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Genetics for people

Genetic Testing
Sports Performance

My Sport

YOUR SPORTS GENETIC PROFILE

This is your sports profile based on your genetics:

1- Strength

2- Resistance

3- Protection against injury

4- Body weight regulation

Knowing your genetic profile will allow you to develop your potential capacities, as well as reinforce the weak ones, optimizing the training process.
Knowing if you have more aptitudes for strength or endurance, greater or lesser aerobic capacity or if you have a greater predisposition to certain injuries includes the parameters that can take your sports performance to another level.

Please carefully read the information below to use correctly the data that your genes encode. We will give you guidelines to customize your training plan and diet more precisely according to your physiological needs.

Take advantage of your genetic profile and modulate the environment in your favor to optimize your sports performance to the maximum.

YOUR SPORTS GENETIC PROFILE

Below we show you your extended sports profile, with each of the characteristics analyzed, according to your genetics:

1- Strength

1.1- FAST FIBERS

1.2- ANAEROBIC ENERGY
Phosphocreatine-ATP system

1.3- VASODILATION

1.4- HYPERTROPHY

Genes analyzed	
ACE	IL6
ACTN3	MTHFR
ADRB2-1	NOS3
ADRB2-2	PPARa
AGT	PPARg
BDKRB2	PPARGC1A
CKM	TRHR
GDF8	VEGFa

2- Resistance

2.1- SLOW FIBERS

2.2- MAXIMUM O_2
CONSUMPTION

2.3- WATER STATE

2.4- HIPOXIA

NOTE: The bars of your genetic result are obtained with different parameters from each other, so you should not compare the different results.

2.5- OXIDATIVE STRESS

2.6- AEROBIC ENERGY
Mitochondrial Biogenesis

2.7- AEROBIC ENERGY
Lipoenergetic efficiency

2.8- ANAEROBIC ENERGY
Phosphocreatine-ATP system

2.9- ANAEROBIC ENERGY
Purine nucleotide pathway

2.10- VASODILATION

Genes analyzed	
ACE	GNB3
ACTN3	GSTM1
ADRB2-1	GSTT1
ADRB2-2	GSTP1
ADRB3	HIF1A
AMPD1	IL6
AQP1	MNSOD
APOA2	NOS3
BDKRB2	NRF2
CAT	PLIN1
CKM	PPARa
COL5A1	PPARg
CRP	PPARGC1
FABP2	TNFa
GDF8	VEGFa

3- Protection against injuries

3.1- MUSCLE INJURIES
Muscle ruptures

3.2- TENDON AND LIGAMENT INJURIES

3.3- BONE INJURIES
Stress Fractures

3.4- JOINT INJURIES
Osteoarthritis

3.5- INFLAMMATION

3.6- RECOVERY AFTER INJURIES

Genes analyzed	
ACTN3	GDF5
COL1A1	GDF8
COL5A1	IL6
EMILIN1	TNFa

NOTE: The bars of your genetic result are obtained with different parameters from each other, so you should not compare the different results.

4-Regulation of appetite and satiety

4.1- APPETITE AND SATIETY

4.2- ADIPOGENESIS

4.3- LIPID OXIDATION

4.4- THERMOGENESIS

Genes analyzed	
ACE	GHRL
ADRB2	GNB3
ADRB3	MC4R-1
APOA2	MC4R-2
APOA5	MTHFR
CRP	NOS3
CYP1A2-1	NYP
CYP1A2-2	PLIN1
FABP2	PPARa
FTO-1	PPARg
FTO-2	PPARgC1
FTO-3	UCP2

NOTE: The bars of your genetic result are obtained with different parameters from each other, so you should not compare the different results.

1. STRENGTH AND EXPLOSIVENESS RECOMMENDATIONS

1.1. FAST FIBERS

You have a genetic profile of **mixed fibers**, which indicates a certain balance in the distribution of slow and fast fibers. This profile is considered more favored for those sporting practices that combine endurance and strength, such as soccer, tennis, or basketball.

1.2. ANAEROBIC ENERGY

Phosphocreatine-ATP system

The phosphocreatine-ATP system generates rapid energy (in a matter of seconds) used in muscle contraction. In your case, **supplementation with creatine monohydrate will NOT be efficient** because you have a genetic predisposition that results in the fact that **this pathway of energy generation** is slower than the general population in your body.

1.3. VASODILATION

Your genetic profile is **unfavorable** for vasodilation, which conditions the supply of glucose and growth factors to muscle fibers, limiting muscle development.

1.4. HYPERTROPHY

You have **an adequate predisposition** to achieve high muscle hypertrophy.

METABOLIC FUNCTIONS INVOLVED IN HYPERTROPHY:

1.4.1. ANGIOGENESIS

You have a genetic profile for angiogenesis, or the formation of new blood vessels, **normal** compared to the rest of the population.

1.4.2. GROWTH FACTORS: ANG II

You have a genetic profile to have **high levels of angiotensin II (ANG II)**.
ANG II is a hormone related to increased blood pressure and sodium retention. It is also involved in the regulation of the immune response and inflammation, cell growth and proliferation, which favors the growth of striated muscles, the one that allows voluntary muscle contraction.

1.4.3. GROWTH FACTORS: Thyroxine

You have a genetic predisposition to have **higher thyroxine levels**, and therefore, you have a special benefit for thyroxine-mediated hypertrophy.
Thyroxine contributes to the formation of a type of undifferentiated cells in the musculoskeletal system, which promotes muscle growth.

