

MYDNA PEDIA

DNA test report



Hi!

This is your DNA test report:

First we describe how we analysed your sample.
Then we give you practical recommendations based on your genetic profile.
Finally we go through the detailed information about your genes.

Sample code:

Date:



MYDNA PEDIA

THIS IS HOW YOUR DNA SAMPLE WAS STUDIED



First you collected cheek cells with a polyester swab, which then included your DNA.



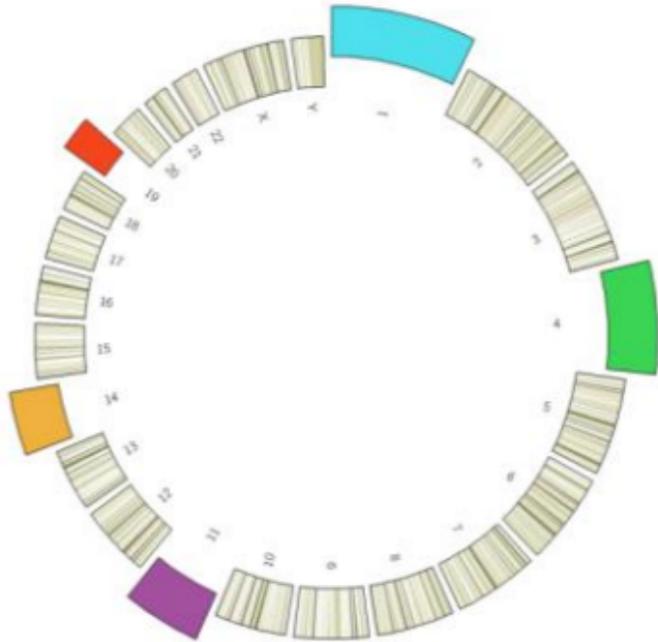
We extracted DNA from the cells on the swab.



We multiplied your DNA of certain areas to million copies with polymerase chain reaction (PCR).



Thanks to PCR, we can see all the small changes in your DNA that we report in these test results.



Human DNA is divided in 46 chromosomes, of which half comes from the mother and half from the father. In the adjacent picture, these chromosomes are shown by numbers (1-22) and letters (sex chromosomes X and Y). Genes are specific functional areas that are located inside chromosomes. Although humans have around 20 000 genes, they represent only approximately 1 percent of the whole genome, which consists of 3 billion small pieces, so called bases.

In this test we have had a look in your genome, which has been part of you from the moment you were born. Thus it is important to understand that these results represent your genetic baseline, which you can affect with your life habits and activities.

You will get lots of additional information of every genetic variant by inputting the **rs code** on the following page: http://www.ensembl.org/Homo_sapiens/Info/Index

IMPORTANT INFORMATION ABOUT THE TEST

Genetic factors are thought to play a significant role in athletic performance, nutrient effects and deficiencies, and in various aspects of well-being and health. In many areas, about half can be explained genetically and the rest by so-called environmental factors such as technic and skill, age, climate, diet, quality of sleep, body weight and mental factors. However, the most important thing to remember is that the result of a DNA test is not the final conclusion as to how good or bad an athlete you can become, how your body weight or skin develops, or what disease risks become actual illnesses or symptoms. Because environmental factors greatly influence how actively your body uses genes, you can develop your hereditary traits in the right direction by making the right exercises and lifestyle choices. In this way, you can take advantage of your genetic strengths and, on the other hand, develop weaker areas and reduce the likelihood of the risks materializing.

DNA testing related to training and nutrition is a growing field of science, but the scientific information is not yet complete. The results of this MyDNAPedia test and the recommendations are always based on the latest and most conclusive scientific information available. Since DNA research is constantly developing, even recommendations based on the very best scientific knowledge do not guarantee the benefits of these test results. MyDNAPedia may benefit some people more than others, and in some cases possibly provide no benefit. In these rare occasions, however, these people have still learnt a lot about themselves and their genetic properties and hopefully got extra motivation to continue training and maintain healthy lifestyle. The result of this test is for informational purposes only and it is not a substitute for medical advice, genetic counselling, diagnosis, or treatment.

