



Decoding 100+ genes for success

DEMO REPORT

Sport Full Package Test Kit

Health begins with us.



Sample ID

fpNGSXXX

Sample receipt

DD.MM.YYYY

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About us & General Information about the report

This report serves as a basic document for athletic activities and is intended for both professional and amateur athletes. Your individual genetics determine your overall athletic profile, metabolism, and the general movement patterns of your body.

Utilizing state-of-the-art technologies - in one of the world's most advanced laboratories - selected DNA segments are analyzed using Next Generation Sequencing (NGS) or PCR tests to determine the so-called genotypes. The NGS method has revolutionized genomic research and various fields of biology and medicine. Unlike earlier sequencing methods, NGS allows for the parallel sequencing of multiple DNA segments in high throughput, significantly improving sequencing speed, accuracy, and cost efficiency. These advances have led to numerous breakthroughs in biological and medical research, personalized medicine, and diagnostic applications. Whole-genome sequencing has provided insights into the genetic makeup of organisms and facilitated the discovery of genetic variants associated with diseases.

Physical performance is defined by complex traits influenced by both genetic and environmental factors. Genetic data can be used to determine, among other things, which types of physical activity are best suited for the body, identify individual risks, and reduce non-contact injuries or other physical limitations.

The foundation of this report is based on various scientific studies that are internationally recognized, accepted by the scientific community, and published. The corresponding publications for each chapter can be found on the last pages of this report.

We would like to emphasize that you should seek advice from medical professionals or sports scientists before making any changes to your training plan or diet based on this report.

Your sample has been evaluated according to the highest quality standards by experienced scientists. We are an ISO-certified laboratory and adhere to the following ISO standards:

ISO 9001:2015

EN ISO 13485:2016

EN ISO 15189:2022

We hereby provide you with your individually compiled results. For questions, suggestions, and additional information, please feel free to contact us (see last page).

Influence of Genetic Factors on Athletic Performance

Athletic success is influenced by numerous genetic factors. On average, approximately 66% of the variations in athlete status can be explained by genetics or genes. The remaining portion of athletic success is attributed to environmental factors such as targeted training, nutrition, geographical origin, as well as medical and social support.

A gene is a segment of DNA that contains genetic information for a specific trait (e.g., eye color or muscle fiber type). Variants of a gene, differing due to mutations, are referred to as alleles.

Mutations are permanent changes in the genetic material of a cell. They can be triggered by environmental influences such as UV or radioactive radiation (mutagens) or occur randomly during cell division. Mutations in eggs and sperm that lead to successful fertilization of the egg are inherited by offspring. However, if the alteration occurs in a somatic cell, it does not affect the offspring.

Each gene in the human body is present in duplicate, allowing for three possible genetic predispositions (variations) due to mutations. These variations are known as genotypes. Mutations can occur in only one of the genes, both genes, or neither. The effects of mutations are often amplified when both gene variants are affected.

In scientific contexts, there are various ways to represent genotypes. Most commonly, they are expressed using the so-called bases (A, T, G, C) such as Genotype-AA, -CT, -GA, etc. Alternatively, a different format is sometimes used for genotype representation, such as IL6-174CC, MSTN 153R or ACTN3 577XX (indicating that the ACTN3 gene is mutated in both copies, resulting in the protein being non-functional).

Graphical representation of possible gene variations:

 **no variation**

 **one variation**

 **two variations**

Mutations can fundamentally have both positive and negative effects, including on athletic performance. For example, some mutations can lead to an increased production of red blood cells, improving the oxygen supply to muscles and enhancing endurance performance. On the other hand, specific mutations also contribute to muscle performance. Some individuals, due to their genes, have greater muscle mass, while others exhibit higher endurance or better responsiveness in strength training.

Genetic predispositions play a crucial role in athletic performance, providing insights into the individual strengths and weaknesses of athletes. By analyzing certain genetic factors, athletes can optimize their training and competition strategies, unlocking their full potential.

Research on relevant genes and their influence on athletic success began in the late 1990s. Due to the methods available at that time, gene analysis was significantly more complex, and only a few genes were explored. Currently, over 250 genetic markers have been identified, with direct or indirect influences on athletic performance attributed to them. Three major areas, each with dozens of associated gene variants, include markers for endurance, strength, and power. Other hereditary traits also play a significant role in sports, such as regeneration time—the duration for muscles to fully recover after training, crucial for designing the training schedule, or susceptibility to ligament and tendon injuries. Other selected chapters provide more detailed information on aerobic capacity, an essential parameter for endurance sports. Some gene variants appear

Influence of Genetic Factors on Athletic Performance

in multiple chapters as they influence various aspects of sports. Not all of these gene variants have been sufficiently scientifically studied, but continuous efforts are being made to conduct more studies with athletes to further strengthen the results and resulting statements statistically.

