



A genetic test designed to support the optimization of individual athletic potential

Know. Personalise. Train smarter.



SPORTPROFILE





ATHLETIC POTENTIAL IS INDIVIDUAL

Athletes of comparable age, physical characteristics, and training status may respond differently to the same training program. Athletic performance reflects the **interaction among genetic background, quality of preparation, nutrition, recovery, psychological factors, environment, and medical history.**

Within this context, genetic variability may contribute to differences in muscle-fiber composition, energy metabolism, exercise response, inflammatory and repair processes, connective-tissue resilience, and selected biomarkers relevant to sport. When incorporated into a multidisciplinary assessment, genetic information may help professionals make more informed, targeted decisions.

GENETICS DOES NOT DEFINE AN ATHLETE'S DESTINY

SPORTPROFILE does not identify talent or prescribe an ideal sport. It provides contextual information to be interpreted alongside medical history, functional assessment, preferences, goals, and observed response to training.

An integrated approach to performance

- › *Personalize training and the distribution of training loads.*
- › *Optimize recovery timing and strategies.*
- › *Inform strategies for preventing muscle damage and injury.*
- › *Integrate athletic preparation with sports nutrition.*
- › *Define clinical and functional indicators for ongoing monitoring.*



THE TEST

SPORTPROFILE is a genetic test that analyzes a selected panel of **single-nucleotide polymorphisms (SNPs)**, relatively common DNA sequence variants that may contribute to individual differences in biological processes relevant to physical activity and sport.

The analysis covers **40 genes** and generates a profile of **34 traits** organized into **seven functional areas**. Results describe relative predispositions, not certainties about ability or individual outcomes. Variant effects are probabilistic and should be interpreted in the context of the overall profile, available scientific evidence, and the athlete's observed characteristics.

What it may help clarify

- **Athletic orientation**

Relative predisposition toward power-, speed-, or endurance-based activities.

- **Exercise response**

Potential differences in performance and the capacity to sustain training loads.

- **Muscle recovery and damage**

Susceptibility to damage, inflammatory, and regenerative processes

- **Musculoskeletal tissues**

Potential predisposition to tendinopathy, ligament injuries, or osteoarticular conditions.

- **Nutrition and ergogenic aids**

Information that may help contextualize individual response.

- **Biomarkers**

Predispositions related to metabolic parameters of clinical and nutritional interest.





THE SEVEN FUNCTIONAL AREAS ASSESSED

Muscle damage	Predisposition to muscle-fiber damage and characteristics of inflammatory, repair, and regenerative processes.
Injury	Relative susceptibility to tendinopathy, ligament injuries, osteoarticular conditions, and concussion.
Power	Predisposition to generate high levels of force in a short time.
Endurance	Characteristics associated with oxidative metabolism and the capacity to sustain prolonged effort.
Training and capacity	Contextual information to help balance power and endurance work.
Performance	Potential differences in performance and individual response to training stimuli.
Biomarkers	Genetic predispositions related to metabolic and physiological parameters of clinical and nutritional interest.

STABLE GENETIC DATA, A DYNAMIC STRATEGY

A person's genetic profile remains substantially stable throughout life, while training, nutrition, recovery, and clinical status change over time. Its value therefore lies in comparison with real-world data and in translating results into testable decisions that can be reviewed periodically.



THE 34 TRAITS ANALYZED

For each trait, the report presents the observed genotype, an interpretation of predisposition, general recommendations, and applicable interpretive limitations. Traits are grouped here for ease of reading; in the report, they are organized within the seven functional areas.

