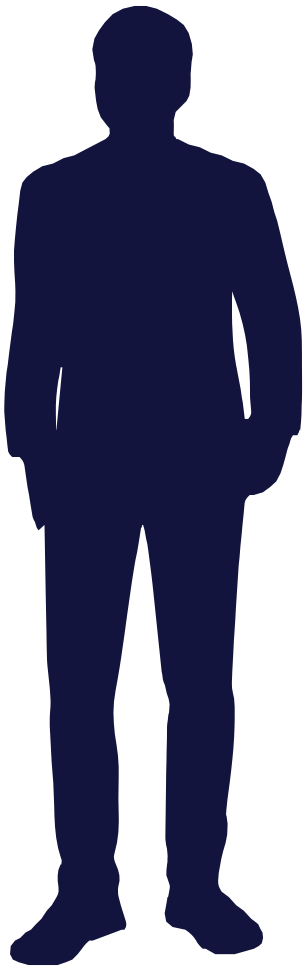
INTELLIGENE **PROFILE**

Name:
Surname:
Age:
Date of birth:
Estimated weight:
Estimated height:
Gender:

Referring Practitioner:
Sample type:

Report Date:
Reference no:
Date of Collection:



REPORT OVERVIEW

2. GENETIC IMPACT INDICATORS

VERY HIGH - HIGH PRIORITY FOR CHANGE

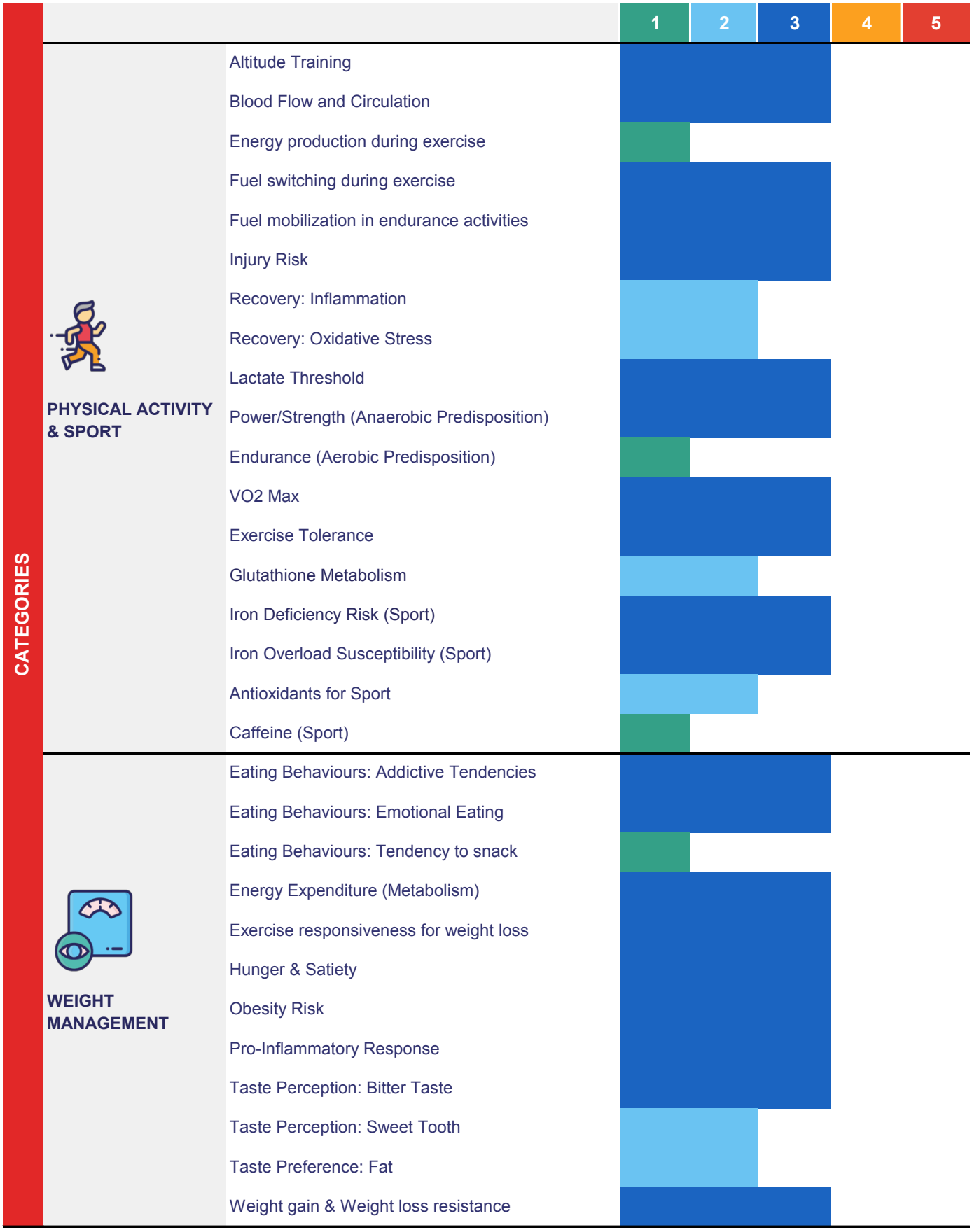
HIGH - BE AWARE

MODERATE - MODERATE CONCERN

LOW - KEEP ON YOUR RADAR

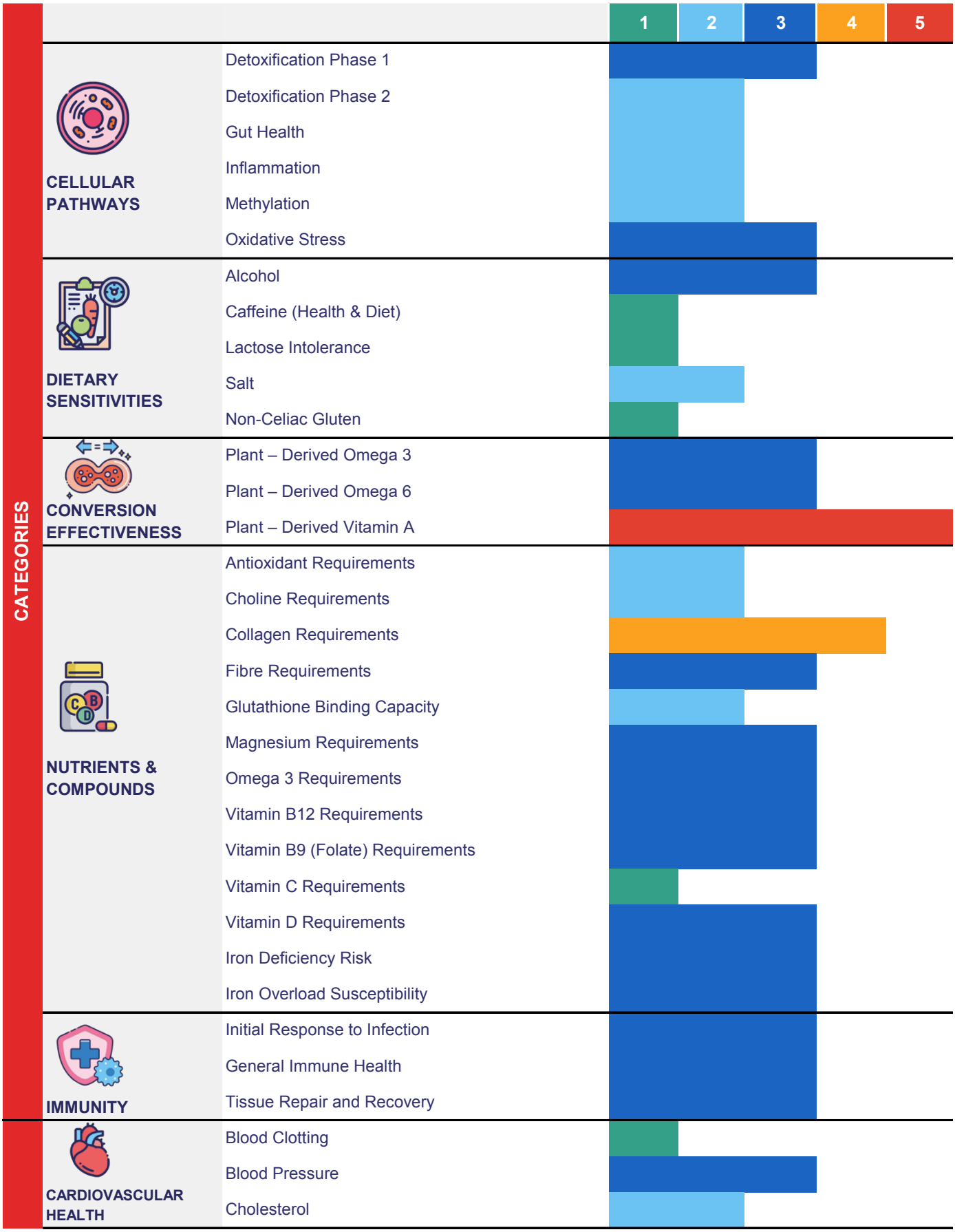
VERY LOW - YOU'RE WINNING

3. SUMMARY OF GENETIC IMPACT

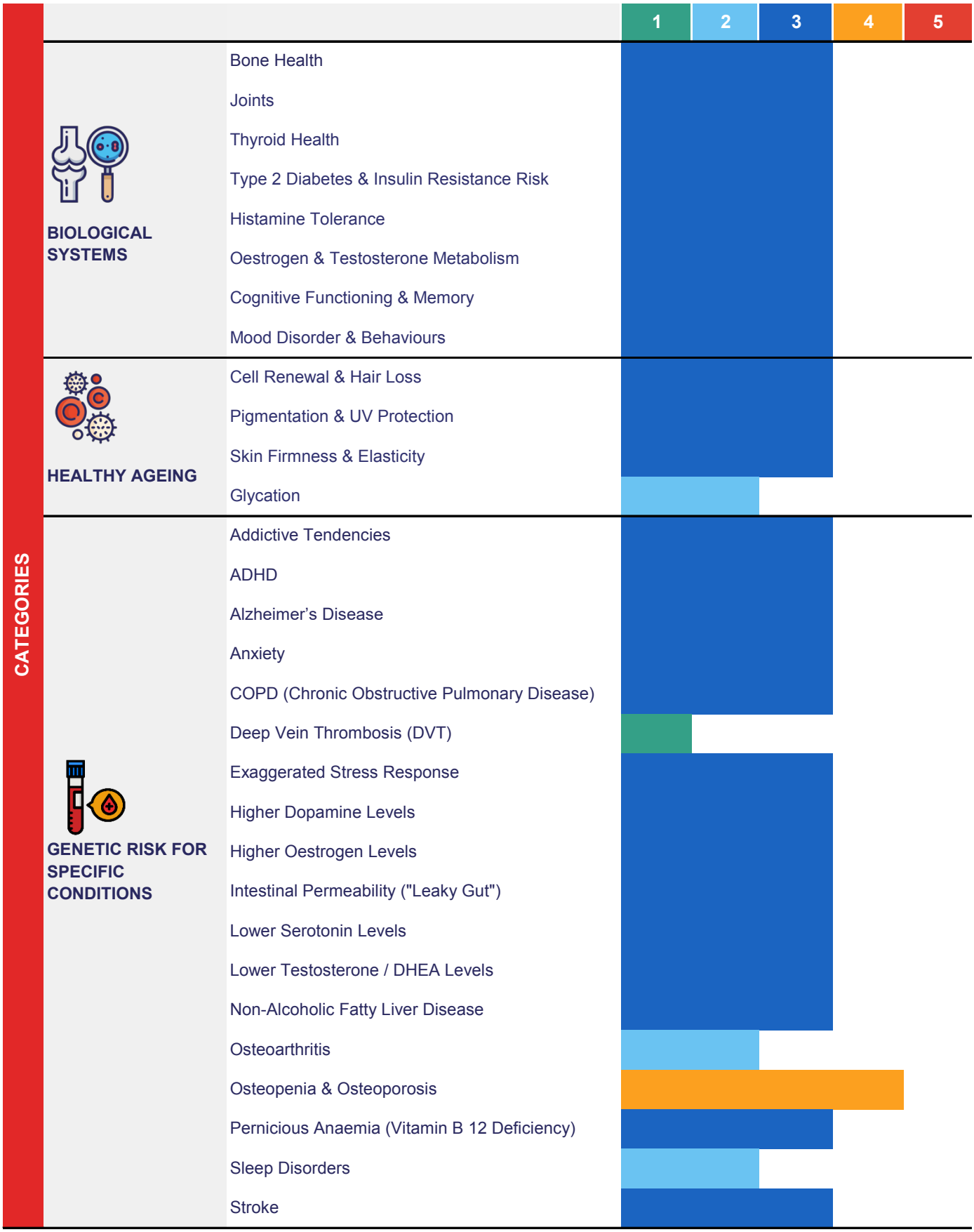


5	4	3	2	1
VERY HIGH GENETIC IMPACT (UNFAVOURABLE)	HIGH GENETIC IMPACT	MODERATE GENETIC IMPACT	LOW GENETIC IMPACT	VERY LOW GENETIC IMPACT (FAVOURABLE)

