For Support Please Email

support@diabetes60system.org

Always consult your physician before beginning any exercise program. This general information is not intended to diagnose any medical condition or to replace your healthcare professional. Consult with your healthcare professional to design an appropriate exercise prescription. If you experience any pain or difficulty with these exercises, stop and consult your healthcare provider.
# Contents

**Introduction**........................................................................................................... 5

**Chapter 1: Understanding Diabetes**................................................................. 7

What is Diabetes? ........................................................................................................ 7
What is Insulin? ................................................................................................................. 7
Origin of the Term Diabetes ......................................................................................... 8
Symptoms of Diabetes ................................................................................................. 9
Emergencies Pertinent to Diabetes .............................................................................. 10
The Different Types of Diabetes .................................................................................. 11
  Gestational Diabetes .................................................................................................. 12
  Pre-Diabetes and LADA ............................................................................................. 13
  Type I Diabetes .......................................................................................................... 13
  Type II Diabetes ......................................................................................................... 15

**Chapter 2: About HIIT** ......................................................................................... 17

How does HIIT work? ................................................................................................. 17
Different HIIT Regimens .............................................................................................. 18
  The Peter Coe Regimen .............................................................................................. 18
  The Tabata Protocol .................................................................................................... 19
  The Gibala Plan ........................................................................................................... 20
  The Timmons Plan ...................................................................................................... 21
Why is HIIT So Popular? ............................................................................................. 21
HIIT and Diabetes ........................................................................................................ 22
How Does HIIT Help to Curb Type II Diabetes? ......................................................... 22
How HIIT Benefits Your Heart ................................................................................... 23

**Chapter 3: The Science Behind HIIT** ................................................................. 25

What Does Science Say About HIIT? ....................................................................... 25
Scientific Studies into Diabetes and HIIT ................................................................. 25
  The Results ................................................................................................................ 27
Tips for Benefitting from HIIT ..................................................................................... 29
## Chapter 4: The 4 Phases of HIIT

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>31</td>
</tr>
<tr>
<td>The 4 Phases Revealed</td>
<td>32</td>
</tr>
<tr>
<td>Phase 1</td>
<td>33</td>
</tr>
<tr>
<td>Phase 2</td>
<td>35</td>
</tr>
<tr>
<td>Phase 3</td>
<td>36</td>
</tr>
<tr>
<td>Phase 4</td>
<td>37</td>
</tr>
<tr>
<td>Fat-Burning Benefits</td>
<td>39</td>
</tr>
<tr>
<td>How to do HIIT the Right Way</td>
<td>41</td>
</tr>
</tbody>
</table>

## Chapter 5: The 8-Week Plan

<table>
<thead>
<tr>
<th>Week</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>44</td>
</tr>
<tr>
<td>2</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>46</td>
</tr>
<tr>
<td>4</td>
<td>47</td>
</tr>
<tr>
<td>5</td>
<td>48</td>
</tr>
<tr>
<td>6</td>
<td>49</td>
</tr>
<tr>
<td>7</td>
<td>49</td>
</tr>
<tr>
<td>8</td>
<td>50</td>
</tr>
</tbody>
</table>

## Section in Chapter 5

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Exercises</td>
<td>51</td>
</tr>
<tr>
<td>The Rules</td>
<td>56</td>
</tr>
</tbody>
</table>

## Chapter 6: Some Help

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIIT Devices</td>
<td>58</td>
</tr>
<tr>
<td>Tips and Tricks</td>
<td>59</td>
</tr>
<tr>
<td>Precautions</td>
<td>61</td>
</tr>
<tr>
<td>Conclusion</td>
<td>62</td>
</tr>
<tr>
<td>Disclaimer</td>
<td>62</td>
</tr>
</tbody>
</table>
Introduction

Modern eating habits and lifestyle choices have created a diabetes epidemic that shows no signs of slowing down.

According to the latest figures released by the International Diabetes Federation, there are already 387 million people with diabetes worldwide, and this figure is expected to rise to 592 million by 2035. [1]

In fact, the Centers for Disease Control and Prevention (CDC) predict that nearly ONE THIRD of all American adults will be diabetic by 2050 if current trends continue. [2]

And this is deeply worrying for us all, because diabetes is amongst the most serious health conditions in the world, having a hugely detrimental impact on the entire human body. It is a long-lasting, chronic condition that has serious implications for your short and long-term health, so it’s crucial that you address it immediately.

And here’s why...

According to a World Health Organization Multinational Study of Vascular Disease in Diabetes, a massive 50% of people with diabetes will die of cardiovascular disease, mainly heart disease and stroke [3], while the CDC state that diabetes is the leading cause of kidney failure, non-traumatic lower-limb amputations, and new cases of blindness among adults in the U.S. [4]

And if that’s not worrying enough, The International Diabetes Federation reports that a person dies from diabetes every 7 seconds [1]. Indeed, The World Health Organization state that your risk of dying is DOUBLED if you have diabetes, compared to those who don’t. [5]

So would you like to finally take control over your diabetes, and transform your health and life-expectancy in the process?

I thought so!
So let’s get started...
Chapter 1: Understanding Diabetes

What is Diabetes?

Diabetes occurs when your body is unable to maintain a balanced concentration of glucose in your blood. (Glucose is the simplest type of sugar and serves as the chief energy source for your body.)

This imbalance occurs because your pancreas is unable to produce the level of insulin your body needs to regulate your blood glucose level.

If you are suffering from Type 1 diabetes, your body is unable to produce insulin on its own. If you have Type 2 diabetes, then you are not producing a sufficient quantity of insulin – or the insulin that is produced does not work properly (known as insulin resistance).

As well as type I and type II, other forms of the disease include pre-diabetes, gestational diabetes and latent autoimmune diabetes, and we will discuss all of these in more detail in just a moment.

What is Insulin?

For your body to work efficiently and smoothly, you need to extract energy from the glucose you have consumed, and insulin is the hormone responsible for this conversion.

It is produced by the pancreas and allows glucose to enter the body’s cells, where it is used as fuel for energy. If you have diabetes, your body cannot make proper use of this glucose, so it builds up in the blood and can’t be used as fuel. Eventually, this leads to high levels of blood glucose (high blood sugar).

The glucose moves around your entire body via your blood. The blood glucose concentration is referred to as glycaemia. Self-care and suitable diabetic treatment can help you to monitor and manage your blood glucose levels.
There are numerous remedies available for the different types of diabetes.

You can take insulin injections to increase the insulin levels of your body, allowing it to better process the glucose into energy.

Alternatively, you can eat a number of healthy foods, spices and herbs that have been shown to lower blood sugar naturally, such as bananas, spinach, fenugreek, ginseng, cinnamon, bitter melon, aloe vera, milk thistle and curcumin, for example.

In addition to these options, the HIIT treatment for diabetes is also becoming a very popular choice, as our scientific understanding of the disease improves.

In recent years, HIIT has proven to be a very successful method for lowering blood sugar naturally, and we will discuss this treatment in detail later in the book.

**Origin of the Term Diabetes**

The word diabetes has its origins in the Greek language. It basically means a “tap” or “siphon”.

The Greek physician, Aretus the Cappadocian, named this condition as “diabainein” during the second century A.D. He referred to his patients passing a great quantity of water as ‘siphon’.

During 1675, the term “mellitus” was added to diabetes by Thomas Willis.

This is because the world “mel” in the Latin language means honey. Of course, the blood and urine of diabetic people contains an extra amount of glucose, and because glucose has a sweet flavor like honey, their blood and urine was referred to as “mel”.
So the literal meaning of diabetes mellitus is “passing of sweetened water”.

People in Ancient China discovered that ants became attracted to the urine of diabetic people as it had a sweeter taste, which led to the creation of the popular term “sweet urine disease”.

**Symptoms of Diabetes**

To recognize the onset of this condition, it is important to look for its signs and symptoms.

These include:

- Large amount of unexplainable weight loss
- Increased urination, also known as polyuria
- Increased thirst, also referred to as polydipsia
- Increased hunger or polyphagia
- Sudden changes in your vision
- Numbness or a tingling sensation in your limbs and hands
- Exhaustion and fatigue
- Slow healing body sores
- Being prone to more infections
- Dry and scaly skin

If you can spot any of these symptoms in your body, it is essential that you visit your doctor for a check-up.

Although many of these symptoms may be indicators of other conditions too, if you are experiencing any of them, it is crucial that you visit your doctor for a thorough check-up.

Of course, there are other less common symptoms of diabetes as well. While they are not
specific to diabetes alone, they can help to indicate the inception of the condition.

These include:

- Blurry vision
- Slow healing cuts
- Headaches
- Dizziness
- Itchy skin

It’s also worth noting that persistently high levels of blood glucose can result in the absorption of sugar in the lens of your eye, which results in strange changes in your eye’s shape, which can stimulate changes in your vision.

Moreover, numerous different kinds of skin rashes also occur during the course of diabetes. They are known as the “diabetic dermadromes”.

**Emergencies Pertinent to Diabetes**

Type I diabetics can experience something known as “diabetic ketoacidosis”, which is a disturbance of the metabolism characterized by vomiting, abdominal pain, nausea, deep breathing, and the odor of acetone in the breath. The deep breathing experienced during diabetic ketoacidosis is known as “kussmaul breathing”.

