



REVERSE DIABETES2 NOW

#### Disclaimer

This participants' book has been developed as an integral part of the Reverse Diabetes2 Now group programme. The ideas and advice in this edition serve only as an inspiration to help you achieve a different lifestyle. This book is intended to support the programme and never to replace the advice from your primary care physician.

This participants' book is explicitly not intended as a guide in its own right and must not be used by third parties. Always contact a doctor if you require medical advice.

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# HOW SHOULD YOU READ THIS BOOK?

This book has three parts

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# Welcome to the Reverse Diabetes2 Now programme

Today, you'll take your first step towards reversing type 2 diabetes. We will guide you through this programme with the utmost care and attention. You will learn that unprocessed, varied food is not only very tasty, but it also makes a difference to your health. You will also learn that there are other ways to exercise than intensive sports, and that getting enough sleep and relaxing are very beneficial for your health. And hopefully, as with the hundreds of people before you, this will have a positive effect on you and your body.

Do you remember the first time you heard you had type 2 diabetes and when you were first given medication? You may probably already tried many things to manage your condition. From now, you will gain new insights about the development of type 2 diabetes, its effects, and why what you have tried so far hasn't had a long-lasting effect.

Since 2014, Voeding Leeft has specialized in reversing type 2 diabetes. Our programme is

constantly being reviewed. We investigate what our participant's need and look for new insights.

This participants' book outlines the fundamentals of the Reverse Diabetes2 Now programme. It is meant as a reminder – something to take home and to make notes in. You can also visit the private Facebook group to ask questions, watch video's, and share experiences, tips and recipes. Our team is also at your service behind the scenes.

I hope you'll soon be able to say that the programme has been of value to you, that it has given you insights, and that it has changed your life. I wish you every success in reversing your type 2 diabetes.

Best wishes,

Barbara Kerstens Voeding Leeft Programme Director



The condition 'diabetes mellitus' was described as 'honey urine' as early as 1,500 BC. That's right: doctors used to taste a patient's urine to see if they were diabetic. For a long time, lifestyle changes were prescribed to treat the condition, simply because no drugs were available. However, with the advent of medicinal insulin in the twentieth century and later other medication, doctors stopped advising lifestyle changes and increasingly prescribed drugs.

You may be familiar with the situation: talking to your GP about your lifestyle and, before you know it, being prescribed the first pill. This first daily pill turned into several pills a day, all in different shapes and sizes. And in the end, perhaps you needed to inject insulin. This isn't a very positive situation, especially if you're the one who has to take all that medication. Reverse Diabetes2 Now is about breaking this negative spiral. We do this by providing you with dedicated support to achieve a healthier lifestyle.

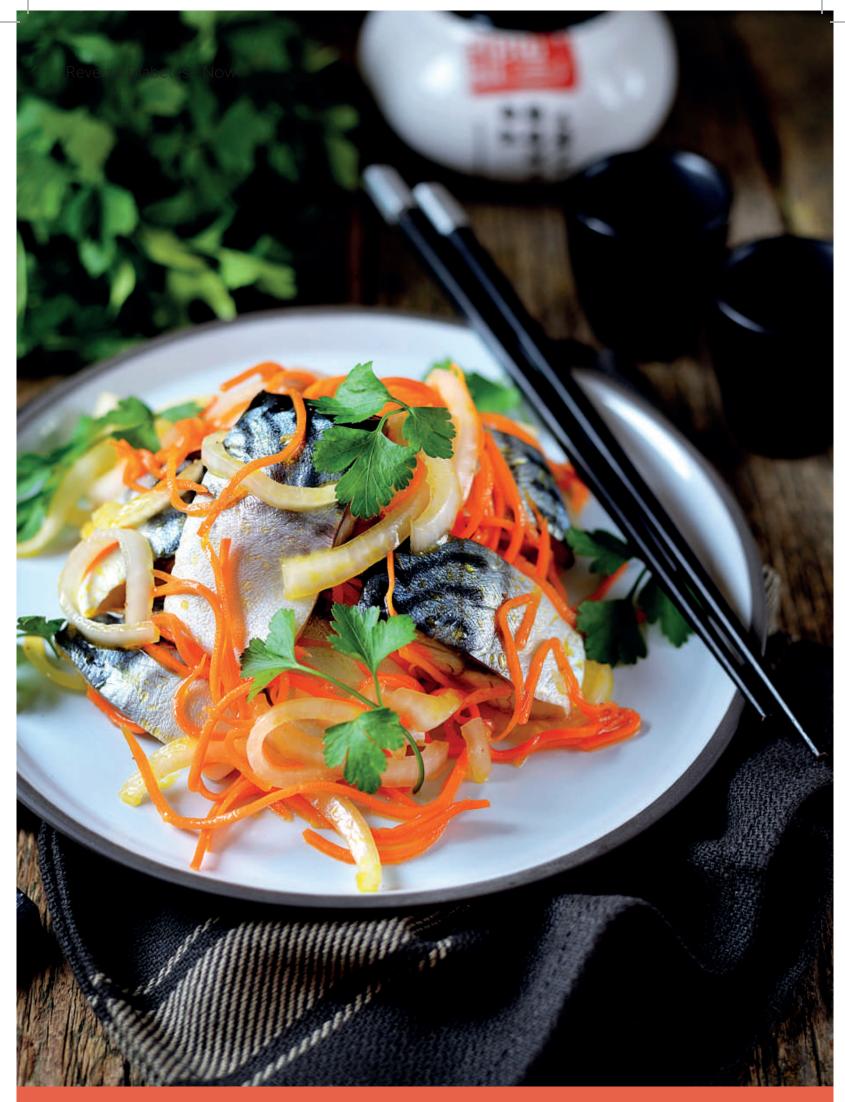
Your own doctor or physician will remain your primary care physician. If you have any questions about the programme and how to manage your diabetes, please contact the support team's practical support staff during the active phase (the first six months). We think it's very important that you also keep in touch with your own primary care physician, as he or she will continue supporting you after these six months. If you have any urgent questions or issues that are unrelated to diabetes, please contact your primary care physician.

My goal is for you to regain control over your condition. As one of my patients once put it so beautifully: 'I feel like I've been driving around without a licence for years, but now I've finally got my licence.' If you feel the same way after the next six months, then I've achieved my goal. I wish you the very best on your journey, as there are truly wonderful moments to experience when you make time for and focus on yourself.

Best wishes,

Nynke van der Zijl - general practitioner (GP) Head of medical team Reverse Diabetes2 Now





# FIRST THINGS FIRST

# 1 FIRST THINGS FIRST

#### Why are you participating?

You are participating in Reverse Diabetes 2 Now – congratulations on taking this fantastic first step! We'd like to ask you to write down your goal. This exercise can be very helpful in answering that question.

Sit on a chair. Place your feet on the ground. Feel your body sitting in the chair; feel the clothes on your body. Take a deep breath, so deep that it reaches the deepest point of your stomach. Your stomach may expand outwards. Then exhale all the way out. Hold your breath for two seconds before inhaling again. Do this three times.

If you want, close your eyes. Then ask yourself: what's the real reason I'm participating? Ignore any thoughts you have that are unrelated to the programme. Try to listen to the answers that are relevant. Also ask yourself: what do I want to work on and why is that important to me?