All the advice and recommendations related to training or nutrition are based on the following assumptions: 1) you have good general condition and you are healthy; 2) a doctor has not banned training from you; 3) you have not been told to exercise or eat according to some specific instructions due to a medical condition (for example high cholesterol levels); 4) you do not have such medication that affects your training or eating; 5) you do not have food allergies; 6) you do not have any other reason that prevents you to follow our recommendations.

If you are not sure about the above assumptions, we recommend that you ask instructions from your own doctor before following our recommendations.

You are always responsible of all your actions and consequences that are related to our instructions or recommendations. The people behind or the partners of MyDNAPedia are not in any responsibility for the consequences, costs, damages, or any other implications that may be caused by following or not following our instructions and recommendations and that are related to this DNA test or its results.

INSTRUCTIONS ON INTERPRETING THE RESULTS

These instructions help you understand the meaning of the results and apply them in your training program.

1

Genetic testing is mainly based on likelihoods and risk factors. In practice, it means that with your result you belong to a group of people, who are more likely to have a certain risk, condition, or feature. "You have genetic potential to increase anaerobic threshold and aerobic fitness efficiently" means that in a study the group sharing the same result that you have increased aerobic fitness with a standardised training program more than a group with an opposite result.

2

When reading the results, you should also pay attention to the frequency of the same result in the general population. For instance, majority (64%) of the general population does not have the genetic factor that helps achieve high inner motivation and increased satisfaction produced by training. In 32% of the population this genetic factor has become only from one parent and only 4% belong to the group that has the extraordinary genetic motivation factor. Hence, even if you did not belong to this 4% group, you may have high motivation due to other external factors.

3

As a third point, it is good to remember that a genetic test can only be used to analyse genetic factors. Usually individual characteristics are affected also by different environmental factors like training. It may well be that genetically your maximal oxygen uptake potential is not good but you have achieved good maximal oxygen uptake capacity by exercising correctly. Hence it is important that the earlier training background is taken into account when planning changes in the training program based on the genetic test results.

MYDNAPEDIA TRAINING INSTRUCTIONS

At MyDNAPedia, we believe in 3 basic rules in training:

1 REGULARITY

To be able to maintain fitness and get good results, you need to work out regularly and not keep too long breaks.

2 SUSTAINABILITY

You will not see results in a day or two. Long-term goals will keep you on the right track and eventually reward you!

3 REST

You need to find the correct balance between training burden and rest. Without rest your fitness will not develop.

BASIC STRUCTURE OF THE MYDNAPEDIA FITNESS TRAINING PROGRAM (7-10 DAYS CYCLE)

Include the following work outs once in a training cycle (7-10 days):

Strength training at gym or home 30-60 min

Long and slow endurance workout 1-2 h

Intensive (at aerobic threshold) walking/running/cycling 30-50 min

High-intensity (between aerobic and anaerobic threshold) training 10-20 min

When you do these workouts in 7-10 days cycles, you will still have 3-6 days for resting. **Now you can use one of these days to develop something we have marked with red or yellow colour in this test report.** This way you can keep up the basic elements of training and at the same time develop areas that may genetically require attention. **If you are an athlete or you work out according to a training program, you should apply the results of this test so that they fit your own training schedule.**



FITNESS

1

AEROBIC FITNESS AND ANAEROBIC THRESHOLD POTENTIAL

Anaerobic threshold is a boundary where lactate begins to accumulate faster than it can be removed. This limit depends on your genes and aerobic fitness. The genetic variants studied here impact how well you can train your anaerobic threshold and this way affect aerobic performance.

Your genotype:

rs8192678/GG (57% of global population share the same result)

rs2267668/GA (25% of global population share the same result)

Interpretation:

You have average genetic potential to increase anaerobic threshold and aerobic fitness.

Recommendation:

Include relevant exercises at normal level in your training program.

Example exercise:

Continuing high-intensity training e.g. by running or cycling. You can adjust the length of the workout according to your own fitness. The length can be 20–40 min or in the beginning 2 x 10 min may be enough. Remember proper warm up/downs before and after exercise.

AEROBIC FITNESS AND ANAEROBIC THRESHOLD – **ADDITIONAL INFORMATION**

Anaerobic threshold is a boundary where lactate begins to accumulate faster than it can be removed. This limit depends on your genes and aerobic fitness. Trained athletes may have anaerobic thresholds that are 80–90% of maximum heart rate.