A hyperosmolar non-ketotic state can also take place during diabetes, but it is more prevalent in type II diabetics. It is normally caused by dehydration.

The major and most serious diabetes complications however are related to your blood vessels.

Around 75% of deaths linked to diabetes are the result of a coronary artery condition.
Other macro-vascular conditions that may affect individuals with diabetes include peripheral vascular disease and stroke.

Damaged blood vessels in your body inflict harm on your nerves, kidneys and eyes.

The damage imposed on your eyes is referred to as “diabetic retinopathy”. It is caused when the retina’s blood vessels become damaged. If the condition continues to worsen, your vision is compromised and you can become permanently blind.

The damage inflicted on your kidneys is referred to as “diabetic nephropathy”.

It can result in protein loss, tissue scarring and even chronic diseases of your kidneys that can require a kidney transplant or dialysis, or sometimes even both.

The damage inflicted to your body’s nerves is referred to as “diabetic neuropathy”. Symptoms include tingling pains, and an altered sensation of pain and numbness, all of which may result in damaged skin.

Most diabetics also suffer from foot conditions, including foot ulcers. They are very difficult to cure and may require amputation of the infected foot. Moreover, the proximal neuropathy during diabetes results in chronic muscle wasting, as well as weakness.

The Different Types of Diabetes

The most commonly occurring types of diabetes, namely diabetes type I and II, will be discussed separately in the next section. But before we do, let us first throw some light on the less well-known forms of the disease, which are gestational diabetes, pre-diabetes, and latent autoimmune diabetes.
Gestational Diabetes

Gestational Diabetes Mellitus (GDM) is somewhat similar to type II diabetes in many aspects. It involves a mixture of inadequate production of insulin release and responsiveness.

It takes place in around two to ten percent of all pregnancies, although in most cases, it improves and then disappears after delivery. However, around five to ten percent of women experiencing gestational diabetes develop diabetes mellitus after their pregnancy. In most cases, these women suffer from diabetes type II.

Gestational diabetes can be easily treated, but it demands full and thorough medical care with supervision during the course of the pregnancy. Management includes dietary changes, monitoring of the blood glucose and insulin.

Although it is usually transient if left untreated, gestational diabetes can destroy a fetus and even damage the mother’s health. The risks faced by the affected baby include an abnormally large birth weight, abnormalities in the central nervous system, malformations in the skeletal muscles and congenital cardiac illness.

Increased levels of insulin in the fetus can also inhibit the production of fetal surfactant and can result in respiratory distress syndrome.

The destruction of red blood cells can result in high levels of blood bilirubin. Prenatal death can also take place in chronic cases. Labor induction can also be indicated if the placental function is decreased. The doctor may also perform a C-section on the expectant mother if there is marked fetal pain and distress.
Pre-Diabetes and LADA

Other types of diabetes include pre-diabetes and latent autoimmune diabetes of adults (LADA.)

Pre-diabetes is a condition that takes place when the blood glucose concentration of an individual becomes extremely high, but not high enough to be diagnosed as type II diabetes mellitus.

Often, people who experience type II diabetes spend a long period in the pre-diabetes state.

Latent autoimmune diabetes of adults (LADA), or late-onset autoimmune diabetes of adulthood is a form of diabetes mellitus type 1 that occurs in adults, often with a slower course of onset. Adults suffering from LADA are generally misdiagnosed at the beginning with type II diabetes.

However, diabetes type I and II are the most commonly occurring forms of diabetes, so in this section we’re going to take a look at these two types in more detail.

Type I Diabetes

Diabetes Type I is essentially a condition of the auto-immune system; it is also known as idiopathic or immune mediated diabetes, and typically develops in children and young adults.

In Type 1 Diabetes, the immune system disrupts the insulin-producing cells in the pancreas, which are known as beta cells.

These are located in the Islets of Langerhans – the regions of the pancreas that contain its endocrine (i.e., hormone-producing) cells. The reason behind this reaction, however, is still unknown, but the result is that the pancreas is unable to produce any insulin at all. And
without the presence of insulin, your body cannot convert sugar into energy.

Type I Diabetes represents around ten percent of the total cases of the condition worldwide. It is considered to be amongst the most serious of childhood conditions. The onset of Type I Diabetes is typically quite sudden, and symptoms present themselves equally quickly.

The basic symptoms of the condition include unexplainable weight loss, fatigue, blurry vision, weakness, headaches, skin infections, increased appetite, dizziness, excessive urination and excessive thirst.

As the pancreas is unable to produce its own insulin, Type 1 Diabetics are dependent on daily insulin shots in order to fulfill the insulin requirements of their body.

And their blood glucose concentration must be tested several times during the day to determine whether or not their glucose is under control.

If Type I Diabetics are not given regular insulin injections, their bodies start to burn stored fat in order to obtain energy. This releases toxic chemical substances into the blood, which accumulate inside the body and result in a condition called “ketoacidosis”, which can lead to diabetic coma (passing out for a long time) or even death.

While Type I Diabetics typically experience high blood sugar levels, these levels can also drop very low at times as well. This condition is also accompanied by gastroparesis, where the dietary carbohydrates are erratically absorbed by the body.

Another complication associated with Type I Diabetes is Addison’s disease, although it only occurs in around one to two percent of type I diabetics.

Type I Diabetes can be partly inherited via multiple genes; the HLA genotypes are known to increase the likelihood of the condition. [6]
Environmental factors can trigger the condition in people susceptible to Type I Diabetes, too. And although evidential proof is still required in this area, it is understood that there is a relationship between the Coxsackie B4 Virus and Type I Diabetes. [7]

**Type II Diabetes**

During Type II Diabetes, the body becomes resilient to the routine effects produced by insulin. Moreover, your body loses the capacity to produce enough insulin in your pancreas over time. The exact cause of this condition remains unknown, although genetics have a strong role to play in determining your likelihood of developing Type II Diabetes.

The symptoms of Diabetes Type II include:

- Passing excessive urine
- Being extremely thirsty
- Feeling lethargic
- Slow healing cuts
- Unexplainable hunger
- Leg cramps
- Blurry vision
- Gradual weight gain
- Mood swings
- Skin infections

Around 85 to 90 percent of all diabetes cases are represented by Type II Diabetes.

The condition normally occurs in adults above the age of 45. However, an unhealthy diet and sedentary lifestyle can induce the onset of Type 2 Diabetes in children, adolescents and young adults. If Type II Diabetes runs in the family, then your chances of acquiring the condition are higher than normal.
For instance, if your paternal grandfather and father have Type II Diabetes, then you are likely to inherit a vulnerability to the condition. A change in your environment or lifestyle is enough to trigger the condition if you are predisposed to the illness.

The risk of acquiring Type II Diabetes heightens if you have any of the following:

- High blood pressure
- Obesity
- Inadequate physical activity
- Poor diet
- An ‘apple’ physique where extra weight lies around the waist

You are also quite likely to develop Diabetes Type II in the following cases:

- If the condition runs in your family
- If you are 55 years old or above
- If you are 45 years old or above and overweight
- If you are 45 years old or above and suffer from high blood pressure
- If you are 35 years old or above and have a Torres Strait Islander, Chinese or Aboriginal origin
- If you are 35 years old or above and belong to the Indian subcontinent or Pacific Island
- If you gave birth to a baby over nine pounds and have suffered from gestational diabetes during pregnancy
- If you suffered, or are suffering from, polycystic ovarian syndrome

There is no permanent cure for Type II Diabetes, but you can successfully manage it – and dramatically improve your symptoms – by adopting a healthy lifestyle that includes a healthy diet and regular exercise.

And the best form of exercise you can perform is high intensity interval training (HIIT).
Chapter 2: About HIIT

HIIT stands for high-intensity interval training.

It is also known as HIIE (high-intensity intermittent exercise) or SIT (sprint interval training.) It is a revised and improved type of interval training.

Basically, it is an exercise plan that alternates short time periods of very intense anaerobic exercise coupled with less vigorous recovery phases; in short, it is a type of cardiovascular workout.

The routine HIIT sessions vary from about four to thirty minutes. These short but intense workout periods improve athletic capacity as well as the condition itself.

How does HIIT work?

Essentially, HIIT recruits more muscle fibers than other form of exercise, rapidly depleting muscle glycogen levels in the process and promoting a greater increase in post-exercise muscle insulin sensitivity. [8]

To put it another way, you are kick-starting your pancreas to produce insulin again.

All the HIIT sessions are comprised of very intense physical activity and exercise. The sessions start with some warming up exercises followed by repetitions of incredibly intense exercises that are separated by a few medium-intensity exercises.

The medium-intensity exercises help you recover from the intense workout, and the sessions end with a relaxing, cooling down period.

When executing high-intensity exercises, make sure to put in 100 percent and lower your effort to about 50 percent when doing medium-intensity exercises.
The frequency and length of each exercise varies, as you will discover later, but you need to carry out high-intensity exercises at least three times for 20 seconds each.

If you have an instructor, they will decide the best high-intensity exercises for you according to your condition, gender, age and other medical conditions that you are suffering from.