INTELLIGENE



5	4	3	2	1
VERY HIGH GENETIC IMPACT (UNFAVOURABLE)	**HIGH** GENETIC IMPACT	**MODERATE** GENETIC IMPACT	**LOW** GENETIC IMPACT	**VERY LOW** GENETIC IMPACT (FAVOURABLE)



5	4	3	2	1
VERY HIGH GENETIC IMPACT (UNFAVOURABLE)	**HIGH** GENETIC IMPACT	**MODERATE** GENETIC IMPACT	**LOW** GENETIC IMPACT	**VERY LOW** GENETIC IMPACT (FAVOURABLE)

4. EXPLANATION OF GENETIC IMPACT

PHYSICAL ACTIVITY & SPORT

Altitude Training	**3**	Average response to hypoxic training. Your overall genetic profile is associated with a slower response to hypoxic training and a suboptimal adaptation to altitude. You can still benefit from altitude training but experiment at non-critical periods of the competitive season to determine how you respond. Altitude training (>2,400m above sea level) is a popular protocol among endurance athletes to increase exercise capacity or to acclimatise prior to competitions. The body acclimatises to the relative lack of oxygen by increasing the mass of red blood cells and hemoglobin or altering muscle metabolism. To optimise the benefits from altitude training: i. Maintain sufficient levels of iron in the diet. ii. Hydrate well – the body tends to lose water and sodium during acclimatisation and this may lead to dehydration. iii. Spend a minimum of 2-3 weeks doing altitude training. iv. Moderate physical activity for the first few days during altitude training.
Blood Flow and Circulation	**3**	Blood flow and the fluid (water)/sodium balance in the blood is regulated by the blood pressure. Blood flow is key to bringing the oxygen necessary for aerobic energy (ATP) production as well as removing by-products in working muscles. Based on your genetic results, you are at above-average risk for a raised blood pressure during intense exercise, especially in the presence of habitually high salt intake. An increase in blood pressure decreases blood flow to working muscles and induces fatigue. Careful balancing (intake versus loss) of sodium is necessary. Blood flow also affects oxidative stress, detoxification, inflammation, VO2max and the usage and replenishing of glycogen stores.
Energy Production During Exercise	**1**	Your genetic profile shows a highly efficient energy production during exercise. The mitochondria are the key sites of energy production (in the form of ATP - adenosine triphosphate) for muscle fibers. Mitochondria use carbohydrates (sugar) molecules to produce ATP in the presence of oxygen. ATP provides the muscles with energy during exercise

Fuel Switching During Exercise	**3**	According to your results, an average genetic ability to facilitate fuel switching from glycogen to fat (glycogen sparing) during endurance events is detected. Carbohydrate depletion in endurance sports leads to the ‘‘hitting the wall’’ phenomenon. Shifting of fuel sources during exercise from predominantly glycogen to fat stores, will preserve glycogen stores and thus increase performance during endurance events.
Fuel Mobilisation in Endurance Activities	**3**	Your genetic ability to mobilise internal substrates (glycogen and fat stores) during longer duration physical activities, is average. Changes in substrate utilisation are highly influenced by exercise duration and intensity. The longer the time spent exercising, the higher the contribution of fat as an energy substrate. With increasing intensity, the contribution of carbohydrates to energy expenditure increases, and the contribution of fatty acids decreases.
Injury Risk	**3**	Average risk for musculoskeletal injury. According to your gene profile, your susceptibility for soft tissue injuries (e.g. tendons) is average compared to that of the population average. Injuries in sport commonly occur to the musculoskeletal system and can be simple, involving the muscle, ligament, tendon or bone, or complex, involving more than one aspect of the musculoskeletal system.
Recovery: Inflammation	**2**	Good anti-inflammatory response. Inflammation is a normal immune response and an essential part of tissue healing following exercise. The essential anti-inflammatory response is controlled by various genes. The results from your gene test, are associated with a good recovery rate after intense sessions. You can exercise most days of the week. Anti-inflammatory nutritional support may be required during periods of additional intensity.

Recovery: Oxidative Stress	**2**	Oxidative stress is a natural occurrence that increases during exercise. The ability of the body to control oxidative stress and detoxify is largely influenced by genetics. Your post-exercise recovery rate is considered very good and a shorter recovery time is needed. Oxidative stress is a natural occurrence that increases during exercise. The ability of the body to control oxidative stress and detoxify effectively is largely influenced by genetics.
Lactate Threshold	**3**	Typical or average lactate threshold trainability (LTT) - this is considered the most common outcome. The lactate threshold (LT) reflects the physiological response to a given workload. The more work you can do before reaching your LT, the better. High lactate levels can cause a decline in performance faster and with this result, taking more than 3-4 weeks off may be detrimental to fitness. Lactate shuttling is the balance between fast-twitch muscle fibers producing lactate and slow-twitch muscle fibers using lactate as a fuel during exercise. Your gene results reflect an average lactate shuttling capability, which may impact performance potential. Utilizing HIIT (high-intensity interval training) may improve your LT. During exercise, lactate has 3 primary roles: i. Major energy source ii. Supports optimal blood sugar levels. iii. Inhibits the breakdown of fat for energy.
Power/Strength (Anaerobic Predisposition)	**3**	Good power and strength predisposition. Your gene composition is good compared to that of the general population when it comes to a genetic predisposition to power and strength related activities.This result should not change your sporting or fitness goal but rather help you understand how best for you to reach that goal, by taking advantage of your genetic strengths.
Endurance (Aerobic Predisposition)	**1**	Outstanding endurance predisposition. Your gene composition compares to and surpasses in some instances those of elite endurance athletes. You have an excellent ability to excel in endurance related exercises. Endurance related sports are typically moderate intensity exercises with extended duration times such as cycling and running. However, to maximise overall fitness and health, you need to add anaerobic (power and strength) types of training also to your exercise routine. Statistically, the odds of having the perfect genetic score is 0.0005%.

VO2 Max	**3**	VO2max is the threshold of the body's ability to transport and use oxygen during physical activity. VO2max based training is typically intense interval training. You will still be able to improve VO2max. Focus on lactate threshold training and movement efficiency to improve aerobic endurance performance. You have genetically a typical or intermediate VO2max trainability. Aerobic potential or VO2max is the highest rate of oxygen consumption attainable during exhaustive exercise and is considered one of the best measurable indicators of a person's aerobic potential and capacity for endurance activities.
Exercise Tolerance	**3**	Typical ('normal') exercise tolerance. Rate of perceived exertion (RPE) or exercise tolerance refers to the capacity of an individual as measured by their ability to endure exercise and/or the maximum workload achieved during the exercise period. Both physiological and affective factors (e.g. mood response) are influenced. Rate of perceived exertion has approximately a 35% heritable component. It affects motivation to exercise, exercise behaviour and sporting performance. Based on your overall genetic profile, you have an average perceived exercise tolerance (e.g. feeling fatigued) and pain threshold. This is considered the most common outcome. Exercise tolerance can be increased via various fitness, lifestyle and nutritional strategies.
Glutathione Metabolism	**2**	Based on your genetic profile, you have a slightly reduced ability to utilise glutathione. Glutathione is a powerful antioxidant. For individuals engaged in sports, maintaining adequate glutathione levels can improve recovery, reduce muscle fatigue and damage, enhance immune function, and support overall athletic performance. During exercise, the body's increased oxygen demands produce more free radicals. Free radicals can be harmful to your tissues affecting athletic performance and recovery. Most athletes benefit from taking glutathione, irrespective of genetics because a 90-minute exercise routine can cause as much as a 60% depletion of glutathione in the bloodstream.

Iron Deficiency Risk (Sport)	**3**	The genetic analysis detected variations in iron metabolism. This result is considered a moderate risk for abnormal iron homeostasis. However, intense training does speed up iron loss and should be monitored in athletes and vegetarians. It is recommended to do blood tests for the full iron profile. Recommendations for iron intake will be based on the results of the blood tests.
Antioxidants for Sport	**2**	Based on your genetic results, you have a slightly lower endogenous antioxidant ability to defend against free radical damage. Your antioxidant requirements are thus above the recommendations for the general population. Professional sports people or highly active individuals may require more antioxidants than general guidelines.. You may benefit from an increased intake of antioxidant-rich foods or supplementation.
Iron Overload Susceptibility (Sport)	**3**	Hemochromatosis, a condition characterized by excessive iron absorption in the body, holds significant implications for individuals. In your recent genetic analysis, the presence of genetic variants associated with iron overload, warrants attention. To proactively manage your iron levels and mitigate any potential risks, it is strongly recommended to undergo periodic testing to assess the iron levels in your body. Regular monitoring, especially in the presence of genetic variants linked to iron metabolism, can help maintain a balance that is conducive to both optimal athletic performance and overall health.

Caffeine (Sport)	**1**	Your genetic profile indicates you are a fast metaboliser of caffeine. Consume 5-6mg/kg body weight caffeine, 15 to 30 minutes before a sporting event to get its full ergogenic effect. Including caffeine in your sports fuel during long events should also be beneficial.

WEIGHT MANAGEMENT

Eating Behaviours: Addictive Tendencies	**3**	Based on the genes tested you have a moderately increased genetic risk for addictive eating behaviours and is predisposed to developing or engaging in addictive patterns of eating. Addictive eating behaviours refer to a range of behaviours characterized by a loss of control over eating, cravings, and continued consumption of certain foods despite negative consequences. Having an increased genetic risk for addictive eating behaviours does not guarantee you will engaged in such behaviours, as environmental and lifestyle factors also play significant roles.
Eating Behaviours: Emotional Eating	**3**	You have a moderately increased genetic risk for emotional eating. Emotional eating refers to the tendency to eat in response to emotional cues or to cope with negative emotions, such as stress, sadness, or boredom, rather than eating in response to physiological hunger cues. It involves using food as a way to regulate or soothe emotions rather than satisfying physical hunger. You have variants of certain genes have been associated with emotional eating tendencies via its involvement in regulating appetite and mood, as well as its impact on dopamine levels, which is involved in reward processing and emotional regulation. Emotional eating is a complex behaviour influenced by a combination of genetic factors, environmental influences, psychological factors, and individual experiences.
Eating Behaviours: Tendency to snack	**1**	The tendency to snack is a complex behaviour influenced by various factors, including genetics, environment, and individual preferences. Regular snacking can lead to a higher calorie intake, disrupt natural satiety signals, and result in poor food choices, often involving processed and high-calorie snacks. Snacking may also disrupt meal patterns, leading to irregular calorie distribution throughout the day. Certain gene variants have been linked to increased snacking behaviour, however, those were not detected in your DNA test.

Energy Expenditure (Metabolism)	**3**	Energy expenditure (EE) is the total amount of energy (or calories) that a person needs to complete all bodily functions and physical activity. The genetic effect may reach 40% of the variance in EE. Based on your genetic testing, you have lower EE potential and will burn calories less efficiently. It is important that you follow the correct diet and have an active lifestyle to overcome this genetic weakness.
Exercise responsiveness for weight loss	**3**	Your genetic results indicate that your rate of fat loss in response to exercise is average. You have to include dietary changes to maintain your ideal body mass as regular physical activity on its own may not suffice. In addition, you might need to increase the intensity and/or duration of exercise to achieve weight loss goals.
Hunger & Satiety	**3**	Genes influence the delicate balancing act between hunger and satiety hormones. The genetic variations detected in your gene profile may impact your appetite and feeling of fullness. Increasing the amount of fiber, protein & regular healthy snacks throughout the day may help to curb your appetite.
Obesity Risk	**3**	Genetically, you have an increased predisposition to obesity. Your Obesity Risk Score index is higher than average. If you follow a diet that matches your genetic profile, you can overcome this genetic weakness. Discuss the best type of diet with your healthcare practitioner.
Pro-Inflammatory Response	**3**	Susceptibility to an increased inflammatory response is genetically determined. Your genotype profile indicates you are at moderately higher risk for chronic low-grade inflammation, which is associated with metabolic conditions such as impaired glucose tolerance and obesity.
Taste Perception: Bitter Taste	**3**	Bitter taste perception in terms of genetics refers to the ability of an individual to detect and perceive bitter taste compounds present in certain foods and beverages. The ability to taste bitterness is influenced by genetic variations in taste receptor genes. A genetic variant in the bitter taste receptors gene was detected. This can impact your food preferences and dietary choices of certain bitter-tasting foods and beverages, causing you to potentially avoid foods such as broccoli, grapefruit and coffee.

Taste Perception: Sweet Tooth	**2**	Certain genetic variations or traits may influence an individual's inclination or tendency to prefer foods that are sweet or have a high sugar content. You carry one genetic variation in the sweet taste receptors genes and based on your DNA results, you are expected to have a somewhat increased sweet taste experience or 'craving'. Genetic predisposition is just one factor among many that contribute to food preferences, and environmental, cultural, and learned factors also play significant roles.
Taste Preference: Fat	**2**	Genetic factors can play a role in shaping food preferences and the perception of flavours, including the preference for fatty foods. Those gene variants were not detected. Genetic predisposition is just one factor among many that contribute to food preferences, and environmental, cultural, and learned factors also play significant roles.
Weight gain & Weight loss resistance	**3**	Your genetic results show a moderately high susceptibility to weight loss resistance and adipogenesis. Weight loss resistance refers to losing weight slowly and adipogenesis indicates if you pick up weight easily. This result should guide your targets about the rate of weight loss.