Anaerobic threshold is improved by workouts, where the speed is just below the current threshold. These type of exercises can be divided in slower-speed but longer or higher-speed but faster workouts. If you are just getting used to this type of training, dividing the exercises in shorter sections can be a good option.



*You have this feature marked with yellow colour. We recommend you to keep one intensive workout in your **MyDNAPedia Training Program**.*



4

MUSCLE FATIGUE AND RECOVERY

Muscles produce lactate as a glucose metabolite during intensive training. Due to increased lactate level, muscles feel heavy and tired during and after intensive exercise. The feeling of tired muscles is affected by the efficiency of lactate delivery back to muscles, where it is used as an energy source and thus removed more quickly. Inefficient and slow lactate delivery may lead to faster muscle fatigue during the exercise as well as to impaired performance.

Your genotype:

rs1049434/AA (13% of global population share the same result)

Interpretation:

Your muscles may not get tired that easily in intensive training.

Recommendation:

Try to extend the length of intensive workouts and possibly decrease the recovery time between them.

Example exercise:

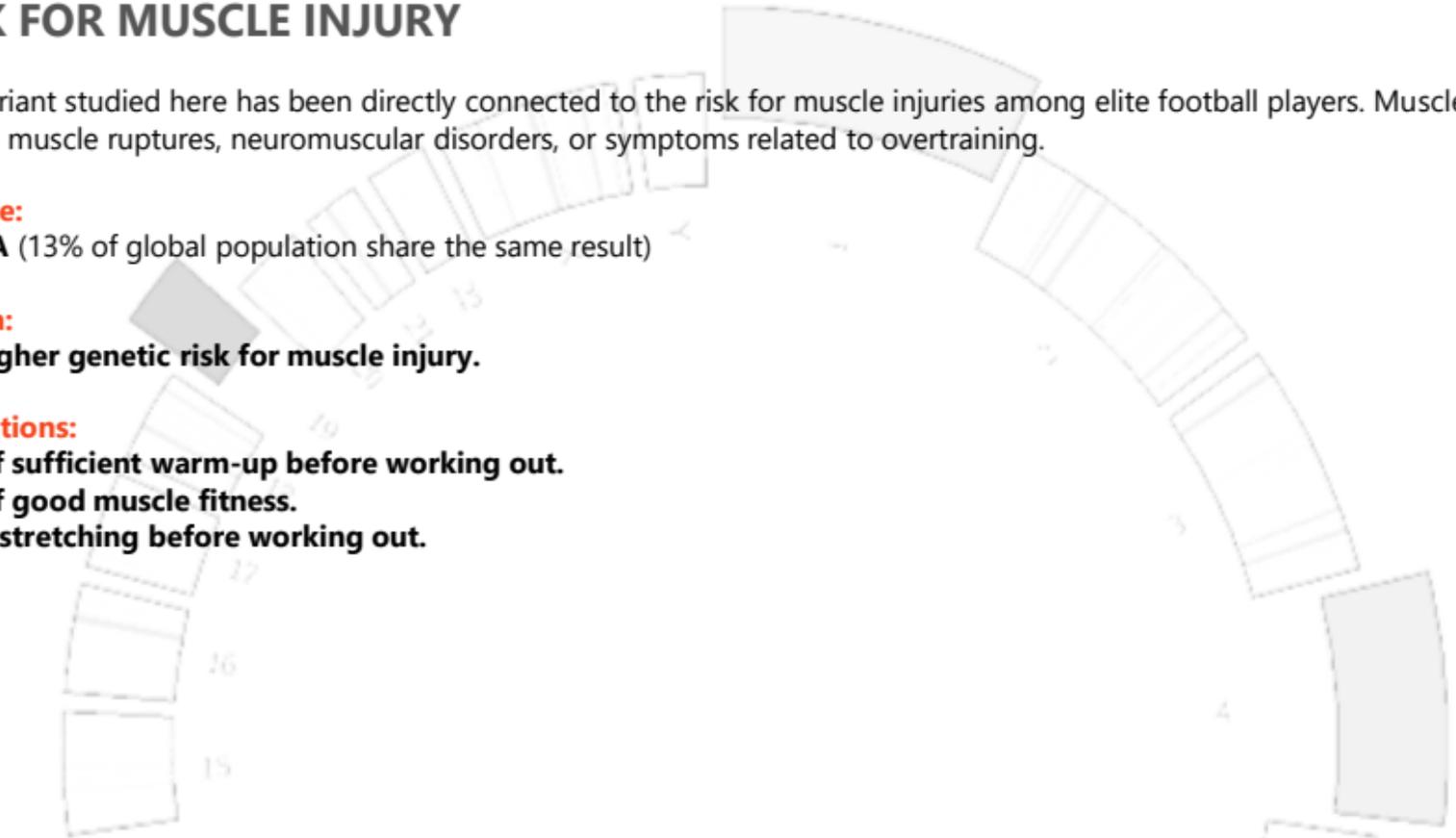
High intensity intervals at almost full speed/power. 6–10 x 1–2 min / recovery 1–2 min between the intervals. Do proper warm up/down before and after exercise. You can adjust the training burden by the number and length of the intervals.

