MOVE

— *Essential Athletic Genetics*

A foundational look at how your DNA shapes performance, recovery, injury resistance and nutrition — the essentials every athlete should know.

ABOUT THIS REPORT

Genes influence how your body responds to training, recovers between sessions, handles food and stress, and stays resilient over years of hard work. This report translates the current science into everyday language so you (and the people who work with you) can build smarter, more personal routines.

Every result below is written in a simple format: what the gene does, what your version means for this profile, and a 1-5 rating of how strongly it influences the trait. Higher stars = stronger, more established science behind it.

TESTING PLATFORM

This report uses the Illumina Global Screening Array v3 / v4 (GSA) — a genome-wide SNP genotyping platform with multi-disease and pharmacogenomic content. Every genetic variant reported here is directly typeable on the GSA platform and returns clean letter-based genotypes (A/T/C/G).

ATHLETE INFORMATION

SAMPLE BARCODE	GSA-2027-08471-A	REPORT ID	RPT-MOVE-2027-1042
PANEL	Illumina GSA v3 / v4 — MOVE — Essential Athletic Genetics	SPORT	Endurance running
AGE / SEX	27 / Male	ANCESTRY GROUP	European
SAMPLE COLLECTION DATE	2027-08-14	ANALYSIS DATE	2027-08-22
REPORT ISSUED	2027-08-24		

PANEL SUMMARY

TOTAL GENETIC PROFILES
14

UNIQUE DNA VARIANTS ANALYZED
31

CATEGORIES COVERED
7

This report translates genetic markers into personal training, recovery and nutrition context. Use it together with your coach, trainer or dietitian to fine-tune day-to-day choices.

READING YOUR REPORT

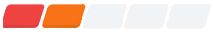
About the *Star Ratings*

Each variant is scored 1 to 5 based on **how strongly YOUR specific genotype influences this trait**. A high rating is neither 'good' nor 'bad' — it means the gene matters *for you* in this area.

Very strong effect: this genotype has a large, meaningful influence on this trait

Strong effect: this genotype shifts the trait clearly in one direction

Moderate effect: some influence — typical of a balanced heterozygous carrier



Mild effect: the gene has small impact for you in this profile

Minimal effect: your genotype does not meaningfully shift this trait

HOW TO USE THIS REPORT

1. **Read it with a professional**
   Genetics gives you the terrain; a coach, physician, or dietitian helps you build the path.
2. **Don't over-interpret**
   A single 'unfavorable' result doesn't mean you can't succeed — many elite athletes carry 'non-ideal' variants.
3. **Combine with lifestyle data**
   Sleep, nutrition, training history, and mental state matter as much or more than any single gene.
4. **Use it for personalization, not prediction**
   The best use is to shape *how* you train, eat, and recover — not to predict outcomes.

Domain *Overview*

Each profile is scored on a 1–5 scale based on how strongly your specific genotype influences the trait.

ATHLETIC PROFILE

01 Power vs Endurance Profile

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MUSCLE & STRENGTH

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10 Fat Response

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CARDIO FITNESS

14 Blood Pressure Response to Exercise

01. Power vs Endurance Profile

RS	GENE	GENOTYPE	RATING
rs1815739	**ACTN3**	CC	
rs4341	**ACE (proxy for I/D)**	CG	

rs1815739 — ACTN3 Genotype: CC

WHAT YOUR GENE DOES

This gene builds a protein called alpha-actinin-3 that lives inside your fast-twitch muscle fibers — the fibers you use for sprinting, jumping and lifting heavy. Think of it as extra scaffolding that helps those fibers produce sudden, powerful force.

WHAT DO YOUR GENETICS SAY?

You produce a full amount of this fast-twitch protein. Your muscles are wired for explosive power — sprinting, jumping, quick lifts. This is one of the most-studied 'sports genes' — it partly explains why some people are naturally drawn to sprint sports and others to distance running. Lean into sprint work, plyometrics, and heavy compound lifts — your muscles respond quickly to explosive training. Watch for shorter recovery windows after high-intensity power sessions.

rs4341 — ACE (proxy for I/D) Genotype: CG

WHAT YOUR GENE DOES

This gene controls a protein that helps set your blood pressure and how your blood vessels respond to exercise. It also plays a role in whether your muscles lean toward endurance or power.

WHAT DO YOUR GENETICS SAY?

You have a balanced profile — a mix of endurance and power potential. The gene this variant sits near has been looked at in Olympic athletes, soldiers, and mountaineers for years — it's a small but consistent piece of the endurance-vs-power puzzle. You get flexibility — respond to both endurance and strength blocks. Rotate emphasis by season rather than trying to peak both at once.

