HAPPY **GUT**, HEALTHY **WEIGHT**

Discover How a Happy Gut Holds the Key to Achieving and Maintaining Your Healthy Weight

"A potent prescription for lasting wellness. Read it, share it… and thrive."
—Ocean Robbins, CEO, Food Revolution Network
Author, *31-Day Food Revolution*

DR. ARUN DHIR, FRCS, FRACS, MD
Gastro Intestinal and Weight Loss Surgeon

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This book is dedicated:
To my patients and clients, who remain a constant source of inspiration and to whom I remain forever indebted for their trust in me.

To my wife Reetika, for her constant support and feedback, and to our lovely kids, Gaurang and Vrinda, for all the positive energy you bring forth in my life every day... I would be incomplete without you all.

To my parents, who taught me to be of service to humanity in every way… every day.
I am what I am because of you.

NOT ANOTHER BOOK ON WEIGHT LOSS

I am a gastro-intestinal and bariatric (weight loss) surgeon in Melbourne, Australia - someone who has cut, healed, stitched, and researched the human gut for over two decades. Through my work, I have seen the scourge of obesity up close. To say that the insights I have gained thus far have been fascinating would be an understatement. Along the way, I've not only learned much about weight loss, but also how weight loss surgery can only provide temporary benefit to those who are considering this option if it's not combined with the lifestyle skills that can cause a shift on a physical and a mental plane. This has allowed me valuable insights which I have attempted to share here with you in a practical, easily digestible manner – such that you also can take charge of your health.

My personal voyage in search of answers to the many questions I had led me to become an avid student of the ancient wisdom of health and happiness, as embodied by the world's healthiest and longest living people. This book allows me to be an instrument of service, so that I can share the knowledge I gained in order to help *you* achieve optimal health and vitality – and maintain it, too!

After all, achieving optimal health – in both physical and mental well-being – is a primal human need.

Oh, no, not again, you might be thinking. *Not another book on weight loss! Not another book on how to lose weight with low calorie recipes, when everyone believes (and knows) that eating less and exercising more is the secret to losing weight.*

Well, the good news is it's not. We all know that all those diet programs, from the Atkins to the Paleo diet to Nutrisystem to Weight Watchers all work temporarily, but then most people gain the weight back – or some just can't sustain their new diet plan anymore. Nor have I written this book to profess the benefits of weight loss surgery. While surgery may be a suitable option for some (not all), the ideas presented in this book are not only a lot simpler to apply and wire… trust me, they are a lot less painful, than surgery, too!

Science is beginning to unveil another chapter in our understanding of weight loss. It appears that the magic bullet to health, longevity, and weight control naturally lies in your own gut – your microbiome, a scientific word for the kind and amount of bugs in your gut. And the influence these tiny bugs exert on our thoughts, cravings, and food choices is – maybe surprisingly – too strong to be ignored.

This is not hearsay, anymore!

The subject of gut health has been topical since the times of Hippocrates in 350BC. Interest in gut health has been re-ignited, however, since the recent discovery of the gut microbiome and the influence it exerts on our brain, our metabolism, and the immune system, to name only a few systems feeling its effects. Virtually every week, a new scientific study comes out on how our microbiome underlies not only weight control, but also disease, from cardiac to autoimmune, as well as our mental health issues, from depression to autism and schizophrenia. In fact, the volume of information on the

gut microbiome is growing so huge now that you could nearly link any adversity in your life to your gut's health.

So, as your gut goes, so will your life go.

This book will allow you to transition from theory to practice. While, so far, science on the subject of weight loss has been fascinating, let's admit that it has also been very confusing. It would perhaps be safest to say that science in this space is evolving… and that is what forms the basis of evolution.

However, this book sets the foundation for a lifestyle where achieving and keeping a healthy weight is "practically" possible, and with no artificial diets or magic pills. The success mantra of this work rests on this one equation: *Happy Gut = Healthy Weight*.

So, put on your seatbelt and take this exciting journey with me to a new, vibrant, healthy, and naturally energetic life.

Melbourne
Dec, 2018 *Dr Arun Dhir*

"Ultimately the best use of a physician's knowledge is to teach people how to heal themselves."

– Dr. David Simon, MD

CONTENTS

PREFACE

In his book**,** ***Happy Gut, Healthy Weight*** **- Dr Arun Dhir** has combined his many years as a gastro-intestinal clinician and bariatric surgeon, educator as well as keen student of lifestyle approaches with ancient wisdom and modern science. Many years in the making, this book now gives us a fresh approach to health and weight loss, with a specific focus on the microbiome. The microbiome is the collection of micro-organisms in and on our body, especially those in the large intestine.

Research into the microbiome is changing medicine. We now understand the importance of the microbiome as the central 'engine' of our bodies and brain's health. Research has shown a connection between the gut bacteria and weight and obesity. We understand that in our complex human body, the gut microbiome regulates body functions. Too many of the bad bacteria, like parasites and yeasts and not enough of the good ones, like Lactobacillus or Bifidobacteria, can lead to serious health issues.

Just like us, our Microbiome too is in a constant state of change depending upon our lifestyle, diet, stresses, medications etc.

Until recently, issues surrounding weight loss have usually focused on diet and exercise. In this book Dr Dhir's view on weight management diverges somewhat from the standard focus on specific diets and

counting calories. He delves deeper into the recesses of our 'gut' to find the answers to losing weight and keeping it off.

The gut-weight link is explored in detail, as well as looking at important factors such as stress management. The focus therefore of this book is to look at a whole approach, starting with fixing the gut flora which extends to improvement in overall health and weight management.

This book is packed with practical information about how we can heal our gut; prebiotics and probiotics; extensive information of different foods and their benefits; stress management; exercise; environmental toxins; lifestyle improvement and much more. It is significant that appropriate references are also provided in this book which highlights its scientific approach.

This is a 'weight loss' book with a difference. The answers lie in healing our gut health and adapting a healthy lifestyle. We are what we eat, and so are the bacteria living in our gut. The good news is that we can vastly improve our gut bacteria and hence weight management!

Dr Dhir's book is at the cutting-edge of new research that is starting to unravel the link between gut-bacteria and why it is that some people can lose weight whilst others struggle.

I am confident that this book by Dr Dhir, 'Happy Gut, Healthy Weight' is an amazing recipe for lasting health. It is a compelling read for any health seeker. I will encourage everyone to adopt Dr Dhir's mantra of ***'Happy Gut = Healthy Weight'.***

Professor Avni Sali AM
MBBS, PhD, FRACS, FACS, FACNEM
Director, National Institute of Integrative Medicine (NIIM)
President, International Council of Integrative Medicine (ICIM)
Author: *'A guide to Evidence-Based Integrative and Complementary Medicine'*
"A clinical Guide to Integrative Oncology"

INTRODUCTION

We live in an era where human kind has developed more diets than have ever been known to mankind. The irony is that, on this journey of evolution, we are now the heaviest in size known to mankind.

- Dr Arun Dhir,
Health and Wellness Reformist, Gastro Intestinal Surgeon

If you want to lose weight effortlessly and keep it off, you need to *eat more bugs*.

No, not the ones that annoy us. By *bugs*, I'm talking about the trillions of helpful bacteria that live in your gut and play a fundamental role in maintaining a healthy and happy body.

We live in a world of microscopic organisms – bugs that are in us, on us, and around us. These microbes inhabit just about every part of the human body, living on the skin, in the gut, and even up the nose. Ninety-nine percent of them, however, reside in the gut, where there's a miniature world made up of one hundred trillion microscopic, non-human organisms – ten times more than the number of cells in the human body!

Imagine. One gram of poop contains more bacteria in it than the number of people on this planet! The total weight of the living mass of the gut flora in our gut is 1.3 kilos, and that, coincidentally, is the weight of the human brain, as well.

These microbes are composed of around 500 species, each with their own benefits, these ranging from breaking down your food and extracting nutrients to hunting for food pathogens and protecting you from colds and the flu – yes, as you guessed, the microbiome is a crucial component of the immune system.

The microbes we're talking about are in charge of:

- Digesting our food by breaking it down into smaller parts
- Governing our appetite
- Producing crucial vitamins and nutrients
- Normalizing glucose levels
- Promoting nutrient absorption
- Controlling our metabolic rate, which greatly impacts weight
- Orchestrating our immune system and even producing natural antibiotics
- Regulating inflammation
- Influencing our moods
- Supporting mental clarity
- Balancing our hormones, and…
- Determining how our genes are expressed

Is your microbiome in good shape?

The answer lies in the balance of "bad bacteria" versus "good bacteria." The bugs in our gut are like those in a rain forest, forming a diverse and interdependent ecosystem.

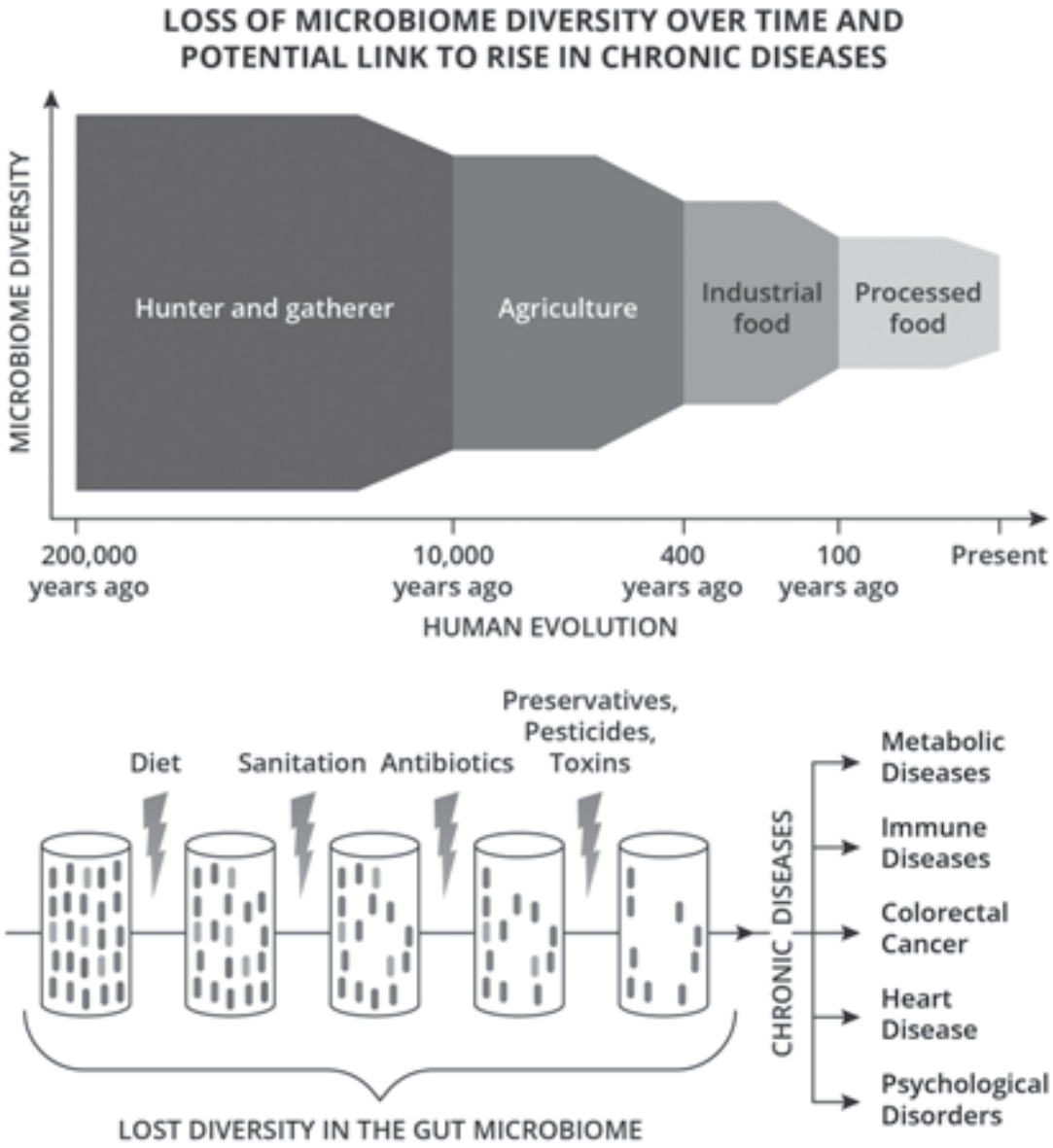
For our system to stay resilient and function optimally, our gut must contain a higher ratio of gut-friendly "bugs" to outnumber those that

are harmful. In fact, a healthy gut contains a balance of about 85% goodies and 15% baddies.

When these microbes are kept at this ratio, our body and mind perform at peak efficiency: our immune system functions at full force, our heart works better, our brain is sharper, our moods are more even-keeled and cheerful, and, importantly for our discussion at hand, our metabolism – the engine of life – works at peak efficiency to help us burn calories so that we can maintain our normal weight.

Unfortunately, the modern diet of processed food, high sugar – bad bacteria thrive on sugar! – high stress, little exercise, overuse of drugs/medications, and especially antibiotics (which kill not only bad bacteria, but disease-fighting "friendly" bacteria, as well) results in a microbiome that becomes home to many billions of potentially dangerous bacteria, fungi, yeast, and pathogens that set up a cascade of inflammation. And inflammation – as we will see in Chapter 2 – is the seat of all of our modern-day killers: cancer, diabetes, heart attacks, and obesity.

As we pay the price of civilization with disease, the roots of this suffering could be traced to a poor gut microbiome and poor gut health. Highly processed foods (pre-packaged foods, not the way nature made them) change our microbiome and upset the balance. This is where, in comparison to our forefathers, the microbiome of a modern Westerner can be seen as not only out of balance, but less diverse, too.


LOSS OF MICROBIOME DIVERSITY OVER TIME AND POTENTIAL LINK TO RISE IN CHRONIC DISEASES
MICROBIOME DIVERSITY
Hunter and gatherer
Agriculture
Industrial food
Processed food
200,000 years ago
10,000 years ago
400 years ago
100 years ago
Present
HUMAN EVOLUTION
Diet
Sanitation
Antibiotics
Preservatives, Pesticides, Toxins
CHRONIC DISEASES
Metabolic Diseases
Immune Diseases
Colorectal Cancer
Heart Disease
Psychological Disorders
LOST DIVERSITY IN THE GUT MICROBIOME

The result is a microbiome in which bad bacteria outnumber good bacteria and prevent the good critters from doing their job. The bad critters then take over and are linked to numerous health problems, including obesity, diabetes, allergies, auto-immunity, cancer, heart disease, fibromyalgia, eczema, asthma, autism, and even schizophrenia.

A poorly populated microbiome also leads to depression, as the gut-brain connection is a powerful force affecting our thoughts, cravings, food choices, and moods. In fact, many scientists refer to the gut as our second brain, as it is estimated that 90% of serotonin, the feel-good neurotransmitter (brain messenger), resides in the gut. But… more on the gut-brain connection later.

The Microbiome: The Driver of Your Metabolism

Do you know that your body has potential energy that could fuel the power needs of an entire city for at least a week?

Yes, you heard me right! A week's worth of energy, the amount needed to run a city, is stored within this powerhouse – your amazing body. Within your body rests an amazing nuclear reactor that allows energy to be effortlessly derived from the raw materials – otherwise known as food – and which provides fuel for the body's machinery.

In Chapter 6, we will see that this so-called nuclear reactor – our metabolism – determines how we handle food, how we store it, and also how we get rid of the unwanted or toxic stuff. This is crucial because, if not handled properly, this unwanted toxic bad stuff has the potential to cause disease.

Put simply, our metabolism is a beautifully synchronised and orchestrated series of chemical processes, that supply energy to the dance of life in our bodies, and it percolates every life form within nature.

The physical health of this nuclear reactor – *the metabolism* – determines our health, our fitness, our optimal weight, and our vitality. A sluggish metabolism attracts disease, obesity, and dull-headedness, while an optimal metabolism is the key to health and vitality. In other words, our metabolism and our ability to maintain an optimal weight are intimately linked.

The Metabolism – Microbiome Connection

Your microbiome is the main driver of your metabolism. If you are overweight or struggle to keep weight off, have diabetes, aching joints, and/or poor mental focus, chances are that this may be stemming from a poor metabolism, itself being a reflection of the state of your gut microbiome. As we will see in more detail later, the term *metabolic syndrome* has been coined for a cluster of medical diseases such as diabetes, high cholesterol, and high blood pressure which seem to stem from a dysfunctional metabolism.

The Microbiome and Our Genes

It is natural for us to attribute our weight to our genetics.

Chapter 5 of this book delves further into the subject of how genes really turn the dials on our biological destiny. It turns out that, contrary to what we would have thought, the Human Genome Project – one of the world's largest collaborative projects when it comes to studying human genetic make-up – found that the most highly evolved species on the planet, the human being, has only 22,300 pair of genes that make each one of us as unique as we are. Just 22,300 pairs of genes that determine all of the unique physical features and mental traits of all the people in the world. The number sounds too small to account for the variations we see in the seven billion of us here on planet Earth, but it's not.

It turns out that the microbes in our gut have a far greater pool of genes that exert influence on our beings. Estimates hold that the gut bugs – by their sheer number and diversity – can exert 100 times more genetic influence than our own "native" genes. They create this influence by maintaining a close interplay with our genes. It wouldn't be amiss to state that, when it comes to our genes, the bugs we harbour in and on our body are the single most powerful factor helping shape our physical and mental well-being (or lack thereof).

