetitive movements, or force. For example, running long distances or repeatedly jumping up and down. Stress fractures can also arise from normal use of a bone that's been weakened. Anyone can experience a stress fracture, but some people have higher predisposition which is associated with lower bone mass density. Stress Fracture is a common overuse injury in repetitive sports. It affects up to 20% of athletes, in particular female athletes. The major determinant of stress fracture risk is bone mineral density that has large genetic component up to 85% of bone mineral density variability is explained by genetic variations). We use information on dozens of genetic variants to estimate your risk of stress fracture. Some genetic variations increase the risk of stress fracture while others have protective roles.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Stress Fracture out of 15 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ You may want take extra measures to protect yourself against stress fractures.
- ♥ Avoid excessive intake of sodium, coffee, wheat bran, and sugar. This helps in reducing the risk for stress fractures.
- ♥ Additionally strengthening the calf muscles have been shown to have a substantial impact on preventing stress fractures from happening.
- ♥ Try the following exercise to strengthen your calf muscles: Use a resistance loop band or tie a long band into a loop 12 to 15 or 30 to 40 cm in diameter. Then, loop the resistance band around your foot with your toes pointed up toward the ceiling. Holding the band tight, push your foot and ankle down against the band as far as comfortable. Hold the position for a second, then return back to your starting position slowly. Do 10 repetitions, then switch to your other foot.
- ♥ Use a resistance loop band or tie a long band into a loop 12 to 15 or 30 to 40 cm in diameter. Then, loop the resistance band around your foot with your toes pointed up toward the ceiling. Holding the band tight, push your foot and ankle down against the band as far as comfortable.
- ♥ Hold the position for a second, then return back to your starting position slowly. Do 10 repetitions, then switch to your other foot.
- ♥ As always consult with a personal trainer before making any changes to your exercise routine.

REFERENCES

Read more about Stress Fracture by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)

The muscle system is responsible for movement of the human body, posture, movement of substances inside the body and for the generation of body heat. Your overall muscle power and how much you can increase it with exercise depends strongly on your genetics. Also your potentials for muscle injury, muscle cramps, muscle soreness after exercise and other muscle problems are also influenced by your genes. Explore the genetic basis of your muscle characteristics in this section.

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Muscle Cramping

Typical

higher than
30%
of the population

MY GENETIC VARIANTS

0
MY TOTAL

WHAT IS MUSCLE CRAMPING?

Muscle cramps can be caused by the overuse of a muscle, dehydration, muscle strain, or bad posture. In addition to potential risk factors such as inadequate blood supply, nerve compression, and mineral depletion, muscle cramps are also influenced to a good extent by genetics. Individuals who have genetic variants in the AMPD1 gene are significantly more likely to get muscle cramps and pains when they exercise.

YOUR GENETIC VARIANTS

You don't have any genetic variants (SNPs) associated with Muscle Cramping out of 6 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ There is no known genetic influences for your muscle cramping risk. Still make sure not to change the intensity of your exercise abruptly.
- ♥ If you have muscle cramps, you have to focus on strengthening the exact muscle that is experiencing the cramp.
- ♥ Here are directions for specific muscles. However it is best to talk to a trainer before engaging in exercise: Lunges (Quadriceps, Hamstrings and Gluteals): Step 2 to 3 feet forward with your right foot and lower you left knee toward the floor. Go down until your right thigh is parallel to the floor. Keep your right knee in line with your ankle so that you can still see your toes. Return to standing and repeat with left leg. Alternate right and left legs for each set. Start with no weight. When you can do 3 sets of 20 reps, do the exercise using resistance bands or holding dumbbells. Split squats (Quadriceps, Hamstrings and Gluteals): If you have a chronic knee injury, split squats are a good alternative to lunges. Step 2 to 3 feet forward with your right foot. Lower your left knee toward the floor until your right thigh is parallel and come back up that one rep. Return to the starting position and lower your left knee again. Complete all 15 repetitions with the right knee forward before switching legs. When you can do 3 sets of 20 reps, add weight. Calf raises (Gastrocnemius and Soleus): Calf raises target both of the muscles that make up the calf. Stand with the balls of your feet on a step or block with your heels hanging down. Rise up on balls of your feet until your toes are pointed down just as they would be at the bottom of your pedal stroke. Return to the starting position. When you can do 3 sets of 20 reps, try single leg calf raises, switching legs after 15 reps.
- ♥ Lunges (Quadriceps, Hamstrings and Gluteals): Step 2 to 3 feet forward with your right foot and lower you left knee toward the floor. Go down until your right thigh is parallel to the floor. Keep your right knee in line with your ankle so that you can still see your toes. Return to standing and repeat with left leg. Alternate right and left legs for each set. Start with no weight. When you can do 3 sets of 20 reps, do the exercise using resistance bands or holding dumbbells.
- ♥ Split squats (Quadriceps, Hamstrings and Gluteals): If you have a chronic knee injury, split squats are a good alternative to lunges. Step 2 to 3 feet forward with your right foot. Lower your left knee toward the floor until your right thigh is parallel and come back up that one rep. Return to the starting position and lower your left knee again. Complete all 15 repetitions with the right knee forward before switching legs. When you can do 3 sets of 20 reps, add weight.
- ♥ Calf raises (Gastrocnemius and Soleus): Calf raises target both of the muscles that make up the calf. Stand with the balls of your feet on a step or block with your heels hanging down. Rise up on balls of your feet until your toes are pointed down just as they would be at the bottom of your pedal stroke. Return to the starting position. When you can do 3 sets of 20 reps, try single leg calf raises, switching legs after 15 reps.
- ♥ Consult with a trainer before changing any routines.