ATHLETIC CAPACITY AND ORIENTATION

- ▶ *General strength*
- ▶ *Muscle-tendon flexibility*
- ▶ *Predisposition to power-based sports*
- ▶ *Predisposition to endurance sports*
- ▶ *Aerobic capacity*
- ▶ *Muscle hypertrophy*
- ▶ *Skeletal muscle development*
- ▶ *Response to exercise*
- ▶ *Sprint predisposition*
- ▶ *Personal motivation*
- ▶ *Frequency of sports participation*

MUSCLE DAMAGE AND RECOVERY

- ▶ *General susceptibility to sports-related muscle injuries*
- ▶ *Post-exercise recovery*
- ▶ *Muscle recovery and regeneration*
- ▶ *Cramps*
- ▶ *Oxidative stress*
- ▶ *Inflammation*

INJURY: TENDONS, LIGAMENTS, BONE, AND HEAD TRAUMA

- ▶ *Risk of shoulder dislocation*
- ▶ *Risk of anterior cruciate ligament rupture*
- ▶ *Risk of Achilles tendon rupture*
- ▶ *Risk of meniscus tear*
- ▶ *Recovery after meniscus surgery*
- ▶ *Risk of ankle injury*
- ▶ *Risk of bone stress fracture*
- ▶ *Osteoarticular resilience*
- ▶ *Concussion*

CLINICAL AND NUTRITIONAL BIOMARKERS

- ▶ *Effect of sport on body mass index (BMI)*
- ▶ *Impact of sport on cholesterol levels*
- ▶ *Effect of sport on HDL cholesterol levels*
- ▶ *Effect of sport on blood glucose levels*
- ▶ *Sport and testosterone levels*
- ▶ *Effect of endurance training on blood pressure*

PROTECTING MUSCLES, TENDONS, AND JOINTS

1

Muscle damage

Exercise-induced muscle damage comprises an initial mechanical phase, followed by inflammatory and regenerative phases. Variants involved in these processes may contribute to individual differences in susceptibility, particularly under intense or repeated loads or when recovery is inadequate.

Potential applications in practice

- More gradual progression of training loads and eccentric work.
- Recovery planning and systematic symptom monitoring.
- Mobility and muscle-flexibility work, supported by appropriate nutrition.
- Joint-stability protocols and attention to movement technique.

2

Injury: tendons, ligaments, and osteoarticular tissues

Injury susceptibility may be influenced by genetic factors that contribute to connective-tissue quality, inflammatory response, and biomechanical tissue resilience. The test assesses traits related to shoulder dislocation, anterior cruciate ligament injury, Achilles tendon and meniscus injury, ankle injury, osteoarticular resilience, bone stress fracture, and concussion. This information may help inform preventive measures but cannot predict whether a specific injury will occur.

PERSONALIZED PREVENTION

Preventive measures, including eccentric and isometric exercise, joint stability and mobility, movement technique, load management, and functional recovery, should be defined by qualified professionals based on a comprehensive assessment of the athlete.



POWER, ENDURANCE, AND TRAINING ORIENTATION

3

Power

Power is the ability to generate high levels of force in a short time. It is influenced by muscle-fiber composition, neuromuscular recruitment, and the interaction among genetics, training, and nutrition. When interpreted alongside functional assessment, the genetic profile may help inform targeted explosive and maximal-strength training and related nutritional support.

4

Endurance

Endurance is the ability to sustain prolonged effort while maintaining stable performance. It is associated with the efficiency of oxidative metabolism, energy availability, recovery quality, and muscle-fiber composition. The genetic profile may provide an additional perspective when balancing continuous aerobic work with high-intensity interval training.

5

Training and capacity

Training remains the primary determinant of performance. Genetic information may help guide the balance between power and endurance work, aligning programming more closely with individual biological characteristics. The choice of sport remains driven by preferences, goals, sporting history, and functional assessment.

PREDISPOSITION DOES NOT DEFINE A LIMIT

A less favorable genetic profile for a trait does not preclude high performance; a favorable profile does not replace training, technique, motivation, experience, or consistency.

INDIVIDUAL RESPONSE AND BIOMARKERS

6

Performance and individual response

Responses to the same program vary: some individuals develop more pronounced functional and metabolic adaptations, while others show more modest gains. **SPORTPROFILE** considers this variability alongside traits related to sports participation, such as motivation and activity frequency. This information may provide an additional basis for calibrating volume, intensity, and progression and for setting sustainable long-term goals. Any nutritional or ergogenic protocol remains the responsibility of a qualified professional.

7

Clinical and nutritional biomarkers

Body mass index, total and HDL cholesterol, blood glucose, blood pressure, and testosterone levels may be influenced by genetic and environmental factors, as may oxidative stress and inflammatory response. **SPORTPROFILE** provides predisposition information that may help guide prevention and monitoring, but it does not replace direct measurement or medical assessment.