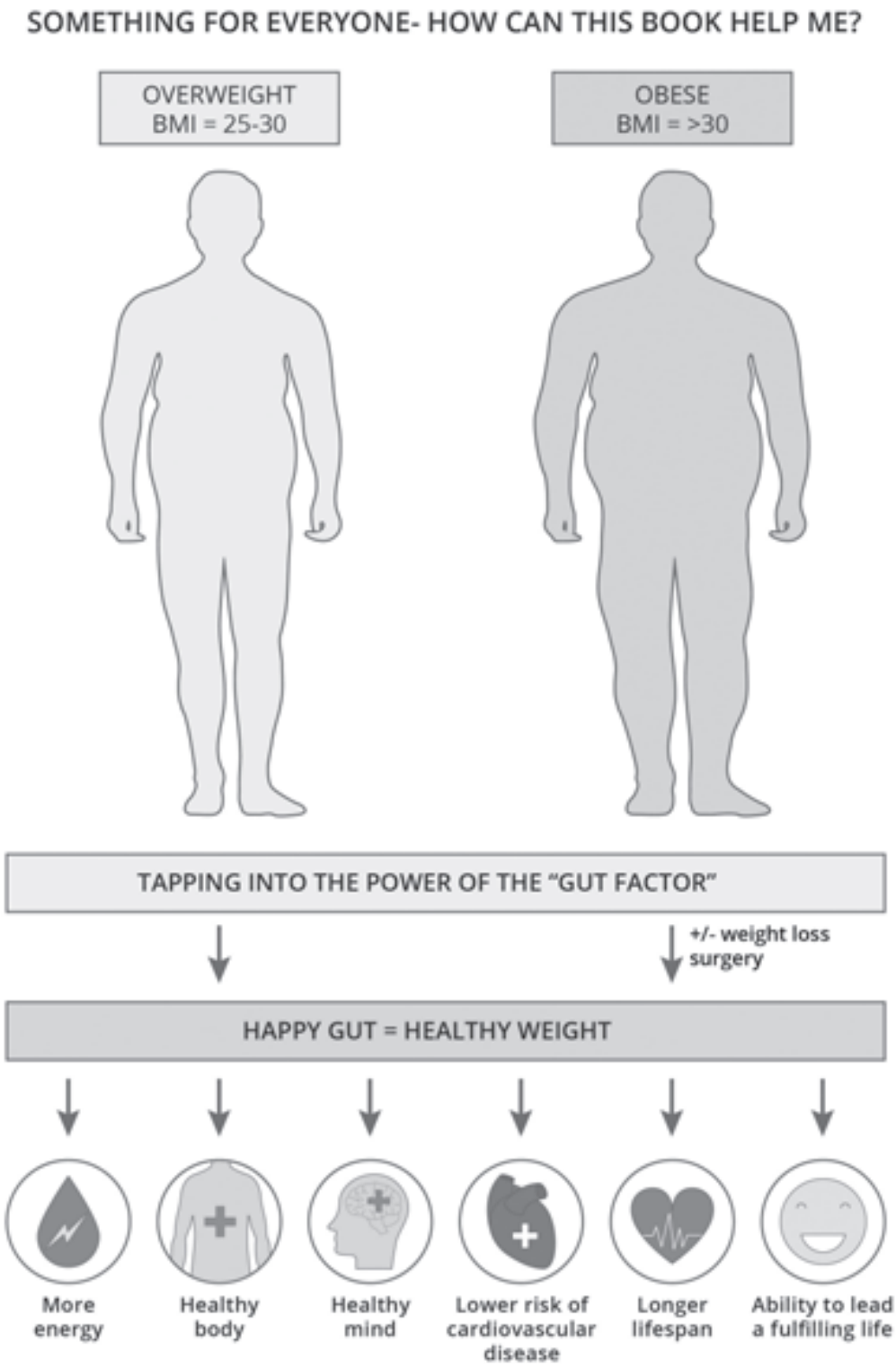
These genes – both those from the gut bugs and our own – are like your fingerprints. However, the beauty of all this is that our lifestyle habits can change these fingerprints for either better or worse.

In Chapter 5, we will learn about creating a positive genetic impact through a healthy microbiome-gene connection.

Towards Inner "Bug" Power

The good news is that you can empower your gut microbiota and help them fight back against their invaders.

In *The Happy Gut – Healthy Weight,* you will learn how to modify your lifestyle – in a gentle and practical manner – to further a healthy microbiome which will then translate into a healthy weight.


SOMETHING FOR EVERYONE- HOW CAN THIS BOOK HELP ME?
OVERWEIGHT
BMI = 25-30
OBESE
BMI = >30
TAPPING INTO THE POWER OF THE "GUT FACTOR"
+/- weight loss surgery
HAPPY GUT = HEALTHY WEIGHT
More energy
Healthy body
Healthy mind
Lower risk of cardiovascular disease
Longer lifespan
Ability to lead a fulfilling life

Here are some of the many ways this book can help you create a positive transformation.

You will learn:

- How simple dietary changes feed the microbiome and regulate the metabolism
- Why detoxifying is a key part of resetting your metabolism
- Why understanding the stress-microbiome connection is important
- How diet can be your best probiotic
- The power of exercise and focused breathing when it comes to gut health, and
- For those who may be considering weight loss surgery, how to supercharge your success after surgery

Calorie counting, depriving yourself of foods you enjoy (not crave), and extreme (anaerobic) physical exercise have no place in this book.

This book is all about healing your gut ecology through well-established, time-tested mind and body practices that will allow you to keep a balance in your microbiome – which will then translate into lasting health benefits and greater vitality in everything you do.

Happy Gut = Heathy Weight is indeed a true measure that shapes the state of your health, vitality, and longevity… a factor that can alter the biological destiny of our existence on this planet.

Happy winnings!

PART I

A "NEW" PERSPECTIVE ON OBESITY

It is common knowledge that our planet is fat and getting fatter.

Yet, we seem to be convinced by the simplistic notion that being overweight is all about eating too much and moving too little… right?

We are living in the midst of a global obesity epidemic – an epidemic which began over fifty years ago in the more industrialised countries before spreading to the so called developing nations. Our global health has consistently declined since the 1960s, such that today almost half (47%) of the world population would be classed as either overweight or obese – almost tripling the rates of obesity over the last five decades.

This problem is not confined just to the United States,Europe or Australia anymore. Westernized societies across the world are plagued with the problem of increasing waistlines and associated medical diseases. What remains of even greater concern is the rising percentage of children who are falling victim to this scourge and the accompanying ailments. It is expected that, in the coming six years, almost a quarter of boys (23.5%) and 32% of girls,age 7-16yrs,in our society will be either overweight or obese.

When it comes to the so-called developing nations – India and China in particular, this problem unfolds in a unique manner. The process of globalization and economic growth is directly linked to the shift in diet patterns happening in these emerging economies. The problem of obesity in India and China, which together form a quarter of the world's population, only opens up the doors to the disastrous consequences that obesity will spell for the world at large.

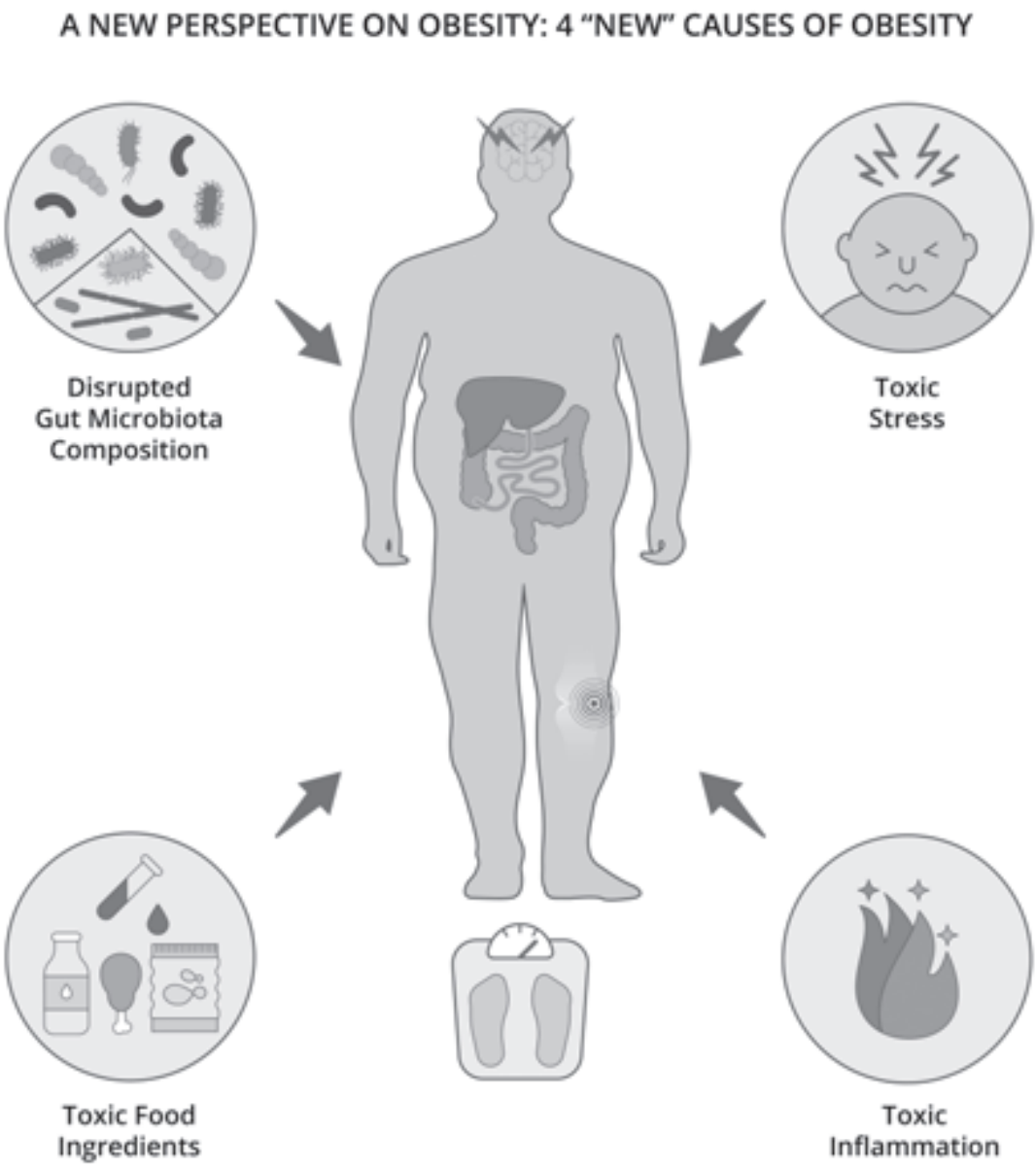
Not only this, but it's interesting to note that obesity and malnutrition can seemingly coexist. Energy-dense and nutritionally poor foods do provide the calories involved in weight gain, but not nutrition.

So, the question remains whether our simplistic explanation of more calories going in than out can explain the global obesity epidemic that we are witnessing. Its cause seems both intuitive and obvious. After all, calories going in should equal calories going out in order for weight to stay stable, and eating and exercise should dictate the balance between them.

My personal experience, having witnessed the challenge of obesity turning into a global epidemic, and having worked for over two decades in mainstream medical institutions, has compelled me to think differently.

The way I have begun to understand this may well not be perfect – nevertheless, based on current scientific knowledge, my approach explains many key aspects of how we've landed ourselves in this situation.

There are four key areas of our wellbeing that convincingly play a significant role in our ability to maintain a healthy weight.


A NEW PERSPECTIVE ON OBESITY: 4 "NEW" CAUSES OF OBESITY
Disrupted Gut Microbiota Composition
Toxic Stress
Toxic Food Ingredients
Toxic Inflammation

xxx

Area 1: Gut Microbes

Knowledge from new research, in explaining the role gut microbes play in regulating our hunger and the way our bodies store fat, indicates that the prevailing view of obesity –that it is caused by gluttony and sloth – is far too simple and probably incorrect.[1]

After all, were this the case, how would it be possible that gut bugs taken from an obese mouse and transferred into a lean mouse could make the lean mouse gain weight, despite no change in food intake or physical activity?

More about this in the rest of this book.

Area 2: Toxic Stress

Research convincingly points to the fact that a prolonged high level of stress can have dangerous and even life-threatening effects on the body. While stress – when it is used constructively – keeps you safe and is good in the short term, prolonged high levels of stress become toxic. Not only can such high stress make one vulnerable to colds, fatigue, and infections, but it can also give you a raging appetite.[2] It appears that one of the stress hormones – cortisol – causes the body to help refuel after each stress episode. Uncontrolled or toxic stress keeps the refuelling appetite on, thus inducing emotional "stress eating" and weight gain.

Not only this, but the weight gain that occurs due to toxic stress is rather unique. Excess fat gain from toxic stress settles primarily in the central part of the body, the abdomen. This fat is known to be more toxic than the fat from anywhere else on the body, and is called "truncal obesity". Too much fat on your thighs may result in mental pain, but is not associated with deadly diseases. Excess tummy fat, on the other hand, is highly linked to heart disease, diabetes, and cancer.

Area 3: Toxins in our Diet

In the past two decades, research has drawn attention to numerous harmful chemicals that we are exposed to on a daily basis, from cosmetics to preservatives and plastics on to cleaning products.[3] I'm referring here to chemicals that are being sold to us in the form of "safe food preservatives" and other ubiquitous labels which are not easy to understand… but which have an insidious impact on our health.

These toxic chemicals are used in food packaging, such as with preservatives and artificial sweeteners in zero calorie drinks, just to name a few products, which causes havoc with our metabolism. It's thought that our exposure to these so-called *obesogens* can, as the label suggests, make us fat. These chemicals interfere with the processes that determine the number and behaviour of our fat cells. And not only this, but they also pre-program our system to preferentially store food as fat, leaving the rest of the body to run on very low amounts of energy, thus making us feel tired and fatigued most of the time. As a result, our brain perceives this lack of energy to signify a lack of food, and our appetites get boosted.

These toxins also pose a threat to our future generations. A mother's exposure to these toxic chemicals can affect the tender cells of a growing baby in her womb.

Additionally, these toxins can permanently cause havoc on our appetite regulation systems and the systems that determine the processing of energy, and especially fat – thereby keeping a check on excessive weight. Disruption of weight-regulating bacteria due to these chemicals also causes our systems to store more fat, leaving us tired and hungry as we try to run the rest of our body on scraps of left-over energy.

Put simply, long-standing stress – or toxic stress – not only influences your body's metabolism, but can also explain why you're drawn to the chocolate or alcohol in order to find comfort.

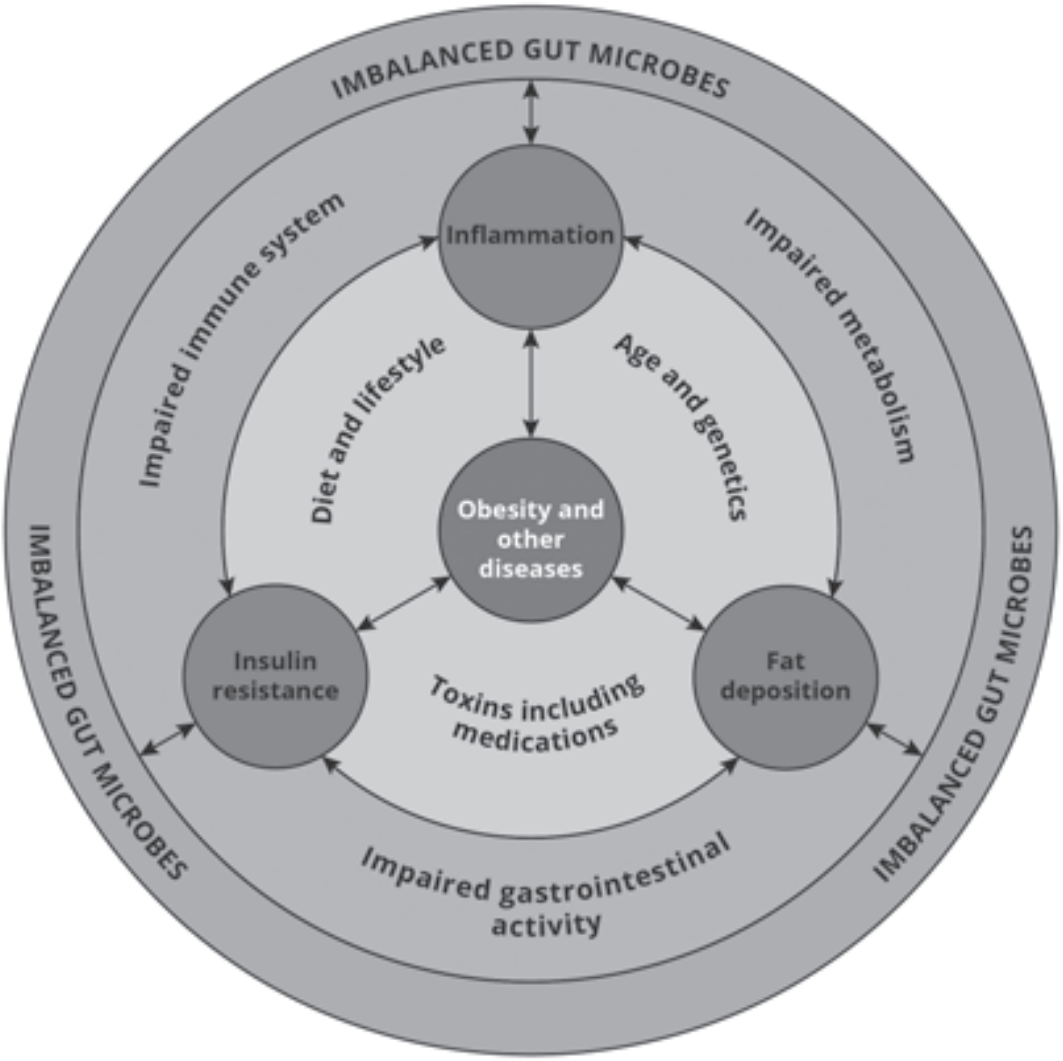
Area 4: Inflammation: The Fire that has Gone Haywire

Excess fatty tissue in the body is now known to be associated with inflammation, which affects many areas of the body, including the internal organs. While inflammation – literally meaning "to be on fire" – is a normal response of the immune system to any foreign invaders or injury, when inflammation goes out of control and turns into toxic inflammation, it then becomes the driver of many killer diseases.[4]

Our diets have a lot to explain when it comes to foods that may be pushing the throttle on inflammation. Several highly-processed, pre-packaged, and sugar-laden foods are the key drivers of inflammation. Most of the major diseases our society faces – by way of heart attacks, cancer, diabetes, and obesity – involve inflammation as the common denominator. One particular organ where the effects of inflammation are coming to light is the brain – where inflammation manifests in the form of memory loss or dementia – which is now being dubbed Type **3** diabetes by the medical community.[5]

In the coming chapters, we will delve into each of the above mentioned areas with a view to presenting this information in a practical and easy to digest manner, such that we can begin to apply this new knowledge in our lives and bring a collective change in the world that we live in.