Moderate-intensity exercises can include any form of exercise that, while not being ‘intense’, still helps to promote weight loss, such as a walk or a light jog, for instance.

Each person following the HIIT plan is entitled to follow their own formula. However, most people practice high-intensity and moderate-intensity exercises in the 2:1 ratio.

For instance, they go for a hard sprint for 30 to 40 seconds and then walk or jog for about 15 to 20 seconds.

Since a routine HIIT session tends to last for around four to thirty minutes, you can maximize your workout when you have limited time.

**Different HIIT Regimens**

HIIT was first developed by Peter Coe, but several versions of the plan are now found all across the globe. We will now take a closer look at some of the most popular versions.

**The Peter Coe Regimen**

Peter Coe, who was a famous athletics coach, used a type of high impact interval training combined with small recovery periods during the 1970s for training his son, Sebastian Coe.

This regimen was inspired by the principles created by Woldemar Gerschler, who was a university
professor and a German athletics coach, as well as the works of Per-Olof Astrand, a Swedish physiologist.

Coe used to set HIIT sessions with repeated and swift 200 meter races with recovery periods of 30 seconds between each run.

**The Tabata Protocol**

The Tabata Protocol is a HIIT version based on a research study carried out by Professor Izumi Tabata and his colleagues during 1996, and the plan initially involved Olympic speed-skaters.

During the study, the subjects executed ultra-intense exercises for about 20 seconds and then rested for around ten seconds. They repeated this cycle continuously for around four minutes. This exercise was carried out on a special cycle ergometer with mechanical brakes.

This regimen was called the IE1 Protocol by Tabata. Athletes that used this technique in the basic study trained around four times a week followed by one day of steady-state training. They were able to obtain results that were similar to that attained by athletes involved in steady-state training for approximately five times a week.

The VO2 max of the athletes following the steady-state training was higher than that of Tabata’s group, but the latter were able to gain more than the former. The Tabata training regimen is now followed by thousands of individuals practicing HIIT for losing weight and controlling their diabetes.
The Gibala Plan

Professor Martin Gibala, along with his team at the McMaster University in Canada, have also researched various forms of HIIT.

During a study conducted in 2009, they asked participants to warm up for three minutes followed by intense exercise for about 60 seconds at around 95 percent VO2 max, accompanied with a rest period of about 75 seconds. They repeated this cycle eight to twelve times and Gibala referred to this plan as “The Little Method”. [9]

Participants of the study trained three times a week and were successful in obtaining gains equal to athletes who practiced steady-state training at 50 to 70 percent VO2 max about five times a week. The Gibala plan is very demanding and daunting, but it is helpful in producing great results for your body.

Gibala’s group later published a more moderate version of the plan in the Medicine & Science section in the Sports & Exercise journal during 2011. This regimen was created as a milder option for sedentary people and diabetics who had not exercised or been involved in physical activity for more than a year.

The plan included a warm-up session of three minutes with ten 60-second repetitions at about 60 percent peak power. Each of the vigorous repetitions were followed by recovery periods of 60 seconds each, and the session ended with a cooling-down period of five minutes.
The Timmons Plan

Another popular HIIT version was created by Jamie Timmons, a biology professor at the University of Loughborough in the UK. His regimen comprised three two-minute sets of bike exercises, followed by high impact cycling for about 20 seconds.

You must exercise for about 21 minutes and the cycling must be practiced three times a week. This plan is helpful in improving the body’s insulin sensitivity and helps you to lose weight at the same time.

Why is HIIT So Popular?

HIIT training is growing in popularity amongst diabetics for two reasons.

Firstly, because it can be easily modified for people of all fitness levels and physical abilities. And secondly, because as we’ve already seen, it has been scientifically proven to burn fat, lower blood sugar levels and reduce the severity of numerous diabetes related symptoms.

According to the American College of Sports Medicine, “HIIT workouts can be performed on all exercise modes, including cycling, walking, swimming, aqua training, elliptical cross-training, and in many group exercise classes”, making these types of workouts extremely flexible.” [10]

More importantly, “HIIT workouts provide similar fitness benefits as continuous endurance workouts, but in shorter periods of time. This is because HIIT workouts tend to burn more calories than traditional workouts, especially post-workout.

The post-exercise period is called “EPOC”, which stands for excess post-exercise oxygen consumption. This is generally about a 2-hour period after an exercise bout where the body is restoring itself to pre-exercise levels, and thus using more energy.
Because of the vigorous contractile nature of HIIT workouts, the EPOC generally tends to be modestly greater, adding about 6 to 15% more calories to the overall workout energy expenditure.” [10]

HIIT and Diabetes

Incredibly, 1 in 12 people now suffer from diabetes. In fact, its prevalence has increased so rapidly in recent years that one person dies from this condition every seven seconds. [11]

To reduce these shocking statistics, we need to tackle diabetes with the correct approaches, and HIIT is one of the most effective available.

So let us now delve deeper into how HIIT works so well for diabetes; particularly type II.

How Does HIIT Help to Curb Type II Diabetes?

Numerous research studies have shown that HIIT reduces high glucose levels as well promoting improvements in cardiovascular conditions in people suffering from Type II Diabetes.

First of all, the vigorous exercise performed during the high-intensity interval increases your heart rate. With an increased heart rate, more blood is pumped to your vital organs, which then helps those organs to attain a larger quantity of oxygen from the blood.

Due to these changes, your metabolic rate improves, and a more efficient metabolic rate results in your body being able to more effectively control the elevated levels of sugar in the blood.

Moreover, strenuous exercise strengthens the walls of your heart, and of course, a strong, healthy heart reduces your risk of developing cardiovascular diseases, which are so common amongst diabetics.
How HIIT Benefits Your Heart

During any aerobic exercise, your heart’s performance is dependent on your heart rate, the quantity of oxygenated blood pumped, and the power of every heart contraction. When combined together, these variables help to augment the oxygen supply and blood flow to fulfill the requirements of your exercising muscles.

The contractions of your skeletal muscles enhance the blood flow returning to your heart, which increases the preload (blood filling in the ventricle). This increased preload improves your heart’s capacity during your exercise plan. This is a chief determinant of the aerobic performance.

This information is backed up by a research paper written by Coyle and Joyner in 2008.

Added to that, when you increase the duration of endurance training, your heart becomes stronger than before, as we’ve discussed. Your heart muscles thicken and the left ventricle’s size increases, which then enhances the performance of your heart during exercise.

According to research studies published during 2008 and 2010, steady bouts of stamina exercises, for example 20 to 30 minutes of non-stop cycling or running performed three to seven days a week, results in many other cardiovascular adaptations, such as the ones listed below:

- Improved heart muscle mass
- Increased stroke capacity
- Enhanced efficiency of oxidative enzymes
- Better disposal of different disposal wastes
- Increased chamber volume and dilation of the left ventricle
- Increased diffusion rates of fuel and oxygen into the muscles
- Improved carbohydrate sparing
- Increased number of mitochondria (the energy factories of body cells)
- Enhanced oxidation of fat
- Improvements in the cell regulatory processes of metabolism
- Better expression of the fatigue-resistant and slow twitch muscular fibers
Chapter 3: The Science Behind HIIT

What Does Science Say About HIIT?

By now, you should be well aware of how HIIT works and should know that it is an exercise plan that involves high-intensity exercises coupled with moderate-intensity ones, and short periods of rest.

But does science back it up?
The answer is yes.

In fact, there are a whole host of scientific studies that prove just how effective HIIT is at lowering blood sugar, burning fat, and improving the symptoms associated with diabetes.

Scientific Studies into Diabetes and HIIT

A 2013 study published in The Journal of Diabetes Research found that high intensity interval training when compared to moderate-intensity continuous exercise produced far greater reductions in blood glucose. [12]

And in another study published in The Journal of Diabetes, Metabolic Syndrome and Obesity, a single high intensity interval training session improved postprandial blood glucose for 24 hours, while a simple 2-week program reduced the average blood glucose reading by 13%, with the patients’ blood glucose remaining low for three days after exercise. [13]
Furthermore, a study published in the European Journal of Applied Physiology found that Type 2 Diabetes patients who took part in just ten 60 second exercises over a period of 2 weeks experienced “rapid improvements in glucose control”. [14]

While another study carried out at the Faculty of Human Kinetics at The University of Windsor in Ontario, Canada, concluded that just four 30 second exercise intervals with 4-minute rest periods caused blood glucose levels to be reduced immediately after each session. [15]

And if that’s not enough to get you working out, performing high intensity interval training over a longer period of time, such as a few weeks, has been shown to improve the metabolism of glucose in the body and increase the breakdown of fat with greater success than any other type of exercise, which is absolutely crucial when it comes to reducing the effects, and the risks, of Type 2 Diabetes. [16]

Added to that, further studies, such as those conducted by Laval University [17], Baylor College of Medicine [18], and the University of New South Wales [19] have shown that shorter, high-intensity cardio sessions result in greater fat loss over time than longer, low-intensity sessions.

Of course, many people reading this will be worried about trying high-intensity exercise. After all, many diabetics are older, sedentary, overweight, and lacking in energy.

But there’s no need to be concerned!