1.4.4. GROWTH FACTORS: Myostatin

You genetically have a **correct physiological regulation of muscle development by expressing functional myostatin**, and therefore you do not have a special benefit for myostatin-mediated hypertrophy. Myostatin is a natural muscle growth inhibitor protein.
Therefore, the lower the expression of this protein, the greater the muscle development, favouring the hypertrophy.

STRENGTH AND CONCLUSIONS EXPLOSIVENESS RECOMMENDATIONS - CONCLUSIONS

Based on your genetic profile, these are the recommendations to improve your abilities in sports disciplines related to muscular strength and force:

CONCLUSIONS

To maximize muscle adaptations for hypertrophy purposes, you can use both training methods based on maximum efforts, heavy loads, and low repetitions, as well as submaximal efforts, loads below 1RM, and high repetitions. The choice of one or the other will depend on the training goals and the cycle of the season.

To improve energy production during explosive activities, **supplementation with creatine monohydrate is NOT recommended** because the enzyme responsible for the resynthesis of ATP from the phosphate pathway does not work efficiently. Instead, the following recommendations are given:

- Longer recovery times between exercises.
- The use of energy supplementation.
- The consumption of protein supplementation of amino acids (BCAA) to improve the recovery processes after sporting activity.

2. RESISTANCE RECOMMENDATIONS

2.1. SLOW FIBERS

You have a **genetic profile of mixed fibers**, which give you the ability to perform both in strength and long-lasting performance.

2.2. MAXIMUM O_2 CONSUMPTION

You have a **maximum oxygen consumption favorable** for performance in endurance sports, and therefore your maximum potential oxygen volume gives you an advantage during prolonged efforts.

2.3. WATER STATE

You have a **correct regulation of the water state**. So, you have a lower predisposition to suffer from dehydration processes during the practice of physical exercise.
Dehydration prevents the body from defending itself against increased body temperature resulting from the evaporation of sweat during physical exercise. In extreme cases, excessive dehydration can result in heatstroke (loss of water by 7 to 8 % of total weight) with very harmful effects on health, including weakness, confusion, and vertigo from 8 % of the total weight of water loss.
For a person weighing 70 kg, a water loss between 7 and 8 % would mean the loss of 5 to 5.6 kg of water in the form of sweat.

2.4. HYPOXIA

According to your genetic profile, you have the **capacity for physiological adaptation to stress situations in normal hypoxia** of the general population.
When the body is subjected to physiological situations in which there is a deficit of oxygen or hypoxia, a series of genetically mediated adaptations are triggered at the cardiovascular, respiratory, and muscular levels, resulting in the improvement of these processes and, consequently, in increased athletic performance.
In this case, **you do not have a competitive advantage** at a genetic level in endurance sports that require high performance in oxygen-deficient states, such as efforts at altitude or intensities, in which aerobic metabolism is compromised (changes in rhythm, high running paces, etc.). Therefore, if you practice any of these sports, you focus your training on improving your ability in hypoxic situations.

2.5. OXIDATIVE STRESS

Oxidative stress occurs when there is an imbalance between free radicals in the body and the antioxidants available to fight them. This process triggers an inflammatory response and can cause associated health problems and affect mitochondrial function, strength, muscle tone, and aging, among other factors. In your case, you have a genetic predisposition to have **efficient oxidative stress regulation systems**.

2.6. AEROBIC ENERGY

Mitochondrial Biogenesis

You have a **correct genetic predisposition for the formation of new mitochondria** compared to the general population.
Mitochondria are structures that produce the energy necessary for muscle contraction through the oxidation of glucose, fatty acids, and/or amino acids. The higher the density, number, and size are, the more ATP is produced from the oxidative pathway.

2.7. AEROBIC ENERGY

Lipoenergetic efficiency

You have a **correct genetic predisposition** in the metabolic process through which energy is obtained from fats (lipolysis).

2.8. ANAEROBIC ENERGY

Phosphocreatine-ATP system

The phosphocreatine-ATP system generates fast energy that can be used as supplemental energy for the aerobic pathway and improves performance in long-duration sports. In your case, **the supplementation with creatine monohydrate would NOT be efficient**, due to the fact that you present a genetic predisposition that this way of energy generation is slower than the general population.

2.9. ANAEROBIC ENERGY

Purine nucleotide pathway

You have a **unfavorable genetic predisposition to take advantage of the energy produced through the purine-nucleotide pathway**. In this pathway, the adenosine monophosphate (AMP) deaminase enzyme present in skeletal muscles converts a molecule called adenosine monophosphate (AMP) into a molecule called inosine monophosphate (IMP), generating energy during physical activity.

2.10. VASODILATION

You are genetically **more prone to vasoconstriction processes than vasodilation**. This characteristic can limit the performance in long-term tests by limiting the supply of oxygen and energy substrates to the muscles, of which the demand is greater in this type of sports practice.

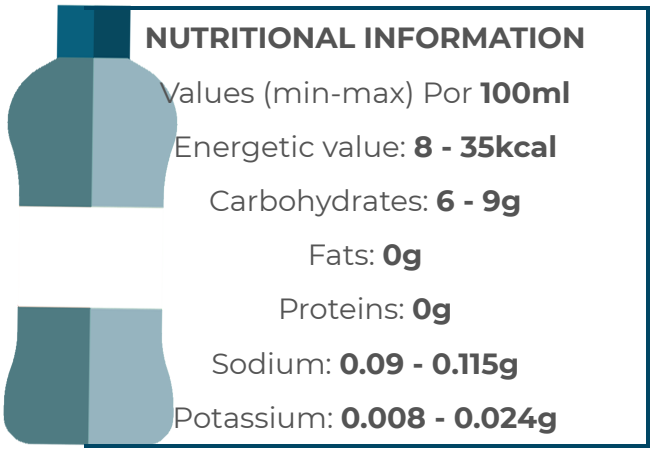
RESISTANCE RECOMMENDATIONS - CONCLUSIONS

Based on your genetic profile, these are the recommendations to improve your abilities in sports disciplines related to the resistance:

CONCLUSIONS

GENERAL RECOMMENDATIONS FOR HYDRATION DURING SPORTING ACTIVITIES: :
Before exercise: Slowly drink 5 to 7 ml/kg in the 4 hours before starting the exercise, which would correspond to approximately 350 - 500 ml in a 70 kg person.