MUSCLE FATIGUE AND RECOVERY – **ADDITIONAL INFORMATION**

Muscles produce lactate as a glucose metabolite during intensive training. Due to increased lactate level, muscles feel heavy and tired during and after intensive exercise. The feeling of tired muscles is affected by the efficiency of lactate delivery back to muscles, where it is used as an energy source and thus removed more quickly. Inefficient and slow lactate delivery may lead to faster muscle fatigue during the exercise as well as to impaired performance; in other words, anaerobic threshold pace then stays low e.g. when running.

The most important factor affecting lactate delivery is *MCT1* protein. During intensive training, the amount of *MCT1* in the muscle cells increases, to ensure proper lactate delivery. More *MCT1* guarantees more efficient use of lactate as an energy source, which helps move at higher intensity and improve performance. By training correctly, it is possible to increase the efficiency of lactate delivery and achieve higher anaerobic threshold. In this test, we examined a single nucleotide polymorphism in *MCT1* gene. With the genotype *AA*, lactate delivery should be working well. Genotypes *AT* and *TT* affect the function of *MCT1* gene, leading to lower *MCT1* protein amount. In that case, lactate delivery is not optimal, which means faster muscle fatigue and impaired performance. However, this feature can be improved by proper training.

Genotype *TT* leads to even 60–65% less efficient lactate delivery when compared with *AA*. According to scientific studies, this genotype leads to higher blood lactate levels after intensive workout. It has also been noticed that the *T* allele is much more common among sprint/power sports athletes compared with endurance athletes. If you have this genotype, it would be worth for you to try to improve lactate tolerance and the efficiency of its delivery to muscle cells. You can train these features by doing high intensity workouts. You should remember though that the recovery from these workouts may be slow and you should not do them too often. Compression textiles may help in muscle pain relief as well as make lactate delivery a bit more efficient and thus speed up the recovery.



9

RISK FOR MUSCLE INJURY

The genetic variant studied here has been directly connected to the risk for muscle injuries among elite football players. Muscle related injuries observed were muscle ruptures, neuromuscular disorders, or symptoms related to overtraining.

Your genotype:

rs1049434/AA (13% of global population share the same result)

Interpretation:

You have a higher genetic risk for muscle injury.

Recommendations:

- 1 Take care of sufficient warm-up before working out.**
- 2 Take care of good muscle fitness.**
- 3 Avoid over-stretching before working out.**



NUTRITION



INTERPRETATION OF THE RESULTS

Your results have been divided in three groups based on the genetic risk. Please note that this distribution is based on the current genetic research and genetic variants studied in this test. The results do not rule out possible effects of some other genetic or environmental factors on the genetic risks.