A low impact HIIT training initiative started by Dr. Gibala resolves this problem.

He carried out a study on obese diabetics who were 61 years old or above. At the start of the study, each participant’s weight, height, blood pressure, resting heartbeat and waist girth were measured. They were hooked to a 12-lead electrocardiograph and were also tested on an ergometer for their capability of using oxygen.
Researchers checked the quantity of oxygen each participant could easily use so that they could estimate the suitable intensity for each participant for their HIIT regimen.

The VO2 peak results enabled the researchers to understand the maximum power of a participant (measured in watts — just like your light bulb), and all the sprint intervals of their plan catered to about 90 percent of the maximum heart rate of the participant according to their oxygen test.

Samples of muscles from a participant’s outer mid-thigh were taken before and after the training. This site was chosen for the participant’s muscle biopsy, so that the major blood vessels and nerves of the participant would not be affected or damaged in the process. Their glucose was constantly monitored as well.

The volunteers carried out HIIT for three days a week: Monday, Wednesday and Friday, and they practiced this regimen for about two weeks.

Every HIIT session encompassed the following:

- Three warm-up minutes at about 30 watts
- Ten sprints of 60 seconds each with alternating 60 seconds of recovery
- Two cooling-down minutes at about 50 watts

The total time of each workout session was around 25 minutes, of which 20 were spent practicing the protocol of HIIT.

The Results

The results of the study revealed that the blood glucose level of the participants over the next 24 hours after the training improved significantly.

This shows that by training for a mere two weeks, all the diabetic participants displayed a greater
ability to control their elevated glucose levels. And a better glucose level meant that their metabolic health also improved.

Moreover, their mitochondrial capacity started improving too. Mitochondria are responsible for manufacturing energy in our cells, which is why they are often referred to as the cell’s energy factories. When their numbers increase, your ability to make energy increases with it. This is extremely important as you get older because the mitochondrial function tends to deplete as a person ages.

Therefore, it can be concluded that about 60 minutes of HIIT for two weeks can improve the two most substantial physiological indicators of the body.

Dr. Gibala was successful in proving that six HIIT sessions spanning over two hours were sufficient for improving the glucose-handling capability of diabetics.

As the Type II Diabetics often find it incredibly tough to curb their elevated glucose concentration, this plan proved to be a fantastic solution.

The best thing about HIIT is that it works for everybody, including the young and the old, the lean and the obese, trained athletes and even the sedentary.

In fact, a 2011 study showed the beneficial effects of HIIT on people with a sedentary lifestyle.

A group of 29 sedentary yet healthy young men and women participated in the study.

The control group was assigned to continue with their sedentary lifestyle, whereas the training group carried out low to moderate-intensity HIIT. The training group carried out ten-minute low-intensity exercises, such as cycling and moderate-intensity sprints.
The insulin and glucose response to glucose load and the aerobic capacity were measured prior to starting the exercise and three days after.

It was observed that even though the control group did not practice any high-intensity exercise, the insulin sensitivity increased to about 28% in the participants of the training group. This clearly shows that sedentary people can gain significant benefits from HIIT.

Of course, it’s important to mention that when you practice HIIT, you should always carry out the required amount of high-intensity exercises. Carrying out moderate or low-intensity exercises all the time will not be of much benefit to you, especially if you are diabetic.

You need to put your muscles and your heart to the appropriate test so that your heart rate improves, because with an enhanced heart rate, your metabolic rate will increase, which helps to control your blood sugar level. And by controlling your blood sugar levels, you are able to control and even reduce your diabetes symptoms.

Tips for Benefitting from HIIT

Here are a few helpful tips that can assist you in getting the most out of the HIIT regimen.

- **Consult Your Doctor:** Firstly, you must consult your doctor before practicing this regimen. Although it is suitable for people of all ages and conditions, it is best that you get a green light from your doctor prior to commencing with the plan. You can choose the different intensity and impact exercises as per your condition. Moreover, certain Type II Diabetics have several complications going on in their body, which is why they might not be able to carry out HIIT.

- **Monitor Your Blood Glucose Level, Heart Rate and Blood Pressure:** Secondly, you need to get your blood glucose level, blood pressure and heart rate checked before and after training. This helps you to monitor your progress and find out whether or not your condition has improved after performing HIIT.
• **Take Essential Medications:** If you are on any diabetes medication, you must not stop taking it unless otherwise instructed to do so by your doctor. If your healthcare provider feels that you are ready to move off the medication while you are performing HIIT, you can stop taking the drugs; however, do not stop using them on your own.

• **Adapt Your Exercise Plan to Your Limitations:** You must only practice the high impact exercises that your body can handle. If you feel dizzy or faint during the course of high-intensity exercise, it is better to terminate it there and then. It is important that your health does not become adversely affected during the plan, which is why you must consider your physical well-being prior to starting the HIIT plan.

• **Choose a Suitable Plan:** Our HIIT plan will be covered in detail in a later section, but please note that you can adapt it to suit your physical condition and the severity of your diabetes symptoms. If you think that you need to reduce the frequency of the HIIT sessions in a week, then do so.

Be sure to practice all of these tips to ensure that you achieve maximum benefits from the HIIT training plan and are able to successfully lower your blood sugar levels.

Diabetes can feel like a huge obstacle at times, but there is absolutely no reason why you can’t gain control over it, and live a long and happy life.
Chapter 4: The 4 Phases of HIIT

Overview

The eight-week high intensity interval training regimen is a unique concept. It combines high-intensity exercise with those of a low or mild intensity.

One session of the HIIT plan is divided into four phases: the warm-up, the high-intensity phase, the low-intensity phase, and the cooling-down period.

The warm-up and cool-down phases are carried out once only during each session, while the high and moderate-intensity intervals continue to exist during the entire course of a session.

For instance, if one session is supposed to last for 15 minutes, then the warm-up and cool-down phases will amount up to about six minutes of the session and the remaining nine minutes will be utilized by impact exercises.

The high-impact exercises during the eight-week HIIT regimen can be any exercise that makes your heart pump blood faster around your body while inducing extra sweating. For instance, you could do swift squatting, running or kickboxing during the high impact interval.

You could also use exercise tools like jumping sacks and jump ropes for high impact exercises. The low or mild-intensity exercises include jogging, walking or light jumping. Basically, you need to execute an exercise that pushes you physically while accelerating your heart rate.

The basic plan of the eight-week regimen is as follows:

- Begin with a work to rest ratio of 1:4 during phase one of the plan. You will be exercising for a maximum of 15 minutes during each session of this phase.
- The workout time increases during phase two and your work to rest ratio changes to 1:2. The workout time also increases so you’ll be working out for a maximum of 17 minutes.
- During the third phase of the regimen, the work to rest ratio becomes equal (1:1). You will now need to exercise for at least 18 minutes during each session of this phase.
- Finally, the work to rest ratio changes once more as the work ratio is doubled; the ratio now becomes 2:1, and the total workout time increases to 20 minutes. This is the most vigorous phase of the eight-week HIIT plan and will help you to burn fat, lose weight, improve your metabolic rate and gain lean muscle.

Generally, individuals practice each phase for about two weeks. However, as with all the other HIIT plans, there is no restriction on the duration of the phases.

If you feel comfortable jumping to phase two after one week of phase one, then do so. But if you feel as though your body is not yet ready to move to phase four after practicing phase three for two weeks, then don’t be afraid to continue with phase three for longer.

Of course, if you have been classed as obese and live a sedentary lifestyle, then you should start off slowly. You could increase phase one and two to about three weeks each and then devote one week each to the last two phases.

Alternatively, if you are an athlete or a bodybuilder who is aiming at increasing your muscle mass, then you could shorten phase one to about three or four days and increase the third and four phases to three and half weeks each, or as you feel comfortable.

**The 4 Phases Revealed**

Ok, you should now be well aware of how HIIT benefits your body, and reduces your diabetes symptoms.

So it’s now time to discuss the complete training procedure of our eight-week HIIT protocol.
As it has been principally designed for diabetics with a sedentary lifestyle and obesity issues, this regimen isn’t particularly intense. It begins with small workouts comprised of easy exercises, and even the high-intensity ones aren’t too tough, so there’s no need to worry!

The purpose is to get you moving, so even the most elderly and inflexible can feel comfortable practicing the protocol.

With time, your body will adapt and improve with the training, and as you become more flexible, the intensity of the HIIT sessions can be increased in order to produce greater results.

As discussed previously, the eight-week plan will be divided into 4 different phases. Note: There is no limit to how long you can carry on with a certain phase.

**Phase 1**

The plan starts with the first phase, which is normally practiced for two weeks.

Each phase of the eight-week protocol is formed of two periods: workout and rest. In phase one, the workout to rest ratio is 1:4, i.e. the resting period is four times longer than the exercise period.

The HIIT training program has been created for inactive and obese people, so the schedule is flexible and you are given a longer resting time.

If you are following this plan, you would need to carry out moderate to high-intensity exercise for 15 seconds and then rest completely or do a low-intensity exercise for about 60 seconds.

You need to repeat this cycle about ten times and finish it off with a 15-second high impact exercise. The total workout time of one session will be 14 minutes.
You can do any exercise that you like. For instance, if you are fond of sprinting, you can do that vigorously during the high-intensity interval.