"A NEW PERSPECTIVE ON OBESITY"
· How your Gut health holds the key to protecting you from Obesity and Chronic Diseases



Chapter 1

THE HUMAN GUT MICROBIOME: OUR SANCTUARY OF HEALTH

"All disease begins in the gut."
Hippocrates
The Father of Modern Medicine
350BC

The Power of Balanced Gut Flora on Weight & Health

If you think you exist alone in this universe, think again. As you may have discovered, we share our bodies with trillions of microorganisms which are of crucial importance to a well-balanced gut microbiome when it comes to keeping us healthy and at a manageable weight.

In this chapter, let's look more closely at how this plays out.

Our gut microbiome is akin to a garden – our inner garden of health and wellness. If we have more flowers than weeds, we enjoy great health. However, when the weeds take over, diseases (and medical bills) begin to crop up.

The microbiome is an ecosystem dependent on the presence of more good critters than bad. When bad bacteria are in control, the immune system cannot do its job and destroy disease-causing microbes. [6] This results in major illnesses like diabetes, heart disease, metabolic syndrome, autism, and other brain disorders.[7] Functional and behavioral disorders are implicated, as well, these including such afflictions as headaches, fatigue, anxiety, depression, acne, eczema, and frequent colds and infections.

Whether all of these conditions are a cause or an effect of unhealthy gut flora is unclear. However, research does point out that fixing the gut flora brings about improvement in our overall health.

Your Ideal Weight

It is acceptable to align "ideal" weight with "ideal" health.

However, the concept of one's *ideal weight* is a myth. In truth, our medical knowledge limits us to certain measures that we have devised based on our understanding of what is or isn't ideal. We have not, however, actually come up with an ideal measure in this area. While

measures such as BMI and waist-hip ratio are helpful, they are by no means representative of an ideal.

It's not that measures are not important. They are, to some extent. The problem is that people tend to get fixated on a number on the scale. It's far more important to achieve your *optimal* weight – where you feel healthy, energetic, and active – rather than to keep aiming for that elusive *ideal* weight based on any given measurement.

Why is the microbiome important for you to maintain a healthy weight?

There are many reasons.

The Microbiome and Our Genes

If you eat an olive and gain a pound, you likely feel like losing weight is impossible because you were born with "fat genes." Yet, are genes equivalent to our destiny? If you inherited so-called fat genes, does this mean obesity is a given? Current research answers with a resounding "no."

Most of our genes are open to lifestyle changes, or, more scientifically stated, we might say that: "Genes can be modified by our neurobiome and our gut microbiome."[8] This means that, even if you have so-called fat genes, obesity is *not* your destiny. You can fight back against these inherited fat genes by changing your lifestyle, as I propose in this book.

This is a major breakthrough, as it means we *can* choose to live a lifestyle that has a proven, positive, genetic impact not only for ourselves, but also for our successors, with whom we share our genetic blueprint.

The most powerful word here is *"Choice"* – we have the ability to choose to make small, easy and healthy choices each day. As these good choices accumulate, they send new positive messages to our

genome (our gene structure) and microbiome (our bacterial hosts) – the two centers of powerful change in every cell. This process of creating small, positive change on a daily basis also causes a beneficial change in the neurobiome – the wiring that forms the control center for our body. When practiced over time, this becomes the new "normal." Our new habit.

Now, doesn't that sound like the "normal" you would like to have? I bet it does.

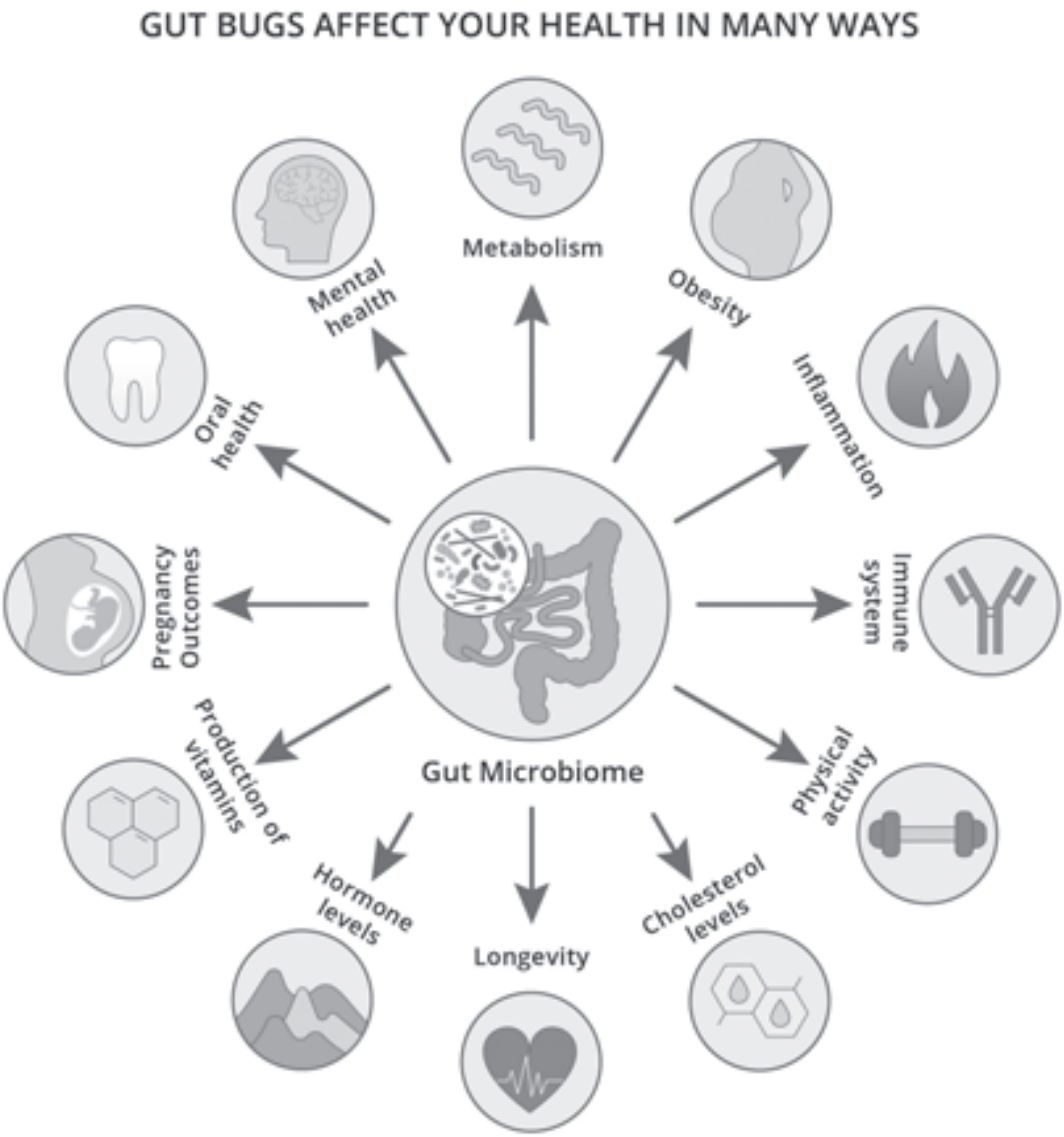
A recent study from Yale University found that, in a group of 4,765 people with an average age of 72, those who carried a gene variant linked to dementia – but also had positive attitudes about aging – were 50% less likely to develop the disorder than people who carried the gene, but faced aging with more pessimism or fear.[9] This study only offers further support for the power of the choices we make.

Throughout this book, you will learn how to make healthier choices. And, when you do, you will boost your immune system and foster greater gut health. This transformation forms the basis of clear thinking which is due to the powerful impact of the gut-brain connection, about which you'll learn more in Part III of this book.

The Firmicutes: Bacteroides Balance

Countless studies have shown that obese people have higher levels of bad, "chubby" fat-storing bacteria from the phylum *Firmicutes,* along with less overall diversity in their gut microbial flora, whilst lean people have higher levels of bacteria from the phylum *Bacteroidetes.*[10] These "chubby" bacteria extract every ounce of energy from the food consumed. This causes you to pile on weight, even if you don't eat more than others. How unfair is that?

In addition to associations with obesity, these bacteria have also been associated with metabolic syndrome and type 2 diabetes.


GUT BUGS AFFECT YOUR HEALTH IN MANY WAYS
Metabolism
Mental health
Obesity
Oral health
Inflammation
Pregnancy Outcomes
Immune system
Gut Microbiome
Production of vitamins
Physical activity
Hormone levels
Longevity
Cholesterol levels

Gut Bugs and Weight loss connection

A study in the *British Journal of Nutrition* found that obese women who were given a daily probiotic supplement on top of a calorie-restricted diet to lose weight lost more weight than women who followed the same restricted diet but were given a placebo – in other words, having more good bacteria in the gut helps support lasting weight loss.[11]

Gut Bugs and Appetite Regulation

Your body produces a number of different hormones that affect your appetite, including leptin, ghrelin, and peptide YY (PYY).[11]

Some studies have shown that different bacteria in the gut can affect how much of these hormones are produced and whether you feel hungry or full.[12]

Short-chain fatty acids (SCFA) are chemicals produced when certain species of gut bacteria break down fiber. Prebiotic foods which are broken down into SCFAs can allow for a reduction of appetite and a decrease in weight gain.

Other studies have shown that prebiotics supplements, which contain compounds that are fermented by gut bacteria, can have a similar effect on appetite.[13]

People who ate sixteen grams of prebiotics per day for two weeks had higher levels of hydrogen in their breath. This indicates gut bacterial fermentation, less hunger, and higher levels of the hormones GLP-1 and PYY, which make you feel full.[14]

Important Note: Your gut bacteria can produce chemicals that can help make you feel full. By affecting your appetite, your gut bacteria may play a role in your weight.

Bad Bacteria Munches Away & You Get Fat

Researchers believe that people are more likely to gain weight from "unfriendly" gut bacteria. To start with, these bacteria are prone more to fat storing than fat burning.

They are also more efficient at breaking down food, and this enables the body to absorb more calories.

Sugar Consumption

Our modern diet is replete with sugar. Sugar not only makes us gain weight, but it also feeds the bad bacteria. One of the reasons many of us are always hungry, and especially for sugar, is likely that the bad bacteria in our guts are shouting, "Feed me!"

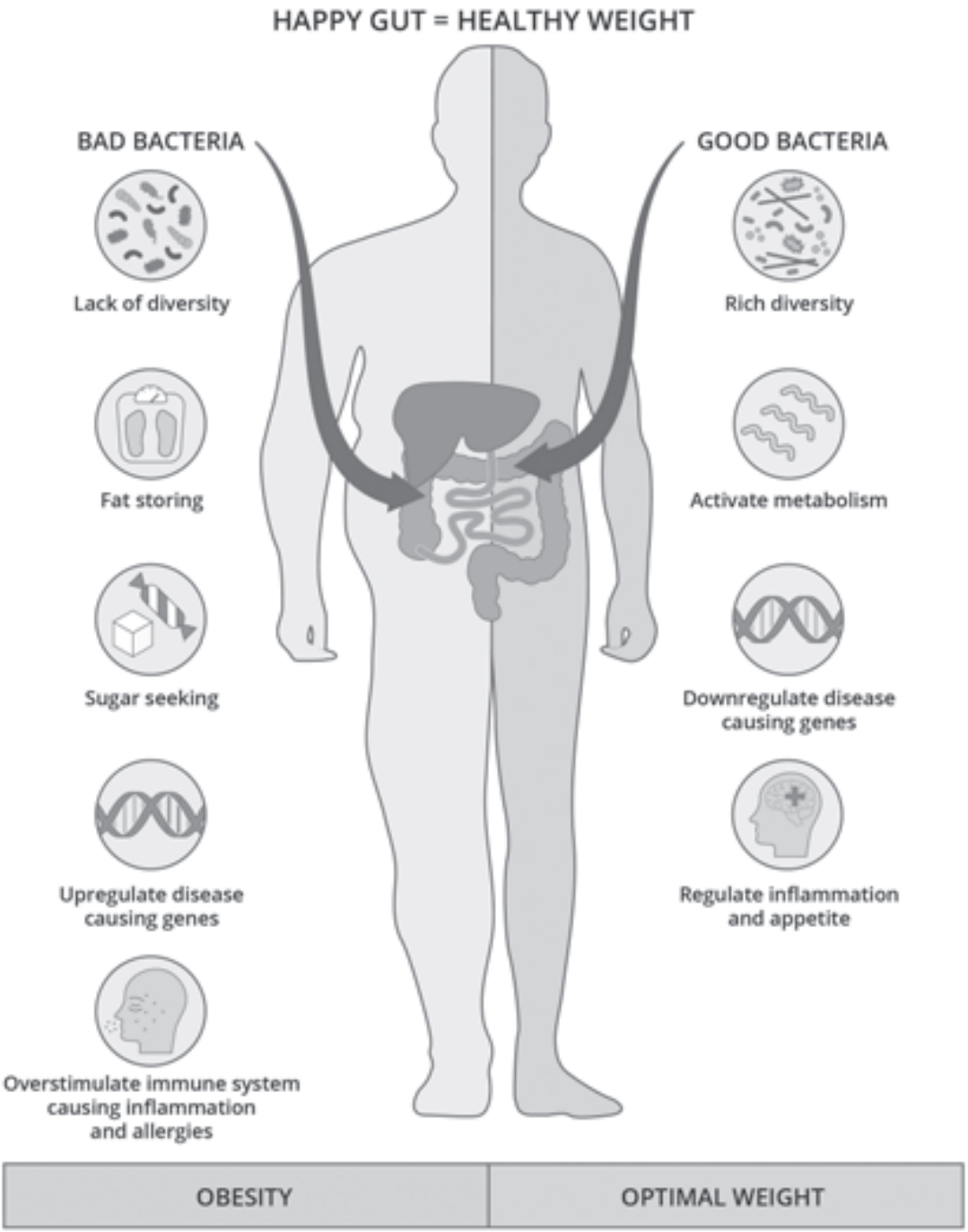
Food Cravings

Bugs in your gut may influence food cravings. For instance, mice bred in germ-free environments have a greater number of sweet taste receptors in their gut when compared to normal mice. Research has also found that chocolate cravers have microbial breakdown products in their urine that are different from those of people who are indifferent to chocolate – and, yes, those people do exist.

First-Line Defense

The human gut (alongwith it's microbiome) is a gatekeeper between us and the world, and what you may not realize is that it even determines our actual exposure to the environment.

If we were to stretch out the entire inner lining of the gut and spread it on a flat surface, it would cover the area of two tennis courts! Just like with anything else in life, the more we expose this surface to the good stuff, which is healthy, wholesome, food, the better off our health and our weight will be.


HAPPY GUT = HEALTHY WEIGHT
BAD BACTERIA
GOOD BACTERIA
Lack of diversity
Rich diversity
Fat storing
Activate metabolism
Sugar seeking
Downregulate disease causing genes
Upregulate disease causing genes
Regulate inflammation and appetite
Overstimulate immune system causing inflammation and allergies
OBESITY
OPTIMAL WEIGHT

Food, drugs, and environmental chemicals must first pass through the gates of cells on the skin, in the gut, and in the airways before a decision is made to let them pass into the bloodstream or not. Additionally, the human microbiome plays a critical role in the maturation and function of our immune system.

The Immune System Resides in the Gut

Eighty percent of our immune system lives within the ecosystem of the gut and affects almost every aspect of how you feel each day. This determines your risk of catching the flu, developing allergies, or even dealing with something as serious as an autoimmune disorder, where the body rages against itself.

The health of your gut microbiome is central to the health of your immune system. When you have more bad critters inhabiting your gut than good ones, the immune system is up in arms and on high alert at all times. This is when it attacks not only foreign harmful bugs, but the body's own cells, causing more inflammation – which, as we'll see later in more detail, is the cause of all evil.

Increasing the Nutritional Value of Food

Evidence is mounting that the make-up of our microbial community influences the nutritional value of food.

How does that work?

Well, it appears that our gut bugs help digest and break down the proteins, carbs, and fatty acids in our foods in order to help us extract its nutrients. Such nutrients include essential vitamins like B, vitamins 12 and 9 (folate), and vitamin K.

Folate keeps our DNA control mechanisms functioning properly; in simple parlance, it keeps your fat genes switched *off*. Yes, ladies, folate is a very important component in your diet.

Research has in fact shown that, in the obese, the *Bifidum* species of bacteria which is especially active in producing folate is typically lower.[14] Less *Bifidum* means less control over your genes and more belly fat.

Protection Against Heart Disease

According to a study in the journal *Atherosclerosis,* patients with hypertriglyceridemia – a coronary artery disease precursor characterized by elevated triglyceride levels (possibly caused by a rich diet and a sedentary lifestyle) – showed positive results when taking probiotics.[15] After taking a daily probiotic supplement for twelve weeks, their triglyceride levels improved and they saw an additional decrease in risk factors for heart disease.

Protection from Other Diseases

A happy gut is one with much diversity. Hundreds of known bacterial species exist and, the more diversity there is in your microbiome (both in terms of the number of different species and the evenness of those species), the better off your health will be.