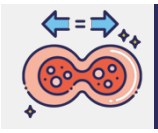
CELLULAR PATHWAYS

Detoxification Phase 1	**3**	Genetic variants in Phase I liver detoxification were detected. Overall, your Phase I liver detoxification is considered compromised. Phase I genes are triggered by specific chemicals, causing a mechanism of protection that safeguards against many kinds of toxins. Avoidance of these toxins and nutritional support can mitigate the risk.
Detoxification Phase 2	**2**	Based on the genetic profile, Phase II detoxification in the liver is slightly impaired. This can be managed by lifestyle interventions and nutritional support. During Phase II, toxins are made water-soluble, allowing for easy excretion and removal from the body. If a sluggish Phase II is unable to keep up with the demand of Phase I, toxins will accumulate.

Gut Health	**2**	Based on the selected genes tested only, you have a relatively low risk of gut health problems. Gut function is inseparably linked to overall health. The gut's primary function is the digestion and absorption of nutrients. However, it has a major influence on the immune system and brain health, e.g. 90% of serotonin is produced in the gut.
Inflammation	**2**	Your genetic profile is associated with a somewhat compromised inflammatory response and immune defense. Inflammation is a vital part of the immune system's response to injury and infection. It is the body's way of signaling the immune system to heal and repair damaged tissue, as well as defend itself against viruses and bacteria. A healthy diet and lifestyle can help keep inflammation under control.
Methylation	**2**	Based on the genetic analysis, you have a slightly impaired methylation pathway. Methylation is essential for the optimal function of almost all the body systems. It occurs billions of times every second. It helps to repair DNA, keep inflammation in check, replenish the compounds needed for detoxification, and maintain a stable mood.
Oxidative Stress	**3**	Your natural protection against free radical damage and environmental pollution is impaired. You are thus not adequately protected against free radicals. This leads to faster skin ageing, and it is therefore necessary to have the right dose of additional antioxidants to provide protection. Alpha lipoic acid (ALA), Coenzyme Q10, Vitamins C and E are powerful antioxidants that can enter via the skin or digestive track such as with supplement use. Zinc, selenium and manganese are important free radical scavengers but can only be absorbed through the digestive tract.

DIETARY SENSITIVITIES

Alcohol	**3**	Everyone knows alcohol is toxic, but your genetic profile is associated with having overall an increased risk of developing chronic conditions such as various cancers, heart disease, depression and dementia, compared to the general population, with regular alcohol consumption. The best available current evidence shows that regular consumption of alcohol does not improve overall health. The World Health Organisation withdrew its previously "safe" guidelines for alcohol consumption.
Caffeine (Health & Diet)	**1**	Your genotype is associated with being a fast metaboliser of caffeine. You are unlikely to have negative symptoms due to caffeine consumption. Caffeine tolerance level: 5-6mg/kg body mass of caffeine daily, which is about 5 cups of coffee per day. Consumption of vegetables such as broccoli and Brussels sprouts will eliminate caffeine quicker from the body.
Lactose Intolerance	**1**	Lactose is the natural sugar found in dairy products, and based on the genetic profile you are likely able to digest lactose without adverse effects. Lactose tolerance should not be confused with a milk allergy.
Salt	**2**	Your genetic profile shows that you are not very salt-sensitive. That means you have a lower risk of hypertension when your sodium consumption increases. Sodium is an essential mineral in the body, that plays a role in nerve signal transmission, muscle contraction and the maintenance of fluid balance.
Non-Celiac Gluten	**1**	Based on the gene tested, you are at low risk for non-celiac gluten sensitivity. However, there are other genes and factors involved in determining gluten intolerance (GI) or Celiac Disease. Thus, this result does not eliminate the possibility of you having GI. GI is quite complex and difficult to diagnose. Symptoms of gluten intolerance include bloating, abdominal pain, tiredness, anaemia, skin problems, and brain fog.



CONVERSION EFFECTIVENESS

Plant-Derived Omega 3	**3**	The FADS1/2 genes are essential for the conversion of omega-3 fatty acids derived from plant sources (e.g. linolenic acid (ALA) found in walnuts, flaxseed, canola, and soybean oil), into the bioactive omega-3 fatty acids, eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA). Your result is associated with an impaired conversion ability that may result in lower DHA/EPA levels. You may benefit from DHA/EPA supplementation and reduced consumption of omega-6 sources.
Plant-Derived Omega 6	**3**	Your gene profile detected variations in the FADS1/2 genes. Faster FADS1 gene activity (G allele) is associated with higher arachidonic acid (AA) levels. AA dietary sources include chicken and beef. Slower FADS2 gene activity (G allele) is associated with higher linoleic acid (LA) and lower gamma-linoleic acid (GLA) levels. LA is found in flaxseeds (and oil), canola oil, soybeans (oil), pumpkin seeds, and walnuts (oil). GLA is obtained from evening primrose, borage and hemp seed oil, and spirulina.
Plant-Derived Vitamin A	**5**	Vitamin A is essential for proper vision, growth, immune function, fertility, skin, and gut health. Your BCMO1 gene result is associated with a reduced ability to convert plant-based vit A (beta-carotene) to the active form, retinol. You may require retinol supplementation. Excessive intake can lead to toxic levels, therefore discuss supplementation with a healthcare professional. Vitamin A is critical for normal vision, the immune system, and reproduction. Vitamin A also helps the heart, lungs, and kidneys work properly.

NUTRIENTS & COMPOUNDS

Antioxidant Requirements	**2**	Antioxidants are compounds produced in the body and found in foods. Antioxidants protect cells from oxidative stress that can cause damage by harmful molecules known as free radicals formed during oxygen use. Based on your genetic results, your natural antioxidative ability is slightly compromised and therefore your nutritional antioxidant requirements are a bit higher than the recommendations to the general population. While we like to think we can get all the nutrients we need from our food supply, due to modern agricultural practices this is becoming less likely. You may benefit from an antioxidant supplement especially if you are physically very active or exposed to pollution. The best dietary sources are colourful foods. Vitamins A, C and E are examples of antioxidants.
Choline Requirements	**2**	Based on your genetic profile, you require more choline than the general recommendation. Choline is a vitamin-like essential nutrient and needed in all cell membranes, for fat transport, DNA synthesis, acetylcholine production and muscle movement. The best dietary source is eggs, however, you might need choline and/or phosphatidylcholine supplementation. The PEMT and BHMT genes play an important role in your choline requirements.
Collagen Requirements	**4**	Collagen is the most abundant protein in the body. It is the major component of connective tissues that make up several body parts, including tendons, ligaments, skin, and muscles. Collagen is also found in many other body parts, including blood vessels, corneas, and teeth. We can think of collagen as the “glue” that holds all these things together. Due to genetic collagen production impairment, supplementing with collagen is recommended. Due to genetic collagen production impairment, your recommended intake of hydrolyzed collagen is 7.5-15g per day.

Fibre Requirements	**3**	The recommended dietary fibre intake is 25-30g per day for adult females and males respectively. However, you need more based on your genetic results. Fibre supports the growth of friendly bacteria needed to help maintain a healthy gut, reduce cholesterol absorption, slow down the absorption of glucose, keeping you feeling fuller for longer, and helps to keep you regular. It is found in edible plant foods such as legumes, fruits, and vegetables.
Glutathione Binding Capacity	**2**	Based on your genetic profile, you have a slightly reduced ability to utilise glutathione. Glutathione is a powerful antioxidant. For individuals engaged in sports, maintaining adequate glutathione levels can improve recovery, reduce muscle fatigue and damage, enhance immune function, and support overall athletic performance. During exercise, the body's increased oxygen demands produce more free radicals. Free radicals can be harmful to your tissues affecting athletic performance and recovery. Most athletes benefit from taking glutathione, irrespective of genetics because a 90-minute exercise routine can cause as much as a 60% depletion of glutathione in the bloodstream.
Magnesium Requirements	**3**	Magnesium is an essential mineral that is a cofactor in more than 400 reactions in the body. According to your genetic profile, you have increased magnesium requirements (above the RDA of 400mg/day). You are likely to benefit by doubling your magnesium to around 800mg/day. Discuss your requirements with your healthcare practitioner.
Omega 3 Requirements	**3**	Omega-3's are essential nutrients (your body cannot produce them). It is important for heart and brain function and has an anti-inflammatory function. There are 3 types of Omega-3's: EPA (eicosapentaenoic acid), DHA (docosahexaenoic acid), and ALA (alpha-linolenic acid) and they have different roles in the body. For healthy individuals with a genetic profile like yours, 1,500mg - 2000mg of combined DHA and EPA are recommended daily, in a ratio of EPA:DHA of 3:1. The best food source of Omega-3 fats is fatty fish: 75g of salmon contains 1.6g DHA/EPA. Good plant food sources include flaxseed and walnuts, but you must eat a lot to gain the same benefits as you do from fish.

Vitamin B12 Requirements	**3**	Vitamin B12 (cobalamin) is important to produce neurotransmitters, energy, and blood cells. Since the human body cannot produce vitamin B12, you need to get adequate amounts of it in the correct form through the diet or via supplementation. The type and quantity of vitamin B12 required are determined primarily by genetics and based on your profile, you require methylated vitamin B12 (that is already bioactive) in dosages higher than the usual recommendations. Avoid cyanocobalamin (synthetic B12). Some of the symptoms of low vitamin B12 levels include anxiety, fatigue, memory loss, and tingling feet.
Vitamin B9 (Folate) Requirements	**3**	Folate is required for numerous processes: DNA maintenance, detoxification, and hormone production to mention just a few. Your genetic profile is associated with an impaired ability to convert dietary folate (Vitamin B9) into the active form, methylfolate and you may require methylfolate supplements. Start slow and titrate up when using methyl folate: 400mcg is a common starting point for adults. Folic Acid is the synthetic, inactive form of folate and should be avoided. Folinic acid is an alternative to methylfolate. Folate is found naturally in uncooked leafy green vegetables, but you may not be able to meet your folate requirements via dietary intake due to the volumes required.
Vitamin C Requirements	**1**	Vitamin C must be acquired from dietary sources, as humans are unable to synthesise it. Genetically, your Vitamin C requirements are as recommended by the RDA (Recommended Dietary Allowance). For females, it is 75mg/d and for males, 90mg/d. However, for optimal health you still may require more. Dietary sources of vitamin C include lemons, oranges, red peppers and strawberries.
Vitamin D Requirements	**3**	Your genetic profile is associated with an increased risk of insufficient vitamin D stores in the body. This risk increases if you are following a very low-fat diet, is a professional athlete, or has limited exposure (less than 20 minutes) to sunlight daily. Consider testing your vitamin D levels (blood tests). Vitamin D is known mostly for its role in maintaining strong bones. It does so by helping the body absorb calcium. Both vitamin D and calcium are required by the muscles, nervous and immune systems to function optimally. Very few foods naturally have vitamin D. The body makes vitamin D when the skin is directly exposed to the sun. Approximately 600 IU is required per day of the active form of vitamin D3, cholecalciferol. Calcium is found in dairy and adults need between 1000-1200mg daily. Consider testing your vitamin D levels (blood tests).

Iron Deficiency Risk	**3**	Iron is a mineral essential for oxygen transport through the blood. You have a certain genetic result with a reduced ability to absorb dietary iron. Ask your healthcare practitioner to test your body's iron stores and ferritin levels, as you may need to increase your iron intake.
Iron Overload Susceptibility	**3**	Hemochromatosis is a condition where the body absorbs too much iron. In your genetic test, one or more variants for iron overload were detected. Your overall results indicate a risk of iron overload. It is recommended to test the iron levels in your body.

IMMUNITY

Initial Response to Infection	**3**	The first step in the normal immune response is pathogen recognition e.g. detecting viruses. A slow initial response to pathogens, such as in your instance, may increase the risk of falling ill quicker and developing a chronic inflammatory state.
General Immune Health	**3**	The immune system is a network of biological processes that protect us from pathogens by distinguishing them from our healthy tissue. Based on your genetic score, you have moderately impaired immune health. You may benefit from additional nutritional support such as reviewing your Vit D and iron nutritional status.
Tissue Repair & Recovery	**3**	After an infection, recovery is crucial where support is focused on resolving inflammation, inhibiting fibrosis and other forms of tissue damage, and restoring and reoptimising function. For example, after lung infections, nutrients such as collagen and vitamin C are critical to repair lung tissue. Your tissue repair and recovery are impaired based on the genetic score.

BIOLOGICAL SYSTEMS

Bone Health	**3**	Based on your genetic profile you have a moderately increased risk for impaired bone health (e.g. osteopenia and osteoporosis). Bone health is crucial for providing structure, anchoring muscles, and storing calcium. Additional nutritional support is recommended.
Joints	**3**	Based on your genetic profile you have a moderately increased risk for developing osteoarthritis. It occurs when the protective cartilage that cushions the ends of your bones, wears down over time. Compromised joint health makes you highly vulnerable to many diseases. Preventative strategies are recommended.
Thyroid Health	**3**	Your genetic profile confers an increased risk for impaired thyroid function. It can relate to either over- or underactive thyroid function. The thyroid gland's primary function is to regulate the body's metabolism - how fast you burn energy. Adequate selenium and iodine intake are especially important.
Type 2 Diabetes & Insulin Resistance Risk	**3**	Based on the genes tested in this analysis, you have a moderately increased risk for type 2 diabetes and insulin resistance. Other factors that increase this risk further include obesity, stress and chronic steroid use. Insulin resistance typically precedes the development of type 2 diabetes. Preventative lifestyle measures are recommended.
Histamine Tolerance	**3**	Genetically, you have an increased risk for histamine intolerance - an indication that you may develop too much histamine. Histamine is a chemical responsible for a few major functions: communicates messages to the brain to trigger the release of stomach acid, to help digestion, and is released after injury or allergic reaction as part of the immune response. You may benefit from limiting histamine-stimulating foods.
Oestrogen & Testosterone Metabolism	**3**	The combination of gene variants identified in this analysis indicates you have moderately impaired estrogen and androgen (testosterone and DHEA) metabolism. This puts you in the medium-risk category. Non-genetic causes of hormonal imbalances that may increase the risk include obesity, liver disease, hormone therapy, certain antibiotics, and some herbal remedies.