During exercise: Drink between 6 to 8 ml/kg/h, approximately 400 to 500 ml/h or 150-200 ml every 20 minutes at a temperature between 15 to 21 °C (avoid frozen or very cold drinks). The drinks will have a caloric content between 80 kcal/L and 350 kcal/L, with 75 % of the energy coming from a mixture of carbohydrates with a high glycemic load. The drink's osmolarity should be between 200-330 mOsm/kg of water and never exceed 400 mOsm/kg of water. They should provide a range of sodium ion of 40-50 mmol/L and potassium ion of 2-6 mmol/L. Range differences must be customized based on the characteristics of the sport, environmental conditions, and the athlete's tolerance.
To check the suitability of the drink, go to the Nutritional Information label, where you will find the reference for every 100 ml of drink:



Others: It will be advisable to avoid training in hot environments with high humidity, as well as the intake of diuretics such as caffeine (up to 300 mg is not a diuretic).

Regarding the performance in hypoxic conditions, you have a habitual capacity compared to the general population. Therefore, **the consumption of beta-alanine and bicarbonate is recommended to attenuate the production of lactate**.

You have an **effective functioning** of the enzymatic systems that regulate oxidative stress. However, it is important to **maintain a varied and balanced diet** with a high proportion of fruits and vegetables, both raw and cooked, which contain several vitamins and phytochemicals.

To improve energy production during long duration activities, **supplementation with creatine monohydrate is NOT recommended.** Instead it is recommended to improve performance in intervallic, strength and speed training sessions by ingesting sufficient calories, carbohydrates and protein to promote recovery.

The **purine-nucleotide pathway** plays a decisive role in obtaining supplementary energy yield under conditions in which there may be an energy deficit, such as the final and decisive moments of a resistance test. Sometimes symptoms of muscular fatigue may occur in the form of cramps, feeling more tired and for longer than usual. To regulate this condition, we recommend **maintaining a continuous energy supply in the form of supplements during training and competition**, especially fast-absorbing carbohydrates such as glucose, maltodextrin and amylopectin, to quickly restore the energy used.

3. RECOMMENDATIONS FOR PROTECTION AGAINST INJURY

3.1. MUSCLE INJURIES

Muscle injuries generally occur when performing explosive actions in which there is an **active stretching** of the muscle fibers beyond their optimal length. Therefore, the flexibility of the muscle fibers determines the risk of suffering from an injury or muscle rupture. In your case, you have a genetic predisposition to have a **normal stiffness in the muscle fibers**, and therefore you have a lower predisposition to suffer from muscle injuries.

3.2. TENDON INJURIES AND LIGAMENT

In your case, **you have a greater genetic predisposition to suffer from tendon and ligament injuries**. Tendons attach muscles to bones and allow movement by transmitting the forces produced by the muscles to the skeleton. On the other hand, ligaments connect bones, providing stability to the joint that surrounds it.

3.3. BONE INJURIES

Stress Fractures

Sporting activity increases the loads that the skeletal system receives. These loads are a stimulus that favors the tissue's growth as long as they are within their tolerance limits. However, when they exceed the bone remodeling capacity of the tissue, stress fractures can occur. This adaptation is determined by the genetics of each individual. In your case, you have a **certain degree of predisposition to suffer from stress fractures**.

3.4. JOINT INJURIES

Osteoarthritis

In your case, **you have a genetic predisposition to develop osteoarthritis or degeneration of the joints**. Osteoarthritis is a process that takes place over the years depending on the level of physical activity of the individual; the greater the activity, the greater the joint impact.

3.5. INFLAMMATION

In your case, you have a genotypic configuration associated with an **adequate inflammatory response**. Acute post-exercise inflammation is a physiological process thanks to which the body repairs tissue damage caused by sports. Acute inflammation begins with a pro-inflammatory phase, followed by an anti-inflammatory response, in which damaged tissue is repaired. The balance between these two phases is the key to an adequate capacity for recovery and adaptation.

3.6. RECOVERY AFTER INJURIES

In your case, **you require longer recovery times after suffering from an injury** due to the presence of a mutation in your genes that encode elastin. Elastin is the main component of elastic fibers and is responsible for their return to their original shape after being stretched during sporting activities. In case you have an injury, this protein is key to early recovery.

RECOMMENDATIONS CONCLUSIONS FOR PROTECTION AGAINST INJURY - CONCLUSIONS

Based on your genetic profile, these are the recommendations to protect yourself more effectively against sports injuries:

CONCLUSIONS

You do not have a special genetic predisposition to suffer from muscle injuries. However, **to prevent muscle injuries** , and accelerate muscle recovery processes after sporting practice, it is recommended to dose the training load, giving the body time to recover and consume muscle recovery supplements and the salts lost in the effort.
Muscle recovery supplements work by stimulating muscle protein synthesis and muscle fiber connective tissue. Some muscle recovery supplements are:

- **BCAA** (branched chain amino acids): They are composed of three essential amino acids (leucine, isoleucine and valine) that can be ingested in the diet, it is recommended to take 10 to 20 g/day, or as sports supplementation, maximum recommended intake is 20 g/day.
- **HMB**: It is composed of one of the amino acids that make up BCAAs, leucine. It is recommended not to exceed the intake of 3 g/day as sports supplementation.
- **Glutamine**: It is recommended not to exceed the intake of 5g/day as sports supplementation.