Another study in the *International Journal of Endocrinology* found that those with low bacterial diversity have more overall adiposity (unhealthy fat), insulin resistance, abnormally elevated cholesterol and lipid levels in the blood, and a more pronounced inflammatory phenotype.[16]

Preventing the Growth of Pathogens

Keeping a dense and diverse microbial community will also protect your gut from being colonized by pathogens, as well as minimize the overgrowth of disease-causing organisms according to a study in *Nature Immunology*.[17] These harmful pathogens –which you can ingest from mishandled food, untreated water, or improper hygiene – can

cause mild diseases like food poisoning on to more severe issues like tuberculosis or colitis.

Gut Feelings

When we're anxious, our stomachs twist. When we're in love, we get butterflies in our stomachs. When we're depressed, we lose our appetite or go for those comfort foods we love, which are not necessarily good for us.

Our gut and our emotions are intimately connected.

Why?

An astounding 95 percent of the serotonin in your body, your happy hormone, is made and stored in your gut.[18]

It seems obvious to reason that the composition of your gut microbiota plays a critical role in influencing things such as anxiety, depression, stress, and even autism through our gut-brain axis. In fact, much research is now demonstrating this. For instance, a study in the journal *PNAS (Proceedings of National Academy of Sciences)* found that, when mice infected with an anxiety-inducing bug were given a strain of probiotics, it not only reduced their levels of stress hormones, but also reduced anxiety- and depression-related behavior.[19]

Such studies have opened doors to the possibilities of using probiotics – now termed "psychobiotics" – to treat neurological disorders such as PTSD, anxiety, and depression. We will talk more about this in Chapter 6.

Brain Health

Our gut microbiota not only make us happy, but these little gut bugs might be affecting our brain directly.

According to researchers at the University College Cork in Ireland, gut bacteria play a role in regulating genes which are considered crucial for proper nerve signal functioning and also for myelin – a crucial insulating sheath required for nerve function.[20] Along these lines, probiotics have been shown to have a therapeutic effect on multiple sclerosis, a condition where the immune system attacks the brain and spinal cord – leading to severe tremors, temporary vision loss, pain, fatigue, and impaired coordination.

Other common diseases like Alzheimer's and Parkinson's may actually start in the gut. For example, in people who have died from Parkinson's disease, scientists have found the same protein clumps that damage dopamine-producing neurons in the gut – as they did in the brain.[21]

The same phenomenon exists in people with Alzheimer's disease. Plaques and tangles that form in the brains of people with Alzheimer's disease also form in their guts.[22] This means that we may be able to use gut biopsies, which are easier to take than endoscopies, to diagnose and treat such brain conditions before they take hold – an idea being researched currently.

The Foundations of Our Biological Destiny: Gut Bugs and Growing Babies

All of our gut flora are laid out *from birth* and inherited from our mothers.

Before a baby is born, it is sterile, as no ecosystem has had a chance to develop. However, when a baby goes through the mother's birth canal, the baby is "seeded" with these microbes, thus starting a new ecosystem in a new being. Additionally, the vernix (the natural white coating found on a newborn's skin) is replete with healthy oils and chemicals, providing another immune and microbiome shot.

This process is essential to helping a baby establish a healthy bacterial environment in areas like the skin and the gut. A team of researchers at USCS studied such microbes' metabolic byproducts – molecules in a newborn's poop. They discovered that the guts of newborns with healthy gut flora had a wide variety of chemicals that can reduce inflammation and nourish immune cells called T-regulatory cells, which are crucial in reducing a child's tendency toward allergies.[23]

Researchers from the Norwegian Institute of Public Health in another study also determined that this "seeding" process of the baby's intestine is an extremely delicate process that can be disrupted by medical interventions... the most common of which is antibiotic administration to the mother or the baby.[24]

IMPORTANT NOTE: The practice of washing babies immediately after birth actually destroys all the good bugs and immunity that have just been acquired on their journey to the outside world.

Caesarean section babies miss out on this "seeding."

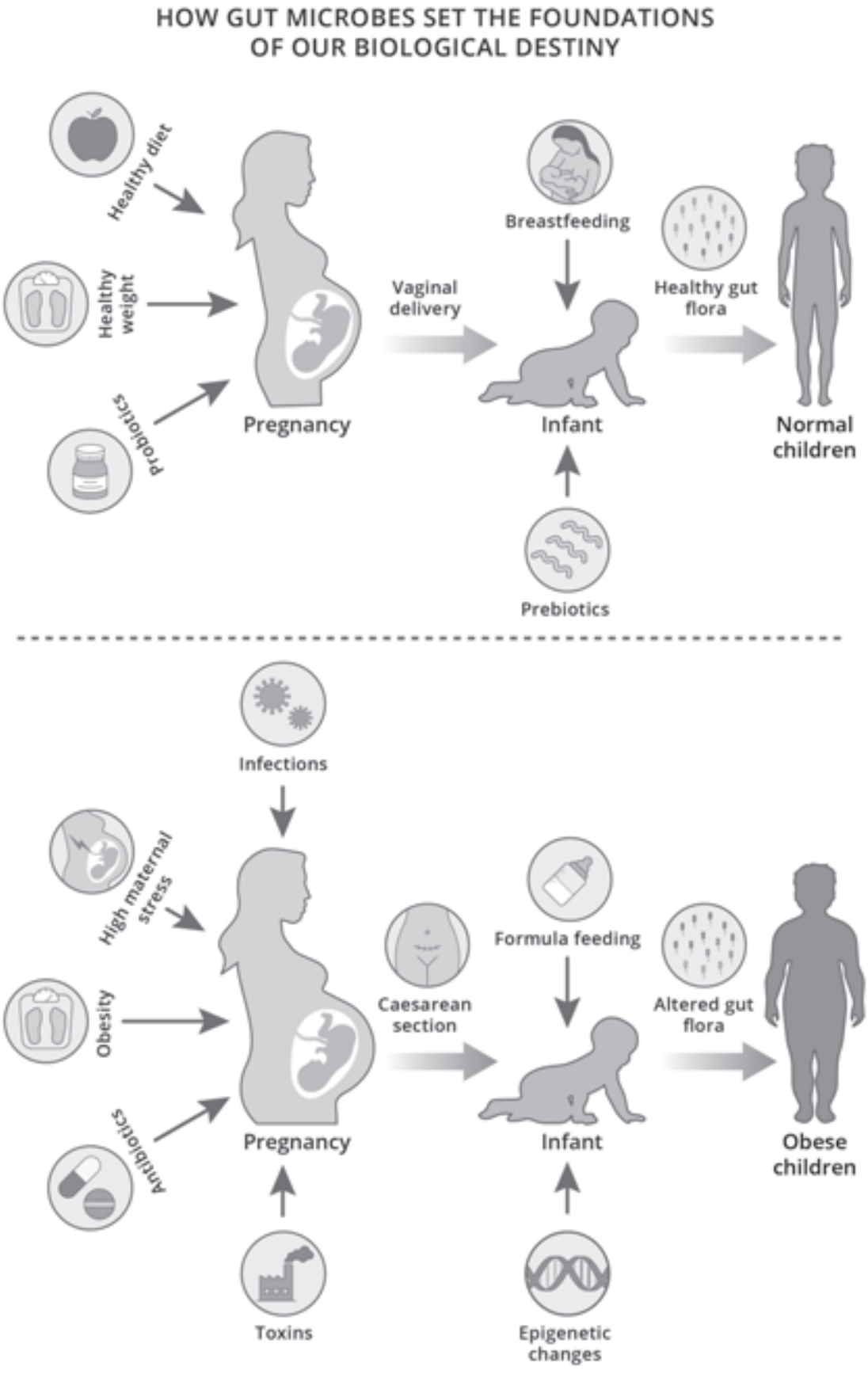
Researchers have tried smearing these surgically delivered babies with the vaginal fluids from their mothers in the moments just after birth, though, and the results are astonishing. After tracking the babies and their microbiomes for a month, the researchers, as reported in the journal *Nature Medicine*, stated that this exercise alone had partly restored normal microbiome development in babies born via C-section in comparison to normally delivered babies.[25]

Childhood Obesity: New epidemic, New Challenges

"The early years are when you give your child a foundation for establishing a proper diet. If kids learn about the importance of eating healthy early in their lives, they will not have to relearn it, as an adult."

Nicole Henderson

Childhood obesity is on the rise and every developed society is recording that up to 33% of their children are obese or overweight. This has steadily worsened over the last twenty-five years.[26] What happens to these overweight kids when they become adults is fairly obvious. Unless we as society get a handle on what is driving this issue, a tsunami of individuals with diabetes, heart problems, cancers, and many other medical maladies is inevitable. This will not only flood our society with a huge financial and medical burden, but more importantly, we must consider what an immense loss it is to our population as a whole, to see the creative potential of young brains being lost to many rounds of doctor appointments and medical visits.


HOW GUT MICROBES SET THE FOUNDATIONS
OF OUR BIOLOGICAL DESTINY
Healthy diet
Healthy weight
Probiotics
Pregnancy
Vaginal delivery
Breastfeeding
Infant
Prebiotics
Healthy gut flora
Normal children
Infections
High maternal stress
Obesity
Antibiotics
Toxins
Pregnancy
Caesarean section
Formula feeding
Infant
Epigenetic changes
Altered gut flora
Obese children

The foundations of obesity are established when an unhealthy gut microbiome takes hold due to poor lifestyle and food choices in the formative years of one's life.

Current data suggests that gut microbes play a role not only in the regulation of the metabolism and digestion, but also have a huge impact on the genes. This is particularly relevant when a growing child has a system that is constantly developing, learning, and relearning.

Threats to a Baby's Microbiome

What might put your child at risk for inheriting a poorly developed microbiome?

- Having taken antibiotics, especially long-term
- Eating a lot of processed or sugary foods
- Having been bottle-fed (vs. breast-fed)
- Cesarean vs. vaginal birth

Perhaps the most damaging thing to a newborn's microbiome is antibiotic use during pregnancy, as this can deplete or eliminate the good gut flora needed for a newborn's postnatal immune development. Also, a childbirth that required antibiotics will wipe out the majority of the good bacteria on all surfaces of the newborn's body.

According to research, giving antibiotics to infants likewise has untoward consequences, as it is associated with a higher risk later in childhood – for asthma, childhood obesity, and celiac disease.[27] As more research emerges, it's highly likely that more links between an infant's compromised microbiome and delayed onset of health issues will emerge. Also, courses of antibiotics throughout one's childhood further destroy good gut flora.

A Poor Microbiome and Your Baby's Health

A newborn that inherits an incomplete or unbalanced microbiome has a risk of developing significant health consequences, as the immune system may be compromised and not fully develop as a result. This leaves the door wide open to the child developing any number of chronic health problems – both immediately and later in life. Researchers at the University of British Columbia reported that three-month-old infants with low levels of four key types of gut bacteria were far more likely to show early warning signs of asthma when turning a year old than infants with normal levels of these bugs.[28]

SUMMING UP

There's no such thing as an ideal weight. Achieving an optimal weight – where you feel healthy, energetic, and active – is far more important than aiming for that elusive ideal weight based on a particular measure.

Microbiome is important to maintaining a healthy weight.

- Obese people have higher levels of bad "chubby" fat-storing bacteria.
- More diversity of the gut bugs equal less weight gain.
- The microbiome regulates appetite and your metabolism.
- Sugar feeds bad bacteria.

Your microbiome does the following for your health :

- Boosts immunity
- Alleviates risks of developing allergies
- Increases the nutritional value of food
- Protects against heart disease
- Improves metabolism
- Prevents growth of pathogens
- Boosts one's mood
- Enhances brain health
- Regulates genes which are critical for proper nerve functioning

Chapter 2

INFLAMMATION: THE ROOT OF ALL DISEASE

"At the heart of every order and disorder is inflammation."
~Dr. David Perlmutter

Inflammation

At the heart of any disease, be it infection or a cancer, is "inflammation"- the root of most modern diseases.

"Inflammation" literally means "to be on fire".

The Roman encyclopedist, Celcius of the 1st Century AD, studied the expressions for inflammation: rubor [29], dolor (pain), calor (increased temperature), tumor (swelling), and functio lisa (loss of function).

Put simply, inflammation is a normal response of the immune system to foreign invaders, toxins, or cell injury. When inflammation goes out of control or lasts longer than required (becoming chronic), it then becomes the driver of many killer diseases.

Leaky Gut: The Source of Harmful Inflammation

Imagine what would happen if, in a war, the gates of a fortress were left wide open.

That's what happens in leaky gut.

Leaky gut begins in the small intestine, when the cells of the gut lining become harmfully porous. Diet, toxins, and insufficient good gut flora cause gaps to occur in the intestinal lining. The pores widen and food particles and/or toxins "leak" into the bloodstream through these openings. Once these materials enter the bloodstream, the immune system identifies them as invaders and attacks them, along with any healthy cells in the neighbourhood. This is how autoimmune diseases, food intolerances, and allergies are hypothesized to develop.

Some of the bacteria in the gut contain compounds called lipopolysaccharides (LPS), also known as *endotoxins*. When these endotoxins leak into the bloodstream, they activate immune cells via a receptor called the toll-like receptor 4, or TLR-4. Though

the amounts are too small to cause symptoms of an infection, such as a fever, the amounts are large enough to stimulate a chronic inflammatory response – a state of inflammation that is always on high alert.

The situation is akin to a fire that is smouldering and which turns into a blaze at the hint of even a little fuel.

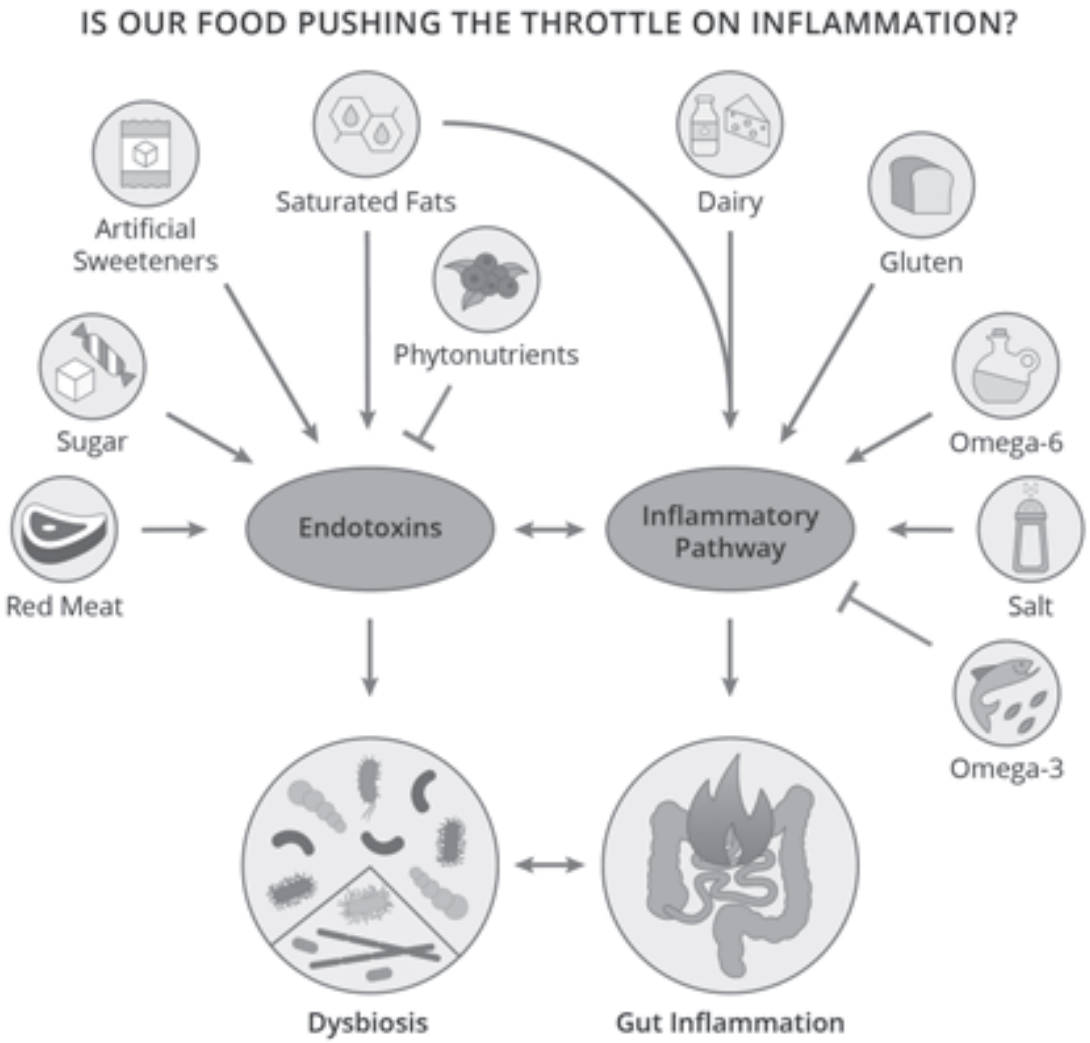
Similarly, longstanding inflammation builds up year by year and eventually erupts into a serious illness or a medical diagnosis.

Is Our Food Pushing the Throttle on Inflammation?

Numerous studies have tied our processed, chemically-laden, Western diet to inflammation and leaky gut.[30] In some studies, for instance, endotoxin levels increase after someone eats an unhealthy meal, and especially when ingesting pure cream, and both high-fat and moderate-fat meals.

And it's not just fat that might be the culprit. Most "high fat" diets also contain refined carbohydrates and processed ingredients like bread, pasta, cakes, and cookies.

IMPORTANT NOTE: The bottom line, as we will learn in more detail in Chapter 4, is that the secret to lasting health is to eat real, whole food from the earth, not food with ingredients that cannot even be pronounced.


IS OUR FOOD PUSHING THE THROTTLE ON INFLAMMATION?
Artificial Sweeteners
Saturated Fats
Dairy
Gluten
Phytonutrients
Sugar
Omega-6
Endotoxins
Inflammatory Pathway
Red Meat
Salt
Omega-3
Dysbiosis
Gut Inflammation

Gut Flora, Inflammation, and the Immune System

As should be clear by now, your ability to fight illness starts in your gut.