Cognitive Functioning & Memory	**3**	Cognitive health is the ability to clearly think, learn, and remember. Several central neurotransmitters are essential for cognitive health. Too little or too much of these chemicals can make or break your learning experience because of the various effects of the chemicals. Based on the genetic score, you have a moderate predisposition to neuro-imbalances. Implementing certain lifestyle measures can optimize your cognitive function.
Mood Disorders & Behaviours	**3**	Mood disorders refer to your emotional function — how well you interpret and respond to emotions (both pleasant and unpleasant). This includes balancing neurotransmitters (brain chemicals) within the neuroendocrine systems that are involved in complex processes such as stress tolerance, ADHD, social functioning, and addictive tendencies. Based on the genetic score, you have a moderate predisposition to neuro-imbalances. Implementing certain lifestyle measures can optimise your brain health.

CARDIOVASCULAR HEALTH

Blood Clotting	**1**	You have a low genetic risk for excessive blood clotting disorders. Blood clots are beneficial when they form in response to an injury or a cut that stops bleeding. The body will naturally dissolve the blood clot after the injury has healed.
Blood Pressure	**3**	You have a moderately increased genetic risk for developing hypertension (high blood pressure). Most people with high blood pressure have no signs or symptoms. Fortunately, high blood pressure can be easily detected and treated.
Cholesterol	**2**	Slight increased genetic risk for heart disease and an abnormal cholesterol profile. Cardiovascular disease generally refers to conditions that involve narrowed or blocked blood vessels that can lead to a heart attack and high cholesterol levels. Cholesterol is an essential constituent of cell membranes and precursors of hormones, such as testosterone and oestrogen. Non-genetic risk factors for heart disease include lack of exercise and smoking.

HEALTHY AGEING

Cell Renewal & Hair Loss	**3**	Your overall genetic profile is associated with suboptimal functioning of the processes involved in cell renewal and repair. These processes are dependent on the active forms of folate and Vit B12. Vitamin B is required for DNA synthesis and replication which are crucial for the constantly dividing skin cells. Your genetic ability to activate these vitamins is limited and you are likely to suffer from a 'genetic' Vit B deficiency. This puts you at risk of premature skin cell death and dermal ageing. Cell renewal capabilities furthermore affect scar formation and wound healing. You are likely to benefit from using cosmetic products containing ingredients to promote wound healing such as Vit C and reduce scarring with silicon gels.
Pigmentation & UV Protection	**3**	Your innate protection against sunburn and UV rays is reduced, whilst the risk of pigmentation (freckles/sun spots) is increased. Your genetic profile is also associated with an increased risk of melanoma (skin cancer). Your tanning ability is moderately reduced and associated with proneness to wrinkles, sun spots and folate loss. You need a daily cream with a higher sun protection factor. In addition vitamins C and E offer protection from UV rays and it is important to replace lost hyaluronic acid. This can be done both externally and internally.
Skin Firmness & Elasticity	**3**	Your collagen production is slower and collagen breakdown is faster compared to the population in general, causing an imbalance. Your skin cells tend to be more prone to structural damage that affects elasticity and begins to age faster. Your most important strategy is to restore the lost collagen and maintain it with oral hydrolysed collagen supplementation. Other nutrients that slow down the degradation of collagen are lutein, Vitamins C and E. Vitamin D3 has a key role in collagen maintenance and is produced following exposure to ultraviolet light B (UVB) rays. Vitamin D deficiency is associated with several skin diseases such as psoriasis, atopic dermatitis, vitiligo and can only be recommended as a dietary supplement since Vitamin D does not get absorbed through the skin.
Glycation	**2**	The body uses glucose as the main source of energy, but if glucose is not properly metabolised, it binds to collagen and elastin fibres and modifies them structurally and functionally. The resulting products are advanced glycation products (AGEs). Your genotype is associated with an impaired ability to break down glucose and thus has a typical (normal) risk of forming AGEs, glycation, and premature ageing. Glycation is controlled by blood glucose levels, and by following a healthy, diet you will support this genetic advantage

GENETIC RISK FOR SPECIFIC CONDITIONS

Addictive Tendencies	**3**	You have inherited certain genetic variations that can increase your susceptibility to developing addictive behaviours. These genetic tendencies can influence your brain chemistry, making you more vulnerable to the rewarding effects of addictive behaviours. Having a genetic predisposition to addiction does not mean that addiction is inevitable. It's essential to be aware of your genetic predisposition, as it can influence your choices and encourage proactive measures to reduce the risk of addiction. For instance, maintaining a healthy lifestyle, seeking support, and avoiding situations that can trigger addictive behaviours can all be helpful strategies.
ADHD	**3**	ADHD is a neurodevelopmental disorder characterized by symptoms such as difficulty sustaining attention, hyperactivity, and impulsivity. Your genetic results suggest that you have a moderate risk of developing ADHD. Genetic variations can influence neurotransmitter function, brain structure, and the regulation of attention and impulse control. Genetics alone do not determine the development of ADHD. Environmental factors, such as prenatal exposure to toxins, maternal smoking during pregnancy, premature birth, and early childhood experiences, also contribute to the risk.
Alzheimer's Disease	**3**	You have inherited genetic variations that are associated with a moderate risk or potential impact on the development of Alzheimer's disease. Genetics is just one piece of the puzzle, and other factors, including environmental influences, lifestyle choices, and overall health, also play significant roles in the development of the disease. Understanding your genetic predisposition can be valuable for proactive management and prevention strategies. Maintaining a healthy lifestyle, engaging in cognitive stimulation and managing cardiovascular health are all important steps to reduce the risk or delay the onset.
Anxiety	**3**	Anxiety disorders are characterized by excessive and persistent worry, fear, or apprehension that can significantly interfere with daily life. While the exact causes of anxiety disorders are multifaceted, research suggests that genetic factors play a role in their development. Having an increased genetic predisposition suggests that you may have an inherent tendency to be at a risk of developing anxiety compared to individuals with a low genetic predisposition. Environmental factors, life experiences, and individual coping mechanisms also contribute significantly to the risk and manifestation of anxiety disorders. However, a diagnosis of an anxiety disorder requires a comprehensive evaluation by a mental health professional.

COPD (Chronic Obstructive Pulmonary Disease)	**3**	Based on the genes tested, you have inherited genetic variations that are associated with a moderately increased risk or impact on the development of COPD. COPD is a chronic respiratory disease characterized by airflow limitation and breathing difficulties. While genetics can contribute to the risk of developing COPD, environmental factors, primarily tobacco smoking, are the primary cause of the disease.
Deep Vein Thrombosis (DVT)	**1**	Based on the genes tested, you have a low genetic predisposition to develop Deep Vein Thrombosis (DVT). Deep Vein Thrombosis is a condition characterized by the formation of blood clots in the deep veins, commonly in the legs. While genetic factors can contribute to the risk of developing DVT, other factors such as age, obesity, prolonged immobility, certain medical conditions, and lifestyle choices also play significant roles.
Exaggerated Stress Response	**3**	Based on your genetic makeup, you have inherited genetic variations that are associated with an increased likelihood or notable physiological and psychological reactions to stressors, compared to individuals with a low predisposition. An exaggerated stress response refers to an excessive or overreactive reaction to stressors. Having a moderate genetic predisposition to an exaggerated stress response suggests that you may be less resilient and sometimes have difficulty to handle stress. Environmental factors, personal experiences, and coping strategies also play significant roles in how individuals respond to stress.
Higher Dopamine Levels	**3**	Dopamine is a neurotransmitter that plays a crucial role in various brain functions, including reward, motivation, movement, and pleasure. Genetic factors can influence the production, release, and breakdown of dopamine in the brain. Having a moderate genetic predisposition suggests that you may naturally have a tendency to have higher levels of dopamine, but not excessive. High dopamine levels can have both positive and negative implications for physical and mental health. Increased dopamine activity is associated with traits such as motivation, reward sensitivity, and positive mood. On the other hand, excessively high dopamine levels can contribute to conditions such as psychosis, mania, or addiction. If you have concerns about your dopamine levels or their potential impact on your well-being, it is advisable to consult with a healthcare professional.
Higher Oestrogen Levels	**3**	You have inherited genetic variations that are linked to an increased risk of having elevated estrogen levels. Estrogen is a hormone that plays a crucial role in various physiological processes, including reproductive health, bone density, and cardiovascular function. While genetics can influence hormone levels, the regulation of estrogen is complex and involves multiple factors, including lifestyle choices, environmental exposures, and other hormonal interactions.

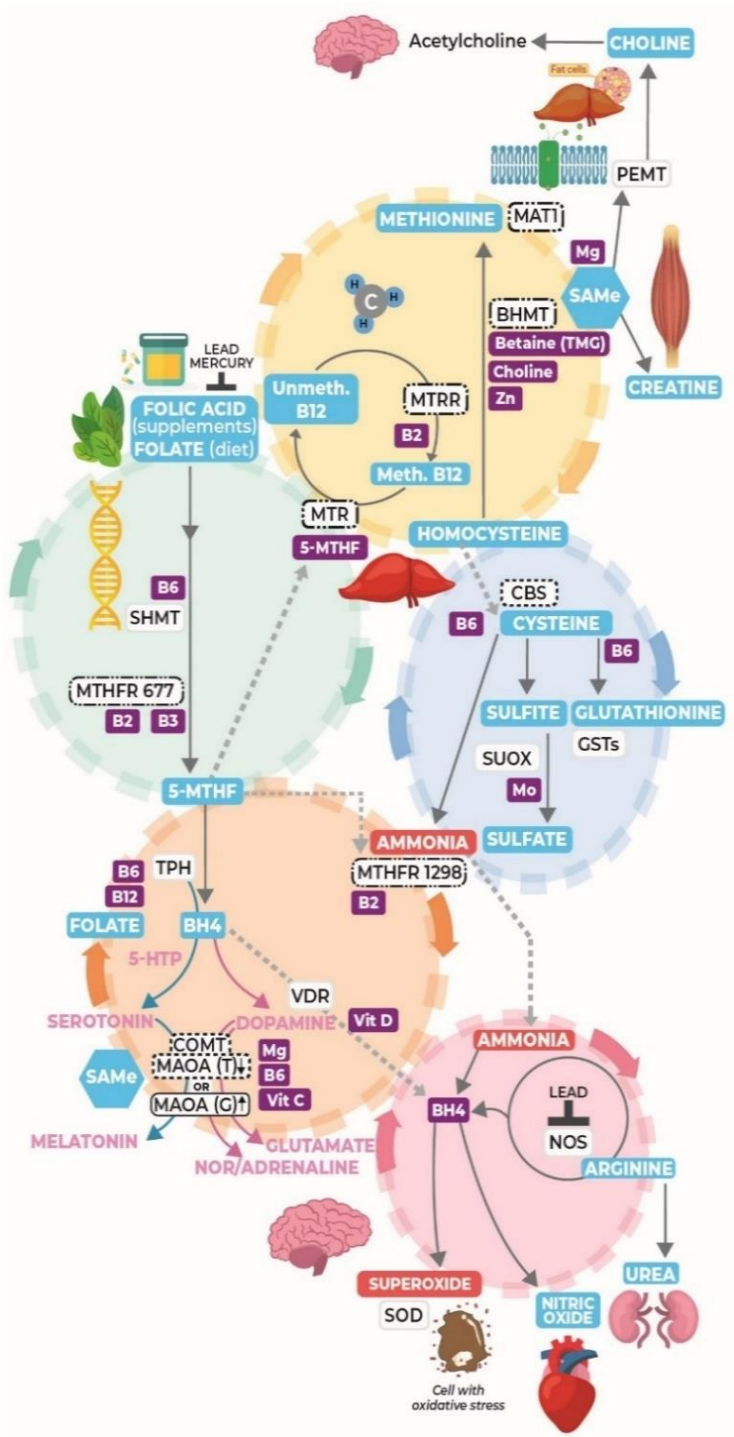
Leaky Gut	**3**	You have inherited genetic variations that are associated with an increased likelihood of developing increased intestinal permeability, commonly known as a 'leaky gut'. A leaky gut refers to a condition where the lining of the intestines becomes more permeable than usual, allowing substances such as toxins, bacteria, and undigested food particles to leak into the bloodstream. This can trigger immune system responses and potentially lead to inflammation and other health issues. Other factors, such as diet, lifestyle choices, stress, medications, and environmental factors, can also influence gut health.
Lower Serotonin Levels	**3**	You have inherited genetic variations that are associated with a moderately increased risk of having reduced levels of serotonin. Serotonin is a neurotransmitter that plays a critical role in regulating mood, emotions, sleep, appetite, and various other physiological functions. Genetic factors can influence the production, release, reuptake, and breakdown of serotonin in the brain. Low serotonin levels have been associated with various conditions, including depression, anxiety disorders, and some types of impulsivity. Serotonin levels can also be influenced by other factors such as environmental factors, lifestyle choices and stress. If you have concerns about your serotonin levels or their potential impact on your well-being, it is advisable to consult with a healthcare professional.
Lower Testosterone /DHEA Levels	**3**	Testosterone plays a vital role in various physiological processes, including the development of sexual characteristics, muscle mass, bone density, and overall well-being. Having a moderate genetic predisposition suggests that you may have inherited genetic variations that affect testosterone production, metabolism, or regulation in a way that leads to lower levels of the hormone. Low testosterone levels, also known as hypogonadism, can lead to various symptoms such as decreased libido, erectile dysfunction, fatigue, decreased muscle mass, and mood changes. However, it's important to note that genetics is just one factor that can influence testosterone levels, and other factors such as age, lifestyle choices, certain medical conditions, and medications can also impact testosterone levels.
Non-Alcoholic Fatty Liver Disease	**3**	Having a moderately high genetic predisposition to develop Non-Alcoholic Fatty Liver Disease (NAFLD) suggests that you may have an inherent tendency to be at a greater risk of developing NAFLD compared to individuals with a very low genetic predisposition. NAFLD is a condition characterized by the accumulation of fat in the liver, typically seen in individuals who do not consume excessive alcohol but are overweight. While the exact causes of NAFLD are multifactorial and not fully understood, genetics is believed to play a role in its development. Environmental factors, lifestyle choices, such as diet and physical activity, metabolic conditions like obesity and diabetes, and other contributing factors also play significant roles.
Osteoarthritis	**2**	Osteoarthritis is a degenerative joint disease characterized by the breakdown of cartilage in the joints, leading to pain, stiffness, and reduced mobility. A slight genetic predisposition was detected of developing osteoarthritis. However, it's important to note that lifestyle factors, including maintaining a healthy weight, exercising regularly, protecting joints from injury, and adopting joint-friendly habits, still play a crucial role in preventing osteoarthritis.