Take a few more deep breaths, just like before. It's time for the next question: What will I be able to do if I achieve my goals? How would my life look? Try to visualize the situation you have in mind as if you were already fully in it.

Imagine that situation is real – picture yourself. What kind of person do you see? What did you let go and what has become important?

Relax and breathe again and write down what you have just discovered during the exercise.

Don't worry if you struggled with this exercise. Simply try again in a couple of days.

#### About changing your lifestyle

Humans are naturally reluctant to change. We prefer to stick to the patterns we know, even if we know that things can be done differently. So, where do you start?

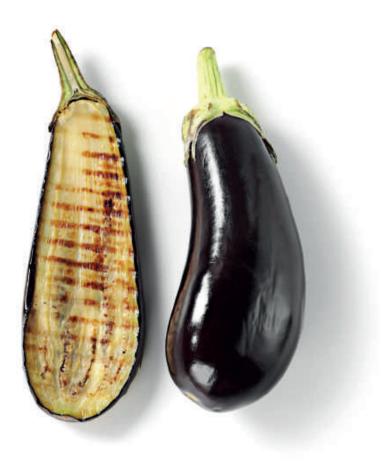
We're happy to support you during the process of change. Some things are useful to know right from the start:

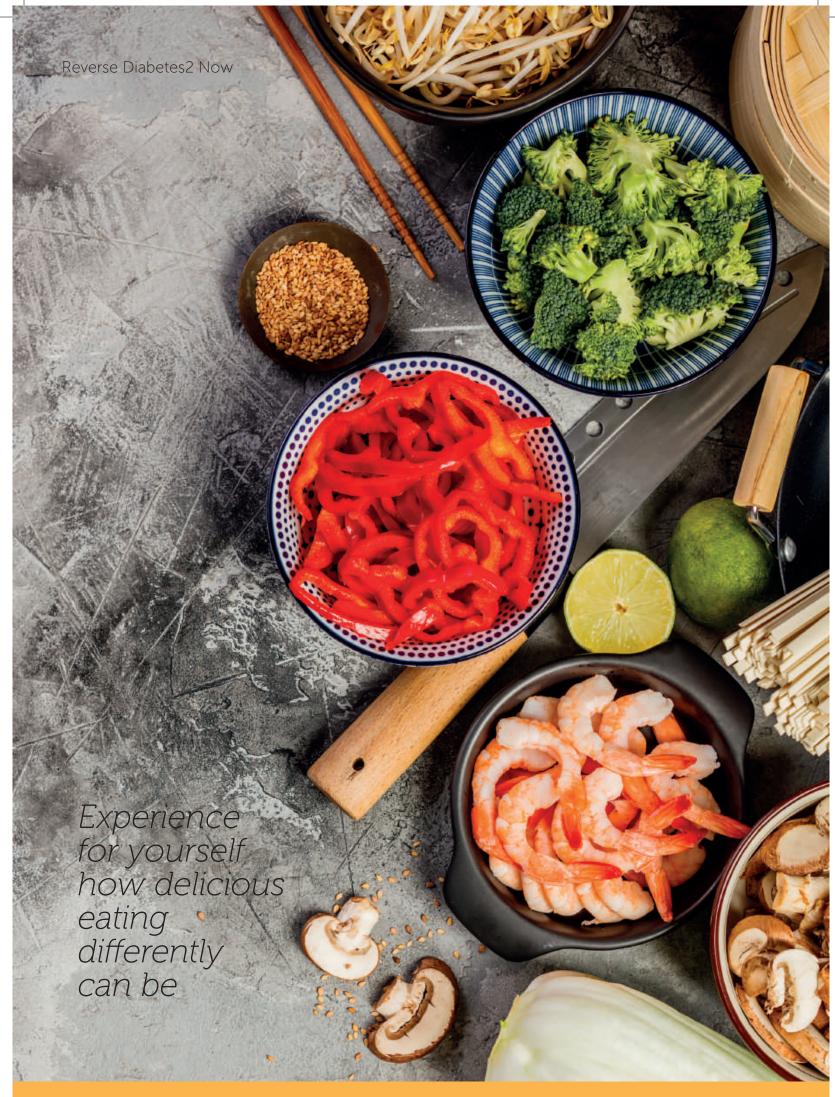
- 1 You are not alone: you will follow the programme with a group of 15 people. You can find support and inspiration in the online community.
- **2** All things are difficult before they get easy, but they are all achievable. We've already supported many people in changing their lifestyle and diet.
- **3** Most participants find the food tasty and filling and they find it easy to stick to the programme.

#### Feel it

During the programme days, we will talk a lot about lifestyle and type 2 diabetes. This book is also full of information itself. No matter how valuable that information is, the most important thing for us is that you notice how your lifestyle affects you. How do you feel after you've eaten something? Was it nourishing? Did you eat enough? What are your blood sugar levels?

Every person is different and reacts differently. Your body is a perfect indicator of what's good for you. If you're not used to listening to the signs, it might be a little tricky at first. Try it out for yourself – you'll be surprised.





#### The origins of and programme approach to type 2 diabetes

Various factors contribute to the development of type 2 diabetes. Both heredity and lifestyle factors play a role. If we look at the 'nutrition' factor, we see that diets in developed countries have undergone several major changes in the last few decades. Our bodies may be struggling to cope with this, which may be contributing to the development of type 2 diabetes.

These changes include a high intake of processed foods, such as white bread, refined pasta and rice, sugar and soft drinks, and processed meats, such as cold cuts. This diet also consists of far too little unprocessed food, such as vegetables, fruit, beans and pulses, nuts, and seeds. In the Reverse Diabetes2 Now programme, this is reversed as much as possible. We're going back to eating as many unprocessed foods as possible. However, this is about more than nutrition. We always combine healthy eating with a healthy lifestyle. Exercise, sleep, and relaxation are part of this and are very important.

#### What does type 2 diabetes do to your body?

'Nutrition' consists of a number of nutrients, such as proteins, fats, and carbohydrates. Our body breaks down carbohydrates in our diet into glucose, which enters the bloodstream. The pancreas then receives a signal that your blood sugar level is rising and produces insulin. Insulin ensures that the glucose is absorbed by the body. However, excessive insulin production (caused by eating a lot of refined grains, sugar-rich products, etc.) can 'tire' the body, making it less sensitive to insulin. The pancreas initially tries to solve this by producing more insulin. But at some point, this can cause the pancreas to become depleted and less insulin will be produced. As a result, your blood sugar level will increase and will not return to normal levels. And this is what we're trying to reverse in this programme.

In this chapter, we'll go into detail on these four topics, which we've expressed as principles and divided into four core elements: **Nutrition, Exercise, Relaxation, and Sleep**. We hope that this new lifestyle will bring health benefits for you, too.