You can also make use of exercise machines, such as the elliptical, treadmill, bicycle, and any other machine that enables you to execute high impact exercise.

During the low interval phase, you have two options. Either you can relax and take deep breaths, or you can continue exercising while lowering your intensity from moderate or high to very low.

The options you choose entirely depend on you and your current health and wellbeing. If the high-intensity interval of 15 seconds hasn’t exhausted you to your core and you have some energy left to exercise slowly, then you must continue exercising.

However, if you feel that you cannot breathe properly, are experiencing sudden and strong pains in your limbs or any other body part, or if you are panting with exhaustion and feel very weak, then it is best that you lie down to practice deep breathing, which is an excellent relaxation technique.

You need to carry out at least three to four sessions of HIIT in one week, so if you are doing a two-week phase one, then you must practice at least seven HIIT sessions during the entire phase. Remember to pace yourself during the phase. There is no need to hurry.

If you are not used to regular exercising and high-intensity training, then this sudden change will be quite hard on your body. This is why you must keep this process slow and gradual, but wholly constant. If after two weeks, you feel that you are not ready to increase the workout time, then feel free to extend phase one.

You can increase it to three or four weeks if you feel it is more appropriate for you.

Please bear in mind that the purpose of the HIIT protocol is not to make you hate exercise, but to make you understand how beneficial
exercise is for your body and health, so that you become motivated to practice an active lifestyle.

**Phase 2**

Once your body becomes accustomed to exercising, you should start to feel more energetic, flexible and healthier than before.

If that’s the case, you are ready to move to phase two.

If you feel as though any of these elements are missing, it is essential that you give your body a little more time before entering the second phase.

The routine time span of phase two is about two weeks. It starts in the third week of the protocol and ends with the fourth week. However, as stated above for phase one, you are permitted to increase its duration if you feel your body requires more time to adjust to a longer exercise period.

The workout to rest ratio changes in this phase as the rest ratio is reduced to half, so now the exercise to rest ratio becomes 1:2. You need to start off a HIIT session in the second phase with about 30 seconds of high-intensity exercise. Any exercise that works well for you can be executed.

Jumping with a jump rope, sprinting and running on a treadmill are popular exercises in the second phase.

Once the thirty seconds are over, you need to rest or carry out a relaxing, low-intensity exercise for about 60 seconds.

Once again, you need to understand your own body and its capabilities before deciding whether to rest or exercise lightly. Repeat this cycle ten times and end the session with a high impact exercise for about 30 seconds.

The total exercise time increases to 17 minutes from 14 minutes.
You must practice at least four sessions of HIIT during every week of the second phase. You should start to feel a marked improvement in your strength, flexibility, and energy levels.

Your muscles and joints won’t feel stiff and rigid like they did during the start of phase one and you should easily be able to exercise for 17 minutes. Once you feel your body has become invigorated and rejuvenated, and you can increase the exercise interval, you should step into the third phase.

**Phase 3**

The third phase is also designed to last for two weeks, however its duration is again entirely dependent on how you feel. You can increase or decrease its time period as per your body’s condition and your mental wellbeing.

With each phase, the rest period decreases and the workout period increases. In the third phase, the work to rest ratio become equal, so now you need to exercise and rest for the same amount of time.

Your body should be able to accept this change relatively comfortably by now and you should be able to withstand longer periods of activity than before.

Start off each session of the third phase with high impact exercise for 30 seconds followed by a low-intensity exercise or resting period for 30 seconds.

Most people choose not to rest in the third phase as they feel comfortable doing a low-intensity exercise for 30 seconds.
However, each person is different, which is why you are allowed to rest if and when you feel like doing so.

This is important to remember because many people ignore the messages their bodies are sending them and fail to take the necessary rest.

Instead, they keep exercising even when their bodies cannot handle the strain, which can be damaging.

You need to practice the 30-second exercise and rest cycle for 11 times in this phase and finish it off with a 30-second vigorous, high impact exercise. Sprinting is normally chosen for this step.

The total workout time increases to 18 minutes in the third phase.

You need to carry out at least four sessions of HIIT during each week of the third phase, so you would be practicing each session at least eight times during the two weeks of this phase.

If your body has become energized and can easily exercise more, you may practice each session five times a week.

**Phase 4**

Now comes the last and most important phase of the eight-week HIIT protocol.

It usually begins in the seventh week and ends with the eighth week. However, some people may start it earlier (during the sixth week) if their bodies are prepared for increasing the workout duration, while some people may reach it in the eighth week and practice it for only one week.
It is perfectly alright if you cannot carry out two weeks of phase four. The idea isn’t to make you a slave to exercise, but to empower you and transform your body, health, wellbeing, and of course, improve your diabetes symptoms.

The goal is to help you become the master of your own body, so you can guide it on the right path. And remember, even if you executed phase four for just one week, you will still gain a huge amount of benefit from it.

The exercise to rest ratio becomes rigorous in phase four. The exercise ratio doubles, so the new workout to rest ratio is 2:1. You need to begin each HIIT session in the fourth phase with a high-intensity exercise for 30 seconds, followed by a low-intensity workout or rest for 15 seconds.

Earlier on, you practiced each cycle for 10 or 11 times in a HIIT session, but things will become laborious and severe in this phase. Each cycle of 30-second high-intensity exercise and 15 second low impact exercise or rest needs to be carried out for 25 times in this phase.

Complete each session with a high impact exercise for 30 seconds. In this phase, the total time of each session needs to be 20 minutes. Make sure to practice at least eight sessions during the two week phase.

You should be sweating a lot during and after each session, and your body will feel exhausted afterwards.

However, as a result of this your stamina, speed and strength will improve and you will be able to take part in different physical activities much more easily than before. Your heart rate and metabolic rate will improve dramatically and your blood sugar will start to fall.
Fat-Burning Benefits

If you continue to follow the eight-week HIIT program, your body will undergo a dynamic transformation, and you will almost certainly lose weight.

A recent study conducted by The University of Western Ontario followed 10 men and 10 women who trained 3 times per week, with one group doing 4-6 30 second treadmill sprints (with 4-6 minutes of rest in between each), and the other group doing 30-60 minutes of steady-state cardio (running on the treadmill at the “magical fat loss zone” of 65% VO2 max).

After 6 weeks of training, the subjects doing the intervals had lost more fat.

That’s right, just 4-6 30-second sprints burns more fat than 60 minutes of incline treadmill walking! [20]

The difference between the results of the two groups is due to the famous “afterburner” effect produced by high-intensity interval training.

Another study carried out at the University of New South Wales in Australia found that patients who practiced HIIT three times per week, 20 minutes per session for 12 weeks, improved their aerobic power by 15% compared to the control group. [21]

They also experienced significant weight loss of 1.5 kg and a reduction in total fat mass of 2 kg.

Also the exercise group had a significant 17% reduction in visceral fat after 12 weeks.

Of course, these results are largely due to the intense nature of the workout, rather than the length of time you’re doing them, and that’s the key.
With HIIT, your metabolic rate remains elevated for a longer time period, and when your metabolic rate shoots up, your body starts burning calories at an accelerated pace.

Even when you stop exercising and are in a relaxed or stationary mode, your body continues to rapidly burn calories (the afterburner effect). This goes on for quite a long time, depending on how intense the workout was. This is how you burn excess fat and lose more weight through HIIT.

Moreover, your muscles also increase in size and strength during the HIIT regimen. This happens due to several methods.

Firstly, if you lift heavy weights during the high-intensity interval training then you will be placing a greater amount of stress on your muscles.

This will alter the muscle’s chemistry and will result in satellite cell and mTOR activation. Both of these changes basically increase the growth hormones in your body. And with an increase in the growth hormones, your muscle size increases.

Added to that, muscle size and volume will also increase due to hypertrophy.

These are separated into types: sarcomere and sarcoplasmic hypertrophy.

Sarcomere hypertrophy refers to an enhancement in the size of the muscle’s contractile region, whereas sarcoplasmic hypertrophy refers to an enhancement in the muscle’s on-contractile portion.

Sarcomere hypertrophy results in an increase in the muscle density, but the muscle’s diameter does not increase. On the other hand, during sarcoplasmic hypertrophy, the muscle increases in diameter, but its density decreases.

Hypertrophy is normally composed of both of these processes. The ratio of the sarcomere hypertrophy to the sarcoplasmic hypertrophy depends on the frequency and intensity of the training.

When you carry out intense workouts during the HIIT plan, you experience sarcoplasmic hypertrophy. It is accompanied with some
percentage of sarcomere hypertrophy as well. This is how you gain muscle mass via HIIT.

**How to do HIIT the Right Way**

You now know how to carry out each phase of the eight week HIIT regimen, but before you move on with the plan, it is important that you consider some important things, so that you execute HIIT the right way.

The high-intensity interval is the most difficult interval for most people as they often lose motivation to work harder during this stage. So here are some tips to help you out.

**Move Gradually:** You need to ease into this system very slowly. Your body won’t be ready to carry out a very intense exercise easily in the first phase, so be aware of this. Keep things relatively easy and pace yourself gradually.