To prevent injuries to tendons and ligaments, we recommend incorporating an injury prevention program that integrates motor exercises, which improve performance, along with other assistant exercises that strengthen the central areas, motor control, and joint stability.
On the other hand, it is recommended to perform strength training with high loads, low execution speed and sufficient recovery between repetitions to improve the stiffness of the tendons and ligaments most affected by physical activity or technical training.
In addition, the processes of maintenance, regeneration and repair of tissues may be altered, increasing the risk of injury to ligaments and tendons. Therefore, we recommend the consumption of vitamin C and lysine (2.25 g/day maximum) and proline (2.8 mg per kg of body weight per day maximum) amino acids to promote collagen synthesis.

To prevent injuries due to stress and wear, we recommend the consumption of some supplements that help strengthen bones and joints:

- **Chondroitin**: Compound involved in the formation of cartilage around the joints. Recommended consumption in the form of sulfate or hydrochloride, maximum daily dose 500 mg.
- **MSM** (Methylsulfonylmethane): This compound has the ability to reduce acute inflammation of muscle and cartilage. Recommended daily consumption of 1 to 6 g.
- **Glucosamine**: This substance helps the formation of tendons, ligaments, cartilage and the fluid that surrounds the joints. Recommended consumption in the form of sulfate, maximum daily dose 500 mg.

To strengthen the joints and prevent or delay the onset of osteoarthritis, we recommend to:

- Increase the consumption of **glucosamine**, a natural substance present in the fluid that surrounds the joints. Glucosamine can be consumed in the form of sulfate or hydrochloride, never exceeding 500 mg/day.
- Increase the consumption of **chondroitin sulfate**, one of the main substances involved in the formation of cartilage around the joints, favouring the delay in the onset of osteoarthritis or joint rupture. Maximum recommended daily intake of 500 mg.
- It is also recommended to eat dried fruits and cereals regularly due to their high content of **magnesium aspartate**.

You present an adequate inflammatory response. However, eat foods rich in Omega-3 **to regulate inflammatory processes**.

To limit recovery time after an injury, it is recommended to establish a balance between training load and recovery, which is necessary to produce organic adaptations, and adjusted to the tolerance of the tissues.

4. RECOMMENDATIONS FOR BODY WEIGHT REGULATION

4.1. APPETITE AND SATIETY

The control of energy intake and the feeling of satiety result from the interaction of hormones, including leptin, insulin, and gastrointestinal peptides related to satiety (NPY) and appetite (ghrelin). Briefly, we can say that when the appetite hormones do not behave properly, the brain fundamentally disconnects from the stomach. This cheats the body and makes it believe that it is hungry when it is not. In addition, it drives cravings and intake of foods high in carbohydrates and low in nutrients, which are easily converted to fat once consumed.
In your case, the genetic relationship between these hormones **does not predispose you to feel hungrier between fasting periods** and, therefore, to eat between meals.

On the other hand, **you do not have a genetic problem in the regulation of leptin**. An alteration in this hormone increases the sensation of appetite, especially due to rapidly absorbed carbohydrates.

Finally, **you have a correct regulation of ghrelin**.

4.2. ADIPOGENESIS

In your case, you have a **genetic tendency to the formation of normal adipocytes** when consuming fats, so you tend to accumulate the fat consumed in a normal way. Adipocytes or fat cells are formed by the process known as **adipogenesis**, which includes the absorption, transport, and oxidation of fatty acids.

4.3. LIPID OXIDATION

In your case, you have a **genetic predisposition to use fat for energy in the normal way. Lipid oxidation** is the physiological process by which stored fat is used for energy generation.

4.4. THERMOGENESIS

In your case, you have some genetic variants which can altered the **correct regulation of the thermogenic process**. **Thermogenesis** is the process by which the regulation of body temperature is maintained, generating heat from the oxidation of brown fat (the one involved in the generation of heat).

RECOMMENDATIONS CONCLUSIONS FOR BODY WEIGHT REGULATION - CONCLUSIONS

Based on your genetic profile, these are the recommendations to help you regulate your body weight. For further information, you can see the distribution of ideal daily macronutrients and micronutrients according to your genetics in the Section Personalized nutrition:

CONCLUSIONS

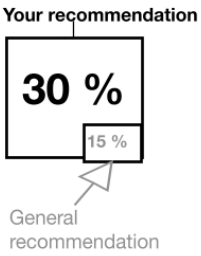
Although, in your case, you have a balanced profile between appetite and satiety, we recommend keeping your blood glucose levels controlled to avoid insulin peaks that increase appetite between meals. To control blood sugar levels, it is recommended to control the intake of foods with a high glycemic index (foods derived from white or refined flours, some cooked vegetables such as carrots or celery, beer, mayonnaise and ketchup, non-whole grains and rice, puree of potatoes or baked potatoes and some fruits such as papaya, melon, watermelon or ripe banana), to avoid processed and fried or stir-fried foods, and to limit the intake of animal protein, increasing the intake of plant-origin proteins.

You could have a thermogenic process disorder that causes you to burn fewer calories at rest. To increase energy consumption at rest, it is important that you exercise frequently, approximately 5 hours of moderate exercise a week. At a nutritional level, the consumption of ursolic acid (present in apple or pear), fucoxanthin (abundant in brown algae), and Irvingia gabonensis is recommended.