Muscle Damage Risk

Typical

higher than
35%
of the population

MY GENETIC VARIANTS

rs17125

1

MY TOTAL

WHAT IS MUSCLE DAMAGE RISK?

A muscle strain, or pulled muscle, occurs when your muscle is overstretched or torn. This usually occurs as a result of fatigue, overuse, or improper use of a muscle. Strains can happen in any muscle, but they are most common in your lower back, neck, shoulder, and hamstring, which is the muscle behind your thigh. Muscle damage can be caused by different reasons, including increased lactate oxidation, deficient lactate efflux pathways, or release of intracellular muscle components into the bloodstream. Mutations in some genes in these pathways are associated with rare condition known as cryptic exercise intolerance. Common genetic variation in the same genes have been found to be associated increased risk of muscle injury, muscle cramping, and lactate accumulation in the muscle. This genetic variation has been associated with incidences of muscle injuries in elite football players. A predisposition to increased muscle damage risk can mean that you have to be more careful about lifting heavy weights or making sudden moves than the average person. Additionally, you may want to focus your exercises on those that improve the tenacity and flexibility of your muscles.

YOUR GENETIC VARIANTS

This is 1 genetic variant (SNP) associated with Muscle Damage Risk out of 8 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ While you may not have known genetic risks for muscle damage, to minimize the risk of a potential muscle tear, there are many steps you can take.
- ♥ For one, try not to sit in one position for too long and move about when working long hours in the office.
- ♥ Always stretch and warm up before and after engaging in exercise.
- ♥ We are in a culture where pushing your limits is seen as a virtue, but it is good to be aware of the limitations of one's body.

Muscle Response to Resistance Training

Typical

higher than
42%
of the population

MY GENETIC VARIANTS

rs1137101 rs15705 rs2162679

6

MY TOTAL

WHAT IS MUSCLE RESPONSE TO RESISTANCE TRAINING?

Muscle-strengthening are recommended to be included in fitness routines for a minimum of 2 days a week. Long-term systematic resistance training increases skeletal muscle size and strength in both men and women of different ages. While studies demonstrate that nearly all individuals will get some benefit from RT, RT-induced gains in muscle size and strength are highly variable between individuals. Muscle strength and size gains following standardized program depend on gender, age, general health, nutrition, and genetics. Several studies reported associations with muscle strength and size. People with some genetic variations gained higher (isometric) muscle strength and biceps size in response to the same resistance training routine.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Muscle Response to Resistance Training out of 12 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- You do not have an elevated predisposition likelihood for muscle response to resistance training. This implies that you are likely to see more gradual gains in your muscle size and strengthening. According to Mayo clinic, resistance and weight training is an important part of any fitness program. Combined with aerobic exercise, weight training can increase your strength and muscle tone, improve your bone density and help you lose weight.

REFERENCES

Read more about Muscle Response to Resistance Training by checking out the following articles:

[Resource 1](#)

Muscle Soreness

Typical

higher than
38%
of the population

MY GENETIC VARIANTS

rs13266634 rs3213221 rs680

4

MY TOTAL

WHAT IS MUSCLE SORENESS?