#### REVERSE DIABETES2 NOW:



Great food



Different exercise



Good sleep



Nice relaxation



Medication decrease

#### NUTRITION

- 1 Eat a diet with as much variety and as many unprocessed foods as possible
- 2 Plant-based food is the foundation of your diet
- 3 Beware of products that are high in sugar or starch.
- 4 Eat a maximum of three meals per day
- 5 Stop counting calories
- 6 Prioritize natural, unrefined fats
- 7 Stay hydrated
- 8 Eat enough and savour your food

#### EXERCISE

- 1 Exercise before your first meal (or before meals)
- 2 All exercise counts
- 3 Make it a daily habit









#### RELAXATION

- 1 Be aware of what stress does to your body
- 2 Make time for relaxation in your daily routine
- 3 Do what's right for you

#### SLEEP

- 1 Ensure you get enough good-quality sleep
- 2 Establish a bedtime routine
- 3 Avoid consuming caffeine in the afternoon

© principles of Reverse Diabetes2 Now

# **Nutrition**



# 1 Eat a diet with as much variety and as many unprocessed foods as possible

The principle of the Reverse Diabetes2 Now programme is to eat a diet with as much variety and as many unprocessed foods as possible. Unprocessed food often contains the most nutrients and the least unnecessary additives. Valuable dietary fibres, vitamins, and minerals required to maintain healthy

bodily functions are lost at every stage of processing. Unprocessed food also leaves you feeling fuller.

#### What is unprocessed food?

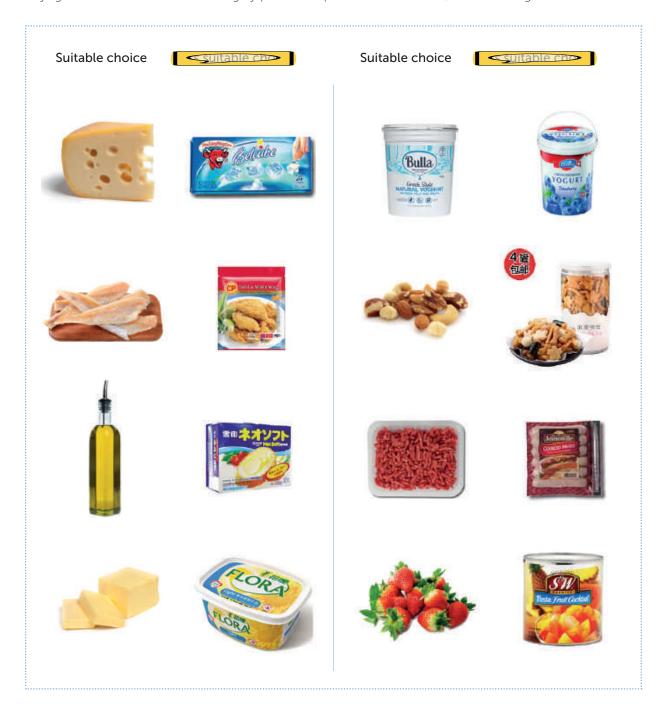
Unprocessed food is 100% natural and recognizable as such. In other words, it is food that has undergone the minimum amount of industrial refinement or preparation. Unprocessed food has very few additives and, likewise, very little has been removed from it. Of course, there is no such thing as completely unprocessed food: bread, grains, or dairy products are all processed. To make the food edible, it has to be prepared or altered. That's why we prioritize food that has undergone as little processing as possible.

Preparation techniques such as baking, steaming, and cooking are not considered 'processing'.



#### Eat like your great-grandmother

If your great-grandmother wouldn't have considered it as food, you're better off not eating it. Cheese is fine; spreadable cheese isn't. White fish is fine; fish fingers aren't. 100% peanut butter is fine; peanut butter spread isn't. Butter and olive oil are fine; cooking or frying oil isn't. Yoghurt is fine; yoghurt drinks aren't. Consider highly processed products not as food, but as a filling.



#### Variation is also important

Each type of food provides different nutrients. A tomato has different nutrients from an aubergine, and the same goes for an apple or berries and chicken breast or herring. It is important that your food consists of as many different (unprocessed) ingredients as possible. The more varied you eat, the more varied the nutrients you consume. That way, you're more like to ensure that your body gets everything it needs.

#### Your intestines

Did you know that our intestines (our gut) contain about two kilograms of bacteria? These bacteria are known as 'human gastro-intestinal microbiota,' 'gut flora,' 'gut microbiota,' or the 'intestinal microbiome'. If all is as it should be, most of your gut flora consists of hundreds of different types of 'good' bacteria that support you in different ways. For example, they help

to digest food, create vitamin K and certain B vitamins, and absorb calcium and magnesium. They also stimulate bowel movements, so that you regularly go to the toilet to remove waste products from your body. They are also an important helper for our immune system. Certain types of bacteria form a barrier against infections and unwanted bacteria.

#### The gut and its relationship with diabetes

There is no 'standard' gut flora. There are a thousand different types of bacteria living in your gut, and each type usually has its own composition. We don't really know what the ideal intestinal microbiome looks like. What we do notice, however, is that people with type 2 diabetes have a much smaller amount of different bacteria, and these bacteria have a different composition. This means the immune system is not optimally supported, leading to an increased risk of inflammation, inflammatory reactions, and digestion problems.

#### How can nutrition help the gut?

Stress, smoking, exercise, medication, and nutrition can alter the composition of the intestinal microbiome, but nutrition plays a particularly large role. To summarize: sugar, soft drinks, fast-digesting carbs, fried food, processed

meat, and too much salt stimulate the growth of the 'bad' gut bacteria. Unprocessed food, and especially prebiotic and probiotic food, can stimulate good bacteria. We'll eat these a lot during the programme.

#### What is prebiotic and probiotic food?

Prebiotic food is a collective term for dietary fibre in vegetables, fruit, whole grain cereals, beans and pulses, nuts, and seeds that the body can't break down completely. This is 'food' for the good bacteria in the gut. Good sources include onion, leek, garlic, asparagus, parsnip, pumpkin, and berries.

Probiotic food is food that contains living 'good' bacteria, produced by a process called fermentation. People have been fermenting food for centuries by adding fungi, yeasts, and bacteria. This changes the composition of the food and makes it last longer or more digestible. These kinds of natural products may support our intestinal flora. If this all sounds complicated – don't worry, it isn't. Probiotics are found in everyday products like full-fat yoghurt, cottage cheese, sauerkraut, or farmhouse cheese, as well as the more exotic tempeh (fermented tofu) and miso.



#### 2 Plant-based food is the foundation of your diet

Studies have shown time and again that eating plant-based food can have health benefits. The reason for this is still not completely clear, but science has several possible explanations. For instance, vitamins and minerals promote the proper functioning of our immune system. In addition, plant-based food contains a high proportion of dietary fibre, which is essential for

the proper functioning of our digestive system and gut. Furthermore, certain substances in plant-based food may have anti-inflammatory properties. Plants also contain substances called 'phytonutrients,' which give the plant its scent, colour, and taste. This is what gives garlic its smell, aubergines their colour, and Brussels sprouts their bitter taste. These substances are the plant's immune system. After all, a plant cannot run away from potential attackers such as fungi, bacteria, and insects. These substances probably also keep our own immune system alert. So we're going to eat lots of vegetables, as well as nuts.