PERSONALIZED NUTRITION

This diet has been calculated based on the data you have provided us and along with your genetics, but we do not know the specific type of sport you do, so this distribution of macronutrients is recommended for weight maintenance, in case you want a specific diet for the sport you practice do not hesitate to consult with your advisor through our app.

*Legend



MACRONUTRIENTS

Proteins:	**23.0 %** *15 %*	
Carbohydrates:	**50.0 %** *55 %*	
Simple	**22.5 %** *25 %*	Present in refined sugars, brown sugar, molasses, honey, fructose (present in fruits) and lactose (present in dairy products). In addition, all processed products usually contain a large amount of sugars.
Complex	**27.5 %** *30 %*	Present in whole grain bread (whole grains), pasta, legumes, starchy vegetables (potatoes or peas) and high fiber foods (whole grain cereals such as oatmeal, brown rice or quinoa).
Fats:	**27.0 %** *30 %*	
Saturated	**6.0 %** *7 %*	Present in foods deriving from animal fats (fatty meats, butter, buttercreams), coconut and palm oil, chocolate and pastries, and bakery products.
Polyunsaturated	**3.5 %** *4 %*	Present in fish, seed oil (sunflower, corn, peanut...) and dried fruits.
Monounsaturated	**17.5 %** *19 %*	Present in dried fruits, olives, olive oil, rapeseed and soybean oil, and avocado.

PERSONALIZED NUTRITION

MICRONUTRIENTS

Vitamins:

	General recommendation		Your recommendation	
B12 Vitamin	**2-2,4** *µg/día*	↑	**2,6-3** *µg/día*	Only present in foods of animal origin (meat, fish, eggs and dairy products).
B9 Vitamin Folic Acid	**320-400** *µg/día*	↑	**600-800** *µg/día*	60 % is found in vegetables, mainly green leafy vegetables and dried fruits, while the remaining 40 % is found in meat and dairy products.
C Vitamin	**75-90** *mg/día*	=	**75-90** *mg/día*	Present in citrus fruits, fruits such as strawberries or currants and kiwi and in vegetables of intense color.
E Vitamin	**12-15** *mg/día*	=	**12-15** *mg/día*	Mainly present in foods of plant origin, vegetable oils, dried fruits and whole grains. To a lesser extent, it is found in leafy green vegetables.

Minerals:

	General recommendation		Your recommendation	
Magnesium	**350-420** *mg/día*	↑	**430-470** *mg/día*	Present in dried fruits, whole grains and dark chocolate.
Sodium	**2-2,3** *g/día*	=	**2-2,3** *g/día*	It is found in fresh food and in common salt.
Zinc	**9,4-11** *mg/día*	=	**9,4-11** *mg/día*	Present in beef, chicken, oysters and crab.

NOTE: Recommended daily doses are intended for a healthy and adult person. The verification of the correct intake amount in individual cases is the responsibility of the customer.

CAFFEINE

Caffeine and sports performance:

Different studies have shown that caffeine has ergonomic effects that promote sporting activity. In the case of **endurance sports**, caffeine stimulates the mobilization of free fatty acids in adipose tissue or intramuscular fat deposits, which result in a suppression of carbohydrate metabolism, and consequently, a decrease in the use of glycogen. On the other hand, in **strength sports**, caffeine increases power production by acting on the central nervous and neuromuscular systems.

Caffeine is easily absorbed after ingestion. Blood levels rise and peak after approximately 30 to 60 minutes depending on your metabolism. Genetically there are two types of metabolizers: **"Fast" and "slow"**. In individuals who have a fast metabolism, caffeine's effects have a shorter duration in the body compared to slow metabolizers. To enjoy caffeine's effects in your sporting activity, it is essential to know what type of metabolizer you are.

Caffeine and health status:

Caffeine is related to health status. It has been determined that the probability associated with suffering from a myocardial infarction due to the intake of high doses of coffee increases considerably in slow metabolizers. However, in fast metabolizers, the tendency is the opposite, and the intake of one to three cups of coffee a day reduces your risk and has a protective effect.

RECOMMENDATIONS

Recommended daily cups of coffee:

As you have a **slow caffeine metabolism**, we recommend limiting the caffeine consumption to about 200 mg a day, which is equivalent to 2 cups of coffee a day.

Supplementation time before sporting activity:

To benefit from caffeine's thermogenic effect during sporting activity, we recommend consuming it at least 1 hour in advance.