RISK GROUP 1

Your risk is minor or it is reduced compared with the general population



RISK GROUP 2

Your risk is at the same level with the general population or the marker is otherwise neutral



RISK GROUP 3

Your risk is increased compared with the general population

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1

RISK FOR OVERWEIGHT AND DIET

Overweight is considered one of the greatest health problems in western countries, since it is linked to a number of diseases like diabetes and cardiovascular diseases. Usually there are a number of environmental factors behind overweight, such as unhealthy eating habits and immobility. In the background, there are however also genetic reasons, which is why some people gain weight more easily than the others. An athlete should take their genetically increased risk for overweight into account at the end of the season and before the start of the new training period and during other pauses in training (for example when injured or ill) to prevent extra weight accumulating. Genetic variants affecting overweight have been found several. In this test, the most classical gene (*FTO*) related to overweight and BMI is studied. The second gene (*PPARG*) is connected to body's fat metabolism.

Your genotype:

rs9939609/AA (14% of global population share the same result)

rs1801282/CC (87% of global population share the same result)

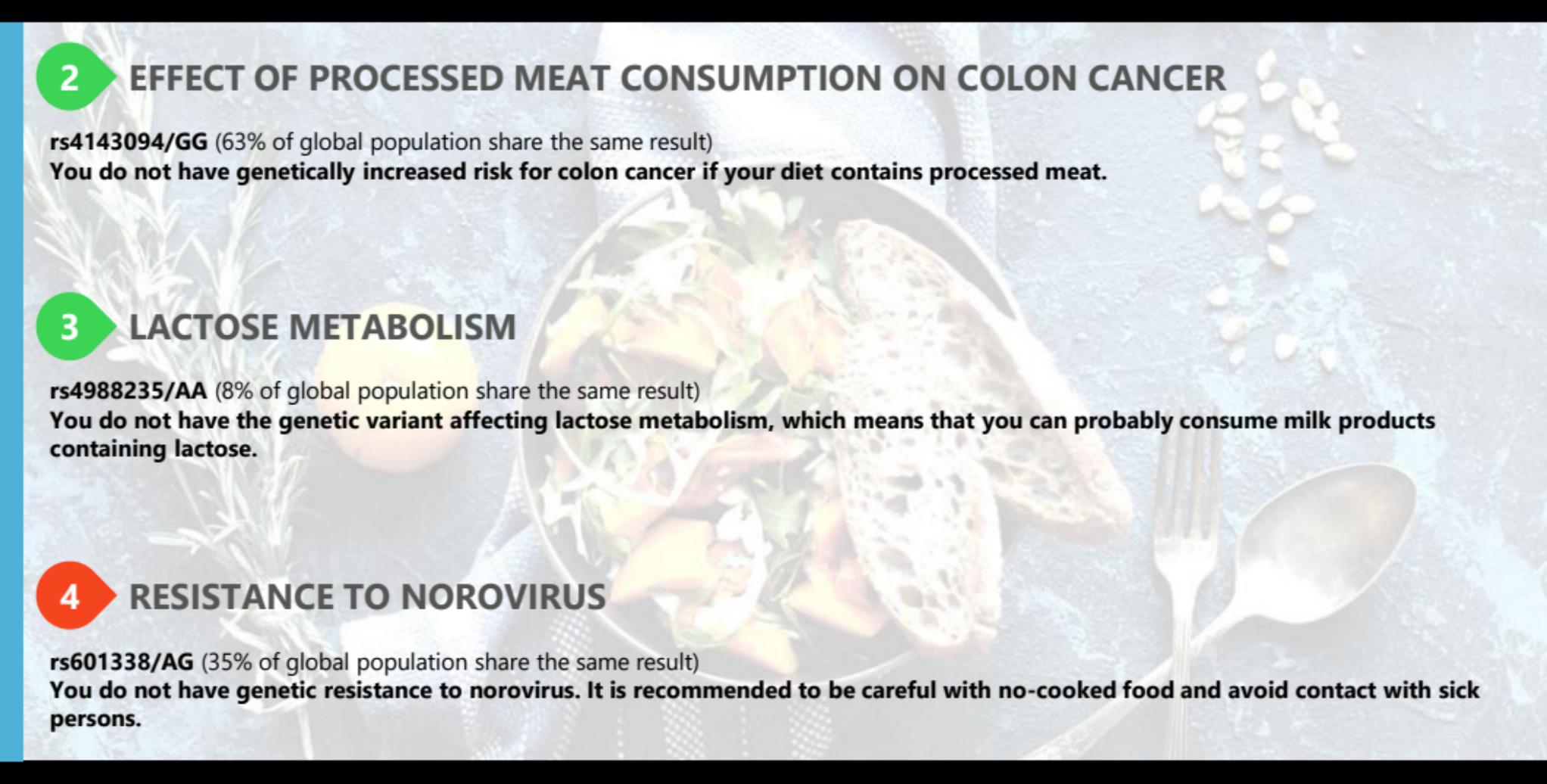
rs662799/AA (71% of global population share the same result)

Interpretation and recommendation:

Your genetic risk for overweight is increased, but according to the genes studied, you do not have to specifically avoid fatty foods to prevent weight gain. During training pauses (between seasons, injury, illness), pay attention not to gain extra weight.