FROM PREDISPOSITION TO MONITORING

The test is most informative when genetic data are considered alongside observed performance, body composition, laboratory biomarkers, sleep quality, training load, and recovery time.



APPLICATIONS

SPORTPROFILE is intended for individuals who participate in sport at competitive or recreational levels. It can be integrated into programs led by sports physicians, nutrition professionals and dietitians, physiotherapists, strength and conditioning specialists, and functional rehabilitation professionals.

When it may be useful

- ▶ When defining more personalized training programs.
- ▶ When optimizing recovery and managing training loads.
- ▶ When informing preventive strategies for muscle, tendon, and osteoarticular concerns.
- ▶ When coordinating athletic preparation and sports nutrition.
- ▶ When monitoring biomarkers and modifiable factors.
- ▶ When communicating with the athlete and establishing realistic, shared goals.

Value for healthcare and performance professionals

- ▶ Adds a stable source of biological information to functional assessment.
- ▶ Helps prioritize prevention and define follow-up indicators.
- ▶ Supports evidence-informed, measurable programming that can be adapted over time.

A MULTIDISCIPLINARY APPROACH

Genotype, phenotype, medical history, functional assessment, nutrition, and response to training: genetic information gains meaning when interpreted within an integrated framework.

ANALYTICAL WORKFLOW

The analytical workflow comprises **six** sequential stages:

1 Professional assessment

Define the objective and assess whether the test is appropriate.



2 DNA extraction

Genomic DNA is extracted from a biological sample (peripheral blood).



3 Amplification

PCR amplification of the regions of interest.



4 Genotyping and sequencing

Variant analysis using advanced molecular technologies, including NGS platforms.



5 Bioinformatics analysis

Data processing using dedicated pipelines and proprietary interpretive algorithms developed by GENOMICA.



6 Personalized report

Integration of results into a **personalized report** organized by the functional areas assessed and designed for professional interpretation.



INTERPRETIVE CRITERIA

Depending on the trait, the assessment integrates evidence from genome-wide association studies (GWAS), multivariate analyses of multiple variants, or analyses of individual variants strongly associated with the phenotype. Interpretive algorithms are updated periodically to incorporate the most robust and relevant scientific evidence.





INTERPRETING PREDISPOSITION

SPORTPROFILE describes genetic predispositions related to the traits analyzed. An increased predisposition does not mean that an injury will occur or that the phenotype will manifest. Likewise, a favorable profile does not guarantee performance, freedom from injury, or normal clinical parameters.

SPORTPROFILE CAN	SPORTPROFILE CANNOT
→ Provide contextual information on the biological characteristics assessed. → Support personalization of training, nutrition, recovery, and prevention. → Identify areas for further functional, clinical, or laboratory assessment.	→ Diagnose disease or predict an individual outcome with certainty. → Determine talent, prescribe an ideal sport, or define achievable performance. → Replace medical judgment, functional assessment, or observation of real-world response. → Independently justify dietary supplements, diets, or changes to training.

Decisions concerning sport, nutrition, and supplementation should be made with the support of qualified professionals.



FROM SAMPLE TO REPORT IN A FEW SIMPLE STEPS



Request the kit



Complete the documentation



**Collect the biological
sample**



**Send the sample to the
laboratory**



**Receive the personalised
report**

Turnaround time



~10 working days

EXCELLENCE IN GENETICS AND MOLECULAR BIOLOGY

GENOMICA is a highly innovative company with extensive technical and scientific expertise, active in both clinical applications and research. Supported by a **team with over 20 years of experience in molecular diagnostics**, **GENOMICA** combines **cutting-edge technology** with a **strong commitment to innovation**, delivering increasingly accurate and accessible diagnostic services.



Over **100.000**
genetic
tests/year



Dedicated
R&D Team



Personalized genetic counseling with
genetic counselors experts in
discussing genetic test results and
familial risks



Laboratories with
groundbreaking
technologies and high
quality standards



ISO 9001-
Certified
Laboratory



Rapid
Reporting

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