ANNEX 1: GENETIC RESULTS

GENE	CATEGORY	GENOTYPE IMPLICATION			YOUR GENOTYPE
		FAVORABLE	NEUTRAL	UNFAVORA-BLE	
ACE-1	Strength	DD	ID, II		DD
	Endurance	II	ID, DD		
	Vasodilation	II	ID	DD	
ACE-2	Body control	AA		GG, GA	GG
ACTN3	Strength	CC	TC	TT	TC
	Endurance	TT	TC, CC		
	Injuries		TC, CC	TT	
ADRB2-1	Strength	GG	GA, AA		GA
	Endurance	AA		GA, GG	
ADRB2-2	Strength	GG	GC, CC		CC
	Endurance	CC		GC, GG	
ADRB2	Body control		AA/CC, GA/CC, GG/CC	AA/CG, GA/CG, GG/CG, AA/GG, GA/GG, GG/GG	GA/CC
ADRB3	Endurance	AA		AG, GG	AA
	Body control	AA		AG, GG	
AGT	Strength	GG	AG, AA		AG
AMPD1	Endurance	GG		GA, AA	GA
APOA2	Endurance		GA, AA	GG	GA
	Body control	AA, GA		GG	
APOA5	Body control		AA	GA, GG	AA
AQP1	Endurance	CC, TC	TT		TT
BDKRB2	Strength		CT, CC	TT	TT
	Endurance	TT	CT, CC		
CAT	Endurance		GG	AA, AG	AG
CKM	Strength	TT		TC, CC	TC
	Endurance: Anaerobic energy	TT		TC, CC	
	Endurance: Maximum O_2 consumption	CC, TC	TT		
COL1A1	Injuries	AA, CA		CC	CC
COL5A1	Endurance	TT, CT	CC		TT
	Injuries	CC		CT, TT	
CRP	Endurance	TT		CT, CC	TT
	Body control	TT	CT, CC		
CYP1A2-1	Caffeine	AA		CA, CC	CC
CYP1A2-2	Caffeine	GG		AG, AA	AA
EMILIN1	Injuries	CC		TC, TT	TC
FABP2	Endurance	AA, CC		TC, TA, CC	CC
	Body control	AA, CC		TC, TA, CC	
FTO-1	Body control	GG		GT, TT	GT
FTO-2	Body control	TT		TA, AA	TA

FTO-3	Body control	TT		TC, CC	TC
GDF5	Injuries	GG		AG, AA	AA
GDF8	Strength	CC, TC	TT		TT
	Endurance		TT	CC, TC	
	Injuries	CC, TC	TT		
GHRL	Body control	CC		CT, TT	CC
GNB3	Endurance	TT, CT	CC		
	Body control	CC		CT, TT	
GSTM1	Endurance	II, ID		DD	ID
GSTP1	Endurance	GG		AA, AG	AA
GSTT1	Endurance	II, ID		DD	II
HIF1A	Endurance	TT, CT	CC		CC
IL6	Strength	GG, GC	CC		
	Endurance	GG, CG		CC	
	Injuries	GG, CG		CC	
MC4R-1	Body control	TT		TC, CC	TC
MC4R-2	Body control	TT, CT	CC		CC
MNSOD	Endurance	GG, AG		AA	AG
MTHFR	Strength	GG, TG	TT		TT
	Body control		GG, TG	TT	
NOS3	Strength	TT, CT	CC		CC
	Endurance	CC, CT	TT		
	Body control	CC		TT, CT	
NYP	Body control	TT		TC, CC	TT
NRF2	Endurance	GG, AG	AA		AA
PLIN1-1	Injuries	CC, CT		TT	TT
PLIN1-2	Injuries	TT, AT		AA	AA
PLIN1-3	Body control	CC/TT, CC/CT, CC/CC, CT/TT, CT/CT, CT/CC		TT/TT, TT/CT, TT/CC	TT/CC
PPARa-1	Strength	CC, GC		GG	GC
	Endurance	GG		GC, CC	
PPARa-2	Body control	CC		GG, CG	CC
PPARg	Strength	GG, CG	CC		CC
	Endurance	CC		CG, GG	
	Body control	CC		CG, GG	
PGC1A	Strength	TT, CT		CC	CC
	Endurance	CC		TT, CT	
	Body control	CC		TT, CT	
TRHR	Strength	TT	CT, CC		TT
TNFa	Injuries	GG		GA, AA	
UCP2	Body control	TT		CT, CC	CT
VEGFa	Strength	CC, CG		GG	CG
	Endurance	GG		CG, CC	

ANNEX 2: GENERAL RECOMMENDATIONS FOR FOOD AND NUTRITION

NUTRIENTS	FOODS
Adipogenesis	
Chitosan	Mushrooms (*Mucor rouxii* and *Choanephora*), squid, crab, *Cyclotella*
Appetite: Regulate ghrelin levels	
Proteins	Meat, fish, legumes, dried fruits
Tryptophan (*promotes sleep*)	Egg, pumpkin seeds, soy, spinach, spirulina, cheese, turkey, chicken
Appetite: Regulate leptin levels	
Conjugated linoleic acid	Milk, cheese, yogurt, beef, turkey, egg yolk
Omega 3	SSardines, anchovies, salmon, tuna, avocado, walnuts
Zinc	Oysters, crab, beef, chicken
Aerobic energy: Mitochondrial biogenesis	
Alpha-lipoic acid	Broccoli, spinach, carrot, potatoes
BCAA	Tuna, soy, turkey, chicken, oatmeal
Coenzyme Q10	Bluefish, pork heart and liver, eggs, soybeans, seeds, spinach, chicken, broccoli, tofu, dried fruits
L-Carnitine	Pork, chicken, lamb, codfish, whole milk, avocado
Vitamin B2	Wheat germ, almonds, wild rice, peas, lentils, whole rye
Vitamin B3	Tuna, salmon, chicken, rice bran, wheat
Anaerobic energy: Phosphocreatine-ATP system	
Creatine	Red meat, liver, wild fish (herring, salmon, and tuna)
Anaerobic energy: Purine nucleotide pathway	
Carbohydrates	Dates, raisins, dried figs
Oxidative stress	
Coenzyme Q10	Bluefish, pork heart and liver, eggs, soybeans, seeds, spinach, chicken, broccoli, tofu, dried fruits
Lycopene	Tomato, red fruits and vegetables: papaya, watermelon...
Selenium	Garlic, onion, Brazil nuts, eggs, salmon
Vitamin C	Citrus, raw peppers, cabbage, kiwi, mango, spinach
Vitamin E	Legumes, liver, dried fruits, whole grains, seeds
Zinc	Oysters, crab, beef, chicken
Muscle injuries: recovery from muscle damage	
BCAA	Tuna, soy, turkey, chicken, oatmeal
Glutamine	Dairy products, red meat, fish, eggs, lettuce, parsley, cabbage, aloe vera, rocket salad
HMB	Avocado, citrus, cauliflower, watermelon, strawberries
Connective tissue injuries: elastin synthesis	
Magnesium	Seeds, almonds, peanuts, pistachios, dark chocolate, whole wheat bread