#### How do you eat more plant-based food?

- Eat soups and salads for lunch.
- Eat a handful of unsalted and unroasted nuts immediately after breakfast or in your yoghurt.
- Eat leftover vegetables in an omelette for breakfast or lunch.
- Incorporate onions, peppers, and mushrooms into delicious sauces to accompany meat (white and red) or fish dishes.
- Make sure that half of your plate is filled with different vegetables.
- Eat a salad with your evening meal.
- For suggestions, please see the recipes.

#### What about meat?

There's nothing wrong with meat in itself. In fact, it contains many good, absorbable nutrients such as protein, iron, vitamin B12, and zinc. But for meat, as for vegetables, more doesn't necessarily mean better. That's why we're in favour of eating meat occasionally – unprocessed, of course.

#### Avoiding processed meat

We're going to avoid processed meat. This is meat with a longer shelf life because it has been corned or smoked, or because preservatives such as nitrates have been added to it. This includes meats such as ham, salami, and bacon, as well as sausages, schnitzel, and ready-made hamburgers. These processes and additives may produce carcinogenic substances that can contribute to the development of stomach or bowel cancer, strokes, and type 2 diabetes.

#### Unprocessed red meat on occasions

Red meat is eaten in moderation in this programme. This is meat that is red in colour when it's raw, such as steak, minced meat, ham, pork chop, lamb cutlet, and so on. The World Health Organization (WHO) has established that eating too much unprocessed red meat can increase the risk of developing bowel cancer. This is probably due to the haem iron, the substance that naturally occurs in meat and gives it its red colour. As haem iron damages the intestinal wall, red meat will only be on the menu every now and then.

# Raw white meat (poultry) or fish (including fatty fish) are on the menu more often

Poultry includes products such as chicken and turkey. Feel free to eat fish such as pollock fillet or cod or fatty fish such as salmon, herring, or mackerel. As they're animal products, there's no need to eat a lot of them.

#### Get enough vitamin D

The sun is the best source of vitamin D. This vitamin also occurs (in relatively small amounts) in our food, such as in eggs, fatty fish, and dairy products like full-fat yoghurt, cottage cheese, and butter. We need this vitamin to support different processes in our bodies, such as bone health and our immune system. As the Netherlands is in the northern hemisphere, our bodies can only produce vitamin D from sunshine between March and November (it's too weak at other

times). It's important to spend enough time outdoors during this period, but many people don't. The Health Council of the Netherlands (Nederlandse Gezondheidsraad) has therefore advised anyone who does not spend enough time outdoors, is pregnant, has a dark skin colour, or is over 50 years old (for women) or 70 years old (for men) to take vitamin D supplements. When in doubt, it's wise to discuss this with your GP





# 3 Beware of products that are high in sugar or starch

Products that are high in sugar and starch consist mainly of carbohydrates. Compared with proteins and fats, carbohydrates cause a quicker increase in blood sugar levels.

Fast-digesting carbs quickly cause a spike in blood sugar levels. These include products such as biscuits, sweets, cakes, soft drinks, fruit juices, bread, buns, potatoes and sweet potatoes, pasta, and rice.

Insulin is needed to process glucose in the blood. The higher the spike in glucose, the more insulin the body produces. If large amounts of insulin circulate in the body after every meal or snack, the cells become increasingly less sensitive to insulin – they no longer 'listen'. Another term for this is 'insulin resistance.' Insulin resistance increases over the years. As a result, you may feel that you're eating the same food as you did ten years ago, but now it makes you put on weight. Excess levels of insulin cause the body to convert glucose into fat, especially around the tummy area (abdominal fat).

Sources of more slow-release carbohydrates include buckwheat, quinoa, brown rice, sourdough and rye bread, oatmeal, and pulses and beans.

**But beware:** in people with type 2 diabetes, sources of slow-release carbohydrates can also cause spikes in insulin and blood sugar levels. That's why we will eat proportionally less of them. So keep a close eye on what a portion

does to your glucose level by measuring your blood sugar. In the long run, you might want to experiment with small amounts of these slow-release carbohydrates and see how they affect your body.

What about sweeteners? Sugar substitutes maintain your need for sugar, so try to avoid or reduce them.





#### 4 Eat a maximum of three meals per day

Don't snack. You can drink water, coffee, or tea (with nothing added) in between meals. In this way, your body and organs get a rest and the opportunity to recover between meals. Every time you eat or drink, your body makes insulin. This immediately stops your body burning fat for several hours. Make sure that you eat enough during a meal, so that you feel full. This will prevent you from getting hungry between meals.

Because we eat a maximum of three times a day, it is important to eat enough at these times to last until the next meal. Try to listen carefully to your body. If you don't feel hungry at the time when you would normally eat, feel free to delay eating for a while. If delaying a meal doesn't fit into your daily schedule, you should ask yourself whether you may have eaten just a little too much at the previous meal. It's fine to feel hungry just before the next meal, so you can enjoy the food even more (and lose weight).

If you notice that you're hungry between meals and feel the need to snack, check what you ate at the previous meal – you probably didn't eat enough. In the future, try to make the meal bigger, add more vegetables, and perhaps add more fatty ingredients, so you'll feel fuller for longer.



#### 5 Stop counting calories

It's not about HOW MUCH you eat, but WHAT you eat. We're not going to count calories anymore. Many people struggle with this, as calorie counting is the foundation of many diets. Following a diet that involves eating less (and often low-fat foods) makes little sense: it's difficult to maintain in the long run and forces your body into low-power mode. At Reverse Diabetes2

Now, we focus on making sure you feel full and eat enough when you are free to eat. Instead of reducing calories, our goal is to increase the quality of your food and make sure you feel full.

In this programme, we're looking to change your diet: a new way of eating and drinking that suits you and is easy to maintain. We hope that the 'real food' in this programme will give you much more energy and, of course, help to improve your blood sugar levels. During

this programme, you will eat tasty food – as unprocessed and fresh as possible – in portions that leave you feeling full. You will eat natural fats, lots of fibre, all kinds of crunchy, fresh vegetables, whole fruits, unprocessed meat and fish, tasty nuts, and full-fat dairy products.







#### 6 Prioritize natural, unrefined fats

It is essential to eat natural fats from fresh and unprocessed foods on a daily basis. This could include fat in salmon, mackerel, avocado, nuts, and extra virgin olive oil. They are needed for different processes in your body – they provide energy and ensure your body can absorb fat-soluble vitamins. In addition, they give flavour to your food and leave you feeling full. So it's no wonder 'low-fat' or 'light' products have little taste.

You keep eating more and more of these products, as it's fat that normally leaves you feeling full. For years, we thought fats were bad. However, more and more studies show that it is the sugars and fast-digesting carbs that have a negative influence on blood sugar levels and therefore on your health. Fats are not the culprit, so feel free to eat full-fat, natural products – even if they contain proportionally more saturated fats.

Make sure you regularly cook with or eat extra virgin olive oil, oily fish, avocado, nuts, and seeds.

However, full-fat yoghurt, full-fat cottage cheese or quark, butter, soft cheeses, feta, and mozzarella should be consumed in smaller quantities.