Osteopenia & Osteoporosis	**4**	Osteopenia and osteoporosis are conditions characterized by a loss of bone density and strength, making the bones more susceptible to fractures. While lifestyle factors, such as diet, physical activity, and hormone levels, contribute to the risk of developing these conditions, genetics also play a role. Having a high genetic predisposition suggests that you may have inherited genetic variations or traits that affect the formation, structure, or remodeling of bones, making you more susceptible to bone loss or reduced bone density. These genetic factors can influence the activity of bone cells, the production of bone-strengthening proteins, or the regulation of calcium metabolism. Testing your vitamin D levels, and regular bone density screenings and assessments, as recommended by healthcare professionals, can help monitor bone health and detect any changes or early signs of bone loss.
Pernicious Anaemia (Vitamin B 12 Deficiency)	**3**	Based on your genetic makeup, you have inherited genetic variations or traits that are associated with an increased likelihood or impact of developing a vitamin B12 deficiency. Symptoms associated with B12 deficiency include fatigue, weakness, neurological problems, and digestive issues. The presence of genetic variations does not guarantee the onset of the disease, and additional factors, such as environmental triggers, may be necessary. Vitamin B12 is primarily found in animal-based foods, and if you have concerns about your vitamin B12 levels, it is best to consult with a healthcare professional for assessment and guidance.
Sleep Disorders	**2**	Based on your genetic makeup, you have a very slight susceptibility to experiencing sleep disorders. Sleep disorders encompass a range of conditions that affect the quality, duration, and timing of sleep. While genetics can contribute to the risk of developing sleep disorders, they are also influenced by various environmental and lifestyle factors.
Stroke	**3**	Your moderate genetic predisposition suggests that you may have a somewhat increased susceptibility to experiencing a stroke compared to those with a low genetic predisposition. However, it's essential to note that genetics alone do not determine the occurrence of a stroke. Other risk factors, such as high blood pressure, smoking, diabetes, obesity, and lifestyle choices, also play significant roles in stroke development. A stroke occurs when the blood supply to the brain is interrupted, leading to damage of brain cells.

5. BIOLOGICAL PATHWAY

A biological pathway is a series of reactions among the molecules in a cell that results in a certain product or a change in the cell. Enzymes, coded by genes, help facilitate those reactions by switching processes on and off.

Methylation	
BHMT-02 (+52C>T): Conversion of homocysteine to methionine	CC ★
CBS (C699T): 1st priority treatment: Ammonia accumulation	AG ▲
COMT (Val158Met): Dopamine breakdown	AG ▲
eNOS (G894T): Ammonia detoxification	GG ★
MAO-A R297R: Neurotransmitter balance	TT ▲
MAT1A (T*1297C): Conversion of methionine to SAMe	CC ★
GSTM1 (Lys173Gln): Glutathione conjugation	PRS ★
GSTP1 (Ile105Val): Glutathione conjugation	AG ▲
GSTT1 (Val169Ile): Glutathione conjugation	PRS ★
MTHFR (A1298C): Methylated folate requirements	TT ★
MTHFR (C677T): Methylated folate requirements	GA ▲
MTR (A2756G): Methylated vitamin B_{12} requirements	AA ★
MTRR (A66G): Methylated vitamin B_{12} requirements	AG ▲
PEMT (G523A): Choline requirements	TC ▲
SHMT (C1420T): 1st priority treatment: Folate availability & DNA synthesis	GG ★
SOD2: Free radical clean-up in mitochondria	AA ★
SUOX (S370S): Sulfur Metabolism	TT ★
TPH2 (G>T): Regulation of serotonin synthesis	TT ★
VDR Taq1: Type of Vit B_{12} for dopamine production	AG ▲



Genes that tend to overmethylate:
GENES

Genes that tend to undermethylate:
GENES

GENES CO-FACTORS

Homocysteine Cycle | Transsulphuration Cycle | Folate Cycle | Neurotransmitter Cycle | Urea Cycle

Methyl group

B2, B6, B9, B12 B-vitamins; **BH4** Tetrahydrobiopterin; **5-MTHF** Methylated folate; **Mg** Magnesium; **Mo** Molybdenum; **Zn** Zinc; **SAMe** S-Adenosyl-Methione; **5-HTP** 5-Hydroxytryptophan; **GABA** gamma-aminobutyrate; **HVA** Homovanillate **VMA** Vanilmandelate; **5-HIAA** 5-Hydroxyindoleacetate; **Meth** Methylated

● ▲ ★ ■

HIGH IMPACT | **MODERATE** IMPACT | **LOW** IMPACT | **NO** IMPACT (NEUTRAL EFFECT)

INTELLIGENE

6. YOUR ACTION PLAN

6.1 PHYSICAL ACTIVITY

6.1.1 WEIGHT LOSS & EXERCISE

A target of 20-25 MET hours per week, consisting of high intensity activities (>6 METs), is recommended for weight loss. The metabolic equivalent for task (MET) is a unit that estimates the amount of energy used by the body during physical activity, as compared to resting metabolism. The MET unit is standardised so it can apply to people of varying body weight and compare different activities. Resting energy expenditure (sitting) is defined as 1 MET. The MET values can be found here:

https://sites.google.com/site/compendiumofphysicalactivities/compendia

6.1.2 SPORT PERFORMANCE

According to all your performance genes, your body will best respond to dividing your training sessions as such:

ENDURANCE / AEROBIC		POWER / ANAEROBIC	
66%		34%	
Zone 2 & 3 Lower heart rate (beween 104 and 138 beats per minute)		Zone 4 & 5 Higher heart rate (beween 139 and 174 beats per minute)	
Zone 2	Zone 3	Zone 4	Zone 5
26%	40%	30%	4%

Exercise for endurance takes place in heart rate zones 2 and 3.
Exercise for power takes place in heart rate zones 4 and 5.

Your recommendations:

Zone	Intensity % of HRmax	Beats per minute		Time you should spend in each zone	Example: during a 60 minute exercise routine
2	60-69.9%	104	120	26%	16 Minutes
3	70-79.9%	121	138	40%	24 Minutes
4	80-89.9%	139	155	30%	18 Minutes
5	90-100%	156	174	4%	3 Minutes

6.1.3 INJURY RISK

You have an average risk for musculoskeletal injury. According to your gene profile, your susceptibility to soft tissue injuries (e.g. tendons) is typical of the population average. Injuries in sports commonly occur to the musculoskeletal system and can be simple, involving the muscle, ligament, tendon or bone, or complex, involving more than one aspect of the musculoskeletal system.

Most sports injuries are related to:

- Tendons, e.g. Achilles tendon injuries
- Ligaments, e.g. torn ligaments
- Bone

Injury is an occupational hazard that is almost impossible to avoid for any professional sportsperson. Carrying these risk gene variants is not deterministic - it does not mean that injury will occur.

Preventative strategies to reduce injury risk include:

- Stretch and warm up muscles and ligaments
- Stay adequately hydrated
- Use the right equipment for the sport you are playing
- Ensure you have the proper technique for the sport you participate
- Ensure you are fit enough
- Use protective gear
- Strap areas of potential stress or injury
- Monitor your training loads
- Allow enough recovery time
- Regular massages
- Injury prevention techniques such as eccentric loading exercises, which are very effective at reducing the risk and severity of symptoms of tendon injuries, especially Achilles tendon injuries.

Bone health

- From the perspective of bone injuries, regular exercise has been shown to increase bone strength.
- Nutrients that are associated with an increase in bone health include Vitamin D and calcium.
- If you are at risk of bone injury, you may require higher amounts of the micronutrients Vitamin D and calcium. In addition, very high caffeine intake can reduce bone mineral density and therefore increase the risk of developing a fracture.

6.1.4 BLOOD FLOW DURING EXERCISE

Your blood circulation is key in managing muscular fatigue since it delivers nutrients and oxygen to every cell in the body. Good blood flow will deliver more oxygen and nutrients to muscles which affect sporting performance and recovery. You carry some mutations in the genes governing blood flow and will benefit from measures to improve circulation.

Improve blood flow as follows:

- Using a foam roller
- Sport massages
- Optimal hydration

Nutrients and foods that will improve circulation are:

- Omega-3
- Ginger
- Goji Berries
- Cayenne Pepper
- Turmeric
- Garlic

6.1.5 GLYCOGEN STORES

Muscle glycogen is the predominant fuel source used during long bouts of aerobic exercise. Aerobic performance is directly related to initial glycogen stores and glycogen depletion is directly linked to muscular fatigue. The amount of nutrients you need to fuel up and replenish will depend on the intensity and duration of your exercise, your age and gender.
Manage glycogen stores as follows:

- Ingesting a pre-workout supplement can often improve performance and reduce fatigue.
- Glucose and amino acids are required after exercise to restore and rebuild muscle cells. Flavoured milk is a good post-recovery drink as it contains, sugar, amino acids and some electrolytes.
- Electrolytes e.g. an electrolyte-based drink after exercise can restore losses.

6.1.6 RECOVERY AFTER EXERCISE

Recovery Classification	Time required between intense sessions	Number of sessions tolerated per week
Fast Recovery	24 Hours	4 Hard Sessions

6.1.7 INFLAMMATION & EXERCISE

Part of the immune system's protective mechanism against triggers such an injury or infection is inflammation. Inflammation can be acute and short-term, for example when you sprain a ligament, or low-grade and chronic, such as ongoing sinus infections. The immune system responds to a trigger by expanding the blood vessels leading to the injured area and releasing inflammatory cytokines and white blood cells for repair and rebuild of injured tissues, causing swelling and redness. Vigorous sessions or bouts of increased-intensity exercise can cause varying degrees of small injuries, called microtraumas, to muscles, connective tissue, bones or joints – all requiring an inflammatory response to heal. Once the injury has been reduced and infections cleared, the cytokines and white blood cells are broken down, and the swelling goes down.

Variations in the inflammatory genes show if you are predisposed to suffer significantly increased levels or slightly increased levels of inflammation. Excessive inflammation can result in prolonged feelings of soreness, swelling and reduced range of motion.

Recommendations:
The most important strategies to deal with inflammation are:

• Allow enough recovery time
• Sleep enough and well
• Don’t smoke

Diet:

• Anti-inflammatory foods to include: vegetables, especially green leafy vegetables, fruit, nuts, fatty fish, herbs and spices: ginger, turmeric and cinnamon.
• Inflammatory foods to avoid: processed meats, processed fats (hydrogenated, heat- treated, trans fats), smoked food, sausages, alcohol, table sugar and high-fructose corn syrup.

Supplements:

• Antioxidants
• Omega-3
• Curcumin
• Vitamin D

6.2 SUPPLEMENTATION

Unless specified otherwise by your doctor, avoid HIGH dose supplementation of:

- Berberine
- Theanine

Genetically, you have higher requirements of the nutrients, compounds or nutraceuticals below and may benefit from supplementation. Consult with a dietitian to evaluate your current nutritional intake and requirements for supplementation.

