



Akshaya Shekhar

Your test results

# Metabolic Balance Panel plus Vitamin D and HbA1c

## Summary

Congratulations on taking the Metabolic Balance Panel plus Vitamin D and HbA1c which puts you in control of your health data!



i-screen

Collection Date: 08 Feb 2023

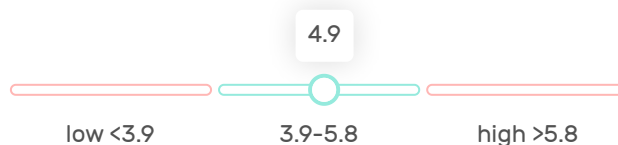
## Full blood count with differential

Your MCHC levels are lower than normal. This is not necessarily of clinical significance, though may be seen in situations such as iron deficiency.

Your haemoglobin, white cell count and platelets are normal.

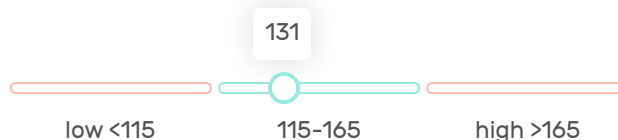
### Red Blood Cell Count $4.9 \times 10^{12}/L$

Responsible for carrying oxygen around the body. A high count can increase the risk of heart attack or stroke, whilst a low count can mean your body isn't getting the oxygen it needs.



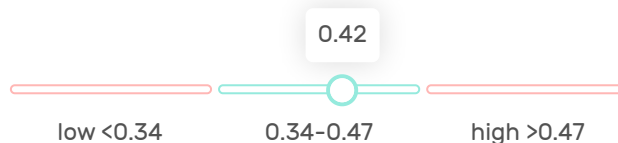
### Haemoglobin 131 g/L

A good measure of your blood's ability to carry oxygen throughout your body. Elevated haemoglobin can be an indicator of lung disease, whilst a low result indicates anaemia.



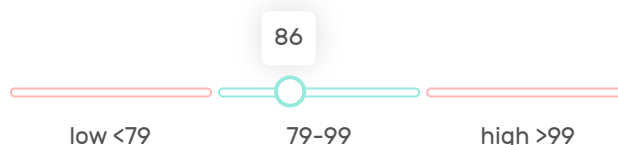
### Haematocrit 0.42

A measure of the percentage of red blood cells in the total blood volume. Elevated haematocrit can increase the risk of heart attack or stroke.



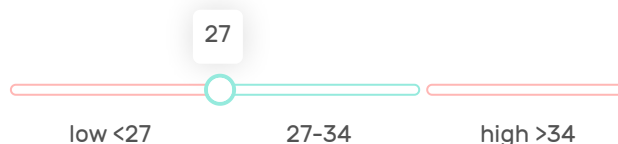
### MCV 86 fL

Mean corpuscular volume (MCV) is a measure of the average size of the RBCs. The MCV is elevated when RBCs are larger than normal, eg in anaemia caused by vitamin B12 deficiency. When MCV is decreased, RBCs are smaller than normal as seen in iron deficiency anaemia.



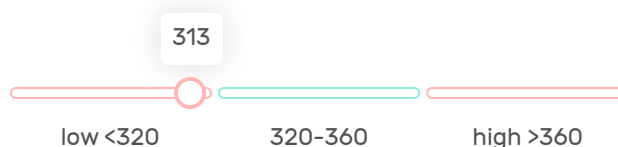
### MCH 27 pg

MCH is a calculation of the average amount of oxygen-carrying haemoglobin inside a red blood cell. Large red blood cells tend to have a higher MCH, while small red cells would have a lower value.



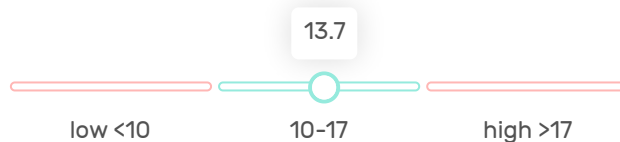
### MCHC 313 g/L

Mean corpuscular haemoglobin concentration (MCHC) is a calculation of the average concentration of haemoglobin inside a red cell. Decreased MCHC is seen in iron deficiency anaemia and thalassaemia.