#### Eat fatty fish and other fish regularly

Fish is good for us. This is probably due to the omega-3 fatty acids in fish. These are fatty acids that the body needs but cannot produce itself. You need them to support the proper functioning of your brain, heart, and blood vessels, to name a few examples. Scientists haven't figured it out yet, but it seems that the omega-3 fatty acids from fish – in oily fish such as salmon, herring, and mackerel, as well as pollock and cod – have anti-inflammatory properties. As with meat and other foods, we prioritize unprocessed fish, so no fish fingers or battered fish but chunks of fish.



#### 7 Stay hydrated

Our bodies are 70% water. Every cell, every tissue, and every organ needs fluid to function properly. For example, water ensures that waste products are removed from the body, that your body stays at the right temperature, and that your joints remain supple. Even slight dehydration can lead to headaches and fatigue (feeling tired). Exercise also leads to fluid loss, and your body tries

to prevent this by making you tired. This is why your body needs to get enough fluids.

#### What should you drink?

Drink water or coffee or tea (without sugar, sweeteners, or milk) during your meals. You can add a dash of unsweetened whipped cream, but only do so when drinking with your meal. Between meals and after the last meal in the evening after the last meal, it is important to let your digestion rest. If you're thirsty, drink water.

Between meals, drink water, tea (including herbal tea) or coffee – again, without any additives. Try to vary daily which types or tea you drink.

Avoid soft drinks, fruit juice, and alcohol. Soft drinks and fruit juice should be avoided because they contain fast-digesting carbs; alcohol should be avoided because it strains the liver.

#### Why is milk less suitable for overweight people with diabetes type 2?

There's only one food that naturally combines sugars and fat. That food is milk. The combination of sugar and fat increases insulin production in the body and stimulates growth. That's why a baby, drinking its mother's milk or milk formulas, is able to grow substantially in a short period of time. Just like cow's milk helps the calf grow very quickly. As this increased insulin production – and therefore growth – is not a good combination in people with type 2 diabetes, we're going to avoid milk.

#### What about other dairy products?

Studies have shown that fermented dairy products can offer health benefits. This includes foods such as full-fat yoghurt, cottage cheese, crème fraîche, sour cream, and farmhouse cheese. This is probably thanks to the nutrients in dairy and their positive effect on gut flora because of the bacteria they contain and the fact that these bacteria convert the lactose (milk sugar) into acids, neutralizing the negative effect caused by drinking just milk.

How much fluid do you need? This is different for everyone. It depends on your level of exercise, the weather, and other factors. Drinking 1.5 to 2 litres a day is a good rule of thumb. If you struggle to drink more water, try adding some flavour to it. Fill a jug of water, put vegetables or herbs in it, cover it, and place it in the fridge. There are endless combinations!

#### Try to drink only two to three cups of coffee a day

Drinking coffee protects against the development of type 2 diabetes. But if you already have type 2 diabetes, it may have a negative impact. This is probably due to the caffeine, which reduces insulin sensitivity and leads to larger fluctuations in blood sugar levels. Besides that, it takes about 12 hours for your body to break down caffeine. So if you drink coffee in the afternoon or evening, this may affect your sleep. Avoid drinking more than two to three cups coffee per day, and preferably only in the morning.





#### 8 Eat enough and savour your food

We love food and enjoy eating. It's important that you enjoy food and savour what you're eating. Take the time to stimulate your sense of smell and taste by preparing your own food, enjoying the fragrant scents, and taking time to chew your food. This stimulates your digestive juices, mixing them better with your food and making it easier for the body to properly digest

your food and absorb it better. Taking your time to eat and chewing your food well is also good for your intestines. It also helps you to savour your food. Moreover, research shows that this technique means you eat the right amount for you personally. After all, you're more likely to continue eating and snacking if you're sitting in the front of the TV.

#### How to savour your food:

- Sit down at the table before each meal.
- Breathe in and out deeply three times, as deep as possible, before you start your meal.
- Don't be distracted by the newspaper or your mobile, iPad, or TV.
- Put your mobile phone aside and make sure it's on silent mode.
- Chew every bite well, and eat slowly.
- Count how many times you chew a bite.
- Savour the food.



#### Read the labels!

During the two-day programme, we will discuss various products and how to read the labels as part of the shopping game.

#### How do you read a label?

First check the list of ingredients to see what's in the product. The ingredient with the largest quantity is listed first; the ingredient in the lowest quantity is listed last. If there are more than five ingredients and/or names that are unfamiliar to you, this is probably a highly processed product. If that's the case, we'd rather avoid it.

#### How can you find out how many lumps of sugar have been added?

Check the list of ingredients first. Sugar can be disguised under different names such as syrup, fructose, dextrose, or honey. Look under the heading 'carbohydrates of which sugars'. 1 cube of sugar is about 4.5 grams. Divide the number of grams under 'carbohydrates of which sugars' by 4.5 to calculate the number of added sugar cubes.

#### How do you find out how many carbohydrates a product contains?

Look at the 'Nutrition Facts' label to see the carbohydrates per serving. Deduct the fibres. For example, each portion contains 15 grams of carbohydrates and 3 grams of fibre. This gives 12 grams of carbohydrates per serving.

Which products do you use a lot and would you like to discuss?			



# Exercise



# **1** Exercise before your first meal (or before a meal)

Our bodies break down carbohydrates into glucose that are absorbed into our blood. The pancreas then receives a signal that your blood sugar level is rising, and produces insulin. Insulin ensures that the glucose is absorbed by the body. As soon as your body produces insulin, it stops burning fat. As you don't normally eat at night, you wake up with an empty stomach in the morning. At this point, your insulin level is low and so you immediately start using your (abdominal) fat reserves.

When you exercise, your body needs extra energy. In the first instance, your body will use up its glucose stores and only then start to burn fat. This will reduce your blood sugar level and make your body more sensitive to insulin.

If you exercise before a meal and it has been a while since you last ate, your blood sugar level will usually be lower and you will have little or no insulin in your blood. Your body will then start to burn fat sooner. And that's exactly what we want, of course.

#### Why do you often feel tired?

If you have type 2 diabetes, you'll often find yourself in a negative spiral. The fluctuations in your blood sugar level, both large and small, can make you tired. Your muscles and cells can't properly absorb the glucose – the energy – so you have less energy. If you don't have

any energy, it's no wonder that you struggle to exercise. Because we're eating differently, your cells will more easily absorb glucose. This will give you more energy and therefore more motivation to exercise. Hopefully you will experience this effect soon!





#### 2 All exercise counts

Stimulate your muscles by exercising. There are many ways you can get exercise into your daily routine, whether at home, at work, or on the go:

- Travel by bicycle instead of by car, or park your car a little further from your home.
- If you have a job that involves a lot of sitting down, stand up regularly.
- Take a walk at lunch time.
- Take the stairs instead of the lift or escalator.
- There are numerous exercise classes on the internet that you can follow at your convenience.
- Consider using a pedometer or an app on your smartphone that registers your activity levels. You could even set yourself new, challenging goals.

Just as with nutrition, varied exercise is good for your body. Alternate your walk with a bike ride and your yoga pose with a strength-training exercise.

It can motivate you to meet someone you know and work out together. It's an easy first step – and you'll be in good company! For example, do something with your fellow Reverse Diabetes2 Now participants. You could also go on a walk with your dog. If you have children or grandchildren who love to play outside, get off the bench in the playground and get moving.