In fact, as mentioned earlier, roughly 70 to 80% of your body's immune cells live in your gut.[31] Contact with your gut microbiome programs your immune cells to behave in a certain way before they go out into circulation.

For example, immune cells called T-cells can either suppress inflammation or promote it, depending on whether your gut is thriving or imbalanced.

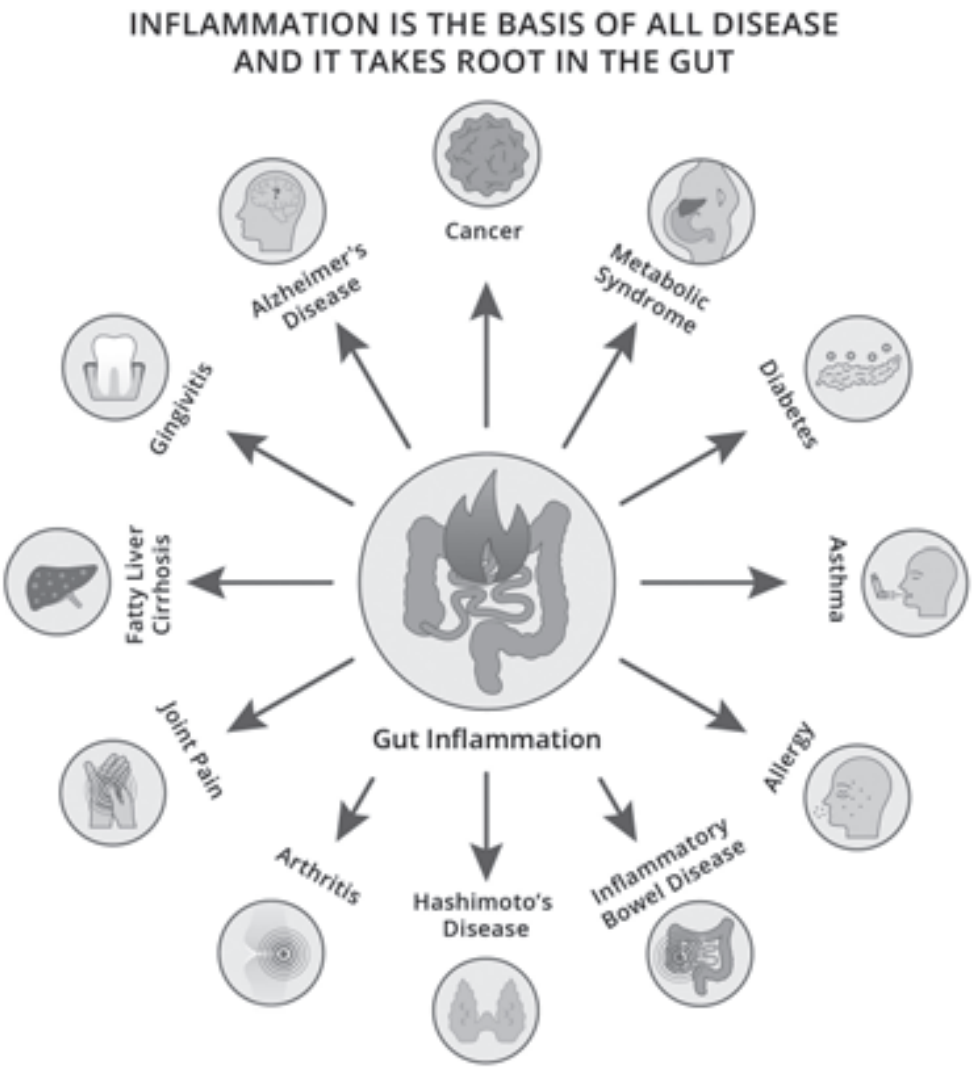
A Poor Microbiome and Disease

When your gut flora is off-kilter, disease will ensue. We'll look at a few scenarios here, such as the following:

AUTOIMMUNE DISEASES

Examples: Arthritis, Inflammatory Bowel Disease, Hashimoto's disease

Autoimmune disorders develop when the body's immune system goes amiss and attacks its own healthy tissue. This occurs largely because of inflammation, which has its roots in poor gut health and causes leaky gut syndrome by increasing the gap between the cells that are meant to be a very fine filter. These incompletely broken down particles released into the bloodstream, which should have been filtered off instead, are identified as abnormal by our immune system – the seat of defense. This kicks off a cascade of autoimmune reactions, which is like a fire that has gotten out of control, and this begins to manifest as arthritis, allergies, or hormonal issues.


INFLAMMATION IS THE BASIS OF ALL DISEASE
AND IT TAKES ROOT IN THE GUT
Cancer
Alzheimer's Disease
Metabolic Syndrome
Gingivitis
Diabetes
Fatty Liver Cirrhosis
Asthma
Joint Pain
Allergy
Gut Inflammation
Arthritis
Hashimoto's Disease
Inflammatory Bowel Disease

Brain Disorders and Cognitive Decline

Examples: Alzheimer's, Dementia, Parkinson's

Inflammation is highly correlated with cognitive decline, whilst an anti-inflammatory lifestyle leads to better memory retention, longevity, and brain health.

Multiple neuro-chemical and neuro-metabolic pathways exist between the central nervous system/brain and microbiome/digestive tract that send signals to one another, affecting our memory, thought patterns, and reasoning.

The bottom line here is that differences in our microbial communities might be one of the most important factors in determining how we deal with cognitive disorders in older age, and possibly behavioural problems in the young.

Cancer:

What is now becoming more and more recognised is that longstanding inflammation and chronic activation of the immune system are very important factors contributing to cancer development.[32] In fact, among the top ten deadliest cancers in the world, three have their origin in the gut: the pancreatic, colon, and esophageal cancers.

Yet, the scourge does not stop there. Scientific studies have also linked gut inflammation to cancers outside the gastrointestinal tract. One study (published in 2001 in *The British Journal of Cancer* looked at the link between gut inflammation (dysbiosis) and breast cancer, and in examining mice, researchers discovered that breast cancer cells developed within 4-6 weeks of infection with a particular type of harmful gut bacteria.[33]

Not only this, but microbes influence our genes, too. This means that they can either promote inflammation and tumor growth or

raise immune function and act as a natural cancer barrier. An anti-inflammatory lifestyle can also help lower serious side effects of cancer treatments (like chemotherapy).

Free Radicals and Cancer

Many studies have shown a link between gut health and better protection from free radical damage. Free radicals are best understood as being akin to vehicle exhaust when a car engine is running – if the engine smoke were let into the car cabin, it could suffocate the driver. Just like the vehicle exhaust, free radicals are chemicals that need to be neutralised or vented out of the body. Free radical damage has been implicated in not only bowel-related cancers, but also brain, breast, pancreatic, and prostate cancers.

While research on the role of antioxidants taken as supplements for cancer prevention has revealed mixed results, it is important to know that a plant-based diet which is rich in natural antioxidants is central to maintaining not only a healthy microbiome, but also to reducing your overall cancer risk.

A FASCINATING NOTE: Just as each of us has a unique genetic composition detailing physical features such as the color of our eyes, skin, etc., so also is our gut microbiome vastly different from that of others. In fact, estimates are that we are 80 to 90% different from one another when it comes to our microbiome.[34]

Fatigue and Joint Pain

Certain bacteria within our digestive tracts contribute to the deterioration of joints and tissue. Research shows that a healthier gut environment helps lower the risk for joint pain, swelling, and trouble moving in people with osteoarthritis and inflamed joints.

Some studies have found that patients with psoriatic arthritis (a type of autoimmune joint disease) have significantly lower levels of certain types of intestinal bacteria, and that patients with rheumatoid arthritis are more likely to have other strains present.[35]

HEALTHY TIP: Instead of taking anti-inflammatory medications to manage illnesses like arthritis or heart disease, we're much better off reducing inflammation in the body by reducing elements in our diet that promote inflammation. Sugar and highly processed foods top the list of these inflammation-causing foods. More about this in chapters 7 and 8.

Fatty Liver, Metabolic Syndrome, and Obesity

The gut microbiome plays a crucial role in the development of obesity-related metabolic diseases such as fatty liver, type 2 diabetes, and insulin resistance. This will be discussed in further detail in Chapter 6; however, suffice it to say that fatty liver is an extremely prevalent liver condition that coexists with obesity. While the fatty liver is seen as, "just an extra bit of fat in the liver tissues," it can progress to cirrhosis, liver cancer, and also liver failure – all of which can be fatal.

The role of poor gut health and an unfavourable gut microbiome in the development of obesity and fatty liver is becoming further established with more and more long-term studies proving a stronger link in this association.[36]

Allergies, Asthma, and Sensitivities

Certain beneficial bacteria lower inflammation, which lessens the severity of allergic reactions, food allergies, asthma, and infections of the respiratory tract. This means stronger defense against seasonal allergies or food allergies, and more relief from coughing, colds, the flu, or a sore throat.

Furthermore, a fortified microbiome, along with an anti-inflammatory diet, helps prevent susceptibility to "leaky gut syndrome" – believed to be one of the primary causes of phlegm or mucus in the lungs or nasal passages which is associated with asthma, allergies, and sensitivities.

Research Supports the Role of the Gut Microbiome in Health and Disease

The association between our health, environment, and the microbiome has been well documented in several sophisticated and comprehensive articles, and this pool of knowledge continues to grow.[37] As our knowledge about this interaction evolves, this may pave way for new understandings of disease and how we may better protect the health of humanity on this planet.

Summing Up

- Inflammation is at the root of most disease.
- Behind inflammation is leaky gut, or a weakened permeability of the gut wall. It is caused by factors such as diet, toxins, and insufficient good gut flora.
- 70% to 80% of your body's immune cells live in your intestines.

A Poor Microbiome & Disease

When your gut flora is off-kilter, it creates a breeding of many conditions like :

- **Autoimmune Diseases** (Arthritis, Inflammatory Bowel Disease, Hashimoto's Disease, etc.)
- **Brain Disorders/Cognitive Decline** (Alzheimer's, Dementia, etc.)
- **Cancer**
- **Fatigue and Joint Pain**
- **Obesity and Metabolic Syndrome**
- **Allergies, Asthma, and Sensitivities**

Chapter 3

HOW STRESS IS MAKING US FAT

"I see rejection in my skin, worry in my cancers, bitterness and hate in my aching joints. I failed to take care of my mind, and so my body now goes to the hospital."
Astrid Alauda

Have you ever sat mindlessly eating a pint of Baskin Robbins ice cream while brooding about why your boyfriend broke up with you, or eating a hamburger and chips as you worked furiously to meet a work deadline? Perhaps you're a busy mom, getting your energy from eating cookies in your car as you ferry the kids back and forth between a slew of activities. Or maybe you're a business owner desperately trying to meet financial targets, spending long hours on planning and goal-setting, when the news of elevated blood sugars and a diagnosis of diabetes throws things into a tailspin.

I'm sure you can come up with your own list of those periods of stress when your hand seems to make it to your mouth almost unconsciously.

The Silent Killer - STRESS

Stress is a natural, physiological, and necessary response that is built into every living being. It's a survival instinct, and the whole aim of this response is directed towards survival.

This physiological response – the stress response – when it starts to languish around for longer than what is required, becomes pathological and then starts to show up as a wide range of unpleasant human experiences. It may take the form of tiredness or irritability, or sometimes a nearly complete inability to cope. Regardless of whether our stressors are a string of many minor ones or a few major ones, they are not only a direct cause of many illnesses, but more importantly, they take away the joy from life.

Stress may originate from physical stressors, such as insufficient sleep or missed meals, as well as emotional stressors, such as a sick family member, pressing deadlines, challenging relationships, or intense parenting demands. Regardless of the cause,the chemical reactions associated with long standing stress,form the common denominator of a disease producing state.

Talking specifically about stress and our weight, there is an increasing body of evidence pointing to several ways in which increasing levels of stress can lead not only to weight gain, but to gaining weight which is very hard to shed.

While short-term stress can cause a person to lose their appetite, long-term or chronic stress can have the opposite effect.

Chronic stress can lead to "comfort eating" – which often involves the overeating of foods that are high in fat, sugar, and calories, hence leading to weight issues in the long run.

How Does Stress Influence Your Gut?

In the previous chapter, we saw the effect stress has on the gut flora, by way of slowing down our metabolism and threatening our health through adversely affecting the immune system.

Later in this chapter, we'll see how weight gain due to stress is specifically due to three main reasons:

- HORMONES: Excess stress causes an inner state of starvation due to the havoc created by stress hormones. Cortisol, the key stress hormone – when circulating in excessive amounts – causes the body to hold on to every bit of energy, mostly fat, no matter how little one eats and how much one exercises.
- GUT INFLAMMATION: Excess stress damages the biofilm that covers the inner lining of the intestines, leading to a leaky gut. As we will see later, this leads to inflammation – a major factor in obesity and its related problems.
- BAD BUGS FLOURISH: Stress causes changes in the gut's bacterial make-up, causing the "bad guys" to flourish and seek sugar, as sugar is comforting and gives us a boost of instant energy. This also contributes to digestive difficulties,

leaky gut, and inflammation, all of which further amplify the damage.

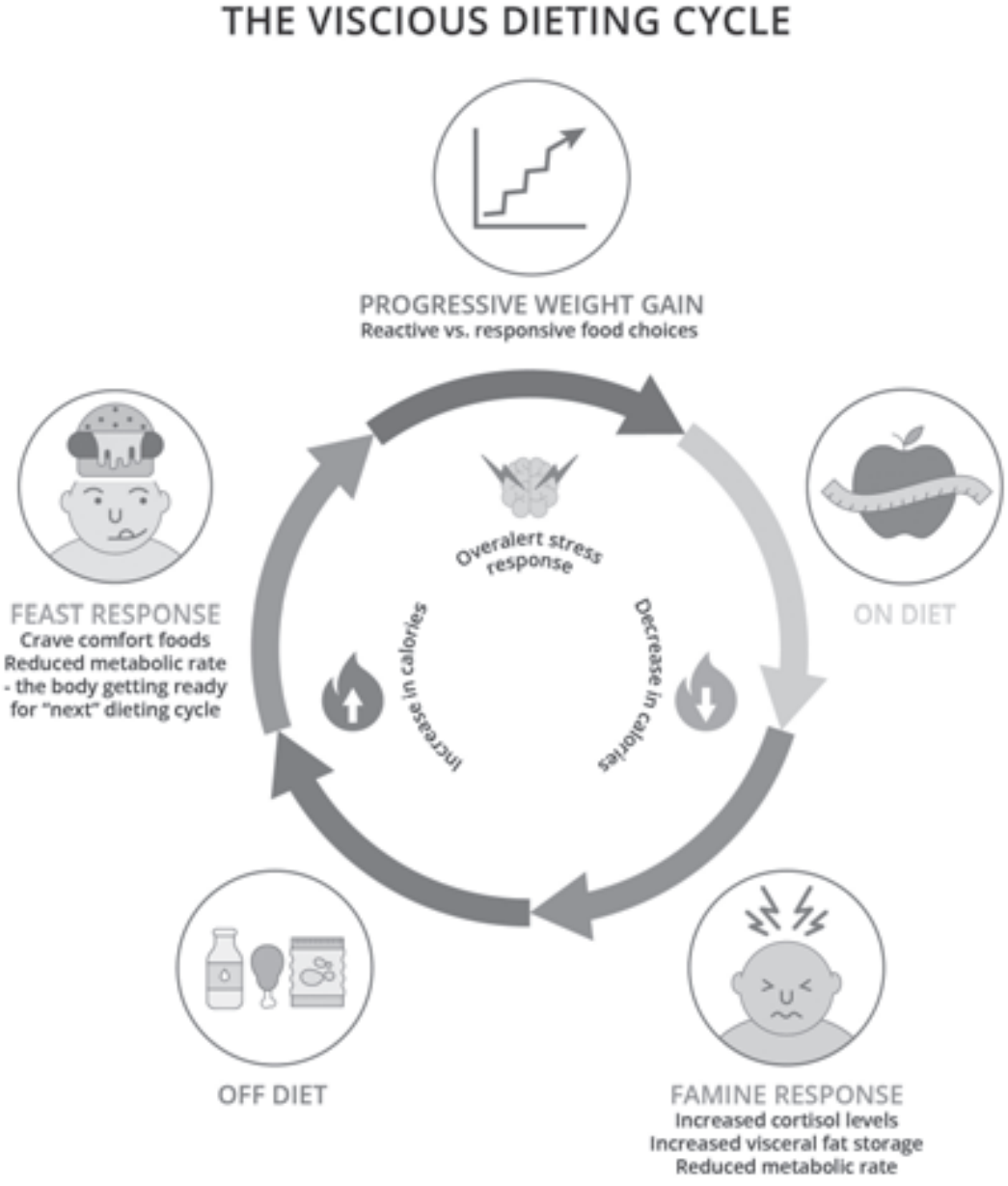
This information is critical to understand since stress is the major driver of the vicious cycle which soon goes into a self-perpetuating mode.

If Not Dieting, Then What?

In his book *If Not Dieting, Then What?,* Dr. Rick Kausman mentions that harsh weight loss diets are not a good long-term strategy. But why not?

We expend most of our energy through our metabolism (just generating our body temperature and keeping the engine running – staying alive), doing some exercise (depending on our activity), and digesting our food. Generally speaking, our metabolism slows down with age; however, we slow down the process of energy expenditure further due to our sedentary jobs, labor-saving devices, and preserved, calorie-dense foods. These habits coupled with not getting enough physical activity leads to more calories going in and less calories going out – causing weight gain. It's all easy to understand up until this point, however: when we decide to go on a crash diet, we trick our body into thinking it's in the middle of a famine, so it holds on to all the calories it can by reducing our metabolic rate. The dieting program may be successful for some initial weight loss, but the sad part is that nearly everyone dieting like this will be back to their previous weight within a year or two, and some may even overshoot their original weight with this weight gain, which will trigger another perceived need for dieting and lead to the vicious "yo-yo dieting cycle." That's why harsh weight loss diets are not a good long-term strategy. In fact, such diets can increase the risk of developing eating disorders – particularly in children and adolescents.