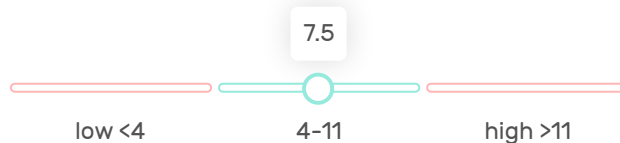
## RDW 13.7 %

Red cell distribution width (RDW) is a calculation of the variation in the size of your RBCs. In some anaemias, such as pernicious anaemia (due to vitamin B12 deficiency), the amount of variation in RBC size causes an increase in the RDW.



## White Blood Cell Count 7.5 $\times 10^9/L$

Responsible for fighting infection. A high count can indicate recent infection and even stress, whilst a low count can result from vitamin deficiencies, liver disease and immune diseases.



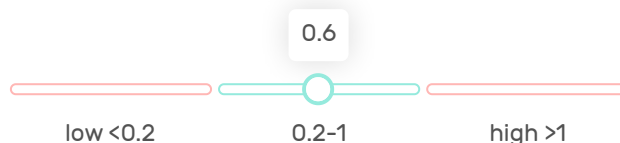
## Eosinophils 0.1 $\times 10^9/L$

A type of white blood cell. Can increase in response to allergic disorders, inflammation of the skin and parasitic infections. They can also occur in response to some infections or to various bone marrow malignancies.



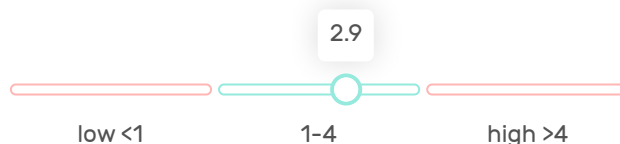
## Monocytes 0.6 $\times 10^9/L$

A type of white blood cell. Can increase in response to infection as well as inflammatory disorders, and occasionally with some types of leukaemias. Decreased monocyte levels can indicate bone marrow injury or failure and some forms of leukaemia.



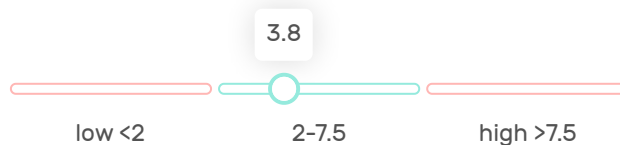
## Lymphocytes 2.9 $\times 10^9/L$

A type of white blood cell. Can increase with bacterial or viral infection, leukaemia, lymphoma, radiation therapy or acute illness. Decreased lymphocyte levels are common in later life but can also indicate steroid medication, stress, lupus and HIV infection.



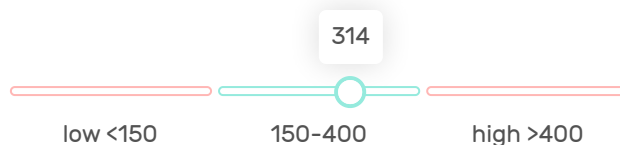
## Neutrophils 3.8 $\times 10^9/L$

A type of white blood cell. Can increase in response to bacterial infection, inflammatory disease, steroid medication, or more rarely leukaemia. Decreased neutrophil levels may be the result of severe infection or other conditions.



## Platelet Count 314 $\times 10^9/L$

Responsible for blood clotting and healing. A high count can indicate a risk of thrombosis, whilst a low count can lead to easy bruising.





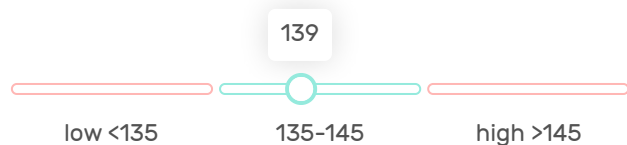
## UECs (Kidney Function)

Your kidney function tests are all within normal range and don't show signs of kidney disease.

\*Note that testing for kidney disease usually also involves a urine sample - refer to our Kidney Check <https://www.i-screen.com.au/tests/kidney-function-test> for more information. If you have specific concerns it is recommended that you check in with your GP for a discussion and potentially further investigation.