# 3 Make it a daily habit

Exercise is most beneficial if you do it daily. It's often difficult to get yourself into a routine at the beginning. But once you get used to it, you won't want to go back. There are some great apps that can help you stay motivated (some of them are even free).



# Relaxation



#### 1 Be aware of what stress does to your body

Short-term stress doesn't have to be bad for your body. Stress hormones are there to make us more alert and active in situations that demand a lot of us, such as in emergency situations, or to act if we are in immediate danger. It only becomes problematic when we experience prolonged or constant stress. Unfortunately, this has become normal for many people nowadays. This could include money-related or work-related stress, or problems in the family

Traffic, loud noises, and a lack of sleep can cause stress on a daily basis. Physical discomfort can also increase stress considerably. For example, the body experiences stress when we are ill, have inflammation, or experience pain.

#### Stress hormones

The key players when it comes to stress are the stress hormones cortisol and adrenaline. These increase under the influence of stress. For example, high levels of cortisol for a prolonged period can have an effect on many other processes in the body. For people with type 2 diabetes, it is particularly relevant that cortisol increases blood sugar levels (which are already high). This stimulates a vicious circle, as obesity and insulin resistance also increase cortisol. That's why it's very important to learn how to handle stress as effectively as possible.

Did you know that highly processed food and lots of sugars also cause stress in your body and increase levels of cortisol?



## 2 Make time for relaxation in your daily routine

Every day, take time to feel how high your stress level is and what you need to reduce your stress. Performing calming exercises or a breathing exercise can help to reduce stress hormones in the body. Regularly taking a few minutes to step back from your situation can really help you to see the bigger picture. Research shows that getting out into nature and enjoying the fresh air can also help. Exercise or rest and listen to the sounds of nature.

#### Tips

- Address the causes of stress.
- Close your eyes once in a while, do nothing at all, and focus on your breathing.
- Evaluate your stress on a daily basis by giving yourself a grade.
- Go outdoors.

Do something every day that you can really enjoy, and relax. Take a bath, write in your diary, read a book, do crafts, sing, dance, go outside, listen to some music, or do something else that relaxes yo				
Consider an activity such as yoga, meditation, or any other relaxation exercise.				



## 3 Do what's right for you

We regularly see people who want everything to be perfect down to the last detail. But perfectionism causes stress and other problems, so try to let it go. Try to do things in a way that works for you, even if you're tempted to eat something that was part of your old diet.

Every second is the beginning of something new. You can change your diet anytime and start again from scratch. If you've been tempted to return to your old diet, don't be hard on yourself – just start again. A reassuring thought!



# Sleep



#### 1 Ensure you get enough good-quality sleep

It is very important that you get enough sleep. A poor night's sleep can cause blood sugar levels to rise in people with type 2 diabetes. Sleep helps hormones to restore our body, reduce stress, and strengthen the immune system. The levels of the hormone cortisol, which is also a stress hormone, decrease during the night. This allows the body to rest. In addition, you don't eat while sleeping and your body starts to burn excess abdominal fat.

Sleep deprivation makes people hungrier and makes them eat more during meals. Going to bed later means a longer evening (and a longer time to have to control your appetite). Often, this becomes more and more difficult the later it gets. Food eaten in the evening is especially effective at stimulating the production of abdominal fat. This is the time of the day when people are the least active, but also when the production of insulin (growth hormone) is relatively, at its highest level. Where normally you would burn abdominal fat at night, late snack means your body spend hours digesting food – without burning a single gram of your own fat. Normally, insulin levels in the evening and night should be low, so that other hormones have a chance to perform their functions. A high level of insulin at night hampers recovery and increases blood sugar levels.



#### 2 Establish a bedtime routine

A lot of people look at their tablet, smartphone, or computer shortly before they go to sleep. Research shows that this can have an effect on sleep due to the blue light emitted by these machines, which keeps our bodies awake. Light naturally regulates our biological clock and therefore also our sleep. In addition, your phone, tablet, or computer often provide new stimuli that can keep you awake. Avoiding screens and displays two hours before going to bed is a good way to prepare for sleep. In addition, try to create a cosy and dark sleeping environment, with fresh air and a comfortable temperature. Or how about a calming sleep ritual, such as a relaxation exercise, soothing music, or a nice cup of herbal tea?



#### **3** Avoid consuming caffeine in the afternoon

People in the Netherlands drink huge amounts of coffee – it's a very popular drink. It takes on average about 12 hours for our body to process and get rid of the caffeine from a cup of coffee. We drink caffeine because it keeps us sharp, awake, and alert, so it makes sense to avoid caffeinated drinks after the morning. This will have a beneficial effect on your sleep.

If you manage your nutrition well and exercise enough but your blood sugar levels continue to increase, it can be valuable to look at your sleep hygiene.

#### Ask yourself the following questions:

- How many hours of sleep am I getting?
- How is the quality of my sleep? Am I a deep sleeper, a light sleeper, or do I wake often in the night?
- Do I wake up feeling rested?
- Do I go to bed at the same time and get up at the same time (including at the weekend)?
- How is my sleeping environment? Is it at a comfortable temperature? Is there enough fresh air?
- Is it dark?
- Are there any distractions in the two hours before I go to sleep, such as from the TV, phone, or tablet?
- Am I consuming caffeine after lunch?
- Is something keeping you awake? Write down any worries you have and deal with them during the daytime.
- Am I exercising too much just before I go to sleep? Regular exercise is good for your sleep, but not too close to bedtime.

n the lifestyle assessment that you fill in several times during the process, you will also be asked about the quality of your sleep. The above questions can help you to describe this.	
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# Background information

#### What else will we change?

We know from experience that adapting your lifestyle can lead to unexpected changes. This could include changes to your sight, to your feet, your gut, sweating, bad breath, mood swings, and possibly sugar withdrawal symptoms. There may also be changes in your sex life. These are subjects that we would often prefer not to discuss with others; or we may think we're the only ones affected. Please be aware that a lot changes when you adapt your lifestyle, and you're not the only one this happens to. Also with these subjects you are not alone. We would like to emphasize that you can ask questions about these matters during the return days or in the community.

#### Different types of diabetes medication and other medication

**Metformin** – This medicine helps the body to become more sensitive to insulin and slows down the release of insulin by the liver. The more sensitive the body is to insulin, the easier it will be to lose weight and the healthier your blood sugar levels will be. Metformin supports the reversal process and doesn't lead to hypos (hypoglycaemia). A suitable long-term medication, you can also reduce your usage if your HbA1c is nice and low.

Sulphonylurea derivatives (SU derivatives) (Glimepiride, Gliclazide, Tolbutamide) – It is often possible to reduce the usage of this medication before the start of the programme. If you take SU derivatives, your primary care physician or the Reverse Diabetes2 Now nurse will probably have given you advice before the start of the programme. SU derivatives stimulate the pancreas to produce and release insulin. This process is independent of the carbohydrate intake from our diet: the pancreas produces extra insulin whether you eat a large of small amount of carbohydrates. For example, reducing your carbohydrate intake while using the same quantity of tablets can quickly lead to a low (or too low) blood sugar level. In addition, the extra insulin will induce your appetite, which will make it difficult to lose weight and stick to your new diet.