02. Aerobic Capacity

RS	GENE	GENOTYPE	RATING
rs6552828	**ACSL1**	AA	
rs11549465	**HIF1A**	GG	

rs6552828 — ACSL1 Genotype: AA

WHAT YOUR GENE DOES

This gene helps your body burn fat as fuel — especially during long, aerobic exercise. It also predicts how much your VO2max (aerobic fitness) improves after weeks of training.

WHAT DO YOUR GENETICS SAY?

You are a very good responder — endurance training gives you above-average aerobic improvement. Not everyone gets the same bump in fitness from the same training plan — this variant is one reason why two people can follow the same program and see very different results. Aerobic training gives you strong VO2max gains — make Zone 2 and interval work a weekly staple. Track VO2max improvements over 8-12 week blocks.

rs11549465 — HIF1A Genotype: GG

WHAT YOUR GENE DOES

This gene senses when your muscles are running low on oxygen (during hard efforts or at altitude) and switches on the body's oxygen-saving response.

WHAT DO YOUR GENETICS SAY?

Standard response — your body adapts normally to low-oxygen conditions. This gene handles the body's low-oxygen alarm — it's a big part of why altitude training works for some athletes better than others. Standard altitude and hypoxic training protocols work as expected — no special adjustments needed.

03. Exercise Response

RS	GENE	GENOTYPE	RATING
rs8192678	**PPARGC1A**	TT	
rs4253778	**PPARA**	GC	
rs1042713	**ADRB2**	GG	

rs8192678 — PPARGC1A Genotype: TT

WHAT YOUR GENE DOES

This gene tells your muscle cells to build more mitochondria — the tiny power plants that produce energy for endurance. More mitochondria means more sustainable aerobic power.

WHAT DO YOUR GENETICS SAY?

Below-average adaptation — you may need higher training volume for the same aerobic gains. Think of this gene as the switch that turns endurance training into real physical change inside your muscles. Endurance-only training will give you weaker mitochondrial gains — add HIIT and strength work to trigger the same adaptations through different pathways.

rs4253778 — PPARA Genotype: GC

WHAT YOUR GENE DOES

This gene decides whether your muscles prefer to burn fat or carbs during exercise. Fat = long, steady fuel. Carbs = fast, powerful fuel.

WHAT DO YOUR GENETICS SAY?

Balanced fuel use. This gene helps decide whether your body reaches for fat or carbs first when you're working hard. Balanced fat and carb use — no special dietary tilt needed.

rs1042713 — ADRB2 Genotype: GG

WHAT YOUR GENE DOES

This gene controls how your body reacts to adrenaline (the 'fight or flight' hormone). It affects heart rate response, bronchodilation, and how hard you can push in short intense efforts.

WHAT DO YOUR GENETICS SAY?

Blunted response — you may feel less 'push' from adrenaline, but recover heart rate faster. This one sits on the same receptor that asthma inhalers target, so it also shapes how your airways feel during hard efforts. You may see slightly less endurance gain from standard aerobic training — mix in HIIT and strength work for a broader stimulus.

04. Muscle Performance

RS	GENE	GENOTYPE	RATING
rs1805086	**MSTN (myostatin)**	TC	
rs1544410	**VDR (Bsml)**	TT	

rs1805086 — **MSTN (myostatin)** Genotype: TC

WHAT YOUR GENE DOES

This gene produces myostatin — a natural 'brake' that stops muscles from growing too big. Rare variants remove the brake, allowing bigger muscles.

WHAT DO YOUR GENETICS SAY?

Slightly weaker brake — possibly enhanced hypertrophy response. This gene is your body's natural brake on how big your muscles can get — some people simply have a lighter brake than others. You may have a slightly higher muscle-growth potential — make the most of it with structured resistance work.

rs1544410 — **VDR (Bsml)** Genotype: TT

WHAT YOUR GENE DOES

This gene affects how your muscles use vitamin D — a key vitamin for muscle strength and function.

WHAT DO YOUR GENETICS SAY?

Reduced sensitivity — vitamin D status matters more for your strength; regular monitoring helps. Your muscle cells listen for vitamin D almost like an instruction — the strength of that listening changes person to person. Your muscle needs higher vitamin D to function optimally — test 25(OH)D twice a year and target the upper end of the reference range. Bone density scans every few years are worth considering.