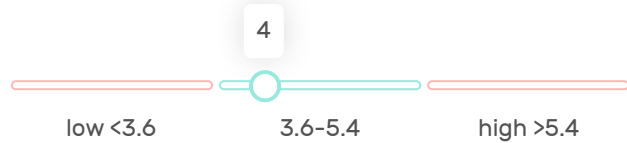
### Sodium 139 mmol/L

Helps regulate the water and electrolyte balance of your body, and is important in the function of your nerves and muscles. Too much sodium can indicate kidney disease.



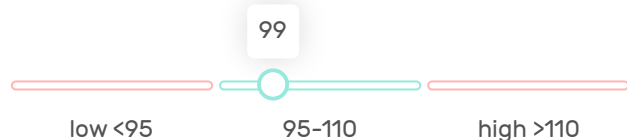
### Potassium 4.0 mmol/L

Minor changes in serum potassium can have significant consequences. An abnormal concentration can alter the function of the nerves and muscles for example, the heart muscle may lose its ability to contract.



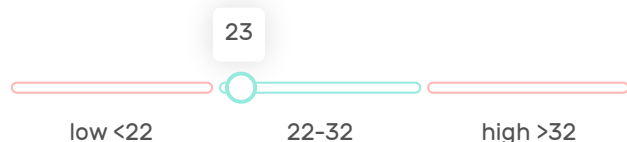
### Chloride 99 mmol/L

Chloride, like sodium, helps to maintain the balance of fluid in the body. Raised levels can be caused by eating too much salt, dehydration, diarrhoea, certain medications and also kidney disease.



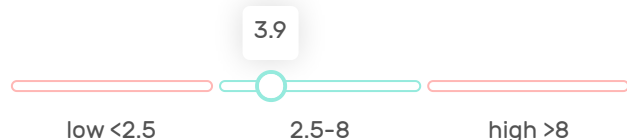
### Bicarbonate 23 mmol/L

Higher than normal levels suggests trouble maintaining pH balance either by failing to remove carbon dioxide or because of an electrolyte imbalance. Elevations may be seen with severe vomiting, chronic lung problems and some hormonal disorders. Low levels may be seen with chronic diarrhoea, diabetic ketoacidosis and kidney failure.



### Urea 3.9 mmol/L

A high concentration of this waste product can indicate dehydration or that your kidneys aren't working properly.



**Creatinine 50  $\mu\text{mol/L}$**

A waste molecule generated from muscle metabolism, and an accurate marker of kidney function.



**eGFR > 90 ml/min**

The estimated glomerular filtration rate (eGFR) measures how well your kidneys filter the wastes from your blood and is the best overall measure of kidney function.

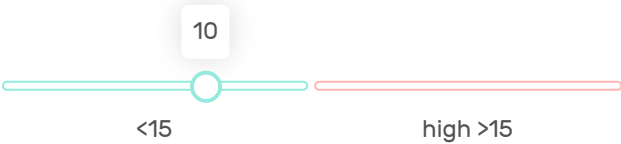


## Liver Function (LFTs)

Your liver function results are within normal range which is a good indication that your liver is working as it should be.

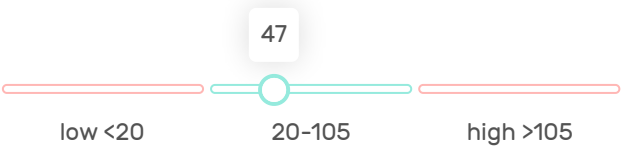
### Bilirubin 10 umol/L

Bilirubin tests are used to screen for or to detect and monitor liver disorders or haemolytic anaemia.



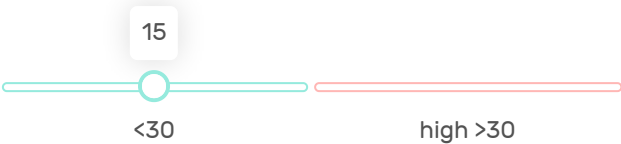
### ALP 47 U/L

Alkaline phosphatase (ALP) is an enzyme located mainly in the liver and the bones. High levels can indicate liver disease.