Disclaimer:

The genetics behind overweight and diet composition is highly complex and it is not totally known how genetics and environmental factors contiguously affect the body composition. *FTO* is however called as the "fat gene" because of its relation to gained body weight.



2

EFFECT OF PROCESSED MEAT CONSUMPTION ON COLON CANCER

rs4143094/GG (63% of global population share the same result)

You do not have genetically increased risk for colon cancer if your diet contains processed meat.

3

LACTOSE METABOLISM

rs4988235/AA (8% of global population share the same result)

You do not have the genetic variant affecting lactose metabolism, which means that you can probably consume milk products containing lactose.

4

RESISTANCE TO NOROVIRUS

rs601338/AG (35% of global population share the same result)

You do not have genetic resistance to norovirus. It is recommended to be careful with no-cooked food and avoid contact with sick persons.



WELLBEING



INTERPRETATION OF THE RESULTS

Your results have been divided in three groups based on the genetic risk. Please note that this distribution is based on the current genetic research and genetic variants studied in this test. The results do not rule out possible effects of some other genetic or environmental factors on the genetic risks.



RISK GROUP 1

Your risk is minor or it is reduced compared with the general population



RISK GROUP 2

Your risk is at the same level with the general population or the marker is otherwise neutral



RISK GROUP 3

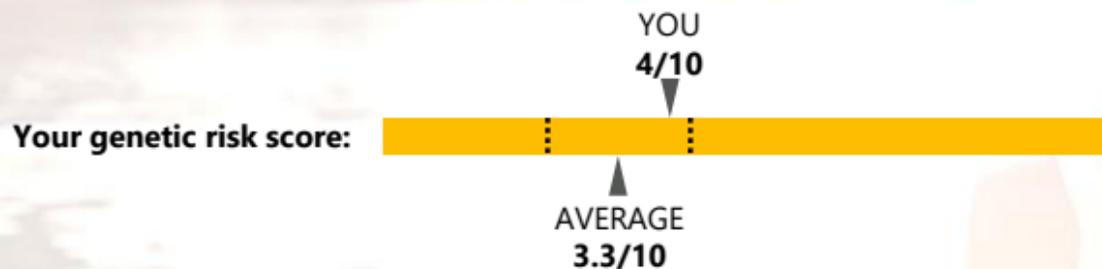
Your risk is increased compared with the general population

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2

RISK FOR LOW VITAMIN D LEVEL



Genetically increased risk for lower blood vitamin D level was not observed so you likely do not have increased requirement for vitamin D.

