SAADI AKADEEMIA

Free guide · Insulin

Are your cells still responding to insulin?

10 questions about the early signs of insulin resistance.

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SELF-ASSESSMENT

Are your cells still responding to insulin?

Insulin resistance develops years before blood sugar rises. This test helps you notice early signs.

For each question, choose one answer that best describes you over the past month. Write down the points and add them up at the end. This takes about 5 minutes.

Question	0 points	1 point	2 points
1. Is your waist circumference more than half your height?	☐ No	☐ Don't know	☐ Yes
2. Do you feel sleepy or heavy after a carbohydrate-rich meal?	☐ Rarely	☐ Sometimes	☐ Often
3. Does hunger return within 1–2 hours after eating?	☐ Rarely	☐ Sometimes	☐ Often
4. Do you have skin tags or darker patches of skin on your neck or in your armpits?	☐ No	☐ Don't know	☐ Yes
5. How many times a week do you do strength training?	☐ 2 or more	☐ 1	☐ Never
6. How many hours do you usually sleep at night?	☐ 7–9	☐ 6–7	☐ Less than 6
7. Have your triglycerides been high or your HDL low?	☐ No	☐ Don't know	☐ Yes
8. Has your blood pressure been elevated?	☐ No	☐ Don't know	☐ Yes
9. Does a close relative have type 2 diabetes?	☐ No	☐ Don't know	☐ Yes
10. Do you have, or have you had, gestational diabetes or PCOS?	☐ No / does not apply to me	☐ Don't know	☐ Yes

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RESULT

What your score indicates

Add up the points for all your answers. This test is not a diagnosis—it helps you identify which areas may need attention and what to discuss with your doctor.

Points	What this generally means
0–6	There are few signs. Maintain your physical activity, sleep and diet quality.
7–13	Several early signs are present. Look at where you scored 2 points and start there.
14–20	There are many signs. Discuss measuring fasting glucose, insulin (HOMA-IR) and HbA1c with your family doctor.

If you have symptoms that interfere with everyday life, or you take medication, discuss your result with your family doctor. The Academy is an educational platform and does not provide personalised medical advice.

Read the article again: saadiacademy.ee/akadeemia/teemad/insuliiniresistentsus

HOW IT WORKS

Insulin resistance in plain language

Insulin is a hormone that opens the door to cells, allowing glucose to move from the blood into the cells. When cells respond less effectively to insulin, the pancreas has to produce more insulin to keep blood glucose within the normal range. As a result, blood glucose may remain normal for years even though insulin is already high.

Stage	What happens in the body	What the test shows
1. Early	Cells need more insulin to do the same job.	Glucose is normal, but insulin may be higher.
2. Compensated	The pancreas works harder, and fat accumulates in the liver and around the abdomen.	HOMA-IR rises, and triglycerides may rise.
3. Prediabetes	The pancreas can no longer fully compensate.	Fasting glucose and/or HbA1c rise.
4. Type 2 diabetes	Blood glucose is persistently high.	The diagnosis is made by a doctor.

Two scientific perspectives

Scientists debate whether excess weight develops first and causes insulin resistance, or vice versa. Research supports both views, and these processes probably reinforce each other. In practice, the same steps help in both cases: physical activity, sleep, food quality and muscle mass.

The book “Veresuhkru ohtlikud saladused” (Varrak) explains insulin and carbohydrate metabolism in depth.

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A PRACTICAL PLAN

4 weeks to support insulin sensitivity

Week	Focus	What to do
1	The order in which you eat foods during a meal	Eat vegetables and protein first, then carbohydrates. Replace sugary drinks with water.
2	Movement after meals	Walk for 10–15 minutes after your largest meal. Muscles can use glucose even without insulin.
3	Strength training	2 times a week for 20–30 minutes: squats, push-ups, resistance band exercises. Muscle is the largest store of glucose.
4	Sleep and dinner	Have your last meal 2–3 hours before bedtime. Keep a consistent wake-up time, even on weekends.

The plate method

- Half the plate: non-starchy vegetables (lettuce, cabbage, broccoli, cucumber, peppers).
- A quarter: protein (fish, eggs, poultry, quark, legumes).
- A quarter: whole grains, potatoes or legumes – not white bread and sweets as extras.
- In addition: a spoonful of healthy fat (olive oil, nuts, avocado).

Ainevahetuse Kood is an 8-week course that turns these steps into a weekly plan: saadiacademy.ee/kursused

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TESTS

What to discuss with your GP

Marker	What it shows	Note
Fasting glucose	Blood sugar in the morning before eating.	A late marker – may remain within the normal range for a long time.
Fasting insulin	How much insulin is needed.	An early sign, but not always included in routine testing.
HOMA-IR	Calculated from glucose and insulin.	Some studies consider values below 1,0–1,5 favourable.
HbA1c	Average blood sugar over about 3 months.	Your doctor provides the diagnostic criteria.
Triglycerides / HDL	The ratio reflects insulin sensitivity.	A high ratio may indicate resistance.
ALAT, liver ultrasound	Fatty liver often accompanies insulin resistance.	A doctor decides whether it is needed.

There is no scientific consensus on optimal ranges – they are based on individual studies. The laboratory's reference ranges apply.

HOMA-IR = glucose (mmol/l) × insulin (µU/ml) / 22,5. Calculate your result: HOMA-IR calculator.

- ☐ Have the test in the morning, after fasting for 10–12 hours.
- ☐ Avoid strenuous exercise and alcohol the day before.
- ☐ Bring previous results for comparison.
- ☐ Write down your questions before the appointment.

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WORKSHEET

Myths and a 7-day tracking sheet

Myth	What science says
“Normal blood glucose means everything is fine.”	Insulin can be high for years before glucose rises.
“Carbohydrates must be eliminated completely.”	For many people, changing the quality, quantity and order of foods is enough.
“Only weight loss helps.”	Physical activity and muscle mass improve sensitivity even before weight changes.
“Fruit is forbidden.”	Whole fruit with fibre is different from juice or a sugary drink.

My week

Daytime	Walking after a meal	Sugary drink (yes/no)	Sleep (h)	Hunger 2 h after eating (0–3)
1.				
2.				
3.				
4.				
5.				
6.				
7.				

Each month, Dr Saadi Club covers one topic with a protocol and a live session where you can ask questions: saadiacademy.ee/klubi

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WHAT NEXT

Explore the topic in more depth at the Academy

Insulin is a core topic in Ainevahetuse Kood. Over 8 weeks, the course gives you a plan for nutrition, physical activity and sleep.

Step	What it is	Where to find it
Free resources	Practical guides with worksheets: blood sugar, sleep, the vagus nerve, inflammation, lab tests.	/tasuta-materjalid
Webinars	One topic at a time, with questions and answers.	/veebinarid
Dr Saadi Club	A video lecture, a protocol and a live stream every month. A Facebook community.	/klubi
Ainevahetuse Kood	An 8-week core course for understanding metabolism and developing a daily plan.	/kursused
Book	“Veresuhkru ohtlikud saladused” (published by Varrak).	varrak.ee

Questions: kursused@synage.ee. We will respond as soon as possible. All articles: saadiacademy.ee/artiklid. © Saadi Akadeemia (OÜ Süsivesik). Sisu üle vaadatud: 2026 · järgmine ülevaatus 2027.

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