Start off slowly with a cardio exercise, cycling or running and quickly finish it off after 15 seconds, or according to the duration of the high-intensity interval of the phase you are following. You can add in more intervals of high-intensity exercise or practice a more vigorous exercise once your body becomes comfortable to the idea of moving and exercising.

**Choose Exercises You Love:** Be sure to opt for exercises in the high-intensity interval that you truly enjoy doing. Never opt for a high impact exercise mode that you hate just because you assume that it will burn extra calories. This is the wrong way to approach the HIIT protocol.

If you try an exercise that you hate, you won’t be motivated to continue practicing it for long. You will then start to lose interest in
the regimen and will fall back to square one. This is why it’s crucial that you opt for an exercise mode that you love.

**Properly Fuel Your Body:** With each phase of the eight-week HIIT regimen, your body burns more calories. This is what you want, but you must not ignore your body’s requirements amidst all the fat-burning excitement!

Not eating enough food won’t help you. Rather, it will weaken your body and adversely affect your ability to carry out the exercises, which are needed to stimulate your metabolism and burn fat in the first place. So be sure to get the right amount of carbohydrates and proteins so that your body has enough energy to exercise. However, if your doctor has advised you to avoid certain foods, then of course, follow their advice.

**Keep a Timer with You:** Make sure that you time each interval in every HIIT session. This is extremely important because it will help you to figure out when to start and stop a certain interval and then move on to the next one.

Moreover, it helps you to note your performance and keeps you aware of your exercise duration. If you don’t keep a timer with you, you might lose track of time and rest or exercise for a longer time period than you should be.

Mostly, people tend to forget when to begin the high-intensity interval and prolong their resting period when they don’t have a timer, which defeats the purpose of the training. Therefore, keeping a timer with you is crucial for carrying out the plan efficiently.

**Listen to Your Body:** Throughout the eight-week plan, always pay heed to what your body has to say. You must not push it beyond what it can bear, or you could injure yourself, which could prevent you from exercising for a long period. Adjust your HIIT sessions according to the needs of your body so that you feel comfortable doing each exercise.
Be sure to practice all of these tips and during your HIIT protocol. If executed the right way, this training plan will produce spectacular results for your body and your long-term health.
Chapter 5: The 8-Week Plan

Week 1

Ideally, the total workout time of each session of phase one needs to be 6 minutes. However, people utilize this time period according to their body’s requirements and fitness objectives. Some do not satisfy the time limit, while others exceed it.

If you are an athlete or a bodybuilder intending to build strong muscles via HIIT, then you can easily extend a single session to 30 or 40 minutes. However, if you are a Type II Diabetic with a sedentary lifestyle, then you have the option of shortening the session for up to five minutes.

However, remember to manage the work to rest ratio properly per workout. The work to rest ratio during phase one (which generally lasts for two weeks) needs to be 1:4. This means that the resting period will be four times longer than the exercise period.

Nonetheless, bodybuilders often tend to change it to 1:2, although Type II Diabetics must adhere to the 1:4 ratio. The high intensity interval of each session in this week will be 10 seconds followed by a resting phase of 30 seconds.

Start your first day’s session with a one minute warm up. Do light jogging, muscle stretching and jumping exercises to warm up your body. Next, do about 10 seconds of vigorous exercise, such as running on a treadmill or exercising on a step machine, arch trainer or elliptical.

You can even do rigorous sprints during the high intensity interval.

The appropriate exercises for the diabetes 60 plan will be discussed in detail in the next section.
Afterwards, practice 30 seconds of low intensity exercise, such as walking, ab-crunching or jogging after the first high intensity period. Diabetics are recommended to rest during the moderate to low intensity phase.

Later, repeat the ‘hopscotch drill’ about three times, ‘arm swings’ two times and ‘jumping jacks’ four times.

Please note: All of these exercises are described in detail later in the book, and demonstrations can be found in the Diabetes 60 System members’ area.

For day two, you need to do’ hopscotch drills’, ‘side to side shuffles and ‘jumping jacks’ in this exact order. Repeat the first, second and third movements, four, three and four times, respectively.

The third day is a rest day.

On the fourth day, carry out ‘jumping jacks’, ‘side to side shuffles’ and ‘heel touches’ for four, four and three times, respectively.

The fifth day will be a rest day as well.

On the sixth day, you need to do four cycles of ‘jumping jacks’, three cycles of ‘arm swings’ and four cycles of ‘heel touches.’

On the seventh day, you can relax!

**Week 2**

Ideally, the total workout time of every HIIT session of week two is six to seven minutes, but you have the option of creating a time schedule convenient for you. The work to rest ratio becomes 1:2 during this phase, but bodybuilders tend to make it 1:1. For diabetics, the 1:2 ratio is ideal.
There is a high intensity interval of 15 seconds followed by a 30 second resting interval for all the HIIT sessions during this week.

On the first day, you need to do three cycles of ‘side to side shuffles’, two cycles of ‘step touch’ and four cycles of ‘punches.’

Carry out four cycles of ‘butt kicks’, two cycles of ‘step touch’ and four cycles of ‘on the knees pushups’ on the second day.

The third day needs to be the resting day, so exercising will not be necessary.

On the fourth day, you need to do four cycles of ‘jumping jacks’ followed by four cycles of ‘punches’ and four cycles of ‘side to side shuffles.’

Do four cycles of ‘jumping jacks’ four cycles of ‘butt kicks’ and four cycles of ‘on the knees pushups’ on the fifth day.

The sixth day is a no-exercise day.

For the seventh day, be sure to do four cycles of ‘butt kicks’, two cycles of ‘side to side shuffles’ and three cycles of ‘step touch.’

**Week 3**

In the third week, the work to rest ratio becomes almost parallel. The high intensity interval needs to last 25 seconds which is then followed by a 30 second resting interval.

Remind yourself to start the first day with three cycles of ‘step touch’, two cycles of ‘windmill twist and stretch’ and four cycles of ‘punches.’
On the second day you need to perform three cycles of ‘kneeling side-kicks’, three of ‘jumping jacks’ and three cycles of ‘dead bugs.’

The third day is a rest day.

Start the fourth day’s exercise with four cycles of ‘jumping jacks’, three cycles of ‘windmill twist and stretch’ and three cycles of ‘step touch.’

On the fifth day, you need to do three cycles of ‘kneeling side-kicks’, four cycles of ‘dead bugs’ and three cycles of ‘punches.’

The sixth day is a rest day.

On the seventh day, you should do four cycles of ‘step touch’, two cycles of ‘windmill twist’ and stretch and four cycles of ‘kneeling side-kicks.’

**Week 4**

During this week, the work to rest ratio changes to 1:1. This requires you to practice high intensity and rest intervals of 30 seconds each.

Start your first session with four cycles of ‘high knees’, two of ‘arm swings’ and three of ‘supine trunk twist’.

Day two is a rest day.

On the third day, do four cycles of ‘butt kicks’, three cycles of ‘on the knees push-ups’ and three of ‘kneeling side-kick.’
Start the fourth day’s session with four cycles of ‘high knees’, two cycles of ‘arm swings’ and two cycles of ‘supine trunk twist.’

You should perform five cycles of ‘butt kicks’, three of ‘kneeling side-kicks’ and two of ‘high knees’ on the fifth day, followed by a rest day on day six.

On the seventh day, follow up with four cycles of ‘high knees’, two of ‘on the knees push-ups’ and four of ‘kneeling side-kicks.’

**Week 5**

The work to rest ratio remains 1:1 in this week. Therefore, you will be exercising and resting for 30 seconds each time.

On day one, carry out four cycles of ‘hopscotch drill’, three of ‘bridge-ups’ and four lots of ‘lunges.’

On the second day, repeat four cycles of ‘high knees’, two of ‘lunges’ and four of ‘heel touches.’

The third day is a rest day.

This leaves you with a routine of practicing four cycles of ‘high knees’ on the fourth day, followed by four cycles of ‘side to side shuffles’ and four of ‘bridge-ups.’

On the fifth day, you should carry out four cycles of ‘hopscotch drill’, three of ‘heel touches’ and two lots of ‘lunges’ followed by a rest day on the sixth day.

This will enable you to finish off the week performing four cycles of ‘high knees’, four cycles of ‘side to side shuffles’ and three of ‘bridge-ups’ on the seventh day.
Week 6

The work to rest ratio remains 1:1 in week six, as well. Therefore, you will be exercising and resting for 30 seconds each time.

Day one is a rest day.

On day two, carry out four cycles of ‘side to side lunges’ five cycles of ‘step touch’ and four cycles of ‘bridge ups’.

On the third day, it’s time for four cycles of ‘fly jacks’, three cycles of ‘pendulum lunges’ and four cycles of ‘step touch’.

Day four comprises five cycles of ‘fly jacks’, five cycles of ‘punches’ and four cycles of ‘dead bugs’

The fifth day is a rest day.

This leaves you with a routine of practicing five cycles of ‘punches on the sixth day, followed by five cycles of ‘step touch and four cycles of ‘pendulum lunges.’

You will then finish off the week by performing five cycles of ‘fly jacks’, four of ‘side to side lunges’ and four cycles of ‘dead bugs’ on the seventh day.