Access the World Anti-Doping document that identifies the substances that are prohibited to athletes here: https://www.wada-ama.org/

Supplements	Best Food Sources	Importance
Collagen	Bone broth and the skin of fish.	Collagen, a protein vital for skin health, joint function, and overall structural integrity of the body, is not directly found in foods.
Fibre	Legumes (eg beans, lentils), whole grains (whole wheat bread, oats), fruit (including the skin) and vegetables.	Dietary fibre is crucial for digestive health, blood sugar regulation, and cholesterol management.
Magnesium	Dark leafy greens (eg spinach, kale), nuts, seeds, legumes (eg chickpeas, beans).	Magnesium is an essential mineral for many bodily functions, including muscle and nerve function, blood sugar control, and bone health.
Omega 3	Fatty fish like salmon and mackerel, flaxseeds, chia seeds, walnuts, canola oil, hemp seeds, algal oil, egg yolks from omega-3 enriched eggs, and soy products like tofu.	Omega-3 fatty acids are vital for heart health, brain function, reducing inflammation, mental health, eye health, child development, and maintaining healthy skin.
Vitamin B12 (Methylated)	Foods do not contain methylated ('active') vitamin B12.	Vitamin B12 is essential for red blood cell formation, neurological function, DNA synthesis, mental health, energy metabolism, heart health, and fetal development during pregnancy.
Vitamin B9 (Folate) (Methylated)	Foods do not contain methylated ('active') folate.	Folate is crucial for cellular growth and division, DNA synthesis, prevention of birth defects, red blood cell formation, homocysteine regulation, and supporting mental health and cognitive function.
Vitamin D (Depends on blood test results)	Few foods are naturally rich in vitamin D3. The best sources are fatty fish and fish liver oils. Smaller amounts are found in egg yolks, mushrooms and beef liver.	Vitamin D is essential for bone health, immune function, muscle strength, heart health, mood regulation, and reducing inflammation, and is obtained through sunlight exposure, certain foods, and supplements.

6.3 DIETARY RECOMMENDATIONS

Based on your genetic results, the best type of diet for weight management is:

Moderate in carbohydrates	Eg bread, pasta, rice, potatoes, vegetables, fruit etc.
Higher in protein	Eg chicken, meat, fish etc.
Moderate in fats	Eg olive oil, nuts, seeds, butter, etc.

6.4 FOODS TO AVOID AND FOODS TO ENJOY

FOOD TO ENJOY

- Collagen-rich foods (e.g. bone broth)
- Caffeine dose: 5-6mg/kg body weight (100mg caffeine in 1 cup filter coffee)
- 1-2 Brazil nuts per day
- Hazelnuts, brown rice, chickpeas, spinach, pineapple, cloves, mussels, and dark chocolate (foods high in manganese
- Broccoli, Brussels sprouts, cauliflower, cabbage, kale, bok choy, turnip greens, and arugula (food sources of DIM)

BE CAREFUL OF

- Energy drinks containing taurine
- Fructose (fruit sugar)
- Nitrites (food preservatives that give meat products a pink/red colour)
- Banana
- Papaya
- Pineapple
- Leftover foods (especially meat)
- Grilled (‘braai’) or smoked meats
- Foods rich in tyramine (found in aged and fermented foods e.g. Parmesan, aged cheese, smoked fish, cured meat)
- HCAs (heterocyclic amine) e.g. consumption of well-done meat
- Soy sauce and soy protein
- Malted barley used in bread and beer
- Fish sauce
- Grape juice
- MSG (Monosodium Glutamate, e.g. Aromat)

FOOD TO AVOID

- Starchy foods that have been heated higher than 120°C (e.g., crisps and French fries)

6.5 LIFESTYLE RECOMMENDATIONS

- Anti-inflammatory diet eg Okinawan & Mediterranean diets high in Omega-3
- Consuming carbohydrate-based beverages during prolonged exhaustive exercise may help to reduce inflammation
- Avoid over exposure to the sun
- Choose topical creams with 5% to 10% Vitamin C
- Acupuncture may improve blood flow
- Add on an extra 48 hours to 3 weeks before competing at high-altitude, for optimal acclimatisation
- Avoid organophosphates (e.g. in pesticides, insecticides)
- Avoid triclosan (used in some antibacterial soaps, e.g. Sani-Soap, MYUD Acnice)
- Use filtered water free of fluoride

6.6 OTHER GENETIC TRAITS

- Likely to be leptin resistant (not feeling full)
- You may experience a more intense sensitivity to bitterness taste
- You have a 50% increased risk for skin cancer with unprotected and regular UV exposure

6.7 BLOOD AND OTHER TESTS

Please consult your healthcare practitioner to discuss potential blood and other medical tests for monitoring gene expression.

Consider the following testing:

- Iron Profile (including Ferritin)

  Full Thyroid Profile: TSH, Free T4, Free T3 and Thyroid antibodies (Optimal T3:T4 ratio is 2.4 to 2.7)
- Conversion calculator of units of blood tests: https://www.amamanualofstyle.com/page/si-conversion-calculator

- Vitamin D (Depends on blood test results)

7. PHARMACOGENETICS 101

Pharmacogenetics is the study of how genes affect a person's response to drugs and its long-term goal is to help doctors select the drugs and doses best suited for each person.

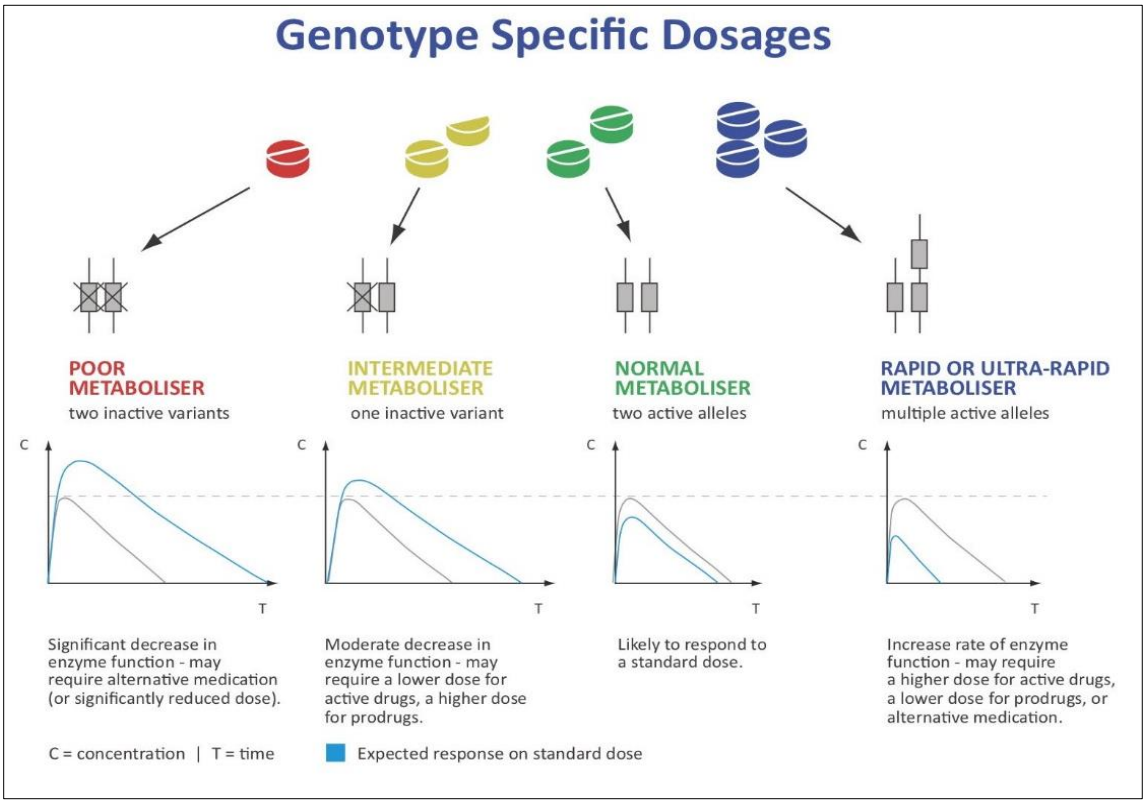
Every individual has a different genetic makeup, which influences the risk of developing diseases as well as responses to drugs and environmental factors.

Genetic variability in genes encoding drug metabolising enzymes may contribute to the high numbers of adverse drug reactions reported, especially in Africa – the continent with the most diverse genetic pool in the world.

The majority of hepatically cleared drugs are metabolized by cytochrome P450 (CYP) enzymes. Although there are many CYP enzymes, six of them metabolize 90% of drugs, namely CYP1A2, CYP2C9, CYP2C19, CYP2D6, CYP3A4 and CYP3A5. These enzymes, and others, are included in the Intelligene Pharmacogenetic test.

The phenotype presentation in these key drug metabolising genes can be used to distinguish between metaboliser genotypes of certain drugs.

8. OVERVIEW OF THE CLASSIFICATION AND GENOTYPE-SPECIFIC DOSAGE GUIDELINES



Metabolic phenotypes:

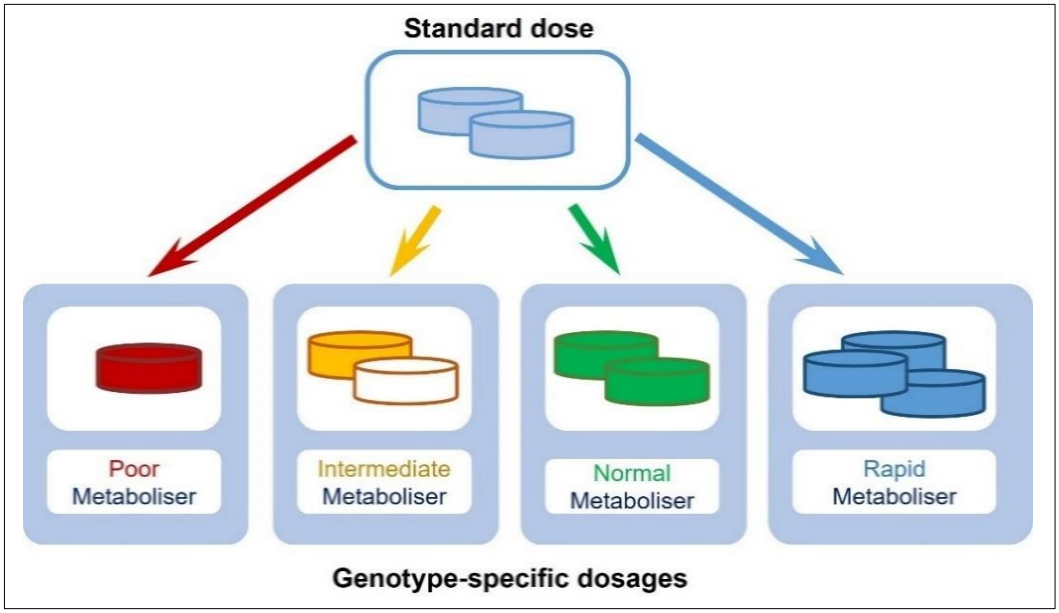
1. **Poor metabolisers:** individuals with a combination of no function or decreased function alleles, and markedly reduced or no enzyme activity.
2. **Intermediate metabolisers**: individuals with a combination of normal and decreased function alleles conferring decreased enzyme activity.
3. **Normal metabolisers:** individuals with fully functional enzyme activity. Also known as Extensive metabolisers in the literature.
4. **Rapid and ultra-rapid metabolisers**: individuals with two increased function alleles or more than two normal function alleles and have high enzyme activity.

Genotype information can be used to guide appropriate therapeutic drug doses:

1. Drugs metabolised from active to inactive metabolites:
   - to reduce the risk of drug-induced adverse reactions in poor metabolisers
   - drug resistance in ultra-rapid metabolisers.
2. Prodrugs that require metabolic activation:
   - drug resistance in poor metabolisers for prodrugs
   - drug-induced adverse reactions in ultra-rapid metabolisers

Some factors to consider in drug responses that are not genetically driven are age, co- morbidities, renal and hepatic dysfunction, concomitant medications, diet and smoking.

9. DOSING RECOMMENDATION FOR DRUGS METABOLISED TO INACTIVE METABOLITES



1. **Poor metabolisers:** Select an alternative drug not predominantly metabolised by the decreased enzyme function or if the drug is warranted, consider a reduction of the recommended starting dose and titrate the response.
2. **Intermediate metabolisers:** Initiate therapy with the recommended starting dose but higher plasma concentrations may increase the probability of side effects.
3. **Normal metabolisers**: Initiate therapy with the recommended starting dose.
4. **Rapid and ultra-rapid metabolisers:** select an alternative drug not predominantly metabolised by the increased enzyme function, risk of therapeutic failure.

10. GENERAL DOSING RECOMMENDATION FOR PRODRUGS

A prodrug is an inactive or partially active compound that, after administration, undergoes metabolic conversion in the body to become an active drug (medicine).

- Poor to intermediate metabolisers: Avoid prodrugs due to potential lack of efficacy.
  Poor to intermediate metabolisers may have poor drug efficacy, risk of therapeutic failure and accumulation of the prodrug. With accumulation of the prodrug the patient is at increased risk of drug-induced side effects.
- Rapid and ultra-rapid metabolisers: Avoid prodrugs due to potential for toxicity.
  Ultrarapid metabolisers will metabolise the parent drug at an accelerated rate. Often good drug efficacy but patient experience drug toxicity.