### AST 15 U/L

Aspartate aminotransferase (AST) is an enzyme created mainly by the liver and the heart. High levels can indicate damage to your liver caused by alcohol, drugs or hepatitis.



### ALT 20 U/L

Alanine aminotransferase (ALT) is an enzyme mainly produced by the liver. A good indicator of liver damage caused by alcohol, drugs or hepatitis.



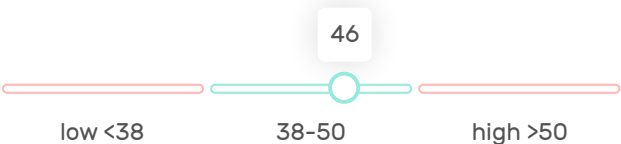
### GGT 16 U/L

Gamma-glutamyl transferase (GGT) is a liver enzyme which can be used to diagnose alcohol abuse as it is typically raised in long term drinkers.



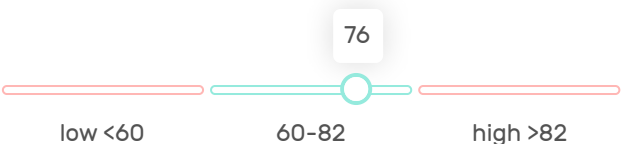
### Albumin 46 g/L

Albumin is a protein which keeps fluid from leaking out of blood vessels, nourishes tissues, and carries hormones, vitamins, drugs, and ions like calcium throughout the body. Albumin is made in the liver and is sensitive to liver damage.



### Total Protein 76 g/L

A measure of all of the proteins in the plasma portion of your blood. Proteins are important building blocks of all cells and tissues - they are important for body growth and health.

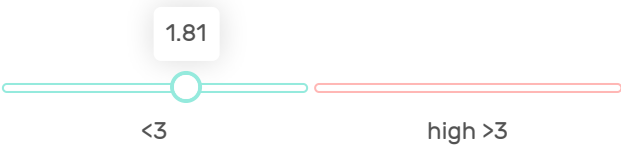


## Inflammation

Your lactate dehydrogenase (LDH) levels are slightly lower than normal - this is not commonly encountered and may be of no clinical significance. Genetic differences between individuals can lead to lower LDH levels than would be expected. Some people have no symptoms at all with this, though others may experience fatigue and muscle pain with exercise. High levels of vitamin C supplementation may also lead to reduced LDH levels. You may wish to consider retesting in 1-2 months, which may provide a normal result, though please do follow up with your GP if you have any concerns.

### High sensitivity CRP 1.81 mg/L

A high-sensitivity C-reactive protein (hs-CRP) test measures low levels of CRP and may be used to help evaluate an individual for risk of cardiovascular disease



### Lactate Dehydrogenase 119 U/L

LDH is an enzyme required during the process of turning sugar into energy for your cells. Only a small amount is usually detectable in the blood, however, when cells are damaged they release LDH into the bloodstream.



### Creatine Kinase 66 U/L

When muscle cells are injured creatine kinase enzymes leak out of the cells and enter the bloodstream. Prolonged elevated creatine kinase after periods of rest can be a sign of overtraining.



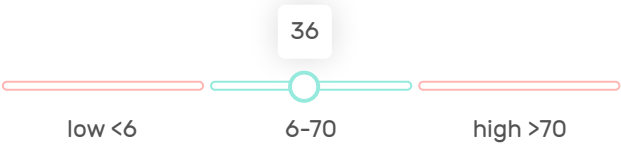


## Pancreatic Function

Your pancreatic enzymes are within the normal range and don't show evidence of pancreatic inflammation.

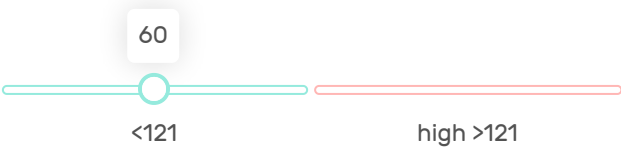
### Lipase 36 U/L

An enzyme produced by the pancreas which is released into the digestive tract to help digest fatty foods.



### Amylase 60 U/L

An enzyme made mainly by the pancreas which is released from the pancreas into the digestive tract to help digest starch in our food.