'New' drugs – Many new diabetes drugs have come onto the market in recent years. GLP-1 receptor agonists and DPP-4 inhibitors affect the hormones that the intestine produces in response to food. The usage of these diabetes drugs does not need to be reduced immediately if you make changes to your diet, as they don't often cause hypos. In a later phase, depending on your blood sugar levels, you can reduce your usage of these drugs, or stop taking them, in consultation with your primary care physician.

Another group of new drugs are the SGLT2 inhibitors. These drugs ensure that the kidneys do not store as much glucose and that you get rid of the excess glucose in your urine (up to 70 grams per day). In combination with a low-carb diet, there is a (small) risk of a serious complication known as 'diabetic ketoacidosis.' To prevent this, every participant in this programme must stop taking this drug.

**Insulin** – If you take insulin, you should have received advice from your primary care physician before the start of the Reverse Diabetes2 Now programme. As the new diet is low in fast-digesting carbohydrates, it is often possible to reduce how much long-acting insulin you take and even stop taking it. You will also probably start to phase out short-acting insulin and also stop taking it in the long run.

**Blood pressure medication** – The new diet can cause you to lose excess fluid, especially in the initial stages. This is because the pancreas produces less insulin; insulin ensures that you retain more fluid through the kidneys. Combined with the weight loss that often occurs, this can have a positive effect on your blood pressure, which means it could be advisable to reduce your blood pressure medication. If you notice that you are often light-headed, have your blood pressure checked by your primary care physician and discuss your usage of the blood pressure medication. Do not change the usage of blood pressure medication on your own – always discuss this with your primary care physician.

#### Glossary

#### Digestion

The way your food is digested. Everything you eat ends up in your stomach. Then it goes to your intestines (gut). Your stomach and intestines break up the food into smaller pieces known as 'nutrients'. These nutrients pass through the intestinal wall into the blood. The blood transports the nutrients to all parts of the body.

Insulin helps to determine exactly where extra glucose and/or protein is needed, and where it is not. Insulin ensures that glucose from the bloodstream ends up in the cells that need it. Without insulin, your body cannot store glucose and proteins and you lose these nutrients through your urine (type 1 diabetes).

#### **Diabetes**

Diabetes is a medical condition. One symptom of diabetes is excess sugar in the blood. Sugar in the blood is also called 'blood sugar' or 'blood glucose'. Too much glucose in the blood is bad for the body. The spikes in blood sugar after meals cause 'glycation' (extra sugar in the body that binds to the tissues and veins contributing to neuropathy, eye problems and cardiovascular disease). Diabetes is a condition that prevents the body from properly regulating the amount of glucose in the blood.

#### Glucose

Sugars and starchy products are carbohydrates and, under usual circumstances, are broken down in the stomach and intestines (gut) into glucose. They then enter the bloodstream.

#### **Pancreas**

The pancreas is in the abdomen. The pancreas produces insulin alongside the opposite hormone 'glucagon' (which causes glucose to be released from the liver) and digestive juices.

#### Insulin

Our bodies are made up of cells. These cells need glucose and protein. Insulin is a hormone that ensures that the nutrients from the blood enter the body's cells. Insulin is therefore very important for the body. A person cannot survive without insulin. If someone doesn't produce insulin, they have 'type 1 diabetes (mellitus)'.

People with type 2 diabetes can still produce enough insulin on their own, but the insulin is no longer as effective. The glucose cannot enter the cells because they are no longer responsive to insulin. This causes excess glucose to circulate in the blood and stick to other parts of the body. In 10% of people with type 2 diabetes, the pancreas no longer produces enough insulin due to old age, exhaustion of the organ, or both. This may cause too much glucose to remain in the blood. Consuming fewer fast-digesting carbohydrates can help you manage this type of diabetes, but there is a smaller chance of reversing your type 2 diabetes.

#### Carbohydrates

Your food consists of nutrients. Carbohydrates are an example of a nutrient. Carbohydrates are found in food that contains flour, starch, lactose (milk sugar), and sucrose (cane sugar and beet sugar). This includes bread, potatoes, rice, pasta, couscous, bulgur, beans, fruit juice, sweets, biscuits, most convenience food and snacks, and honey. The body turns carbohydrates into glucose in the blood.

#### Blood sugar level, or blood glucose

Amount of glucose in the blood.

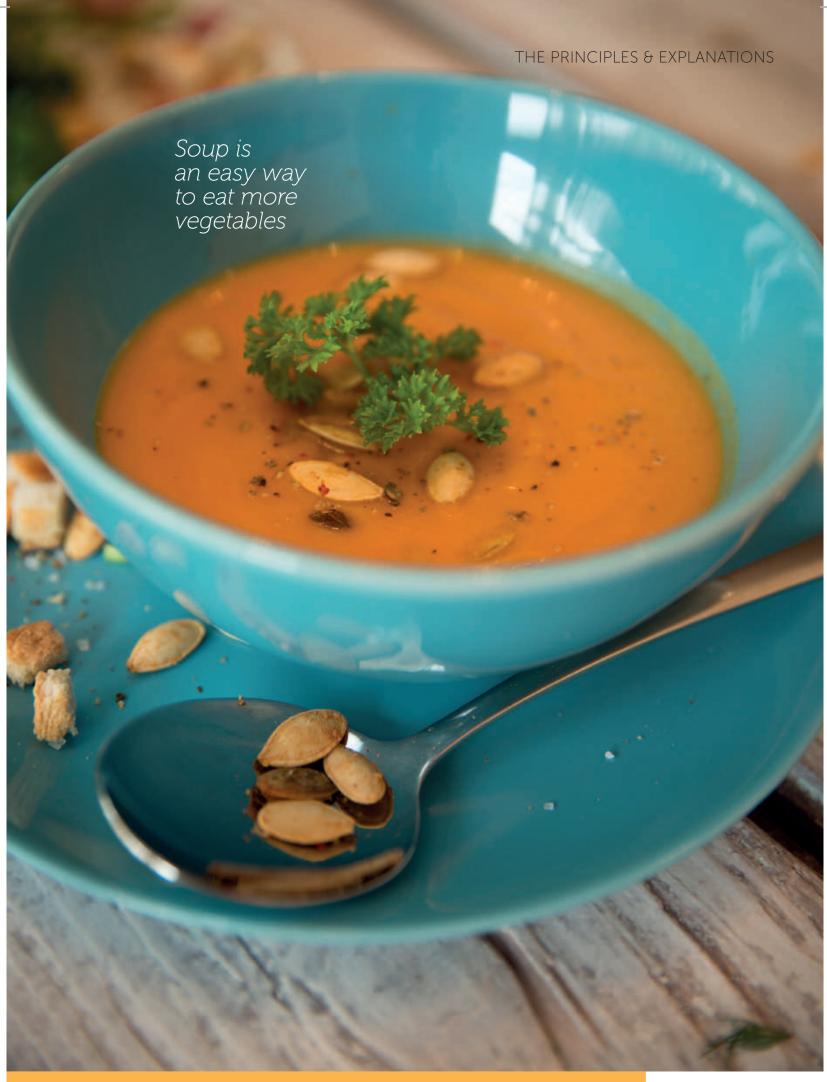
#### Venous plasma glucose

There may be a difference between the blood sugar level measured in the laboratory and the blood sugar level displayed on your blood glucose meter. Although your blood glucose meter must comply with strict conditions, a variation of up to 10% is permitted. That's why laboratory results are more reliable.