NUTRIENTS	FOODS
Connective tissue injuries: collagen synthesis	
Lysine	Milk, cheese, egg, chicken, veal, soy, tofu, watercress, quinoa, wheat germ
Proline	Jellies, cabbage, soybeans, asparagus, monkfish, cod, beef, chicken
Vitamin C	Citrus, raw peppers, cabbage, kiwi, mango, spinach
Bone and joint injuries: injury prevention	
Hyaluronic Acid	Gelatin, bone broth
Glucosamine and chondroitin	Broth of crustacean exoskeleton (shrimp, lobster, crab, ...)
MSM	Tomato, tea, coffee, green leafy vegetables
Prevent inflammation	
Omega 3	Sardines, anchovies, salmon, tuna, avocado, walnuts
Vitamin B9 or folate	
Green leafy vegetables, asparagus, algae, wheat germ, beans, liver, soy	
Vitamin B12	
Beef, liver, chicken, eggs, mollusks, crustaceans, bluefish	
Lipidic oxidation	
Caffeine	Coffee, dark chocolate
Catechins	Green tea, cinnamon, hops, cocoa
L-Carnitine	Pork, chicken, lamb, codfish, whole milk, avocado
Regulate cholesterol levels	
Omega 3	Sardines, anchovies, salmon, tuna, avocado, walnuts
Hypoxia	
Lactate buffers	Baking soda
Nitrates	Beet, spinach, chard, watercress, rocket salad, celery, chicory, fennel, leek
Protein synthesis	
BCAA	Tuna, soy, turkey, chicken, oatmeal
HMB	Avocado, citrus, cauliflower, watermelon, strawberries
Thermogenesis	
Invingia gabonensis	Mango africano
Ursolic acid	Pear, apple
Fucoxanthin	Brown algae (wakame and hijiki)
Vasodilation	
L-Arginine	Walnuts, salmon, tuna, hazelnuts, almonds
L-Citrulline	Seafood, eggs, cheese, watermelon, melon, legumes, dried fruits
Nitrates	Beet, spinach, chard, watercress, rocket salad, celery, chicory, fennel, leek

TECHNOLOGY

DNA Microarray technology consists of a solid surface with microscopic reactions (microreactions) or DNA chip, on which molecular probes are attached to detect the presence of target DNA molecules. Probe-target hybridization is usually detected and quantified by measuring the intensity of a given fluorescence provided by the molecular probe in samples. This type of technology allows the detection of thousands of specific DNA fragments present in a DNA sample. On the other hand, the specificity in terms of DNA sequence recognition is very high since single nucleotide exchange (single-base resolution) can be detected using short oligonucleotide probes (20-25 nucleotides). As a result, DNA Microarray technology has also evolved to be applied as a DNA sequencing technique to genotype several hundred thousand single nucleotide variants (SNVs) in target genes located throughout the genome (Whole Genome DNA Microarray).

Bead Chip Infinium Global Screening Array Orion (GSA Orion) is a line of DNA chips developed by Illumina for its DNA Microarray iScan platform, widely used in population genetic studies and precision medicine, providing optimized content with 100 % reliable and reproducible high-quality genotyping results. The construction of the GSA Chip was carried out in collaboration with a consortium of experts, and for the selection of SNVs, information from prestigious scientific databases such as gnomAD, NHGRI-EBI-GWAS Catalog, ClinVAr, MHC-HLA-KIR and PharmGKB has been used. The GSA allows the analysis of approximately 700,000 SNVs that cover variants of interest (hot spots) throughout the entire genome, impacting a wide range of genetic traits with physiological and pathophysiological implications. In addition, it allows the customization by users to incorporate Ad Hoc 50,000-100,000 variants of interest.