Examples of prodrugs

Abacavir	Cyclophosphamide	Methyldopa	Prednisone
Azathioprine	Famciclovir	Most ACE Inhibitors, e.g. Benazepril, Perindopril, Enalapril, Ramipril	Fosamprenavir
Candesartan	Fluphenazine decanoate	Mycophenolate mofetil	Loratadine
Capecitabine	Fosamprenavir	Oseltamivir	Prasugrel
Clopidogrel	Loratadine	Prasugrel	Tenofovir
Codeine	Losartan	Prednisolone acetate	

11. CLINICAL CONSEQUENCE OF METABOLISER PHENOTYPES ON DRUG RESPONSE

DRUG TYPE	METABOLISER PHENOTYPE	EFFECT ON DRUG METABOLISM	POTENTIAL CONSEQUENCE
Prodrug, needs metabolism to work (e.g. codeine metabolised to morphine)	Poor to intermediate	Slow	Poor drug efficacy, patient at risk of therapeutic failure and drug resistance. Accumulation of prodrug, patient at increased risk of drug-induced side effects.
	Normal	Normal	Initiate therapy with the recommended starting dose.
	Rapid / Ultra-rapid	Fast	Rapid effect and probable efficacy, but patient may be at risk to drug-induced reactions.
Active drug metabolised to inactive drug (e.g. omeprazole metabolised to 5-hydroxyo-meprazole)	Poor to intermediate	Slow	Accumulation of active drug, patient at increased risk of drug-induced side effects. Select an alternative drug. Patient requires lower dosage if the drug is warranted and titrate the response
	Normal	Normal	Initiate therapy with the recommended starting dose
	Rapid / Ultra-rapid	Fast	Poor drug efficacy, patient at risk of therapeutic failure. Select an alternative drug not predominantly metabolised by the increased enzyme activity
	Indeterminate	Unknown	Unknown efficacy. Select an alternative drug.

12. PHARMACOGENETICS RESULTS

This is a summary of your genetic results to share with healthcare providers.

GENE	RESULTS	PHENOTYPE
CYP2D6	*10/*69	Intermediate metaboliser
CYP2C9	*1/*1	Normal metaboliser
CYP2C19	*1/*1	Normal metaboliser
CYP1A2	*1F/*1F	Normal metaboliser, high inducibility
CYP2B6	*1/*6	Intermediate metaboliser
CYP3A4	*1/*1	Normal metaboliser
CYP3A5	*1/*3	Intermediate metaboliser
Factor II	G/G	Risk allele is not detected
Factor V	C/C	Risk allele is not detected
MTHFR 1298A/C	T/T	Risk allele is not detected
MTHFR 677C/T	G/A	Reduced MTHFR activity
SLCO1B1	T/C	Decreased SLCO1B1 transporter function
VKORC1	T/T	Increased warfarin sensitivity
COMT	A/G	Intermediate COMT activity

GENETIC IMPACT INDICATORS

SLOW/POOR METABOLISER

INTERMEDIATE METABOLISER

NORMAL METABOLISER

RAPID METABOLISER

INDETERMINATE METABOLISER

12.1 Warfarin

If a medical professional advises you to take warfarin, your genetic results suggest a recommended starting dose of 3-4 mg/day. In addition, warfarin dosing depends on factors such as age, weight, diet, other medications, liver and kidney function, alcohol consumption, medical conditions, activity level, and regular INR monitoring to ensure safe and effective treatment.

12.2 Metabolism of Active Ingredients (Medications) as indicated in Genetic Impact Indicators

The following examples represent key substrates for various enzymes. It is important to note that many active ingredients are metabolised by multiple enzymes, and while the enzymes listed here play a significant role in the metabolism of these substrates, they may not be the only enzymes involved.

The list includes, but is not limited to, the following:

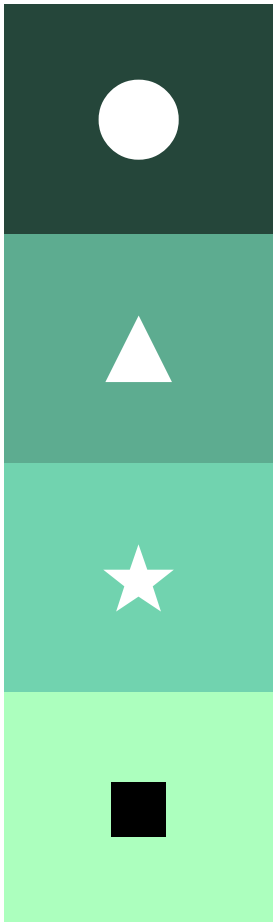
MTHFR677C/T	CYP2B6	COMT
Folate/Folic Acid (Vitamin B9) (consider taking methylated folate supplements)	Bupropion Cyclophosphamide (prodrug) Efavirenz Nevirapine Methadone Pethidine Sertraline	Dobutamine Epinephrine Levodopa (prodrug) Methyldopa (prodrug) Norepinephrine Genetic variants in COMT could play a role in response of: Clozapine Haloperidol Methylphenidate

CYP2C9	CYP2C19	CYP1A2
Candesartan (prodrug) Celecoxib Diclofenac Fluoxetine Fluvastatin Glibenclamide Glimepiride Glipizide Irbesartan Ibuprofen Lornoxicam Losartan (prodrug) Meloxicam Naproxen Nateglinide Phenobarbitone Phenytoin Piroxicam Torasemide Warfarin*(*Also refer to VKORC1)	Amitriptyline Citalopram Clobazam Clomipramine Clopidogrel (prodrug) Cyclophosphamide (prodrug) Dexlansoprazole Diazepam Doxepin Escitalopram Esomeprazole Imipramine Lansoprazole Omeprazole Pantoprazole Phenytoin Proguanil Sertraline Trimipramine Voriconazole	Carvidelol Chlorpromazine Clomipramine Clozapine Cyclobenzaprine Deferasirox Duloxetine Erlotinib Estradiol Fluvoxamine Imatinib Imipramine Melatonin Naproxen Olanzapine Paroxetine Propranolol Theophylline

CYP2D6	CYP3A4	CYP3A4 (cont)
Amitriptyline	Alprazolam	Midazolam
Aripiprazole	Amlodipine	Nifedipine
Atomoxetine	Apixaban	Oxycodone
Brexpiprazole	Aripiprazole	Paclitaxel
Carvedilol	Atazanavir	Prednisone (prodrug)
Chlorpheniramine	Atorvastatin	Quetiapine
Chlorpromazine	Buprenorphine	Rifampicin
Clomipramine	Buspirone	Risperidone
Clonidine	Carbamazepine	Sertraline
Codeine (prodrug)	Clarithromycin	Sildenafil
Desipramine	Clonazepam	Simvastatin (prodrug)
Dextromethorphan	Clozapine	Sirolimus
Donepezil	Cyclophosphamide (prodrug)	Sufentanil
Doxepin	Cyclosporine	Tamoxifen (prodrug)
Duloxetine	Darunavir	Tacrolimus
Escitalopram	Dexamethasone	Tadalafil
Flecainide	Diazepam	Ticagrelor
Fluoxetine	Diltiazem	Tramadol (prodrug)
Fluvoxamine	Docetaxel	Vardenafil
Haloperidol	Efavirenz	Verapamil
Hydrocodone (prodrug)	Erlotinib	Vincristine
Imipramine	Erythromycin	Voriconazole
Metoclopramide	Ethosuximide	Zolpidem
Metoprolol	Etoposide	
Mirtazapine	Everolimus	
Nebivolol	Exemestane	
Ondansetron	Fentanyl	
Oxycodone	Fexofenadine	
Paroxetine	Fluconazole	
Promethazine	Fluvastatin	
Propafenone	Imatinib	
Propranolol	Indinavir	
Risperidone	Irinotecan	
Tamoxifen (prodrug)	Itraconazole	
Tramadol (prodrug)	Ketoconazole	
Trimipramine	Lopinavir	
Venlafaxine	Losartan (prodrug)	
Zuclopenthixol	Loratadine (prodrug)	
	Lumefantrine	
	Methadone	

CYP3A5	SLCO1B1	VKORC1
Alprazolam Amlodipine Atazanavir Atorvastatin Cyclosporine Docetaxel Fentanyl Granisetron Midazolam Nifedipine Oxycodone Simvastatin (prodrug) Sirolimus Tacrolimus Vardenafil Vincristine	Atorvastatin Ezetimibe Fexofenadine Lovastatin Methotrexate Nateglinide Pitavastatin Pravastatin Repaglinide Rifampicin Rosuvastatin Simvastatin (prodrug) Tacrolimus	Warfarin

13. GENETIC RESULT INDICATORS



HIGH IMPACT
SIGNIFICANT CHANGE IN THE FUNCTIONALITY OF THE GENE

MODERATE IMPACT
MODERATE CHANGE IN THE FUNCTIONALITY OF THE GENE

LOW IMPACT
NO OR MINIMAL CHANGE IN THE FUNCTIONALITY OF THE GENE

FAVOURABLE OR NEUTRAL IMPACT
FUNCTIONALITY OF THE GENE IS FAVOURABLE OR IT HAS A NEUTRAL EFFECT

14. GENETIC RESULTS

Gene Symbol	SNP ID	Result
Obesity Risk Index		
ADIPOQ	rs17300539	GG ●
ADRB2-A16G	rs1042713	AA ★
ADRB2-Q27E	rs1042714	CC ★
FABP2	rs1799883	CC ★
FTO	rs9939609	TT ★
LEPR	rs1137101	GG ●
MC4R-INT	rs17782313	TT ★
PPARG	rs1801282	CC ●
TCF7L2	rs7903146	CT ▲
TNF	rs1800629	GG ★
UCP1	rs1800592	TT ★
Hunger & Satiety		
FTO	rs9939609	TT ★
LEPR 668A>G	rs1137101	GG ●
MC4R-INT	rs17782313	TT ★
MMP2	rs1132896	GG ★
Exercise Responsiveness for Weight Loss		
ACE	rs4341	GG ★
ADBR2-Q27E	rs1042714	CC ★
ADRB2-A16G	rs1042713	AA ★
ADRB3	rs4994	AG ▲
FTO	rs9939609	TT ★
LEPR	rs1137101	GG ★
PLIN	rs894160	TT ★
PPARG	rs1801282	CC ★
Saturated Fat Sensitivity during Weight Loss		
ACE	rs4341	GG ●
APOA2	rs5082	AG ▲
APOA5	rs662799	AA ●
FTO	rs9939609	TT ★
TCF7L2	rs7903146	CT ▲
Increased MUFA for Weight Management		
ADIPOQ	rs17300539	GG ●
FTO	rs9939609	TT ■
IL6	rs1800795	GG ●
PPARG	rs1801282	CC ■
TCF7L2	rs7903146	CT ▲
Taste Perception: Sweet Tooth		
SLC2A2 (GLUT-2)	rs5400	GG ★
TAS1R2	rs35874116	CT ▲
Taste Perception: Bitter Taste		
TAS2R38	rs1726866	GG ●

Gene Symbol	SNP ID	Result
Calorie Restriction		
ADIPOQ	rs17300539	GG ●
ADRB2-A16G	rs1042713	AA ★
ADRB2-Q27E	rs1042714	CC ★
ADRB3	rs4994	AG ▲
CLOCK	rs1801260	AA ★
PPARG	rs1801282	CC ★
UCP1	rs1800592	TT ★
UCP3	rs1800849	GG ●
Eating Behaviours: Addictive Tendencies		
ANKK1	rs1800497	AG ▲
OPRM1	rs1799971	AG ▲
Eating Behaviours: Emotional Eating		
BDNF	rs6265	CT ▲
COMT	rs4680	AG ▲
Eating Behaviours: Tendency to snack		
CLOCK	rs1801260	AA ★
MC4R-INT	rs17782313	TT ★
Energy Expenditure (Metabolism)		
ADBR2-Q27E	rs1042714	CC ★
ADRB2-A16G	rs1042713	AA ★
ADRB3	rs4994	AG ▲
CLOCK	rs1801260	AA ★
FABP2	rs1799883	CC ★
FTO	rs9939609	TT ★
LEPR	rs1805094	GG ★
MC4R-INT	rs17782313	TT ★
UCP1	rs1800592	TT ★
Weight gain & Weight loss resistance		
ACE	rs4341	GG ●
ADBR2-Q27E	rs1042714	CC ★
ADIPOQ	rs17300539	GG ●
ADRB2-A16G	rs1042713	AA ★
ADRB3	rs4994	AG ▲
APOA2	rs5082	AG ▲
APOA5	rs662799	AA ★
CLOCK	rs1801260	AA ★
CRP	rs1205	CC ●
FABP2	rs1799883	CC ★
IRS1	rs2943641	CC ●
MMP2	rs1132896	GG ★
PLIN	rs894160	TT ●
PPARG	rs1801282	CC ●
TCF7L2	rs7903146	CT ▲
UCP1	rs1800592	TT ★

●	▲	★	■
HIGH IMPACT	**MODERATE** IMPACT	**LOW** IMPACT	**NO** IMPACT (NEUTRAL EFFECT)