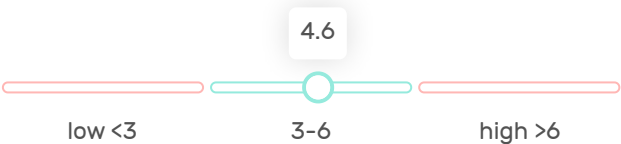


## Blood Glucose

Your fasting glucose is within the normal range and doesn't indicate increased risk of diabetes.

### Fasting glucose 4.6 mmol/L

If you have diabetes your body doesn't process glucose effectively.

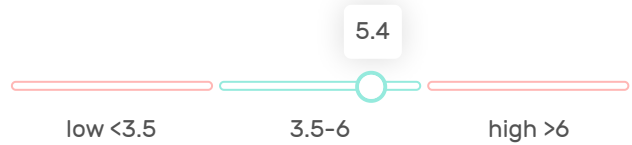


## HbA1c

Your glycosylated haemoglobin levels are within the normal range and don't indicate increased risk of diabetes. An HbA1c test assesses how well you control your blood sugar level over several weeks and is therefore more insightful than a single fasting glucose measurement.

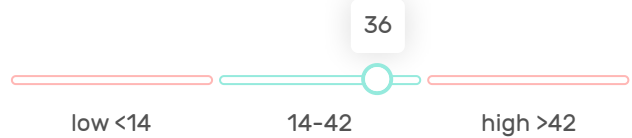
### HbA1c (DCCT) 5.4 %

The diabetes test counts the number of red blood cells that are glycosylated (attached to sugar) and reports it as a percentage, e.g. if 7 out of every 100 red blood cells are attached to sugar, the HbA1c result will be 7%.



### HbA1c (IFCC) 36 mmol/mol

HbA1c can be expressed as a percentage (DCCT unit) or as a value in mmol/mol (IFCC unit). Since 2009, mmol/mol has been the default unit.



# Cholesterol

Your lipid profile is within the normal range. Your LDL "bad" and non-HDL cholesterol levels are within the normal range, whilst your HDL "protective" cholesterol and triglyceride levels are also normal. This typically indicates you are at relatively low risk of developing cardiovascular disease (assuming you are not already in the high risk category).

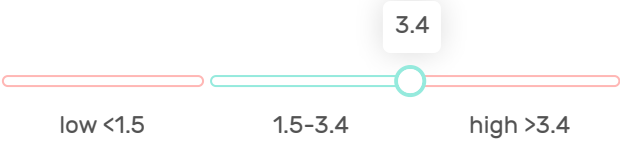
## Total Cholesterol 5.1 mmol/L

High total cholesterol is a risk factor for cardiovascular disease.



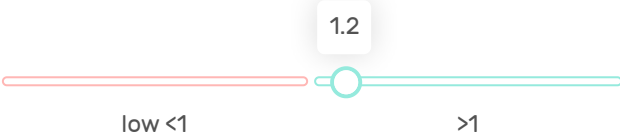
## LDL 3.4 mmol/L

LDL (low density lipoprotein) cholesterol is often called 'bad cholesterol' because it contributes to plaque, a thick, hard deposit that can clog arteries and make them less flexible.



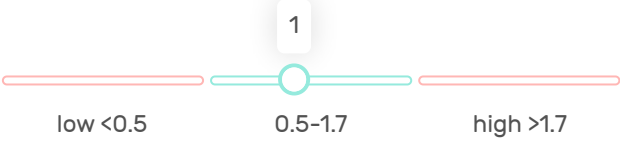
## HDL 1.2 mmol/L

HDL (high density lipoprotein) cholesterol is often called 'good cholesterol' and is protective against atherosclerosis.



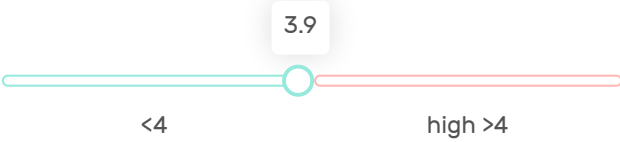
## Triglycerides 1.0 mmol/L

The main storage form of fatty acids in the body. Elevated triglyceride levels may contribute to hardening of the arteries, and increase the risk of heart disease or stroke.



