



HEALTH RESULTS
EXPLORE, MEASURE & IMPROVE your inner *(metabolic)* health



HRM Score

Health Results Metabolic Score





Why Know the Score

There is a little-known health fact that could literally save your life: there is one simple biological process that links virtually all chronic illnesses together. From heart disease to certain cancers, from Alzheimer's to strokes, from type 2 diabetes to obesity, this process is often the direct cause of chronic conditions. On the rare occasion it is not the primary reason for chronic illness, it still plays a leading role. This biological process is known as **insulin resistance**.

Insulin is a hormone that has many roles within the body, but in particular is responsible for ensuring our blood sugar levels remain in equilibrium. When this balance is challenged too frequently over prolonged periods, some cells start to become resistant to insulin. Your pancreas tries to compensate by producing even more insulin, which often then results in a condition called hyperinsulinemia (too much insulin). It is the combination of these two events (insulin resistance and hyperinsulinemia) that plays a role in virtually all modern chronic illnesses.

But the good news is that both are reversible.

Today, Health Results makes it simple to get an insight into your body's relationship with insulin. Once you understand your results, significant improvements can swiftly be made with subtle changes to diet and lifestyle.



HRM Score

The Health Results Metabolic (HRM) Score provides a convenient, reliable and easy-to-understand indicator of metabolic (inner) health.

The purpose of the score is to provide a physiological outcome measure of insulin resistance.¹ This can be used to assess current metabolic health and then track the impact of dietary and lifestyle interventions - if necessary it can track medical interventions too.

The algorithm created has been developed by leading doctors working on behalf of Health Results. It uses five widely available and accepted biomarkers of insulin resistance to provide a relative measure of metabolic health.² Improvements to your score are possible with effective dietary and lifestyle interventions.

This approach enables the use of quality improvement methodology to drive improvements in the metabolic health of individuals and populations.

The five measurements taken are:

- Waist to height ratio
- Blood pressure
- Blood glucose level
- Blood triglyceride level
- HDL cholesterol (HDL-C)

¹ A physiological outcome measure means results are based on measurements related to anything to do with bodily systems or physical measurements, rather than being assessed via self-reporting questionnaires or observations by a third party.

² A relative measurement means it only has significance in relation to something else.

Health Results Metabolic Score

When the five HRM measurements have been collected, they are entered into the Health Results software or app and a current score is calculated. Rather than receiving a score of just one figure, the score you receive is a range of plus or minus 10. This allows for variables such as: time of day, how relaxed you were when taking your blood pressure or if you were bloated while doing your waist to height measurement.

So, for example, if your score was 45, then your range is 35 to 55.

As you make dietary and lifestyle changes, the aim is to keep steadily improving your range by scoring higher up the scale.

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

A breakdown of the scoring system designed by doctors specialising in metabolic health is on the next page. There are further guides on how to take these measurements in our other Health Results handbooks.



Category	Criteria		Score
Waist			
Waist circumference	Men <90cm	Women <80cm	Adds a positive score
	Men 90-93.9cm	Women 80 - 82cm	No score added
	Men 94-102cm	Women 82 - 88cm	Negative score
	Men >102cm	Women >88cm	Increased negative score
Waist to height ratio	<0.5		Adds a positive score
Lipids			
Fasting triglycerides	<1.3 mmol/L		Increased positive score
	1.3-1.69 mmol/L		Adds a positive score
	1.7-1.99 mmol/L		No score added
	2-2.29 mmol/L		Negative score
	>2.29 mmol/L		Increased negative score
HDL-C	Men >1 mmol/L	Women >1.3 mmol/L	Adds a positive score
Trig : HDL-C ratio	<1.3		Adds a positive score
Fasting Glucose			
Fasting glucose	<5.5 mmol/L		Increased positive score
	5.5 mmol/L		Adds a positive score
	5.6 mmol/L		No score added
	5.7-6.9 mmol/L		Negative score
	> 6.9 mmol/L		Increased negative score
Taking T2D medication	Yes		Increased negative score
Blood Pressure			
	SBP <120 and DBP <80		Increased positive score
	SBP 120-129 or DBP 80-84		Adds a positive score
	SBP 130-139 or DBP 85-89		No score added
	SBP 140-159 or DBP 90-99		Negative score
	SBP 160-179 and/or DBP 100-109		Increased negative score
On medication for BP	Yes		Increased negative score

NOTE for people with T1 Diabetes:

- Fasting glucose scoring for people with T1D: if they know their last HbA1c %, our practitioner may use this number in place of their fasting blood glucose measure.
- If their HbA1c is unknown, we then score their 'fasting glucose score' as an average of their other 3 domain scores (rounded to the nearest whole number).

References

Waist

- Alberti et al. 'Harmonizing the Metabolic Syndrome,' *Circulation* 120(16):1640-5
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- Brown KF, Rungay H, Dunlop C, Ryan M, Quartly F, Cox A, et al. 'The fraction of cancer attributable to modifiable risk factors in England, Wales, Scotland, Northern Ireland, and the United Kingdom in 2015,' *British Journal of Cancer*. 2018;118(8):1130-41. Population attributable fractions (PAFs) were calculated for combinations of risk factor and cancer type with sufficient/convincing evidence of a causal association. Overweight/obesity has the second-highest PAF after smoking because it affects a high proportion of the UK population and is also linked with many cancer types.

Waist to height ratio

- Ashwell M, Gibson S, 'Waist to height ratio as an indicator of "early health risk": simpler and more predictive than using a "matrix" based on BMI and waist circumference,' *BMJ Open* 2016;6:e010159.

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Triglycerides

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Triglycerides : HDL-C

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Blood Pressure

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- Collaborators GBDRF, Forouzanfar MH, Alexander L, Anderson HR, Bachman VF, Biryukov S, et al. 'Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013,' *Lancet*. 2015;386(10010):2287-323. In terms of global attributable deaths, years of life lost, years lived with disability, and disability-adjusted life-years (DALYs) in 2013, six risks or clusters of risks each caused more than 5%: dietary risks accounting for 11.3 million deaths and 241.4 million DALYs, high systolic blood pressure for 10.4 million deaths and 208.1 million DALYs.

T1D HbA1c to eAG

- https://professional.diabetes.org/diapro/glucose_calc.

References

Fasting glucose and T2Diabetes

- Kaze AD, Santhanam P, Musani SK, Ahima R, Echouffo-Tcheugui JB. 'Metabolic Dyslipidemia and Cardiovascular Outcomes in Type 2 Diabetes Mellitus: Findings From the Look AHEAD Study,' *Journal of the American Heart Association*.0(0):e016947. In a large sample of overweight/obese adults with T2DM, we observed that low HDL-C and metabolic dyslipidemia were each associated with higher risks of atherosclerotic CVD events.
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