Several studies have found that extreme discipline, like that which is required for success with any diet, is associated with increased cortisol concentrations [38]. This leads to a stressed-out system because of constant calorie counting and weight-watching, causing the body to eventually seek comfort foods (e.g., chips, hamburgers, and soda) and develop an increased drive for disinhibited eating, or binge eating.


THE VISCIOUS DIETING CYCLE
PROGRESSIVE WEIGHT GAIN
Reactive vs. responsive food choices
ON DIET
Decrease in calories
FAMINE RESPONSE
Increased cortisol levels
Increased visceral fat storage
Reduced metabolic rate
OFF DIET
Increase in calories
FEAST RESPONSE
Crave comfort foods
Reduced metabolic rate
- the body getting ready
for "next" dieting cycle
Overalert stress
response

On the other hand, some flexibility in dietary patterns and food choices reduces the risk of this "break-through" binging which is observed with a highly restricted and disciplined diet plan.

People who maintain rigid rules around their food appear to be less attentive to the physiological cues of hunger and satiety, leading to overeating.

Studies suggest that continuous dieting produces increases in cortisol levels (reflecting the levels of stress) of as much as 18 percent in comparison to healthy non-dieting adults.[38] Cortisol promotes insulin resistance, which in turn promotes fat storage – particularly around the abdomen – a key driver of metabolic syndrome and fatty liver.

The Stress Baggage!

I hear many of my clients say, "I barely eat enough, however, everything I eat just stacks on!" or "It's so hard for me to shed even a pound!"

What surprises some of my clients is the notion that the reason they are so heavy is likely all the "stress baggage" they are carrying. As mentioned above, any form of prolonged physical or emotional stress is detrimental, and yet, we all need that optimal level of stress.

Ultimately, dieting is a form of starvation, and causes a build-up of subtle levels of stress in the body. This stress and the anxiety of the wait to see results leads to a state of chronic stress, causing the body to remain in a starvation mode for longer, holding on to every kilojoule of calorie that it can hold on to. Studies confirm that lab animals put in stressful situations gained weight even when they were eating *exactly* the same food as the unstressed animals who did not gain weight.

Belly fat

We can all relate to a situation where we are stressed, anxious, or unhappy – and in those cases, we seek comfort foods that are likely to be high in starches, sugars, and calories; in short, we crave calorie-dense foods, or foods that make us feel comfortable and safe. Research from the University of Cincinnati's College of Medicine suggests there's a biological link, not just a psychological one, between stress and cravings for foods that are more likely to lead to fat storage. Research in the field of nutrition and obesity shows that there is a strong link between chronic stress and belly fat.[39]

In many ways, this is nature's mechanism for self-preservation. Our biological make-up will store and save energy if there is a perceived danger of starvation or extinction; however, it acts as a double-edged sword. When your body feels safe and relaxed, you are more likely to burn fat rather than store it. The body's mechanisms identify you being relaxed as meaning that you are less likely to starve and have more confidence of getting more food – situations that are less likely to require fat storage. So, feeling relaxed, generally and especially while having a meal, cues your body to burn the calories rather than hold onto them.

Our World of Distractions

We live in a world of distractions. All day, every day, we are bombarded with opportunities to be distracted… social media feeds, messages, emails, and phone calls. And, as I've come to realize, many of us choose (whether we're conscious of it or not) to distract ourselves on purpose in order to escape from life in various ways.

The "Busy-ness" of Life vs. the Business of Life: Decision Fatigue

The brain does only one thing for us: it makes decisions. Living in a world of ongoing distractions requires the brain to be constantly

making decisions, even if they are of little significance. This ongoing process of constant stimulation, and ongoing decision making – the "busy-ness" – causes extensive fatigue for the brain, this being called *decision fatigue*. This causes your brain to crave the only source from which it can get energy to keep doing its job… sugars. This is when you go for the doughnut or the chocolate chip cookies, as such sugars give your brain the sugar "kick" that it is seeking to keep going with its business. If this pattern of "busy-ness" continues, it changes our food choices in general, such that we will go for the sugar-rich foods out of habit, rather than for an occasional treat.

These distractions cause not just a loss of focus, but also a loss of connection to the present moment and, more importantly, a loss of connection to what messages our body is sending us. This is precisely what is called "Mindless eating" – the opposite of mindful eating – where we actually pay heed to the cues our body sends us from time to time.

Given that most of us are going to be distracted on a regular basis, consciously or unconsciously, it's important that we take a deeper look at how and why we get distracted, and also do what we can to start "distracting" ourselves in healthy ways and for healthy reasons – like going for a walk, standing up from our work seat, or talking to someone.

Mindless Munching

At times, life can get quite intense and stressful, and each one of us comes up with creative ways of avoiding certain feelings, situations, and activities that are challenging for us (i.e. things we're scared of or uncomfortable with), where we tend to distract ourselves in ways that may not necessarily be serving us well in the long run. This is when food is a readily available distraction. Food – especially rich and sugary food – makes us comfortable, and also makes us feel safe.

More crucially, when food choices are being driven by hormones of stress, we ignore the messages our body is sending to us and indulge in mindless munching.

Repeated stress, played out as a heightened sense of urgency, anxiety, fear, or even irritability, is often present in our fast-paced, modern lives. The hormones of stress not only drive our food choices, but are addictive to a point where, after a while, the body actively seeks these hormones – which act like a "drug" – and this slowly chips away at the foundation of our health.

And this process is lethal when it comes to maintaining a healthy weight. Stress increases appetite (especially for sugars and fat), makes us hold onto the fat, and causes us to, in an instant, forego our ability and willpower to implement a healthy lifestyle routine.

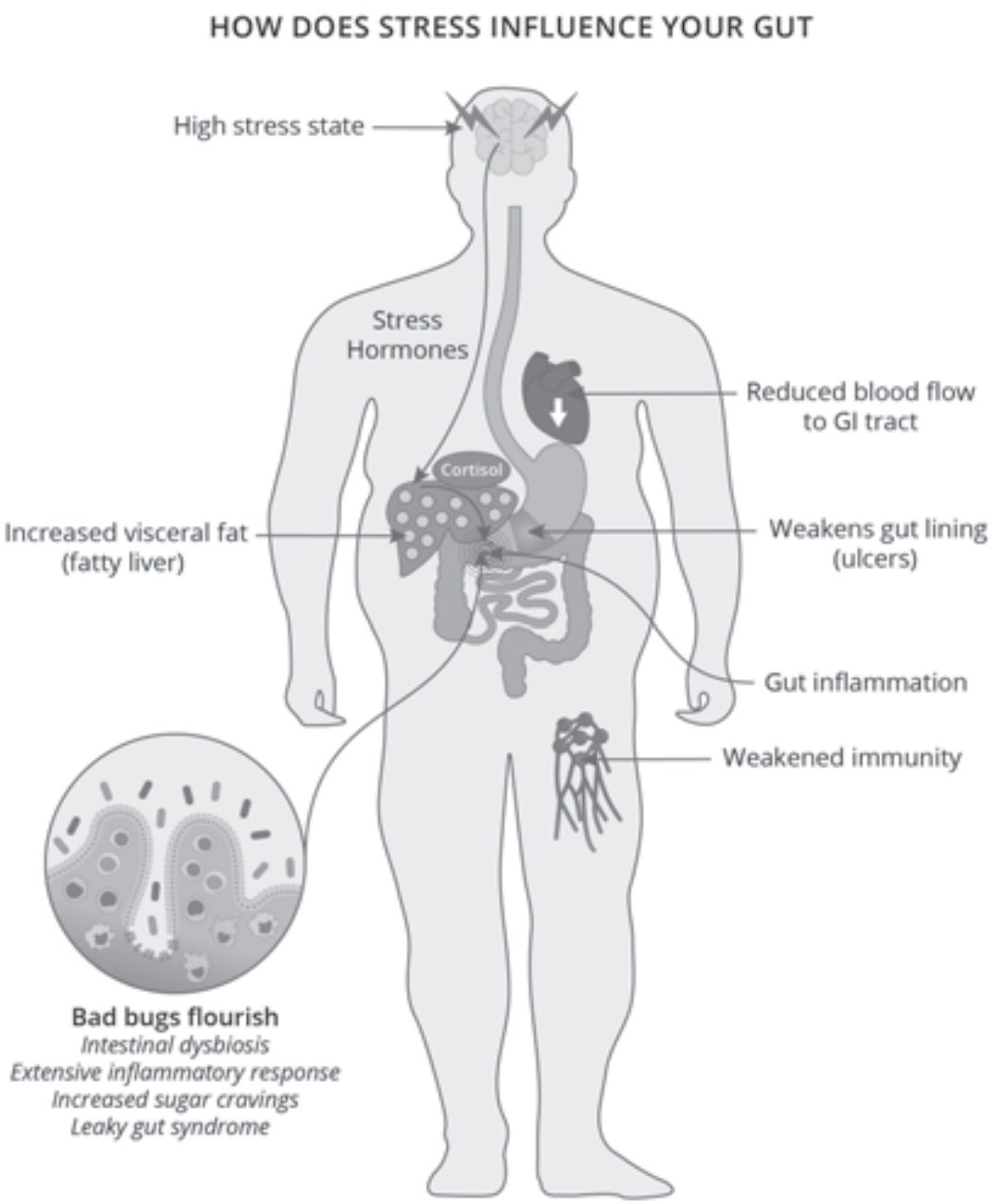
So, How Does Stress Make us Fat?

There are four major reasons stress leads to weight gain.

Hormones

When your brain detects a threat, whether it's a growling dog, a demanding boss, a flat tire, or a big credit card bill, it triggers the release of a cascade of chemicals that include adrenaline, CRH, and cortisol. These chemicals prepare your brain and body to handle the threat by boosting alertness, readying you for action, and preparing you to withstand injury.

A quick shot of adrenaline causes your blood to flow away from the internal organs and to your large muscles in order to prepare for "fight or flight," inhibiting hunger.


HOW DOES STRESS INFLUENCE YOUR GUT
High stress state
Stress Hormones
Cortisol
Reduced blood flow to GI tract
Increased visceral fat (fatty liver)
Weakens gut lining (ulcers)
Gut inflammation
Weakened immunity
Bad bugs flourish
Intestinal dysbiosis
Extensive inflammatory response
Increased sugar cravings
Leaky gut syndrome

Once the effects of adrenaline wear off, though, cortisol – "the stress hormone" – lingers and signals the body to replenish your food supply. And then you grab for the nearest doughnut and mindlessly wolf it down.

Evolutionally, this was okay when you were running from a grizzly bear, as you needed a great deal of energy to fight or escape, and so your body stored fat and glucose. But, in today's world, threats come not from danger to our lives, but from lifestyle stressors like deadlines, rush-hour traffic, crabby bosses, and the nightly doomsday news. These are not things which you can run from or engage in a fist fight with, and you don't expend much energy in addressing them. And so, the weight piles on.

Ghrelin

When our sympathetic nervous system is activated in the flight/fight mode, the hormone ghrelin is released from our stomach. It's probably not the only hormone that our gut makes in response to stress; however, ghrelin is known as our hunger hormone because it stimulates appetite and promotes fat storage. This explains why, when we are stressed, we may feel the compulsive need to eat.

Buddha Belly

The chronic stress from life crises, work-life demands, and worries about the future result in an extra layer of "visceral fat" deep in our bellies – a Buddha belly. This happens because your belly has an abundant supply of blood vessels and cortisol receptors to make the whole process of metabolism function as efficiently as possible. These cortisol receptors, when constantly stimulated because of long-standing stress, cause fat to be preferentially stored – and stored centrally, around the belly organs.

Unfortunately, excess belly fat is not only unhealthy, but hard to get rid of. The fat releases chemicals that trigger inflammation, and this increases the likelihood that we will develop heart disease or diabetes.

Added to this dilemma is the psychological component: you also feel stressed because you can no longer fit into that slinky little black dress that you just spent $300 on.

And this isn't all. Excess cortisol slows down your metabolism because your body wants to maintain an adequate supply of glucose for all that hard mental and physical work you need to deal with the perceived threat.

Anxiety

The adrenaline surge that happens during "flight/fight mode" creates jumpiness, and we feel fidgety and wired as a result. Ultimately, the fight or flight response is our innate survival instinct that sets us up to stay safe and comfortable no matter what it takes.

This was fine when, as discussed above, we needed a burst of energy to run from the grizzly bear, and this pent-up energy quickly dissipated once the threat was over so that we then calmed down and relaxed.

But without this explosion of physical energy, the stress hormones continue to circulate in our bloodstream. Stress becomes a chronic state and we feel easily charged up and anxious.

This constant anxiety is one of the biggest triggers for "emotional eating," as exhibited with eating fatty, sugar-laden, unhealthy foods which temporarily distract and calm us. We are more likely to turn to a bag of chips if we are on a couch and feeling anxious, as this is the kind of food that is comforting. When we go for these comfort foods every time we feel anxious, it wires our brains so that every

time those familiar feelings of stress and anxiety return, the body looks for comfort in external sources such as comfort foods. Those extra calories that we end up collecting further add to the stress of feeling fat and out of control.

Anxiety can also make you eat more "mindlessly" when worrying thoughts swim in your head and you don't even focus on the taste of the food, how much you've eaten, or when you are feeling full. Furthermore, you end up eating more, but feeling less satisfied.

Cravings and Easy Foods

When chronically stressed, we crave "comfort foods" such as a bag of potato chips or a pint of ice cream. Such highly processed foods tend to be easy to procure and eat, and are generally high in fat, sugar, or salt – hence, they provide us with the pleasure kick.

We crave these foods for both biological and psychological reasons.

Biological Reasons

Many people crave and over-eat foods made from wheat, like cookies, cakes, pasta, and pizza.

These foods contain gluten, a major source of inflammation in the body. Once you start, it may be hard to stop eating them because gluten foods are addictive, as well. Essentially, wheat – both refined and whole wheat – acts like an opiate in the brain and creates the desire to consume it again and again.

It's difficult to feel satisfied for long, though, and so you begin to seek it out more and more often. Your blood sugar spikes and crashes, and then you're looking for your next slice of pizza or chocolate chip cookie for another wheat fix.

This appears to happen because, when your body digests wheat, polypeptides (short proteins) called exorphins make you feel high, as they attach to opioid receptors in the brain.

FYI: Gluten contains a protein called *Gliadin* that damages the lining of your gut. Food particles leak through your gut wall and your immune system goes to work. Hours or even days later, you may experience fatigue, bloating, joint pain, and weight gain as a result.

Psychological Reasons

There are also psychological reasons for cravings and overeating.

Stress can mess up your brain's reward system while cortisol may cause you to crave more fat and sugar. Childhood memories, such as the smell of pecan pie, can also lead us to associate sweet foods with comfort.

Furthermore, when stressed, we are more likely to drive through the fast food lane rather than take the time to stop at the supermarket and gather the ingredients to make a freshly cooked meal.

Stress and the Microbiome

Stress doesn't just cause you to gain weight and leave your stomach in knots. Research shows that ongoing stress can negatively affect the trillions of healthy bacteria in your gut, depleting beneficial strains and allowing pathogenic strains to take hold.[40]

It's hard to say what comes first – a poorly populated microbiome or the stress. Either way, stress impacts the microbiome negatively and decreases your ability to handle stress.

How Stress Hurts Your Gut and Your Health

Reduced Blood Flow

When your body goes into flight/fight mode, blood flows away from your gut and into your muscles and your brain. This is why, during heightened stress, you might experience a lull in digestive and immune health.

Eroded Protection from Effects of Stress

Interestingly, one of the main jobs of gut bacteria is to signal the brain that it needs to cope with elevated "stressors" so that they don't affect the rest of the body.

But, over time, chronic, long-term stress erodes the good critters that are there to protect you from the effects of stress. A study published in the *Journal of Physiology and Pharmacology* showed that consistent stress negatively affects the amount and diversity of your good gut flora.[41] When this happens, the whole ecosystem suffers and this affects the way you look, feel, and act without you even being aware of it.

Weakens the Gut Lining

Your gut barrier – a protective biofilm – keeps unfriendly microbes and pathogens from entering your bloodstream. Stress's harmful effects weaken your gut's intestinal lining against invaders and makes you more susceptible to illness, exhaustion, and nutritional deficiencies.

Reduces Immunity

We know that the health of the gut impacts the immune system, as a majority of the immune system resides in the gut. Unfortunately,

continual stress, according to the U.S. National Institute of Mental Health, causes the protective nerve chemicals to deplete and this suppresses immunity, especially if the stress response has gone on for too long.[42]

This negatively impacts the digestive tract, the excretory system, and the reproduction system. Sometimes the stress causes them to stop normal function altogether.

Leads to Inflammation

Recent studies suggest that a microbiome influenced by stress can lead to the type of inflammation that is tied to mental health issues such as depression and anxiety.[43] Yes, microscopic bugs even influence our moods, and we'll talk much more about this in Chapter 6 when we discuss the gut-brain connection.

How Friendly Gut Flora Keep Stress in Line

While stress impacts your gut flora, your microbiome is also actively working to keep stress in check. If well-nourished beneficial bacteria outnumber the bad guys, your microbiome helps to buttress the body's response to stress, and also to keeps stress' negative effects on your overall health in check.

Here's how.

Produces Serotonin

As we mentioned earlier, gut bacteria produce important mood-regulating neurotransmitters like serotonin that communicate with the brain. Serotonin is essential for coping with mental turmoil and has been dubbed the "happy hormone."

Lowers Cortisol

Healthy bacteria in the gut work to help lower cortisol, the bad stress hormone. In one study, medical students drank probiotic-rich fermented milk or a placebo for eight weeks in preparation for an important exam.[44] Students given the fermented milk showed lower cortisol levels, increased serotonin levels, and fewer GI symptoms which are typically associated with stress and anxiety in comparison to students in the control group.