The delayed onset muscle soreness refers to the feeling of soreness 12-24 hours after heavy exercise. It is commonly understood to be the result of microscopic tears in your muscle tissue. The mild muscle strain injury creates microscopic damage to the muscle fibers and coupled with the resulting inflammation causes the pain. The less fit you are, the more likely it is for your muscles to feel sore. If you have a higher predisposition towards muscle soreness, you may want to only gradually increase the intensity of your workouts and concentrate more on endurance exercises that put less pointed pressure on your muscles. Genetic variants in some inflammation-related genes (IGF2) were found to be related to the greatest muscle soreness immediately after exercise, and highest post-exercise serum creatine kinase activity.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Muscle Soreness out of 7 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- Although you do not seem to have above average muscle soreness risk, do take precautionary steps to minimize muscle soreness after exercise.
- Drinking coffee before exercise, eating a low-fat, high-carb and high protein nutrition bar, an adequate warm-up routine and staying hydrated are key to preventing muscle soreness.
- Additionally, electrolyte-rich foods like bananas or avocados are quite helpful in keeping the right mineral balance within your muscles. Right before finishing your exercise routine, include 10 or so minutes of easy aerobic work such as jogging or walking followed by stretching.
- Taking a cold shower after your exercise also minimizes the chance of inflammation.

Muscle Strength Loss

Slightly Elevated

higher than
55%
of the population

MY GENETIC VARIANTS

rs13266634 rs3213221 rs680

4

MY TOTAL

WHAT IS MUSCLE STRENGTH LOSS?

From the time you are born to around the time you turn 30, your muscles grow larger and stronger. But at some point in your 30s, you start to lose muscle mass and function. The cause is age-related sarcopenia. Physically inactive people can lose as much as 3% to 5% of their muscle mass each decade after age 30. Even if you are active, you will still have some muscle loss. The speed by which we lose muscle strength when we stop exercising, depends on a variety of factors, such as age, diet and the amount of sleep that we get. Sometimes even two weeks of physical inactivity can result in substantial muscle strength loss. Genetic variants in some inflammation-related genes (IGF2) were found to be related to the greatest muscle strength loss after exercise.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Muscle Strength Loss out of 5 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ Your genetic muscle loss risk is slightly higher than average and you may consider slowing it down by adequate protein intake, sufficient calorie intake, and regular exercise.
- ♥ Try to include creatine, vitamin D, and whey protein within your diet.
- ♥ The primary method of slowing down muscle strength loss is resistance training or strength training. These activities increase muscle strength and endurance using weights or resistance bands. Resistance training can help your neuromuscular system, hormones.
- ♥ Some exercises that will help you slow down muscle loss include: Pull-down (or alternatively chin-up) Chest press Compound row (A pulling motion in the horizontal plane) Overhead press Leg press
- ♥ Pull-down (or alternatively chin-up)
- ♥ Chest press
- ♥ Compound row (A pulling motion in the horizontal plane)
- ♥ Overhead press
- ♥ Leg press
- ♥ The proper number, intensity, and frequency of resistance exercise is important for getting the most benefit with the least risk of injury. You should work with an experienced physical therapist or trainer to develop an exercise plan.

REFERENCES

Read more about Muscle Strength Loss by checking out the following articles:

[Resource 1](#)

Muscular Strength

Typical

higher than
42%
of the population

MY GENETIC VARIANTS

rs7136446

1

MY TOTAL

WHAT IS MUSCULAR STRENGTH?

Muscular strength is the amount of force a muscle can exert in a single contraction. Muscles have two types of fibers, fast twitch and slow twitch. Fast twitch provide the explosive bursts of energy required in weight lifting and sprinting. Slow twitch fibers are for longer endurance type activities. Building fast twitch fibers requires aerobic type activity such as sprinting. Slow twitch fibers depend on anaerobic exercise to gain strength. Endurance type activities such as circuit training and long distance running build slow twitch fibers. Muscular strength is determined by fast twitch fibers which focus more on quick bursts of energy. Familial studies have shown that up to 90% of the variance in muscle mass and up to 60% of the variance in muscle strength are heritable. Furthermore, skeletal muscle force production is dependent on the properties of the muscle tissue. Two genetic variations have been found to be significantly associated with muscular strength.