Week 7

In week 7 the work to rest ratio changes. During this week you will be active for 30 seconds, followed by 20 seconds of light, active rest, such as stretching, for example.

Like week 6, week seven begins with a rest day.
On day two, you will begin with four cycles of ‘high knees’, two of ‘wall sits’, three of ‘butt kicks’ and three cycles of ‘arm swings’.

Day three is composed of four cycles of ‘butt kicks’, three cycles of ‘supine trunk twists’, four cycles of ‘on the knees push-ups’ and four cycles of ‘180 degree jump squats’.

Day four begins with four lots of ‘180 degree jump squats’, five cycles of ‘scissor runs’, three cycles of ‘arm swings’ and three lots of supine trunk twists’.

Day 5 is a rest day.

On day 6 the regimen includes five cycles of ‘high knees’, three cycles of ‘wall sits’, four lots of ‘butt kicks’ and finally four cycles of ‘arm swings’.

The week finishes with six lots of ‘scissor runs’, four cycles of ‘180 degree jump squats’, three cycles of ‘supine trunk twists’ and four lots of ‘on the knees push-ups’.

**Week 8**

In the final week of the 8-week HIIT program, the work to rest ratio is 2:1 – 30 seconds active followed by 15 seconds of light, active rest.

Once again, the week begins with a rest day so you have plenty of energy to take on the week ahead!

Day 2 begins with five lots of ‘scissor runs’, three cycles of ‘side to side lunges’, four cycles of ‘fly jacks’ and three lots of ‘heel touches’.

On day three it’s time for four cycles of ‘half burpees’, four cycles of ‘fly jacks’, three lots of ‘alternating shoulder taps in plank’ and finally, two cycles of ‘deep squats’.
Day four begins with five cycles of ‘scissor runs’, three cycles of ‘deep squats’, four cycles of ‘heel touches’ and then four lots of ‘side to side lunges’ to finish.

Day 5 is a rest day.

Onto day 6 and we have four lots of ‘fly jacks’, three lots of ‘alternating shoulder taps in plank’, four cycles of ‘side to side lunges’ and five cycles of ‘scissor runs’.

And to end the 8-week program, day 7 concludes with four cycles of ‘fly jacks’, five cycles of ‘heel touches’, three cycles of ‘deep squats’ and four lots of ‘half burpees’.

The Exercises

If you are not used to exercising regularly, or at all, you might not be familiar with many of the exercises we’ve just discussed. For that reason, you should familiarize yourself with them as much as you can.

As well as watching the videos in your Diabetes 60 System members’ area, this section will help you to understand how to practice every exercise that you need to execute during the plan.

**Hopscotch Drill** – Remember how you played hopscotch when you were a kid? Well, those skills are precisely what you need to remember for this drill! Begin with your feet shoulder width apart. Start by hopping onto the right leg, whilst the left leg bends and hits the glutes. Then hop again landing on both feet. Continue by hopping to the left leg, (right knee bends and hits the glutes) and then hop landing on both feet again. Continue this pattern.
Arm Swings – Stand up and extend your arms straight out by your sides. Slowly start to make circles of about 1 meter in diameter with each outstretched arm. Continue the circular motion.

Deep Squats – Stand tall with your feet hip width apart and your arms down by your side. Start to lower your body down as far as you can by pushing your hips back and bending your knees and pushing your body weight into your heels. As you are lowering into the squat your arms will start to raise out in front of you for balance. Keep a neutral spine at all times and try not to let your knees go over your toes. The lower body should be parallel with the floor and your chest should be lifted at all times and not rounded. Pause then lift back up in a controlled movement to the starting position.

Fly Jacks – Start in an upright position with your feet together and hands to the side. Begin the movement by jumping vertically while at the same time moving your feet out shoulder width apart and your hands out and across the front of the chest. Return to starting position and repeat. Make sure the core stays tight and the movements are quick and controlled.

Jumping Jacks – Stand with both feet together and slightly bend your knees. Keep your arms to your sides. Now, you need to jump and raise your arms simultaneously while separating your legs to the sides. Make sure to land on your forefoot with both legs apart. Moreover, your arms should be overhead. Later on, take another jump and lower your arms while returning your legs to the midline. Repeat this exercise several times during the time set for the high intensity interval.

Side-to-Side Shuffles – Extend your left leg to your body’s side and shuffle your right leg towards it. Your feet and chest need to be as straight as possible when you shuffle your two legs, one after another.

Heel Touches – Lie straight on your back. Crunch your abs and position your legs in a triangular shape. Lift your head and upper back slightly. Now, touch your heels in an alternating manner. While practicing this, ensure to touch one heel at a time.
Step Touch – Stand straight with your shoulders relaxed, abs fully engaged and your hands firm on your hips. Take deep breaths and extend your left leg outwards to its side and return to the starting point. Practice the same with your right leg and continue this step touching one side to another. A measuring tape, resistance band or a jump rope can be placed on the exercise mat to guide you further.

Punches – Stand straight and move your left foot forward. Your arms need to be firm. Throw a left jab, right cross followed by a left hook by making your elbow bend slightly at a 90 degree angle. Pivot the left heel upwards as you slowly rotate your left hip forward for powering a punch. Next, practice the same on the right side.

Butt Kicks – Stand with your knees quite close together and your arms on your side. Flex the left knee as well as your left leg right behind you in a manner that enables it to touch your glute. Return the leg to the exercise mat and repeat this step with your right leg. Try to perform it fast. The faster, the better.

Windmill Twist and Stretch – Stand in straddle with your legs about three feet apart. Arms out to the side as if you are making a ‘T’ shape. Keeping your spine straight, fold forward and place your hands on the ground, bringing your right hand to your left ankle. Now reach your left arm straight up behind you to open through your chest. Return to an upright position and repeat on the other side.

Kneeling Side-Kicks – Start kneeling on your exercise mat. Pull your abdomen in and then drop the tailbone towards the ground. Extend the left leg out to your side keeping your toe pointed towards the ground. Further drop your right hand on the ground under the shoulder and leave your arm perfectly straight. This will make your torso move to one side. In addition, drop the shoulder blades a little, so they open up. Rotate your arm a little, so your elbow’s inner crease moves outward. Place your left hand on your hip and place the right one behind your head. Lengthen the left leg as far away from your
body as possible and begin kicking. Practice this on the opposite side as well.

**Dead Bug** – Take a pair of dumbbells (any weight that you can conveniently handle.) Lie on your back and bend your knees at a 90 degree angle. Your feet must touch the ground. Tuck your abdomen in when you start lifting your left leg up a little above the hip. Extend the right arm above your head, with palms facing inwards so that your left hand extends by its side. Next, switch your legs and arms. Practice as many reps as you can during the high intensity interval.

**Supine Trunk Twist** – Lie straight on the back, keeping your knees and hips bent. Your feet should be flat and your arms should rest away from the sides. Position the arms as if you were carrying some trays. Start squeezing the shoulder blades. Flatten the neck gently to the ground and slowly rotate the legs towards the left side. Later, continue twisting your body while keeping the right shoulder blade and forearm facing the floor. Twist until you feel a stretch in the spine and right hip. Maintain this stance for three minutes or as long as you can handle, and then switch sides.

**On the Knees Push-Ups** – Arrange your body in the push-up position. Now bend your knees so they touch the floor and extend both your legs backwards. Do push-ups in this position.

**High Knees** – Stand straight and keep your feet at hip’s width. Look straight and keep your arms to your side. Start jumping from your left to your right, and vice versa. Lift your knees as much as possible while doing that.

**Bridge Ups** – Lie on the floor with your knees bent and arms flat down by your side. Using the strength in your legs, push your hips up off the floor, and lower back down. Keep your core engaged and controlled as you repeat.

**Lunges** – Stand on the ground keeping your torso upright. Step forward, so your right leg is two feet apart from your foot, left
motionless behind. Lower the upper body while keeping your torso upright. You must maintain your balance and then switch sides.

**180 Degree Jump Squat** – Stand with the feet shoulder width apart. Squat down as if you were performing a normal squat. Engage your core and jump in the air explosively and turn 180 degrees as you jump. On landing, now facing the opposite direction, lower the body back into the squat position and that is 1 repetition. Repeat the movement. Be careful to land with control and if there is any pain in knees stop immediately.

**Alternating Shoulder Taps in Plank** – Begin in a full plank position with feet hip-width apart. Lightly tap left shoulder with right hand. Return to start and then immediately lift left hand and tap right shoulder.

**Half Burpees** – From a standing position, quickly drop your body to the floor, so your hands and feet are touching the floor. Kick your feet out behind you and then jump them back underneath whilst remaining in a push up position. Try to do this as fast as possible.

**Pendulum Lunge** – Begin standing with your right leg and foot rooted to the floor and left leg lightly placed on the floor. Lunge the left foot forward, far enough so that knee is directly above the heel (it should not go past the toes). Hold for two seconds. Lift your left leg up and then extend same leg back to a rear lunge. Continue front and back lunges with the right leg. Switch and repeat as many times as necessary.

**Scissor Run** – Stand tall with your feet together, arms by your sides. Jump up and bring your left foot forward and your right foot back as you reach your right arm up and your left arm back (palms facing in). Land softly and then immediately jump again, switching your feet and arms in a scissor
motion as quickly as possible. Continue switching and jumping.