To provide you with an overview of your genetically determined athletic performance potentials, we currently analyze 100+ sport-associated gene mutations (defined by rs-number) in your genetic material. Within a gene, multiple mutations at different locations can influence athletic performance in one direction or another.

We also constantly monitor the latest developments in genetic sports research and update our report when new insights are published through current studies.

DEMO REPORT

SUMMARY OF YOUR RESULTS

MUSCLE TYPE DETERMINATION IN THE SPRINTING GENE - POWER OR ENDURANCE

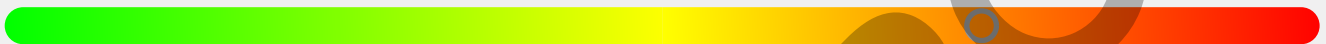
Your Result:



The mutation analysis has revealed that your ACTN3 gene is not mutated, indicating that you have the potential for power- and strength-based sports. According to this result, endurance sports are not favored.

ENDURANCE PREDISPOSITION

Your Result:



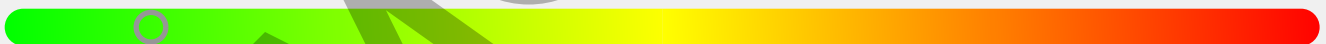
Endurance predisposition: The genetic analysis of 43 selected markers has indicated that you are less predisposed to endurance sports, as you predominantly lack the typical traits associated with endurance athletes.

OVERALL RESULT for your endurance sports potential:

When considering your result for general endurance predisposition alongside the muscle type determination, it indicates a lower potential for achieving high performance in endurance sports.

MUSCLE POWER PREDISPOSITION

Your Result:



The analysis of 45 gene variants has revealed that your genetic potential in power-related sports is very high. Consequently, with tailored training, you could achieve high performance in power sports.

Overall result for your potential in power-related sports:

When considering your result for general muscle power predisposition in combination with the muscle type determination result, there is a very high potential for achieving high performance in power sports.

SUMMARY OF YOUR RESULTS

MUSCLE STRENGTH PREDISPOSITION

Your Result:



The analysis of 42 gene variants has revealed that your genetic potential in strength-based sports is high, indicating that, with tailored training, you could achieve high performance in strength sports.

Overall result for your potential in sports that particularly benefit from muscle strength:
Considering your results for general muscle strength predisposition along with the muscle type determination, your overall potential for strength-based sports is very high.

MUSCLE BUILDING

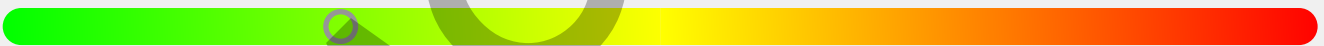
Your Result:



The result of the analysis of the MSTN gene has revealed that you do not carry a mutation in the examined variation, and therefore, genetically, you are not predisposed to build a larger muscle mass.

REGENERATION TIME - INFLAMMATORY RESPONSES AND NON-CONTACT INJURIES

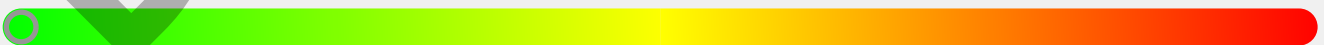
Your Result:



The analyzed gene variations overall provide good protection against sports-related injuries. The level of inflammation is low, and the antioxidative processes are not significantly adversely affected. Therefore, the required regeneration time for your muscles is not genetically prolonged, and your training plan does not need to be adjusted for this reason.

MUSCLE BREAKDOWN (RHABDOMYOLYSIS)

Your Result:



The analysis of the affected CKM gene variant has shown that you do not have a risk for the development of muscle breakdown during exertion.

SUMMARY OF YOUR RESULTS

INJURIES - RISK OF TENDON AND LIGAMENT TEARS

Your Result:



The analysis of the results for the analyzed gene variants indicates an increased risk of non-contact injuries to tendons and ligaments in your joints.

CARDIORESPIRATORY FITNESS & AEROBIC CAPACITY

Your Result:



The genetic analysis of genes playing a crucial role in aerobic capacity has revealed a moderate result for you. This implies that, genetically, you receive average support for endurance performances.

IRON STORAGE - MORE PERFORMANCE OR HEMOCHROMATOSIS

Your Result:



Your iron storage, according to the analyzed gene variants, is not elevated, and therefore, it does not contribute to higher performance due to increased iron in the blood. On the other hand, this also means that you do not carry a risk for hemochromatosis.

MUSCLE FATIGUE (LACTATE)

Your Result:



Your genetic predisposition does not indicate an increased susceptibility to rapid muscle fatigue during sports.



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