YOUR GENETIC VARIANTS

This is 1 genetic variant (SNP) associated with Muscular Strength out of 2 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ You will probably gain muscular strength at typical rate when you exercise regularly.
- ♥ Weight training is the fastest way to build strength. Weight training increases the explosive power athletes need for the power sports. Strength training not only increases power but it also aids with endurance.
- ♥ The most widely used method is lifting a weight that is 70% of your maximum 10-12 times. You repeat this three times with 1-5 minute breaks in between sets. Another thing to remember is that you should never repeat strength training on a specific muscle more than once every 48 hours. If you do, you can cause numerous injuries and basically wear the muscle out so you receive no improvement at all.
- ♥ Always consult with a professional trainer before you engage in any new exercise routine.

REFERENCES

Read more about Muscular Strength by checking out the following articles:

[Resource 1](#)

Skeletal Muscle Performance

Typical

higher than
50%
of the population

MY GENETIC VARIANTS

rs659366

1

MY TOTAL

WHAT IS SKELETAL MUSCLE PERFORMANCE?

Muscles such as biceps, pectorals and quadriceps are called skeletal muscles because they attach to the skeleton to generate motion. Skeletal muscles are composed of very long, thin cells that include the full complement of organelles needed for general cellular functions. In addition, more than 90 percent of the total volume of a skeletal muscle cell is composed of muscle proteins, including the contractile proteins actin and myosin. When a muscle cell is activated by its nerve cell, the interaction of actin and myosin generates force through so-called power strokes. The total force depends on the sum of all the power strokes occurring simultaneously within all the cells of a muscle. Skeletal muscle is one of three major muscle types, the others being cardiac muscle and smooth muscle. Your skeletal muscle can bear a high load at constant length, or shorten rapidly when the load is low. Uncoupling proteins 2 and 3 (UCP2 and UCP3) may negatively regulate mitochondrial ATP synthesis and, through this, influence human physical performance. A study found that genetic variants in the UCP3/2 gene locus are associated with training-related improvements in skeletal muscle performance.

YOUR GENETIC VARIANTS

This is 1 genetic variant (SNP) associated with Skeletal Muscle Performance out of 2 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ You are likely to see typical skeletal muscle performance improvements in response to training.
- ♥ Consider diets rich in anti-oxidants, which are thought to contribute positively to skeletal muscle performance.
- ♥ Some exercises that will help you strengthen your skeletal muscles include: Pull-down (or alternatively chin-up) Chest press Compound row (A pulling motion in the horizontal plane) Overhead press Leg press
- ♥ Pull-down (or alternatively chin-up)
- ♥ Chest press
- ♥ Compound row (A pulling motion in the horizontal plane)
- ♥ Overhead press
- ♥ Leg press
- ♥ As always, consult with a personal trainer when engaging in a new exercise routine.

Slow Muscle Repair

Elevated

higher than
92%
of the population

MY GENETIC VARIANTS

rs1205 rs16944 rs1800629

9

MY TOTAL

WHAT IS SLOW MUSCLE REPAIR?

Are you one of those people who take a very long time to heal after a muscle injury? Prolonged strenuous exercise, like high intensity weight training, results in activation of inflammatory factors. Genetic variants in several genes enhance the inflammatory response that may slow down the repair of muscle damage following exercise. A person with higher predisposition to inflammation will benefit from less frequent exercise activities, and longer recovery periods. If the body is not fully recovered it may result in injuries, muscle straining and over-training. This is particularly important for high-intensity weight training athletes, and bodybuilders.

YOUR GENETIC VARIANTS

These are 3 genetic variants (SNPs) associated with Slow Muscle Repair out of 13 that we are using for the determination of your predisposition for this trait.

RECOMMENDATIONS

- ♥ You may experience longer muscle repair times than the average population.;
- ♥ To ensure your muscles heal faster after an injury, you need to make sure to eat enough good quality protein
- ♥ Avoid trans-fats, saturated fat, and omega-6-rich vegetable oils.
- ♥ Consume monounsaturated and omega-3 fats have an anti-inflammatory effect.
- ♥ Include Vitamins D, B complex, C, and A, as well as calcium, copper, iron, magnesium, manganese, and zinc.
- ♥ To top it off, a good night's sleep does miracles to help accelerate muscle repair.

REFERENCES

Read more about Slow Muscle Repair by checking out the following articles:

[Resource 1](#) [Resource 2](#) [Resource 3](#)