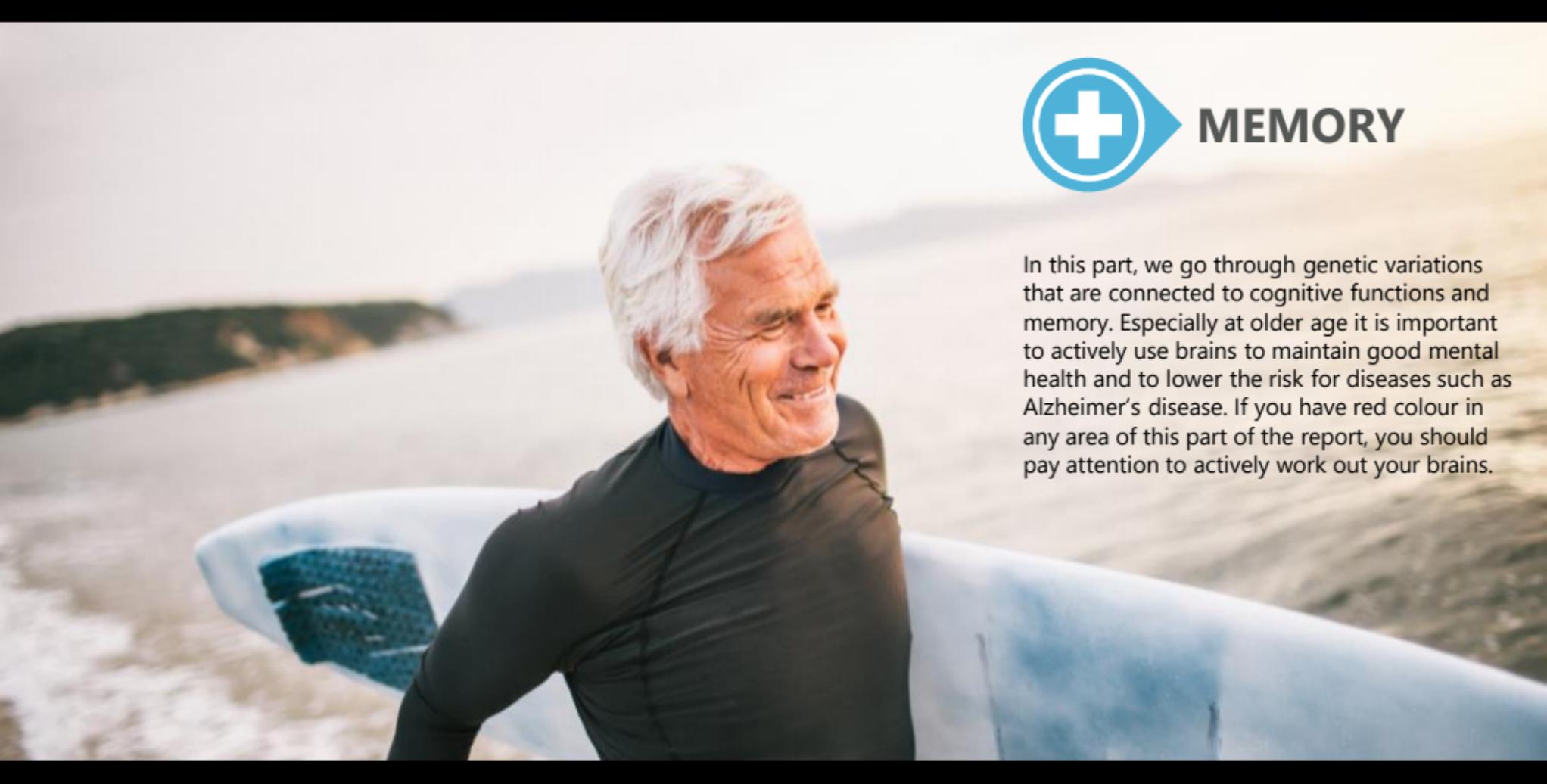
This conclusion is based on the five most common genetic variants connected to vitamin D deficiency and low blood vitamin D levels.

Even though you may not have increased risk for vitamin D deficiency, you should pay attention to getting enough vitamin D from various sources:

Sun: This is a good, natural way of increasing body's vitamin D levels, if enjoyed moderately. **Please note:** if you have increased risk for skin cancers (melanoma and basal cell carcinoma risks marked with red colour on the next page), you should avoid excessive sunlight and concentrate on getting vitamin D from other sources.