#### Fasting blood sugar

The level you measure when you wake up in the morning, before you have had breakfast.







# MEASUREMENTS & CONTACT

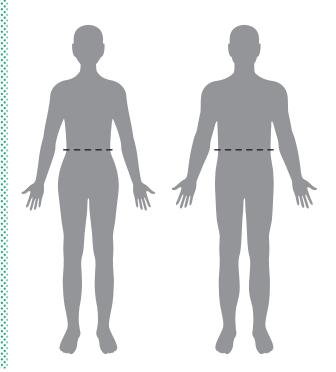
#### Regularly measure your waist yourself

The amount of abdominal fat (tummy fat) is a good indicator of your health. So even if you don't lose weight in kilos, dropping some centimetres from your waist circumference will improve your blood sugar levels and therefore your health. This is not always the case if you consider weight alone, as some people put on a lot of muscle mass during the programme.

#### Why?

For the purposes of this programme, we're more interested in your waist circumference than your weight in kilos or your Body Mass Index (BMI). As explained during the two-day programme, low sensitivity to insulin (insulin resistance) is a major culprit behind abdominal fat. An enlarged waist circumference (tummy) is often a symptom of insulin resistance. Conversely, this means that a reduction in waist circumference is a good indicator of the progress of the reversal process. Using your weight as an indicator is a bit trickier, especially because extra muscle gained from more exercise can distort the measurement. The same volume of muscle and fat will weigh very different amounts (although muscles are a lot heavier, they're what we need because they absorb a lot of glucose). So don't take the number on the scales at face value.

## Measuring your waist circumference



- Stand upright with your feet about 25 to 30 centimetres apart;
- Measure the area between the lower rib and the upper front side of the pelvis (draw a horizontal line at this point);
- Measure on bare skin, having exhaled normally, without the tape measure pressing too much against the skin;
- Use the tape measure to measure where the horizontal stripes are shown, over your stomach;
- Measure the circumference twice and note the average value in centimetres, rounded to the nearest 0.5 centimetre.

## BLOOD SUGAR MEASUREMENT

#### HbA1c and normal blood sugar levels

The HbA1c is your 'average' blood sugar level over the past eight weeks. If you have diabetes, you need to regularly measure your blood's HbA1c level. The abbreviation stands for 'haemoglobin A1c'. This is the glycated protein, the amount of sugar bound to the red blood cells (extra sugar in the body binds to tissues and veins contributing to neuropathy, eye problems and cardiovascular disease). The HbA1c tells you about your blood sugar levels over the past eight to ten weeks.

For diabetes patients, the HbA1c target is  $\leq 53$  mmol/L ( $\leq 7,0\%$ ). This means that your blood sugar levels averaged between 6 and 9 mmol/L (see table). Research has shown that maintaining this HbA1c level reduces the risk of long-term complications. Healthcare providers will give you advice that will help keep your HbA1c below 53 (7,0%). If you're aged 70 or over, you have a slightly higher target level ( $\leq 58$  mmol/L ( $\leq 7,5\%$ ) or  $\leq 64$ mmol/L ( $\leq 8,0\%$ ), depending on how long you've had diabetes). We ask you to have your HbA1c tested in the lab by your GP before the second and third return day. To advise you properly, it's important that you have a recent HbA1c measurement for us. Without this measurement, we don't have enough insight into how you're doing.

	Fasting blood sugar (plasma glucose)	Blood sugar after eating (plasma glucose)	HbA1c (mmol/mol)	HbA1c (%)
Normal	< 6,1	< 7,8	< 42	< 6,0%
Imbalance (pre-diabetes)	6,1 - 6,9	7,8 – 11,0	> 42	> 6,0%
Diabetes	> 7,0	> 11,1	> 53	> 7,0%

We ask you to have your HbA1c tested in the lab by your GP before the second and third return day. To advise you properly, it's important that you have a recent HbA1c measurement for us. Without this measurement, we don't have enough insight into how you're doing.



#### Blood sugar measurements

Use the table below to keep track of your blood sugar levels. You can also write down when and what you last ate here. To measure a 7-point daily curve, you should take a measurement at the following times: on an empty stomach, just before each meal, 1.5 to 2 hours after the meal, and before going to bed. Are there any other particularities or do you have any complaints? Then take a measurement of your blood sugar level.

Date	Time	Blood sugar level	How long ago did you eat?	What did you eat?	When was the last time you exercised? What did you do and when? Was this before or after a meal?	Stress level (1-5) (1 = none, 5 = a lot)

Date	Time	Blood sugar level	How long ago did you eat?	What did you eat?	When was the last time you exercised? What did you do and when? Was this before or after a meal?	Stress level (1-5) (1 = none, 5 = a lot)

Date	Time	Blood sugar level	How long ago did you eat?	What did you eat?	When was the last time you exercised? What did you do and when? Was this before or after a meal?	Stress level (1-5) (1 = none, 5 = a lot)

# SCHEDULE FOR FILLING IN THE MEASUREMENTS DURING THE GROUP PROGRAMME

	Height (in metres)	Waist circumference (in centimetres)	Weight (in kilograms)	HbA1c (mmol/mol)
Start of the two- day programme				
After 1 month (return day 1)	X			X
After 3 months (return day 2)	X			*
After 6 months (return day 3)	X			*

<sup>\*</sup>to be measured by the GP or specialist

#### Lab measurements

You have your HbA1c, blood sugar level on an empty stomach, and (if applicable) cholesterol measured before the start of the programme, before the second return day, and before the third return day. We do this so that the nurse can tailor the advice to your needs as best as possible.







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HbA1c	GLUCOSE	FOOD & DRINKS	PHYSICAL ACTIVITY	SLEEP		STRESS	

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GLUCOSE VALUE										
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PHYSICAL ACTIVITY	Before/after meal* *circle what applies for you	meal*		Before/ after meal	neal		Before/ after meal	neal		
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HbA1c	GLUCOSE	FOOD & DRINKS	PHYSICAL ACTIVITY	SLEEP		STRESS	

HbA1c	Value before breakfast	Value 1,5-2 hours after breakfast		Value before lunch	Value 1,5-2 hours after lunch		Value before diner	Value 1,5-2 hours after diner		Value prior to sleep
GLUCOSE VALUE										
FOOD & DRINKS	Breakfast		Snack	Lunch		Snack	Dinner		Snack	
PHYSICAL ACTIVITY	Before/after meal* *circle what applies for you	meal*		Before/ after meal	neal		Before/ after meal	neal		
SLEEP	From:	till:					Diabetes medication	ation		
	Quality Good or bad, if bad, why?	ad, why?					Time: Kind of medication:			
STRESS	Grade (0-10, 0 = no stre:	Grade (0-10, $0 = no$ stress, $10 = a$ lot of stress)					Self reflection What can be done different to reach your goal?	ifferent to reach you	ur goal?	
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Snack	Snac	Υ	Lunch		Snack	Dinner		Snack	
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