## Non-HDL Cholesterol 3.9 mmol/L

Non-HDL cholesterol is considered an effective lipid measurement for assessing cardiovascular disease risk as it is believed to reflect levels of 'bad' cholesterol. Other risk factors include smoking, high blood pressure, diabetes, obesity, physical inactivity, age, gender, ethnicity and family history.

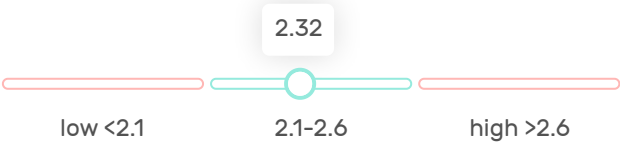


## Bone Health

Calcium and phosphate work together to help build strong bones and teeth. Your markers are within the normal range and don't indicate an imbalance that could cause bone weakness.

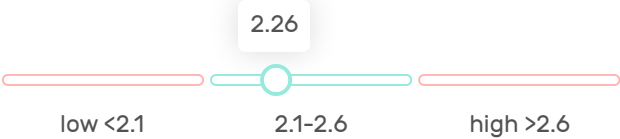
### Calcium 2.32 mmol/L

plays a critical role in developing and maintaining your overall bone health.



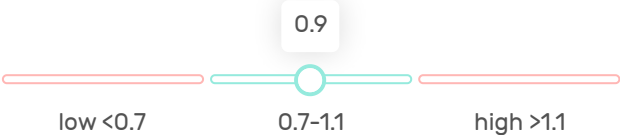
### Calcium (corrected) 2.26 mmol/L

Plays a critical role in developing and maintaining your overall bone health. If the total calcium result is abnormal, a corrected calcium calculation provides further information.



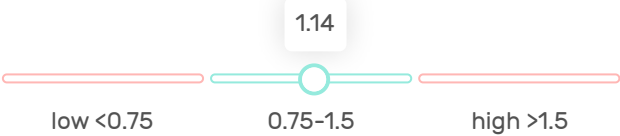
### Magnesium 0.90 mmol/L

Magnesium and calcium work together closely to maintain strong bones, and magnesium deficiency has been associated with an increased risk of osteoporosis.



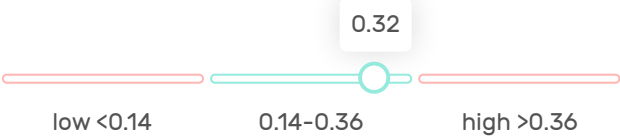
### Phosphate 1.14 mmol/L

Most phosphate in the body comes from foods such as beans, peas and nuts, cereals, dairy products, eggs, beef, chicken and fish contain small amounts of phosphate. Phosphates are vital for energy production, muscle and nerve function, and bone growth.



### Urate 0.32 mmol/L

If too much urate is produced or not enough is excreted, it can accumulate and lead to gout – an inflammation that occurs in joints.

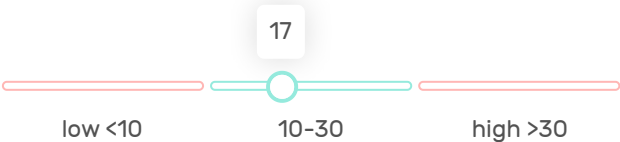


## Iron Studies

Your ferritin levels are below the normal range, which may indicate iron deficiency. During reproductive years iron deficiency in women is usually due to heavy menstrual losses, though other possible causes may warrant consideration. I would recommend following up on this result with your GP.

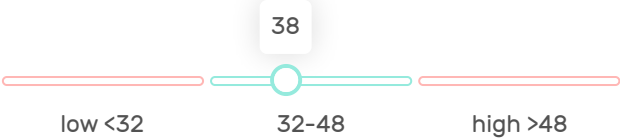
### Iron 17 umol/L

An essential trace element is necessary for forming healthy red blood cells and for some enzymes.