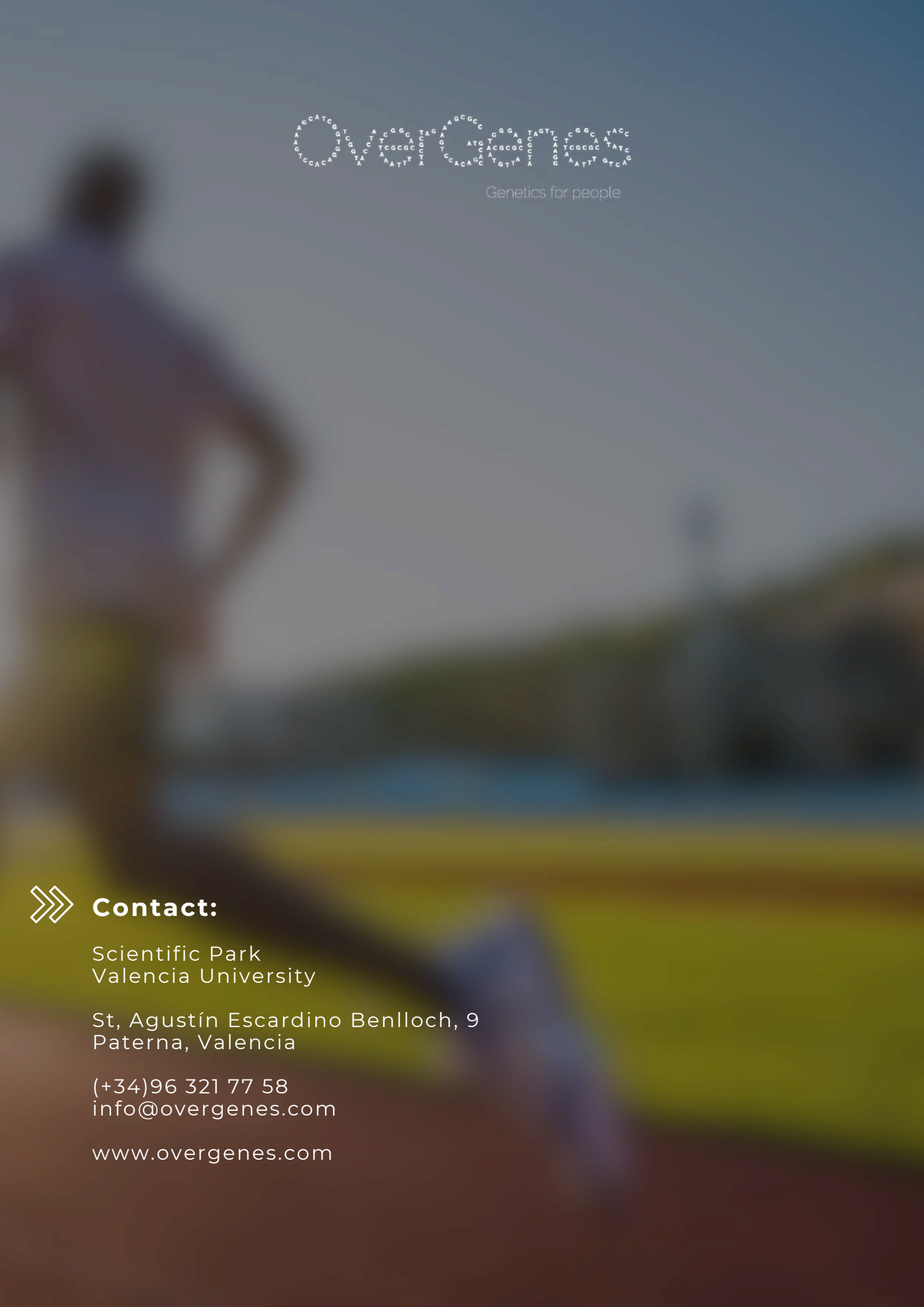
RISKS AND LIMITATIONS

The results presented in this report are limited to the scientific knowledge available at the date of development of the test. The test only detects the specified genetic variants. The recommendations described throughout this report are for guidance only. The recommended daily doses are intended for healthy adults. The verification of the correct intake amount in individual cases is the responsibility of the customer. Overgenes cannot be held responsible for any misinterpretation of the data provided.
MySport is not a medical report and you should consult your doctor if you are suffering from any type of illness or disease, particularly in the case of pregnancy, breastfeeding, allergy, diabetes or taking any type of medication to adjust the doses of food supplements or other recommendations.

GLOSSARY

- **Allele:** Each of the alternative forms of a gene, which may have differences in their sequence.
- **ATP:** Acronym of adenosine triphosphate. Primary molecule in obtaining energy for many essential processes, such as muscle contraction.
- **Cell:** Basic structural and functional unit of life.
- **DNA:** Abbreviation for deoxyribonucleic acid. A molecule present in our cells that contains the genetic information necessary for the development and proper functioning of living organisms.
- **Gene:** A segment of DNA that represents the unit of hereditary information.
- **Genetic predisposition:** Also called genetic susceptibility. It is the increase in the probability of developing a certain condition or pathology due to the presence of one or more genetic variations.
- **Genotype:** Combination of the variants of a gene in an individual.
- **Glucose:** It is a simple sugar (monosaccharide) that is an essential source of energy in many metabolic processes for the body to function properly.
- **Glycolytic system:** It is the process of energy production through the breakdown of carbohydrates as a fuel source (glycolysis).
- **Haplotype:** A set of DNA variations, or polymorphisms, that tend to be inherited together.
- **Heterozygous:** When the two alleles of the same gene are different.
- **Homozygous:** When the two alleles of the same gene are identical.
- **Lactate (lactic acid):** Chemical compound that our body generates to produce energy. Increasing the intensity of physical activity in short-term exercises increases its concentration. If the training intensity is above the lactic threshold, lactate accumulates and generates fatigue and decreased performance.
- **Maximum muscle strength:** Greater strength is defined as the force that a group of muscles can exert through voluntary muscle contraction. Specifically, it could be defined as the largest weight that a person can move in a single movement.
- **Maximum repetition or 1RM:** Maximum load that you can move in a certain exercise in a single repetition. For example, if you have a 1 RM of 100kg in deadweight, you can move a maximum of 100kg of deadweight in one repetition. It is important to know our 1RM to be able to calculate the weights that we must move in each of our training sessions, and in this way, achieve our goals.
- **Metabolism:** Set of chemical processes that occur within a cell or organism and serve to produce energy or use it as fuel.
- **Mutation:** Variation in the nucleotide sequence of genes that affects 1 % of the population.
- **Oxidative stress:** Produced by an imbalance of the metabolism that produces many free radicals but cannot eliminate the excess. This results in cellular deterioration.

- **Phenotype:** Set of directly visible characters of an organism.
- **Polymorphism:** Variation in the nucleotide sequence of genes that affects ≥1% of the population.
- **SNP:** Single nucleotide gene polymorphism.



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