**Side to Side Lunges** – Stand with your feet and knees together. Take a large step with your right foot to the right side and lunge toward that leg down towards the floor. Make sure your right knee does not extend past your toes and keep your left leg relatively straight. Push off through your right foot to return to the start. Repeat on the left leg.

**Wall Sits** – Slide your back down the wall, bending your knees until they are bent at about a 90 degree angle. Your thighs should be parallel to the ground and it should appear that you are sitting in an invisible chair. Your knees should never extend past your ankles—they should be straight above your ankles. You may need to slide further up or down on the wall to get into this position. Hold this seated position, contracting your abdominal muscles.

In order to understand these exercises better, please consult the Diabetes 60 System members’ area, where you will be able to view the instructional videos.

**The Rules**

There are certain rules and regulations you need to follow when carrying out the Diabetes 60 System, if you want to benefit fully.

Here they are...

**Stop if you become dizzy** – In case you start feeling dizzy during the course of an HIIT session, experience a severe headache, or feel that you are about to faint, you must stop. It is evident that diabetics often suffer from dizziness and headaches that can become severe if not handled properly. This is why you must be patient with the HIIT plan and stop if you feel as if you do not have the strength to continue.

**Stop if you feel weak** – Be sure to stop your session immediately if you feel you are losing energy and will not be able to complete that day’s work. There is no shame in stopping when you feel your body lacks the energy to move forward. You understand your body better than anybody else, so you have the responsibility to make the right
decisions regarding your exercise. If you feel stopping the session is in the best interests of your body and health, then do not hesitate. It is better to practice the session another day instead of continuing it and hurting yourself.

**Move back one day if you cannot complete two sessions in a row** – It is best that you carry out two consecutive HIIT sessions, two days in a row. However, if you feel sick, dizzy, weak, or are experiencing any other health related issue, you must stop. You should move back one day and then repeat the three day cycle.

**Warming up and warming down sessions** – Before you start any HIT session, you must warm up for about three to four minutes, so the blood is flowing and your muscles are fully prepared for the training. You must warm down for about three to four minutes after every high intensity interval, too.

**Stick to the intervals** – It is essential that you stick to the interval duration of every phase, even if you feel you can prolong it. Do not increase it unless you reach the next phase. This ensures that you do not become dizzy or sick during any HIIT session of any phase. You can shorten an interval or a session if you feel uncomfortable.

**Decrease your intensity if your heart rate does not slow down** – If your heart beat does not slow down when you rest or do low intensity exercise during the low intensity interval, then it is important that you decrease your intensity during the high intensity intervals. If you feel breathless during rest or low intensity intervals, stop the training immediately.

**Stop in the event of chest pain** – If you suffer from breathing abnormalities or chest pain during an HIIT session, you must stop the session instantly. Relax till you gain some breath and visit your doctor as soon as possible.

**Exercise until your muscles feel sore** – Assuming you’re not experiencing any of the above problems, you must exercise until your
muscles feel sore. This is an indication that you have utilized your anaerobic sources.

Chapter 6: Some Help

HIIT Devices

Timing yourself correctly during intervals of HIIT sessions is crucial to your success. Here are some phone and web apps that will make sure you don’t increase or decrease the duration of an interval by mistake.

**Bit Timer** – Bit Timer is an excellent app that helps you carry out accurate interval timing by offering you three interval settings: work, rest and repeat. Only four minute short intervals are allowed, so you cannot go beyond it with this app. It is compatible with every iOS device.

**HIIT Interval Timer** – This is a convenient and simple app that helps you customize your workouts and it works with all sorts of IOS devices.

**Seconds** – Containing ‘time wizards’, this app is amazing! It helps you tailor all your workouts as per your needs and lets you allot different music for different intervals to boost your performance. It works well with iPod touch and all types of iPhone devices.

**HIIT Workout Timer** – This is a cost-effective app suitable for intermediate, beginner, and advanced workouts. Its compatibility with iOS devices makes it even better.

**Interval Run** – This app is basically an efficient, virtual coach that will motivate you to perform at your best during your workout by
instructing you on when to breathe. It is compatible with iPods and iPhones.

**iSmooth Run** – This app allows you to easily reach the heart rate and pace zone you want to accomplish in each interval. It works well with iPhones.

**Tabata Pro** – This is a great app that has been specifically designed for the Tabata workout. It is perfectly compatible with every iOS device.

**Tabata Trainer** – This app contains nine complete Tabata routines, so you can follow them easily without worrying about timing yourself. Its compatibility with all kinds of iOS devices makes Tabata Trainer a brilliant application.

**Interval Timer** – This fantastic web app is handy if you don’t have access to a Smartphone and want to time yourself during the different intervals of an HIIT session.

**7-Min** – This is another popular web application for HIIT training and as the name suggests, it’s ideal for a quick and vigorous seven minute workout.

**Seconds Pro** – This is rated as the most advanced and efficient web app for HIIT sessions. It also provides you with the option of setting music for specific intervals.

I would definitely suggest that you look into these applications so you never experience problems when timing your intervals.

**Tips and Tricks**

There are no hard and fast rules for how you should implement your high intensity interval training. However, there are a few tips and tricks that will help you improve your results.
Do a variety of exercises – Even though the Diabetes 60 System instructs you to follow a certain set of exercises during each of your HIIT sessions, you have the option of doing other exercises too. Following a specific routine tends to become monotonous at times, and monotony murders your motivation to work harder. So if you feel like working out on your elliptical one day, or going for a run for your HIIT session, you should do it.

Do not exceed the average 60 seconds – If you feel you have the strength to continue with a high intensity interval even after a minute, then it means you are not exerting enough effort during the exercise interval. You need to be completely exhausted during a 60 second workout interval. Therefore, utilize all your energy during the exercise interval, so you really make your muscles and lungs work.

Do tough exercise for a minimum of 10 seconds – If you cannot workout extensively for 60 complete seconds, put in the maximum effort for a minimum of 10 seconds instead. The less effort you put in, the more cycles you will have to perform, which means having to exercise longer to produce the same results. Working harder and doing less sets produces better results.

Recover properly – Be sure to give your exhausted muscles enough time to recover during the rest or low intensity phase. This is hugely important because your muscles need to rest and recuperate. Moreover, the recovery period helps you regain energy, so you can exercise again in the next interval.

Time yourself – Make sure to time yourself properly because the better your intervals are timed, the more you will be able to benefit from them.

Keep attempting the low intensity phase – If you have enough strength to keep going after a high impact interval, you should do light exercise during the resting phase. This will increase your stamina, burn more fat and help lower your blood sugar.

These trips and tricks will allow you to maximize your productivity and results using the HIIT regimen.
Precautions

There are some precautions you must take while carrying out HIIT, to ensure that you stay fit and healthy during the course of the protocol.

Firstly, you must ensure that you are following a healthy diet. You must include good sources of proteins and carbohydrates, so your body can gain enough energy to exercise vigorously.

Ideally, your carbs to protein ratio needs to be 2:1.

Excellent sources of carbohydrates to consume during the implementation of HIIT include mangoes, bananas, sweet potatoes, yams, brown rice, whole grains and carrots. Foods rich in proteins include chicken, fish, shrimp, prawns, nuts, hemp protein, whey protein, beans, legumes and dairy products, such as cottage cheese, yogurt and milk.

It’s also vital that you drink at least eight glasses of water during the day to stay hydrated.

Thirdly, you need to sleep for at least seven to eight hours every night, so your body is able to recover well. The growth hormone is released in your body when it is at rest and helps repair, rebuild and strengthen your muscles, making you stronger, leaner and healthier than before.

Fourthly, always remember that if you feel woozy or experience any breathing issues, you must stop the training immediately, or you could damage your health.

Light-headedness is often the result of not providing your body with the energy it needs to perform the activities. Therefore, you must get sufficient quantities of carbohydrates and important electrolytes,
such as potassium and sodium to prevent feeling unsteady and dizzy during your training.

By practicing these precautions, you will ensure your wellbeing while burning fat, losing weight and lowering your blood sugar levels, leading to significant improvements in your overall health and diabetes symptoms.

**Conclusion**

Diabetes is a serious health condition that can dramatically reduce your quality of life and increase your risk of developing potentially life-threatening health conditions such as heart attacks, stroke, kidney failure and more.

There are many treatments available for diabetics, but none of them provide a permanent cure. The Diabetes 60 System does not claim to be able to cure you of your diabetes either, but as you’ve seen, it can significantly improve your symptoms, consequently boosting your health, improving your quality of life, and extending your lifespan.

If you are a diabetic and wish to lose weight, improve your health and reduce the severity of your diabetes, then the Diabetes 60 System is exactly what you need.

**Disclaimer**

It is essential that you consult your doctor before starting any exercise regimen, particularly the HIIT protocol. Each person’s body has its own specific needs, demands and physical limitations.

This is why you need to seek your doctor’s consent prior to initiating HIIT, as it is a particularly intense and demanding form of exercise. If you do not seek your doctor’s advice, and face any complications after starting the Diabetes 60 System, then the creators of the protocol cannot be held responsible.
References
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