05. Muscle Fatigue

RS	GENE	GENOTYPE	RATING
rs17602729	**AMPD1**	AA	

rs17602729 — **AMPD1** Genotype: AA

WHAT YOUR GENE DOES

This gene helps muscles produce energy (ATP) during hard efforts. A rare variant reduces energy production, causing quicker fatigue.

WHAT DO YOUR GENETICS SAY?

Rare deficiency — significant early fatigue in high-intensity work; nutrition and pacing critical. This gene handles waste product clearance in working muscles — a weaker version can lead to cramping and rapid fatigue during very intense efforts. You fatigue faster during maximal-intensity sprints and heavy lifts — program shorter, sharper efforts with longer recovery. Watch for exercise-induced cramping and stay ahead of hydration.

06. General Recovery Tendency

RS	GENE	GENOTYPE	RATING
rs1799722	**BDKRB2 (proxy)**	GG	
rs3918226	**NOS3 (proxy)**	GA	

rs1799722 — BDKRB2 (proxy) Genotype: GG

WHAT YOUR GENE DOES

This gene affects a receptor called bradykinin B2 that helps blood vessels open up during and after exercise — key for recovery and delivering nutrients.

WHAT DO YOUR GENETICS SAY?

Good vasodilation response — helps recovery blood flow. This gene helps decide how your blood vessels open up and how much soreness you feel during and after training. Standard cardiovascular response to exercise — no special adjustments.

rs3918226 — NOS3 (proxy) Genotype: GA

WHAT YOUR GENE DOES

This gene helps your blood vessels open up ('dilate') during exercise, delivering more oxygen and blood to working muscles.

WHAT DO YOUR GENETICS SAY?

Normal response. This gene helps your blood vessels relax and open up during exercise — the same effect you get from a plate of beetroot before a race. Standard vascular response — no special adjustments.

07. General Injury Susceptibility

RS	GENE	GENOTYPE	RATING
rs1815739	ACTN3	CC	
rs12722	COL5A1	CT	
rs679620	MMP3	TC	

rs1815739 — ACTN3 Genotype: CC

WHAT YOUR GENE DOES

This gene builds a protein called alpha-actinin-3 that lives inside your fast-twitch muscle fibers — the fibers you use for sprinting, jumping and lifting heavy. Think of it as extra scaffolding that helps those fibers produce sudden, powerful force.

WHAT DO YOUR GENETICS SAY?

You produce a full amount of this fast-twitch protein. Your muscles are wired for explosive power — sprinting, jumping, quick lifts. This is one of the most-studied 'sports genes' — it partly explains why some people are naturally drawn to sprint sports and others to distance running. Lean into sprint work, plyometrics, and heavy compound lifts — your muscles respond quickly to explosive training. Watch for shorter recovery windows after high-intensity power sessions.

rs12722 — COL5A1 Genotype: CT

WHAT YOUR GENE DOES

This gene builds type-V collagen — an important fiber for tendon and ligament structure. It affects tendon stiffness and injury risk (ACL, Achilles).

WHAT DO YOUR GENETICS SAY?

Slightly increased risk of tendon/ligament injury; warm-up matters. This gene has been studied in long-distance runners and triathletes — some versions are linked to more frequent Achilles trouble in high-mileage sports. Slightly elevated Achilles/tendon injury risk — add calf-raise eccentrics 2x weekly and progress running mileage slowly (10 percent rule).

rs679620 — MMP3 Genotype: TC

WHAT YOUR GENE DOES

This gene breaks down and rebuilds soft-tissue proteins during repair. It affects tendon and ligament recovery from small injuries.

WHAT DO YOUR GENETICS SAY?

Slightly higher remodeling activity — normal healing. This gene makes an enzyme that constantly rebuilds your tendons — too much of it weakens the tendon, too little leaves damage lying around. Watch for early tendon tightness and address it with eccentric work before it becomes pain.

08. BMI / Weight Predisposition

RS	GENE	GENOTYPE	RATING
rs9939609	**FTO**	TT	
rs17782313	**MC4R**	AG	

rs9939609 — FTO Genotype: TT

WHAT YOUR GENE DOES

This gene affects appetite regulation and how easily your body stores fat. It's the strongest common variant linked to body weight.

WHAT DO YOUR GENETICS SAY?

Lower genetic tendency to gain weight — easier to stay lean. This is the best-known weight-related gene — it works mostly through appetite, making some people feel hungrier and less satisfied after meals. Standard weight-management response — usual diet and exercise principles work.

rs17782313 — MC4R Genotype: AG

WHAT YOUR GENE DOES

This gene sits in the brain's appetite control system and influences how quickly you feel full after eating.