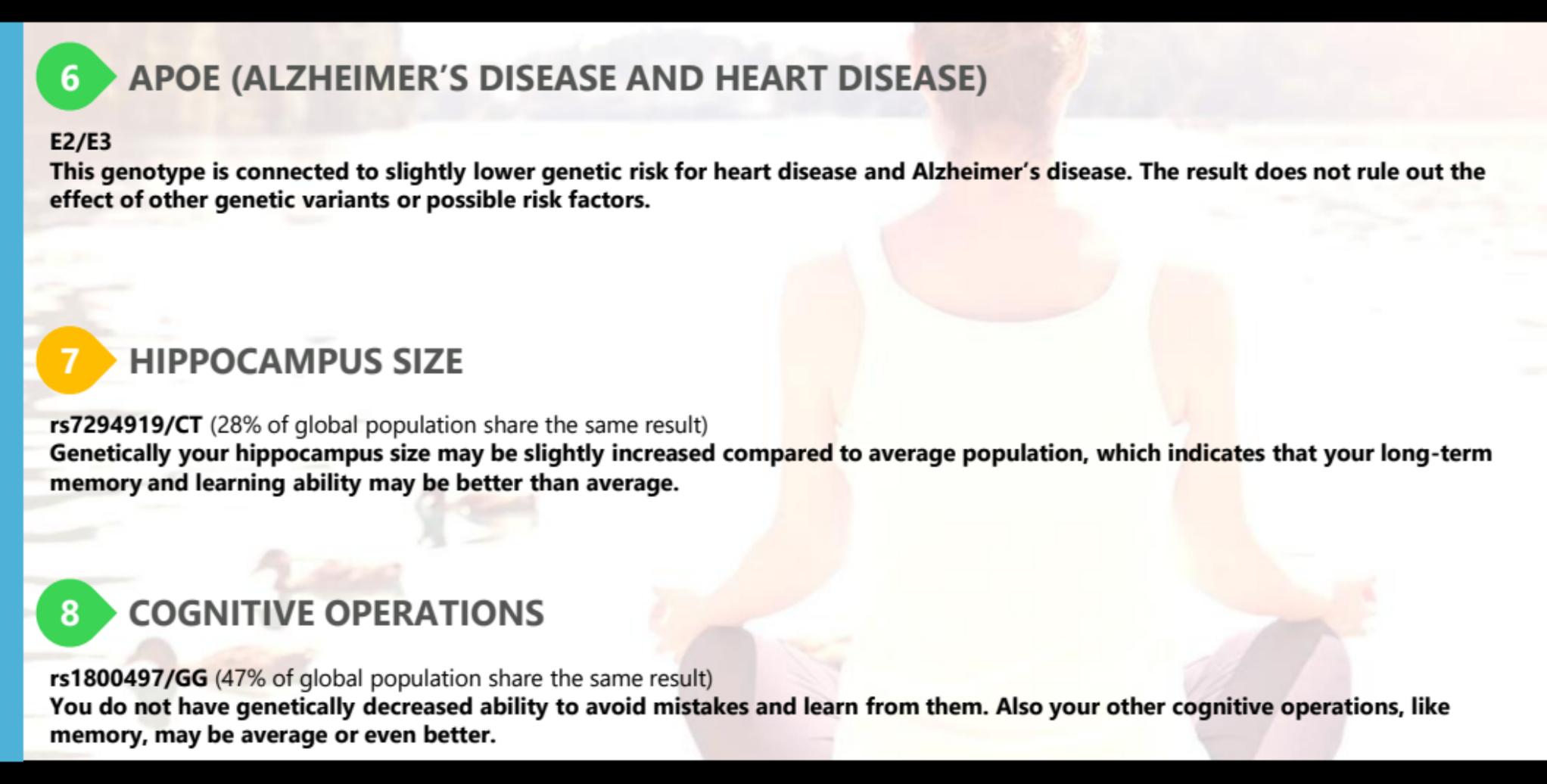
Vitamin D supplements

Food: Fish at least two times a week; milk and butter or other products with added vitamin D



MEMORY

In this part, we go through genetic variations that are connected to cognitive functions and memory. Especially at older age it is important to actively use brains to maintain good mental health and to lower the risk for diseases such as Alzheimer's disease. If you have red colour in any area of this part of the report, you should pay attention to actively work out your brains.



6

APOE (ALZHEIMER'S DISEASE AND HEART DISEASE)

E2/E3

This genotype is connected to slightly lower genetic risk for heart disease and Alzheimer's disease. The result does not rule out the effect of other genetic variants or possible risk factors.

7

HIPPOCAMPUS SIZE

rs7294919/CT (28% of global population share the same result)

Genetically your hippocampus size may be slightly increased compared to average population, which indicates that your long-term memory and learning ability may be better than average.

8

COGNITIVE OPERATIONS

rs1800497/GG (47% of global population share the same result)

You do not have genetically decreased ability to avoid mistakes and learn from them. Also your other cognitive operations, like memory, may be average or even better.

Thank you!



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