Studies show that consuming *pre*biotics (the indigestible fibers that feed probiotics so that they can thrive) also increases the amount of neurotransmitters that affect stress levels.[45] We'll talk about prebiotics in the next chapter.

In other words, both supplementing with good gut bacteria *and* making sure they are well fed helps mitigate stress and its negative effects on your system.

Sleep: Our Natural Stress Buster

Do you ever lie awake at night worrying about paying the bills or about a stressful relationship with your teenage son or daughter? Several modern-day studies have shown that more than 40% of us lie awake at night as a result of stress.[46] This is the major cause of insomnia, and we have trouble switching off our overworked minds.

Poor sleep causes decreased blood sugar, leading to fatigue and an ongoing lack of initiative. This is something that is also noticed in late-night shift workers when a subtle disruption of the sleep cycle causes increased dependence on coffee or caffeinated soft drinks to stay awake, or alcohol to feel better and even sleep better.

Both of the above situations cause a disruption of the chemicals that the body makes to maintain balance. These chemicals in our inner

pharmacy – called hormones, Ghrelin and Leptin – are chemicals that control our appetite. Not only this, but their disturbance also causes us to get our calories mostly from "comfort foods"… mostly sugars.

Finally, not getting enough of our precious sleep erodes our willpower and our ability to resist temptation. In one landmark study, overweight dieters were asked to follow a fixed-calorie diet and assigned to get either 5-½ or 8-½ hours of sleep a night in a sleep lab. Those with sleep deprivation lost substantially less weight.[47]

Summing Up

Stress and Weight Gain

- Longstanding Stress is detrimental to your metabolism, which leads to weight gain.
- Release of the stress hormone cortisol signals our bodies to replenish their food supply and cause us to binge when under stress.
- Chronic stress results in an extra layer of "visceral fat" deep in our bellies, causing our waistlines to grow.
- Stress creates anxiety that leads to binge eating. And, under stress, we eat mindlessly.
- Under stress, we crave **"**comfort foods" – food which is high in fat, salt, and sugar.

Stress and Microbiome

Long standing stress not only influences your gut health but also the health of your microbiome,in the following ways:

- ***Reduces Blood Flow* –** Part of the flight/fight response, reduced blood flow to the gut dulls digestion.

- ***Erodes Protection from Effects of Stress –*** Long-term stress erodes the good critters that are there to protect you from the effects of stress.
- ***Weakens Gut Lining –*** Chronic stress weakens the gut lining and makes you more susceptible to illness, exhaustion, and nutritional deficiencies.
- ***Reduces Immunity –*** As much as 70% of the immune system resides in the gut.[48] Under stress, digestion is weakened, lowering immunity and protection against disease.
- ***Triggers inflammation–*** Stress leads to the type of inflammation that is tied to changes in the gut microbiome that make you more prone to store fat than burn it.

PART II

THE GUT-WEIGHT CONNECTION

"We are all born with three things:
Mind, body, and lifetime.
How we use the first two determines the third."
-Anonymous

Chapter 4

GUT: OUR SECOND BRAIN

The Key to Our Healthy Weight

Ever had a gut instinct about someone, butterflies in your stomach while waiting for that special someone, or a tummy ache just thinking about taking a test? This happens because the stomach and the mind really do chat back and forth.

To nobody's surprise, the better the health of your gut microbiome, the better your brain functions. In one telling study, fearful mice that received gut bacteria transplants from braver ones became braver, too, exploring a maze more boldly.[49]

So strong is the microbiome's impact that some people have named it the "second brain." In fact, there's now a whole new science centered on exploring gut-mind interconnectedness and all its complexity via the hundred trillion bugs living in our guts. And what we've learned so far will change the course of how we perceive emotional problems, mental illness, and neurological dysfunction.

As it turns out, these microbes both receive and send signals to and from the brain. In this two-way street, your brain influences your gut microbes whilst certain species talk back and influence your mood and behavior.

Just by treating gut imbalances, we are learning it's possible not only to resolve pain, inflammation, fatigue, allergies, autoimmune diseases, and weight gain, but to offer relief from brain-related disorders, autism, attention deficit and hyperactivity disorders (ADHD), obsessive-compulsive disorder, depression, dementia, and even Parkinson's disease.

The Gut as a Second Brain

In his book *The Second Brain*, Michael D. Gershon, MD. highlights the vital role the gut plays in our physical and psychological health

via its own neural network: the enteric nervous system (ENS). He mentions in his book that, as he dissected the gastrointestinal tract layer by layer, he was amazed to find that there were many more nerve endings going from the gut to the brain than the other way around. This complex system of about 100 million nerves found in the lining of the gut, the ENS, *is* literally our "second brain." In fact, it arises from the same tissues as our central nervous system (CNS) during fetal development and, consequently, has many structural and chemical parallels to the brain.

As hormones, neurotransmitters, and electrical impulses pulse through a pathway of nerves involving endocrine, immune, and neural pathways, both "brains" communicate back and forth using hormones and neurotransmitters, chemicals that influence our brain circuitry in multiple ways. Of particular importance, the ENS produces 50% of the body's dopamine, our "reward" neurotransmitter, and 95% of the body's serotonin, our "feel good" neurotransmitter.[50]

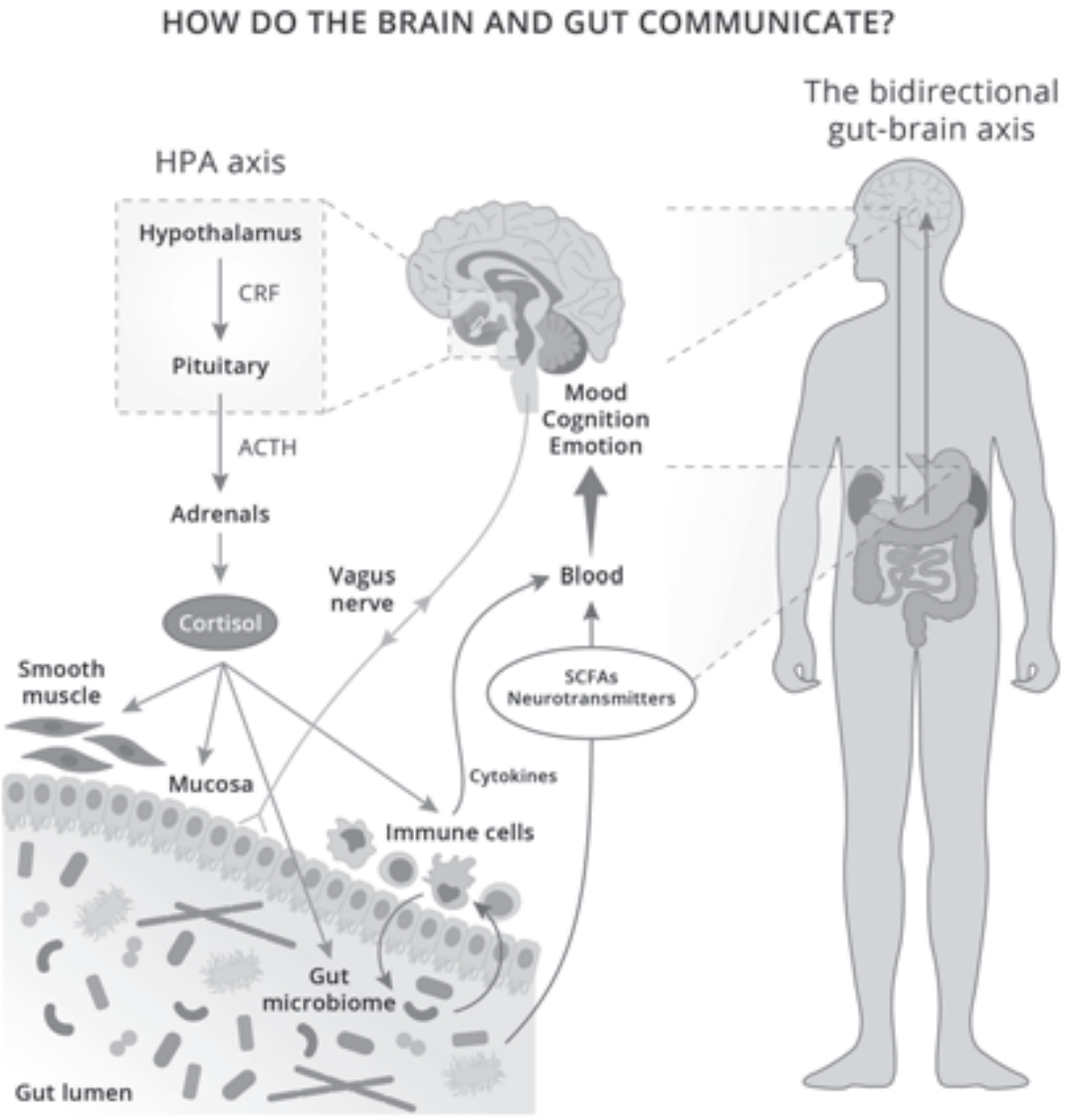
How the Gut Influences the Brain

Exactly how do the brain and gut communicate? Research in the area of neurophysiology is revealing that they do so through the vagus nerve – the tenth cranial nerve, which acts as a superhighway for communication between the gut and the brain, and plays a prominent role in activating the parasympathetic nervous system (PNS). While the sympathetic nervous system gets aroused to launch flight/fight behavior, the PNS calms us down once the threat is removed.

It's estimated that around 90% of the signals passing along the vagus nerve originate from the enteric nervous system and travel to the brain.[51] Discoveries made with advances in electron microscopy have confirmed that tiny nerves extend all the way to the tip of the villi – the folds existing within the inner lining of the gut that allow it to sample particles of food which we consume. Gut bacteria directly

stimulate the afferent neurons of the enteric nervous system in order to send signals to the brain via the vagus nerve. Through these varied mechanisms, gut microbes shape the architecture of sleep and the stress reactivity of the hypothalamic-pituitary-adrenal axis – the axel of our hormonal system. This process influences memory, mood, cognition, and a range of other neurological conditions.

Another idea that is revolutionizing our concept of how our gut influences the brain is that of intestinal inflammation, possibly from the gut microbes, and its potential adverse effect on our brains. Studies done at the Karolinska Institute,Sweden discovered that mice who had longstanding inflammation in the gut also had a more porous blood-brain barrier, making their brains more susceptible to damage.[52] Potentially,their gut bacteria produce chemicals that cause inflammation not only locally but also more systemically.


HOW DO THE BRAIN AND GUT COMMUNICATE?
The bidirectional gut-brain axis
HPA axis
Hypothalamus
CRF
Pituitary
ACTH
Adrenals
Cortisol
Mood
Cognition
Emotion
Vagus nerve
Blood
SCFAs
Neurotransmitters
Smooth muscle
Mucosa
Cytokines
Immune cells
Gut microbiome
Gut lumen

Dysbiosis, leaky gut, and the blood-brain barrier

If symbiosis means living in harmony, then dysbiosis is the opposite – living out of harmony. Dysbiosis, put simply, is a state where the inside of your gut has lost its state of harmony with the rest of your body; it's about the relationship. The concept itself was proposed by Dr. Elie Metchnikoff in 1908, over a century ago.

Dysbiosis is distinct from infection with a specific bug. In one individual, it could manifest as a skin allergy, while in someone else it could manifest as bloating. The bottom line is that, in a state of dysbiosis, the immune system – which calls the gut – it's "home" - is overstimulated and is attacking the body's own cells.

When this state continues, it leads to permanent damage to the inner lining of the gut – causing a state of leaky gut. As the name implies, leaky gut allows the filtering system on the inner lining of the gut to become very porous, such that any unwanted trash can also sneak through, creating symptoms which can be passed off as very subtle and nonspecific to begin with… however, with the passage of time, they'll get labelled as a disease with a diagnosis.

Some of the signs and symptoms include:

- Recurrent gas or bloating
- Cramping
- Irritable bowel syndrome
- Food sensitivities
- Chronic bad breath

Symptoms of dysbiosis that manifest outside the gut are:

- Rashes
- Skin allergies
- Asthma

- Joint pains
- Brain fog, anxiety, or depression
- Weight gain

Causes of Dysbiosis

All of the factors that cause damage to the inner lining of the intestine – as we will discuss further in this book – including a poor diet, stress, medications, and toxins can cause a state of leaky gut which leads to the inflammation that then spreads to the rest of the body.

It is almost like setting off the fire alarm and letting it ring uninterruptedly.

When these toxins, unwanted bugs, and incompletely digested food particles get into the main stream of the circulation, they create a state of inflammation around and within the brain, which is specifically protected by a blood-brain barrier.

Much like the gut lining, the blood-brain barrier is a fine mesh that protects the brain and the spinal cord from harmful substances or infections that may have entered the bloodstream. However, these same substances can cause long-term damage to this barrier if left unchecked.

Some of these toxins include:

- Antibiotics
- Long-standing infections (viral, parasitic)
- Gluten
- Antacid medications
- Alcohol
- Sugars and artificial sweeteners
- Longstanding constipation

When you have leaky gut, it is almost equivalent to having a leaky brain. It manifests as an inability to concentrate, maintain focus, and manage one's stress. This state is called brain fog and partly leads to a reliance on caffeinated drugs, nicotine, and alcohol to give us the artificial stimulation and the relaxation that our brains seek.

The Brain & Gut Connection

Let's look more closely at how the gut-brain connection plays out in health and disease.

Irritable Bowel Syndrome

For some time, we've known that people with irritable bowel syndrome – IBS, a digestive disorder that affects 10-15% of the world's population – also have anxiety or depression.[53]

IBS begins to take root when the enteric nervous system, gut, gut microbiome, and brain are in disharmony, exhibiting a disorderly state of communication between the gut and the brain. A 2017 study published in *Gastroenterology* studied the effects of giving a daily dose of the probiotic *Bifidobacterium longum NCC3001* to patients with irritable bowel syndrome and depression.[54] Patients who were given the probiotic experienced improvement in their IBS symptoms and depression when compared to the other group of patients who did not.

Anxiety and Depression

Imagine if you discovered your anxiety and depression could be lifted merely by loading up with fermented foods to balance your gut flora. This is entirely realistic. Through research on laboratory mice, Bienenstock and Forsythe have shown that gut bacteria seriously affect mood and demeanor.[55] In their experiment, they were able to control the moods of anxious mice by feeding them healthy microbes

from fecal material collected from calm mice. "What we found was an imbalance in the gut microbiota of the stressed mice," said Forsythe. "There was less diversity in the types of bacteria present. The gut and bowels are a very complex ecology. The less diversity, the greater disruption to the body."

From Leaky Gut to a Leaky Brain

Some recent research –, for instance a 2013 study by Michael Berk published in *BMC Med* – has begun dubbing depression an inflammatory disorder mediated by poor gut health.[56] "Neuro inflammation" – as it is now being called – might have its roots in the gut. In fact, multiple animal studies have shown that manipulating the gut microbiota in some way can produce behaviors related to anxiety and depression.[57]

Brain Fog

If you constantly feel fatigued, distracted, moody, or just plain "off," you're likely dealing with some sort of "brain fog." Brain fog has become an unwanted side effect of our fast-paced, digitalised lifestyle – a lifestyle that promotes inflammation and hormonal imbalances, and which is exacerbated by stress. In fact, a new form of dementia dubbed "Digital Dementia" is being looked upon as an extension of the state of brain fog, this being caused by a confused state which is itself due to persistent little distractions which our digital devices offer.

While nutrient deficiencies, sugar overload, a lack of sleep, and high amounts of stress, coupled with caffeine and alcohol, all contribute to brain fog, the common denominator found in people experiencing brain fog is poor gut health.[58]

Behavioral Autism Disorders

The integrity of the gut microbiome also plays an essential role in the development of neurological/behavioral disorders like autism, ADHD, and various mood disorders.

Consider, for instance, that virtually all people with autism have gut-related issues. In a landmark study by Elaine Hsiao, published in *Cell* in 2013, researchers found that when a certain type of bacteria was given to mice who had behavioral characteristics similar to humans with autism, the gut microbiome of these mice changed, along with their behavior.[59] They became less anxious and were more social with other mice.

Hyperactivity and ADHD

Antibiotics, environmental toxins, infectious agents like vaccines, and other forms of neonatal stress create gut dysbiosis (an imbalance in gut bacteria) and vagus nerve dysfunction. This sets the stage for neurological/behavioral disorders by stimulating an already overactive immune system and sympathetic nervous system, which causes children to be extremely impulsive and persistently hyper-aroused. Add to this a highly refined diet that keeps their blood sugar levels high, and you have a recipe for children who are off the wall, extremely hyperactive, and lack the ability to focus.

Neurological Disorders

Disturbances in gut health have been linked to multiple sclerosis, Parkinson's disease, and, as mentioned above, autistic spectrum disorders. This is potentially related to pro-inflammatory states caused by gut dysbiosis and a disturbed microbial balance in the gut.

The case of Parkinson's disease and gut health is worthy of further mention.

Neuro-inflammation along with obesity remain an independent and modifiable risk factor for both Parkinson's and Dementia.

Does Parkinson's Begin in the Gut?