WHAT DO YOUR GENETICS SAY?

Normal satiety. This gene lives in the brain's 'you're full' switch — some versions send a weaker stop signal at the end of a meal. Slight tendency toward stronger hunger — structure meals around protein and fiber to control cravings.

09. Carbohydrate Response

RS	GENE	GENOTYPE	RATING
rs7903146	TCF7L2	CT	
rs1260326	GCKR	TT	

rs7903146 — TCF7L2 Genotype: CT

WHAT YOUR GENE DOES

This gene affects how well your body regulates blood sugar. Poor regulation over time raises diabetes risk.

WHAT DO YOUR GENETICS SAY?

Slightly elevated risk — mind carb timing/quality. This is the single strongest common gene linked to blood sugar control — the variant makes the insulin-producing cells respond a bit less sharply. Slightly reduced insulin response — pair carbs with protein and fat, avoid pure-sugar snacks between meals.

rs1260326 — GCKR Genotype: TT

WHAT YOUR GENE DOES

This gene helps balance blood sugar and triglycerides (blood fats). It affects both metabolic health and endurance fuel handling.

WHAT DO YOUR GENETICS SAY?

Highest — fasting blood fats tend to be higher; endurance nutrition matters. This gene runs the liver's blood-sugar sensor — some versions turn more of that sugar into stored fat. Higher triglycerides on high-carb diets — favor whole-food carbs (oats, quinoa, legumes) over refined ones, include omega-3s (fatty fish 2x weekly), and get a lipid panel yearly.

10. Fat Response

RS	GENE	GENOTYPE	RATING
rs5082	APOA2	GA	

rs5082 — APOA2 Genotype: GA

WHAT YOUR GENE DOES

This gene affects how your body responds to saturated fat in the diet. Some variants gain more weight from saturated fat than others.

WHAT DO YOUR GENETICS SAY?

Balanced response. This gene's effect only really shows up if you're eating a lot of saturated fat — the diet has to meet the gene for the effect to appear. Balanced fat response — standard diet principles work.

11. Caffeine Metabolism / Response

RS	GENE	GENOTYPE	RATING
rs762551	CYP1A2	AA	
rs5751876	ADORA2A	CC	
rs4410790	AHR	CC	

rs762551 — CYP1A2 Genotype: AA

WHAT YOUR GENE DOES

This gene determines how quickly you clear caffeine from your body. Fast metabolizers get performance benefits; slow metabolizers can feel jitters and disrupted sleep.

WHAT DO YOUR GENETICS SAY?

Fast caffeine metabolizer — caffeine boosts performance; low sleep impact. Roughly 4 in 10 people are slow at clearing caffeine — for them, the same cup of coffee sticks around much longer and can actually hurt performance instead of helping it. Fast caffeine metabolizer — caffeine works well as a pre-workout aid. Take 3-6 mg/kg 45-60 min before training. Cut off by early afternoon to protect sleep.

rs5751876 — ADORA2A Genotype: CC

WHAT YOUR GENE DOES

This gene controls one of caffeine's targets in the brain — how you feel from caffeine (energized vs anxious).

WHAT DO YOUR GENETICS SAY?

High sensitivity — caffeine causes anxiety, jitters, disrupted sleep in smaller doses. This is the receptor caffeine actually attaches to — some versions give a bigger focus boost, others give more of the jittery side effect. You may feel jittery or anxious from caffeine — keep doses low and time them well before key sessions, not right before high-focus work.

rs4410790 — AHR Genotype: CC

WHAT YOUR GENE DOES

This gene influences how much caffeine your body 'wants' and tolerates day to day.

WHAT DO YOUR GENETICS SAY?

High caffeine drive — body tolerates and often wants more. This gene influences how strongly caffeine pushes you to want more caffeine — it's part of why some people can drink coffee all day and others can't. You may naturally consume more caffeine — monitor total daily intake to avoid tolerance buildup, especially if using it as a performance aid.

12. Vitamin D Predisposition

RS	GENE	GENOTYPE	RATING
rs2282679	GC	TG	
rs10741657	CYP2R1	GA	
rs12785878	DHCR7	TT	

rs2282679 — GC Genotype: TG

WHAT YOUR GENE DOES

This gene carries vitamin D through your blood. Affects blood vitamin D levels.

WHAT DO YOUR GENETICS SAY?