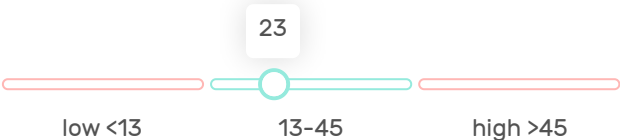
### Transferrin 38 umol/L

A protein that binds iron and transports it around the body (also known as TIBC). High levels indicate iron deficiency.



### Transferrin Saturation 23 %

Low levels typically indicate iron deficiency, and high levels can indicate iron overload.



### Ferritin 23 ug/L

The ferritin concentration within the blood stream reflects the amount of iron stored in your body and is reduced in anaemia.

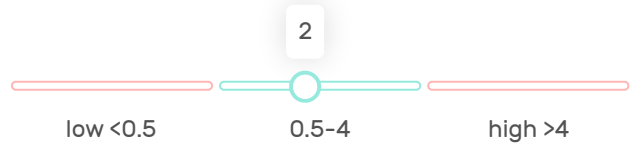


## Thyroid Function

Your thyroid hormones are all within the normal range which is typically a good indication that your thyroid is functioning as it should be.

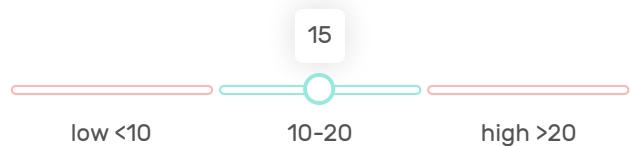
### TSH 2.0 mIU/L

Communicates with the thyroid gland to produce T3 and T4 which regulate metabolic functions. High TSH thyroid test levels indicates an underactive thyroid, and low levels an overactive thyroid.



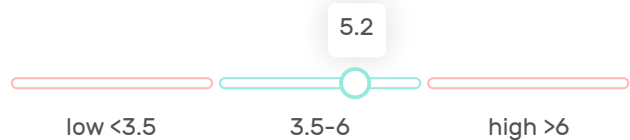
### FT4 15 pmol/L

Measures the thyroxine that is freely circulating and able to regulate metabolism. High FT4 thyroid test levels indicate an overactive thyroid, and low levels an underactive thyroid.



### FT3 5.2 pmol/L

Measures the triiodothyronine that is freely circulating. High FT3 thyroid test levels indicate an overactive thyroid, and low levels an underactive thyroid.



## Vitamin D

Your vitamin D levels are below normal range which may indicate a deficiency - we typically like to see vitamin D levels up above 75 nmol/L.

### Vitamin D 48 nmol/L

Although called a vitamin, vitamin D (25-OHD) is actually a steroid hormone which is activated by sunshine on the skin. It is essential for bone strength as it helps the intestines absorb calcium.



## Recommendations

### Take your blood pressure



Blood pressure is an important cardiovascular disease risk factor, and taking your blood pressure regularly is recommended. High blood pressure puts extra strain on your arteries and heart which over time can cause the arteries to become thicker and less flexible (making them more likely to become clogged up), or to become weaker. This can lead to a heart attack, a stroke, kidney disease or dementia.

### Optimise your iron



Your ferritin levels may indicate an iron deficiency. Some signs that your body is low in iron include feelings of weakness, tiredness and dizziness. Iron deficiency can result in a drop in haemoglobin levels (the protein in your blood that carries oxygen). Consider increasing the amount of iron rich food in your diet. Iron-rich food sources include meats, eggs, green leafy vegetables, (such as spinach, collard greens and kale), wheat germ, whole grain breads, cereals and raisins. Follow up on this result with your GP in the first instance is recommended.

### Optimise your vitamin D levels



You may benefit from vitamin D supplementation and increasing your exposure to the sun to approx. 10 minutes per day in the mornings. Calcium and vitamin D deficiencies can result in accelerated bone loss and increased risk of osteoporosis. You may also be interested in our [blog](#) on seasonal affective disorder, and the link to vitamin D deficiency.

## Check in with your GP



As always, please visit your GP to discuss your results. Laboratory investigations are an important aspect of healthcare, however they must be viewed in the wider context of your medical history, current health and concerns, physical examination findings and other investigations. These results do not replace the need for face to face medical consultation or regular visits to your local GP. A copy of your lab report is attached for your reference.