Gene Symbol	SNP ID	Result
Detoxification Phase 1		
CYP1A1 Ile462Val	rs1048943	CT ▲
CYP1A1 Msp	rs4646903	AG ▲
CYP1A2	rs762551	AA ★
CYP1B1 4326C/G, Val43	rs1056836	CG ▲
EPHX1	rs1051740	TT ▲
Detoxification Phase 2		
GSTM1	rs1065411	PRS ★
GSTP1	rs1695	AG ▲
GSTT1	rs2266637	PRS ★
NAT2	rs1208	AG ▲
NQO1	rs1800566	GG ★
SULT1A1	rs1042028	GG ★
Gut Health		
BHMT	rs567754	CC ★
DAO	rs10156191	CT ▲
FUT2	rs602662	AG ▲
HMOX1	rs2071746	TT ●
MCM6	rs4988235	AG ★
SHMT	rs1979277	GG ★
SUOX	rs773115	TT ★
TNF	rs1800629	GG ★
Inflammation		
CRP	rs1205	CC ●
HMOX1	rs2071746	TT ●
IL1A	rs17561	CC ★
IL1A	rs1800587	GG ★
IL1B	rs1143634	GG ★
IL1B	rs16944	GG ●
IL1RN	rs419598	TT ★
IL6	rs1800795	GG ★
IL6R	rs2228145	AA ★
TNF	rs1800629	GG ★
Mood Disorders & Behaviours		
ANK3	rs10994336	CC ★
ANKK1	rs1800497	AG ▲
BDNF	rs6265	CT ▲
CACNA1C	rs1006737	AG ▲
COMT	rs4680	AG ▲
DRD4	rs1800955	CT ▲
FKBP5	rs1360780	CT ▲
GABRA6	rs3219151	CC ★
HTR1A	rs6295	GG ●
MTHFR A1298C	rs1801131	TT ★
OPRM1	rs1799971	AG ▲
OXTR	rs53576	AG ▲
SLC6A4	rs140701	CT ▲
SULT1A1	rs1042028	GG ★
TPH2	rs4570625	TT ★

Gene Symbol	SNP ID	Result
Blood Pressure		
ACE	rs4341	GG ●
ADD1	rs4961	GT ▲
AGT	rs699	AG ▲
NOS3	rs1799983	GG ★
Cholesterol Metabolism		
APOC3	rs5128	CC ★
APOE	rs429358,rs7412	E3/E3 ★
CETP	rs5882	AG ▲
LPL	rs328	CC ★
PON1	rs662	CT ▲
Type 2 Diabetes & Insulin Resistance Risk		
ADRB2-A16G	rs1042713	AA ★
IRS1	rs2943641	CC ●
PPARG	rs1801282	CC ●
SLC2A2	rs5400	GG ★
TCF7L2	rs7903146	CT ▲
Oestrogen & Testosterone Metabolism		
COMT	rs4680	AG ▲
CYP17A1	rs743572	AG ▲
CYP19A1	rs10046	AG ▲
CYP1A1	rs1048943	CT ▲
CYP1A1	rs4646903	AG ▲
CYP1B1	rs1056836	CG ▲
GSTM1	rs1065411	PRS ★
GSTP1	rs1695	AG ▲
GSTT1	rs2266637	PRS ★
NQO1	rs1800566	GG ★
SOD2	rs4880	AA ★
SULT1A1	rs1042028	GG ★
Joint Health		
1L-1B -511 A>G	rs16944	GG ●
GDF5	rs143383	AG ▲
IL-1A -889 C/T	rs1800587	GG ★
IL-1RN	rs419598	TT ★
MMP1 2G/2G	rs1799750	CC ●
TIMP4	rs3755724	CC ★
Bone Health		
DBP	rs2282679	GT ▲
DBP	rs7041	AC ▲
IL-1A -889 C/T	rs1800587	GG ★
IL-1RN	rs419598	TT ★
MMP1 2G/2G	rs1799750	CC ●
VDR- Bsm	rs1544410	GA ▲
VDR Fok	rs2228570	AG ▲
VDR Taq1	rs731236	AG ▲

●	▲	★	■
HIGH IMPACT	**MODERATE** IMPACT	**LOW** IMPACT	**NO** IMPACT (NEUTRAL EFFECT)

Gene Symbol	SNP ID	Result
Methylation		
BHMT	rs567754	CC ★
CBS	rs234706	AG ▲
COMT	rs4680	AG ▲
GSTM1	rs1065411	PRS ▲
GSTP1	rs1695	AG ▲
GSTT1	rs2266637	PRS ★
MAO-A	rs6323	TT ▲
MAT1A	rs72558181	CC ★
MTHFR (A1298C)	rs1801131	TT ★
MTHFR (C677T)	rs1801133	GA ▲
MTR	rs1805087	AA ★
MTRR	rs1801394	AG ▲
NOS3	rs1799983	GG ★
PEMT	rs7946	TC ▲
SHMT	rs1979277	GG ★
SOD2	rs4880	AA ★
SUOX	rs773115	TT ★
TPH2	rs4570625	TT ★
VDR Taq1	rs731236	AG ▲
Plant-derived Omega-3 Conversion Effectiveness		
FADS1	rs174537	GT ▲
FADS2	rs1535	AG ▲
Cognitive Functioning & Memory		
APOE	rs429358,rs7412	E3/E3 ★
BDNF	rs6265	CT ▲
CACNA1C	rs1006737	AG ▲
CETP	rs5882	AG ▲
IL-1β (-511A>G)	rs16944	GG ●
PEMT	rs7946	TC ▲
TNF	rs1800629	GG ★
Vitamin D & Calcium Requirements		
DBP((GLU416ASP)	rs7041	AC ▲
DBP(T>G)	rs2282679	GT ▲
VDR Fok	rs2228570	AG ▲
VDR Taq1	rs731236	AG ▲
Magnesium Requirements		
COMT	rs4680	AG ▲
MAT1A	rs72558181	CC ★
MUC1	rs4072037	CT ▲
Plant-derived Vitamin A Conversion Effectiveness		
BCMO1	rs11645428	GG ●
Collagen Requirements		
COL1A1	rs1800012	CC ●
COL5A1	rs12722	CT ▲

Gene Symbol	SNP ID	Result
Caffeine Sensitivity		
CYP1A2	rs762551	AA ★
Oxidative Stress		
CAT	rs1001179	CC ★
EPHX1	rs1051740	TT ▲
GPX1	rs1050450	GA ▲
OGG1	rs1052133	CG ▲
SOD2	rs4880	AA ★
Blood Clotting		
FACTOR II	rs1799963	GG ★
FACTOR V	rs6025	CC ★
Thyroid Health		
DIO2	rs225014	CT ▲
FOXE1	rs7850258	GG ●
TNF	rs1800629	GG ★
Non-Celiac Gluten Intolerance		
TNF	rs1800629	GG ★
Lactose Intolerance		
MCM6	rs4988235	AG ★
Circadian Rhythms		
CLOCK	rs1801260	AA ★
Fibre Requirements		
CLOCK	rs1801260	AA ★
CRP	rs1205	CC ●
FTO	rs9939609	TT ★
TCF7L2	rs7903146	CT ▲
TNF	rs1800629	GG ★
UCP1	rs1800592	TT ●
Iron Deficiency Risk		
TMPRSS6	rs855791	AG ▲
Omega 3 Requirements		
BDNF	rs6265	CT ▲
CRP	rs1205	CC ●
eNOS Glu298Asp	rs1799983	GG ★
TNF	rs1800629	GG ★
Blood Flow & Circulation		
ACE	rs4341	GG ●
AGT	rs699	AG ▲
BDKRB2	rs1799722	CT ★
NOS3	rs1799983	GG ★

●	▲	★	■
HIGH IMPACT	**MODERATE** IMPACT	**LOW** IMPACT	**NO** IMPACT (NEUTRAL EFFECT)

Gene Symbol	SNP ID	Result
Salt sensitivity		
AGT	rs699	AG ▲
ACE	rs4341	GG ★

Gene Symbol	SNP ID	Result
Haemochromatosis		
HFE	rs1799945	CG ▲
HFE	rs1800562	GG ★

Altitude Training		
ACE	rs4341	GG ●
ADRB2-A16G	rs1042713	AA ★
ADRB2-Q27E	rs1042714	CC ●
NOS3	rs1799983	GG ★
PPARA	rs4253778	GG ★

Glycation		
AGER	rs2070600	CC ★
TCF7L2	rs7903146	CT ▲

Endurance (Aerobic Predisposition)		
ACE	rs4341	GG ●
ACTN3	rs1815739	TT ★
ADRB2-A16G	rs1042713	AA ★
ADRB2-Q27E	rs1042714	CC ★
AMPD1	rs17602729	GG ★
BDKRB2	rs1799722	CT ★
CKMM	rs8111989	TT ★
COL5A1	rs12722	CT ■
CRP	rs1205	CC ●
HFE	rs1799945	CG ★
NOS3	rs1799983	GG ★
NRF2	rs7181866	AG ★
PPARA	rs4253778	GG ★
PPARGC1A	rs8192678	CT ▲
UCP3	rs1800849	GG ●
VEGFA	rs2010963	CG ★

Power & Strength (Anaerobic Predisposition)		
ACE	rs4341	GG ★
ACTN3	rs1815739	TT ●
AGT	rs699	AG ★
AMPD1	rs17602729	GG ★
CKMM	rs8111989	TT ●
IL6	rs1800795	GG ★
NOS3	rs1799983	GG ★
PPARA	rs4253778	GG ●
PPARGC1A	rs8192678	CT ▲
SOD2	rs4880	AA ●
VDR BsmI	rs1544410	GA ★
VDR Fok1	rs2228570	AG ■
VDR Taq1	rs731236	AG ■

Energy Production during Exercise		
AMPD1	rs17602729	GG ★
NRF2	rs7181866	AG ★
PPARA	rs4253778	GG ★
PPARGC1A	rs8192678	CT ■

Lactate Threshold		
ACTN3	rs1815739	TT ●
AMPD1	rs17602729	GG ★
PPARGC1A	rs8192678	CT ▲
VEGFA	rs2010963	CG ▲

Exercise Tolerance		
AMPD1	rs17602729	GG ★
BDNF	rs6265	CT ★
COMT	rs4680	AG ▲
CRP	rs1205	CC ●

Injury Risk		
COL1A1	rs1800012	CC ●
COL5A1	rs12722	CT ▲
DBP(T>G)	rs2282679	GT ▲
DBP	rs7041	AC ▲
TIMP4	rs3755724	CC ★
VDR Fok1	rs2228570	AG ▲
VDR Taq1	rs731236	AG ▲
VDR BsmI	rs1544410	GA ▲

Fuel mobilization in endurance activities		
ADBR2-Q27E	rs1042714	CC ★
ADRB2-A16G	rs1042713	AA ★
BDKRB2	rs1799722	CT ▲
FABP2	rs1799883	CC ●
PPARD	rs2016520	TT ●

Fuel switching during exercise		
CYP1A2	rs762551	AA ★
PPARD	rs2016520	TT ●

Recovery: Oxidative Stress		
GPX1	rs1050450	GA ▲
GSTM1	rs1065411	PRS ★
GSTT1	rs2266637	PRS ★
SOD2	rs4880	AA ★

●	▲	★	■
HIGH IMPACT	**MODERATE** IMPACT	**LOW** IMPACT	**NO** IMPACT (NEUTRAL EFFECT)

Gene Symbol	SNP ID	Result
VO2 Max		
ADBR2-Q27E	rs1042714	CC ★
ADRB2-A16G	rs1042713	AA ★
AMPD1	rs17602729	GG ★
CRP	rs1205	CC ●
NRF2	rs7181866	AG ★
PPARA	rs4253778	GG ★
PPARGC1A	rs8192678	CT ▲
TMPRSS6	rs855791	AG ▲
VEGF	rs2010963	CG ▲
Skin Firmness & Elasticity		
COL1A1	rs1800012	CC ●
COL5A1	rs12722	CT ▲
IL6	rs1800795	GG ★
MMP1	rs1799750	CC ●
MMP2	rs1132896	GG ★
VDR- BsmI	rs1544410	GA ▲
VDR- Fok1	rs2228570	AG ▲
VDR Taq1	rs731236	AG ▲
Pigmentation & UV Protection		
ASIP	rs1015362	CC ●
MC1R	rs4785763	CA ▲
XPD (ERCC2)	rs13181	TT ★

Gene Symbol	SNP ID	Result
Recovery: Inflammation		
APOE	rs429358,rs7412	E3/E3 ★
CRP	rs1205	CC ●
IL6	rs1800795	GG ★
IL6R	rs2228145	AA ★
TNFα	rs1800629	GG ★
Cell Renewal & Hair Loss		
ACE	rs4341	GG ●
COL1A1	rs1800012	CC ●
COL5A1	rs12722	CT ▲
CYP19A1	rs10046	AG ■
MTHFR 1298	rs1801131	TT ★
MTHFR 677	rs1801133	GA ▲
MTR A2756G	rs1805087	AA ★
MTRR A66G	rs1801394	AG ▲
NQO1	rs1800566	GG ★
Sleep Disorders		
BDNF	rs6265	CT ▲
CLOCK	rs1801260	AA ★
COMT	rs4680	AG ▲
GABRA6	rs3219151	CC ★
TPH2	rs4570625	TT ★

●	▲	★	■
HIGH IMPACT	**MODERATE** IMPACT	**LOW** IMPACT	**NO** IMPACT (NEUTRAL EFFECT)