Slightly lower blood vitamin D. This gene carries most of the vitamin D moving through your blood — a less efficient version means less of it actually reaches your muscles and bones. Slightly reduced vitamin D transport — test 25(OH)D twice a year, target 40+ ng/mL.

rs10741657 — CYP2R1 Genotype: GA

WHAT YOUR GENE DOES

This gene activates vitamin D in your liver. Affects how well your body converts vitamin D from sun/supplements into the active form.

WHAT DO YOUR GENETICS SAY?

Normal activation. This gene runs the first step that turns raw vitamin D from sun or supplements into something your body can use. Standard vitamin D activation — test yearly.

rs12785878 — DHCR7 Genotype: TT

WHAT YOUR GENE DOES

This gene affects how much vitamin D your skin can make from sun exposure.

WHAT DO YOUR GENETICS SAY?

Good vitamin D production from sun. This gene decides how much vitamin D your skin can make from sunlight — some people get a lot more from the same amount of sun. Efficient vitamin D precursor synthesis — standard sun and supplementation work.

13. Iron Status Predisposition

RS	GENE	GENOTYPE	RATING
rs1800562	**HFE (C282Y)**	GA	
rs1799945	**HFE (H63D)**	GG	
rs855791	**TMPRSS6**	AA	

rs1800562 — HFE (C282Y) Genotype: GA

WHAT YOUR GENE DOES

This gene controls how much iron your body absorbs. A variant leads to storing too much iron (hemochromatosis) — a hidden risk in endurance athletes with heavy meat intake.

WHAT DO YOUR GENETICS SAY?

Carrier — monitor ferritin annually. This is the most common inherited iron-overload variant in people of Northern European roots — carrying two copies can quietly build up too much iron over many years. Carrier for iron overload gene — monitor ferritin and transferrin saturation yearly; avoid unnecessary iron supplementation.

rs1799945 — HFE (H63D) Genotype: GG

WHAT YOUR GENE DOES

Another iron-related variant — milder than C282Y but still raises iron absorption.

WHAT DO YOUR GENETICS SAY?

Highest — combined with H63D check needed; overload risk exists. This is the milder cousin of the main iron-overload variant — on its own it's a small deal, but combined with the other one it matters more. Higher iron accumulation risk — monitor ferritin and transferrin saturation every 6-12 months, avoid iron supplements unless prescribed.

rs855791 — TMPRSS6 Genotype: AA

WHAT YOUR GENE DOES

This gene controls hepcidin — the master iron hormone. Affects blood iron levels and can predispose to low ferritin (iron deficiency) in athletes.

WHAT DO YOUR GENETICS SAY?

Highest risk of low iron/anemia — regular ferritin monitoring recommended. This gene runs the hormone that decides how aggressively your body pulls iron out of your food. Higher risk of iron deficiency — monitor ferritin, iron, and transferrin saturation every 6 months. Prioritize iron-rich foods (red meat, spinach, lentils) and pair with vitamin C for absorption.

14. Blood Pressure Response to Exercise

RS	GENE	GENOTYPE	RATING
rs5370	**EDN1**	GG	
rs2070744	**NOS3**	CC	
rs3918226	**NOS3 (proxy)**	GA	

rs5370 — EDN1 Genotype: GG

WHAT YOUR GENE DOES

This gene produces endothelin-1 — a strong vessel-constricting signal. Affects blood pressure and vascular tone.

WHAT DO YOUR GENETICS SAY?

Highest — vessels more constricted; endurance work and BP monitoring important. This gene makes one of the strongest blood-vessel-tightening signals in the body — small differences here nudge your baseline vascular tone. Slightly altered vascular tone — monitor blood pressure yearly, prioritize aerobic exercise and dietary nitrate.

rs2070744 — NOS3 Genotype: CC

WHAT YOUR GENE DOES

This gene helps blood vessels relax and dilate — key for blood pressure control and cardiovascular fitness.

WHAT DO YOUR GENETICS SAY?

Reduced — blood pressure needs closer monitoring; nitrate-rich foods help. This variant sets your baseline production of the small molecule that keeps blood vessels flexible during exercise. Slightly elevated blood pressure risk — monitor BP every 6-12 months, prioritize dietary nitrate (beets, leafy greens), and keep sodium intake moderate.

rs3918226 — NOS3 (proxy) Genotype: GA

WHAT YOUR GENE DOES

This gene helps your blood vessels open up ('dilate') during exercise, delivering more oxygen and blood to working muscles.

WHAT DO YOUR GENETICS SAY?

Normal response. This gene helps your blood vessels relax and open up during exercise — the same effect you get from a plate of beetroot before a race. Standard vascular response — no special adjustments.

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