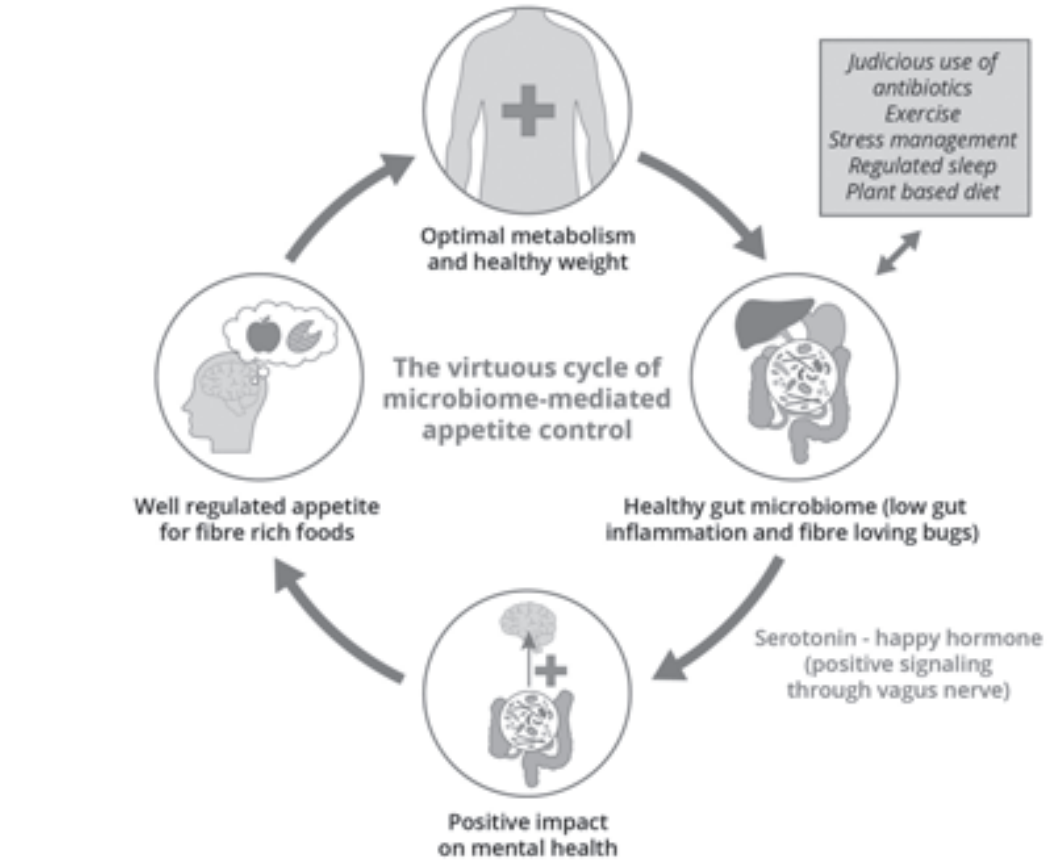
The case of Parkinson's disease is worthy of some elaboration.

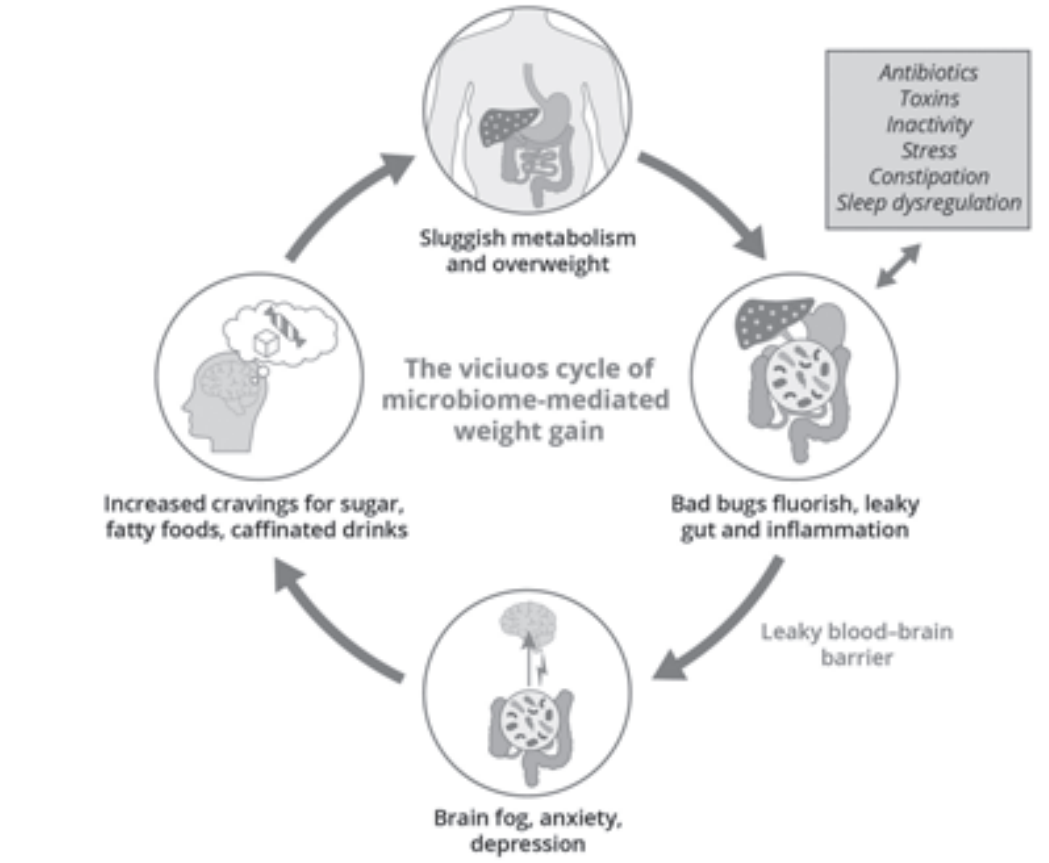
The earliest evidence that the gut might be involved in Parkinson's emerged more than two centuries ago. In the year 1817, the English surgeon James Parkinson reported about those with shaking palsy who were also experiencing severe constipation. In one of the six cases he described, treating the constipation appeared to improve the movement-related problems associated with the disease.[60]

Research from across the globe is pointing to the idea that Parkinson's is a problem of the brain, but which may not necessarily originate in the brain. In fact, Lewy bodies, the grains of protein that are considered to be a hallmark of Parkinson's, are found not just in the brain, but also in the gut.

What is also coming to light is the fact that individuals with Parkinson's have a unique composition of gut bugs. Researchers have found that transplanting gut bugs from patients with Parkinson's into mice who are predisposed to develop Parkinson's can hasten the progress of disease in mice.[61]

MICROBIOTA-GUT-BRAIN AXIS IN HEALTH AND IN OBESITY





Food Cravings and Emotional Eating

If you are like a whopping 97 percent of women and 68 percent of men, you experience cravings for certain foods that set off mindless, emotional eating.[2] And we all know that cravings are a major barrier to weight loss and optimal health.

The reasons for cravings are complex, and everything from genes, past relationship histories with food, stress, and hormones have been blamed from time to time. But who would have thought that those tiny bugs that call our gut their home could influence our cravings?

It turns out that this may well be the case.

Realize that the cheeseburger or the salad you just had feeds your gut bugs first before your body gets to "enjoy" it.

The unfavourable gut bugs and certain yeasts - "baddies" – through *their* love for sugar, can influence your food choices, causing you to go for the muffin over the broccoli salad. If you make these choices on a consistent basis, it leaves you with stubborn cravings that are hard to overcome. Recall, for instance, that microbes also need to be fed, and there's nothing they love more than sugar!

This second brain of ours influences our choices through the enteric nervous system that also governs the normal functioning of the gastrointestinal tract. As discussed earlier, most of this communication happens via the vagus nerve and through various hormones. Studies on the vagus nerve found that blocking the vagus nerve can lead to marked weight loss, while vagal stimulation triggers excessive eating in rats.[62]

Evidence of a connection between cravings, emotional eating, and the microbiome is evolving on a daily basis, and as we are beginning to understand this communication, it is becoming more evident that

there is a much stronger influence that our gut microbiome exerts on our brains, when it comes to making food choices.

Our gut bacteria are endowed with amazing prowess.

They have the ability to detect which food types are missing in a diet, such that they can influence the individual food choices needed to make up for those nutrients.

This is, in a sense, trying to optimise how long a car can run without needing to add more petrol to the tank... and it's truly amazing.

Hormone Mimics

Your body normally secretes hormones like ghrelin, a hormone released under stress that we discussed in Chapter 1, that stimulates your appetite. Other hormones, like Leptin and peptide YY,do the opposite – signal the brain when you are full.

Many gut bacteria manufacture small peptides – protein molecules – that "mimic" these hunger-regulating hormones.

We humans produce antibodies against these microbial hormone mimics. But, here's where it gets complicated: these antibodies, while meant to target microbial hormones, can also bind to our own hormones and cause our appetites to change. This means that microbes can interfere with human appetite by either directly mimicking satiety and hunger hormones, or indirectly inducing this autoimmune response.

How clever are those bugs!

Microbes Produce Neurotransmitters

Recall that your gut makes more than 50 percent of your body's dopamine, the reward neurotransmitter, and that *95 percent* of your

body's ***serotonin***, the feel-good neurotransmitter gets produced in your gut, along with about thirty other neurotransmitters. And both dopamine and serotonin act in the hypothalamus (the hormone control centre in the brain), and thus play a role in regulating our eating behavior. The quality and quantity of these chemicals is in turn influenced by the quality and quantity of the gut microbes.

Neuroplasticity

Neuroplasticity is the ability of the brain to reorganize and create new neural pathways that become expressed as behavior, and that includes formatting new connections between neurons to reshape emotional eating behavior.

While this area of our understanding is still in its infancy, microbes may also influence neuroplasticity.

Synchronizing the Gut and the Brain

As discussed throughout this book, there are many ways to restore balance to your microbiome and, when you do, you will also find yourself thinking more clearly – no more brain fog – and feeling more stable and upbeat. More importantly,this will positively influence your ability to make healthier food choices.

Here are some ways.

Diet

There is truly a lot of truth in the statement that we become what we eat.

By now, you've learned that the most effective way to improve your health is by starting with what you put in your body. This applies to brain health, as well. Our *Happy Gut = Healthy Weight* program

is based on restoring gut health by following a gut wellness diet – a plant-based, low inflammation diet that allows the healthy bugs to take root in your gut. Feed your healthy bugs daily! (More details on this diet can be found in the appendix.)

When you feed your body what it needs whilst eliminating the foods (and lifestyle habits) that cause inflammation, you will establish a healthy gut microbiome, heal your gut lining, and improve the function of your enteric nervous system. This will send the message to the brain that you are not under attack, the immune system will calm down, and your body will be able to rest and reverse disease.

So, forego the apple pie for an apple and opt for a salad loaded with colourful veggies that's topped with nuts, seeds, or ocean-caught salmon instead of going for a hamburger and fries.

Swear Off Gluten

Dr. Perlmutter, in his book *Grain Brain*, mentions that eliminating gluten from your diet can have a positive effect not only on your gut microbiome, but also on your mood – as gluten causes an inflammatory state in the gut lining an also in your brain lining.

The most common response I hear when I mention this to a non-gluten sensitive person is: "What do I eat now?" For anyone who is used to having an abundance of wheat (like bread, pasta, and other flour-containing products) in their diet, taking away gluten is like taking a toy away from a child. That's because wheat – with its key protein, gluten – has a strong addictive property. The protein – called Gliadorphin – interacts with opiate receptors in the brain, mimicking the effect of opiate drugs like heroin or morphine. This is why one can feel cloudy after a hefty dose of bread or pasta.

However, it is also important to understand that not all gluten-free foods are healthy. Grain and gluten-free foods that are pre-packaged

for ease on the go can hurt even more since they are laden with not only processed grains, but also sugars and preservatives. Foods like cereal, granola bars, or peanut butter sandwiches fall into this category.

In fact, some nutritional experts would go a step further and say that whole grains consumed in small amounts, which are preservative free, can actually be healthy for the body.

Regardless, limiting your grain consumption – especially when it comes to that which is wrapped in plastic, and thereby laden with preservatives – should be attempted, since these foods should be consumed in as little an amount as feasible.

There are plenty of gluten-free grains, flours, and starches that can be used instead.

Some examples include:

- Corn
- Millett
- Potato
- Quinoa
- Rice
- Sorgum
- Soy
- Buckwheat
- Rice

Consume Fermented Foods: Nature's Probiotics

What if I mentioned to you that "Fermented Foods" are the next major antidepressant available in the market?

Gut-friendly bacteria can help manage neurotransmitter activity, making them natural versions of Valium and Prozac. In fact, science has discovered specific strains of bacteria that affect the brain or behavior, and has also given them a name – *psychobiotics*. In studies done on mice, as reported in 2011 in *Proceedings of the National Academy of Sciences*, the amount of lactobacillus in their gut affected the amount of a metabolite in the blood called kynurenine, which has been shown to drive depression. The more lactobacilli were present, the less the kynurenine![63]

Proof that Fermenting Foods Make us Happy

Professor Mark Lyte from the Texas Tech University Health Sciences Center, lead researcher of the healthy gut-healthy mind study, says that this is quite possibly a new field where microbiology meets neuroscience. He's proposed that the "probiotic effect" is something that influences several systems of the body, including the hormonal, immune, gastrointestinal, and nervous system. His research confirms that gut microbes not only produce chemicals, but also respond to chemicals from other organs of the body. He also found that many of the bacterial types that are present in the traditionally fermented foods such as Kiefer, Kimchi, Sauerkraut, and natural yogurt produce neuro chemicals that have a marked effect on our brain function.[64]

Certain probiotics also help produce serotonin in the gut, which has protective effects against irritable bowel syndrome, cardiovascular disease, and osteoporosis.

The Bottom line: Ideally, you should fill your day with loads of fermented foods and, if not, take probiotics, preferably soil-based.

Load Up on Fiber

Remember to load up on plant-based fiber. As fiber cannot be broken down by the body, bacteria in the intestines feast on it. As a

result, the bacteria produce *butyrate*. This short chain fatty acid helps to improve the function of the digestive tract's cell lining, besides protecting and enhancing brain function.

Get Folate

Folate is essential for brain health and nervous system function, and also helps to prevent depression and heart disease.

Folate is found in these foods:

- Dark leafy greens
- Broccoli
- Brussel Sprouts
- Avocado
- Beans, peas, and lentils
- Citrus fruits

Consume Omega 3 Fats

The omega 3 fatty acids, DHA and EPA, are effective at reducing the symptoms of depression, and positive effects may carry over to other neurological disorders, as well. This is partly due to the decrease in inflammation that's associated with diets that are lower in omega 6s and higher in omega 3s.

Snack on Nuts

Eat a small handful of nuts like almonds, cashews, walnuts, and Brazil nuts. They're full of serotonin, the feel-good chemical that's reduced when you're depressed.

Cut Back on Antibiotic-laden Foods

Commercially farmed meat and chicken are laden with antibiotics. This is because antibiotics prevent repeated infections in animals raised in poor hygiene conditions.

Check for Food Sensitivities and Allergies

If you have digestive issues, get tested for possible food sensitivities – especially if you experience stress. When the body is in a stressed and inflamed state, your immune system and gut may react to previously harmless foods as if they are a threat to the body.

To reduce your food sensitivities and allergic reactions, start by eliminating these common, allergy-causing, and inflammation-producing foods from your diet:

- Milk
- Eggs
- Peanuts
- Tree Nuts
- Soy
- Grains with gluten in them (wheat, barley, rye, and oats)
- Fish
- Shellfish

Summing Up

The Gut our Second Brain

- **The Gut is the *second brain*.** It has its own neural network**,** the enteric nervous system (ENS), and connects to the brain via the vagus nerve, which provides two-way communication between these two brains.
- **Dysbiosis:** An overgrowth of unfriendly bacteria and yeast produce neurotoxins that will slow your ability to think,weaken will power and affect memory retention.
- **Leaky gut** causes increased inflammation in the body by causing dietary protein such as gluten to leak and causes generalised side effects including brain fog.
- Increased inflammatory hormones have been linked to mood swings, depression and increase stress hormone secretion.
- Excessive starchy diets cause ammonia-producing bacteria to flourish, which is toxic to brain cells.

Irritable Bowel Syndrome: Those with IBS also tend to be anxious and depressed. The problem is thought to be a compounded effect of gut dysbiosis and a hyperalert nervous system.

Anxiety and Depression: Loading up on fermented foods and taking probiotics reduces anxiety and lifts one's mood.

Behavioral Disorders: The integrity of the gut microbiome plays an essential role, as well, in the development of neurological/behavioral disorders like autism, ADHD, and various mood disorders.

Hyperactivity and ADHD: Gut imbalance and vagus nerve dysfunction set the stage for neurological and behavioral disorders.

Neurological Disorders: Disturbances in gut health have been linked to multiple sclerosis, Parkinson's disease, and autistic spectrum disorders.

Food Cravings and Emotional Eating: The microbiome plays a role in food cravings through two-way communication between your gut and your brain.

To synchronize your gut and brain, follow the dietary suggestions presented throughout this book.

Chapter 5

GENE POWER VS. GUT POWER

"The fate of your health is a choice – not a destiny dictated by your genes."

Dr. David Perlmutter, MD

Your genes are why your eyes are brown and your hair is red. They're what make you… well, you. But can genetics determine the size of your jeans?

Research shows that differences in your genes can lead to weight issues. So, if your parents are obese, you're more likely to be obese. But that doesn't mean you *will* be, without question. Many people with obesity in their families don't tip the scales in that direction. Genes offer possibilities. They lay out plans with information that can either be dominant – thereby forcing their commands upon us – or simply offer their design for us to use or not use.

Are You Fated to be Fat?

Enter the Fat Gene?

There was once a committed search for "the obesity gene" which was bolstered by statistical evidence showing that being overweight runs in families. However, the project met with only limited success.

One gene got a lot of attention: FTO.

Scientists found that people with certain differences in this gene have a 20% to 30% higher chance of suffering from obesity. And, what's more, those relevant differences are quite common.

Dozens of other genes were linked to being weight, as well. Some, for example, cause people to naturally store more fat.

But it's still unclear exactly how much weight genes really do carry – pun intended. So the question is: *Are you really destined to be overweight if you have one of these genes?*

The answer is, not necessarily. Today, scientists acknowledge that obesity is a complex disease with many contributing factors, including genetics, behavior, and environment. For this reason, obesity can

run in families not because of genetics, but because of habits and environment. This would explain why, without any dramatic changes in our genes, the number of obese adults in developed nations has steadily increased over the past five decades. This cannot be explained by some dramatic changes in our genes.

The bottom line is, as researchers from the Center for Human Nutrition at the University of California, Los Angeles have concluded:

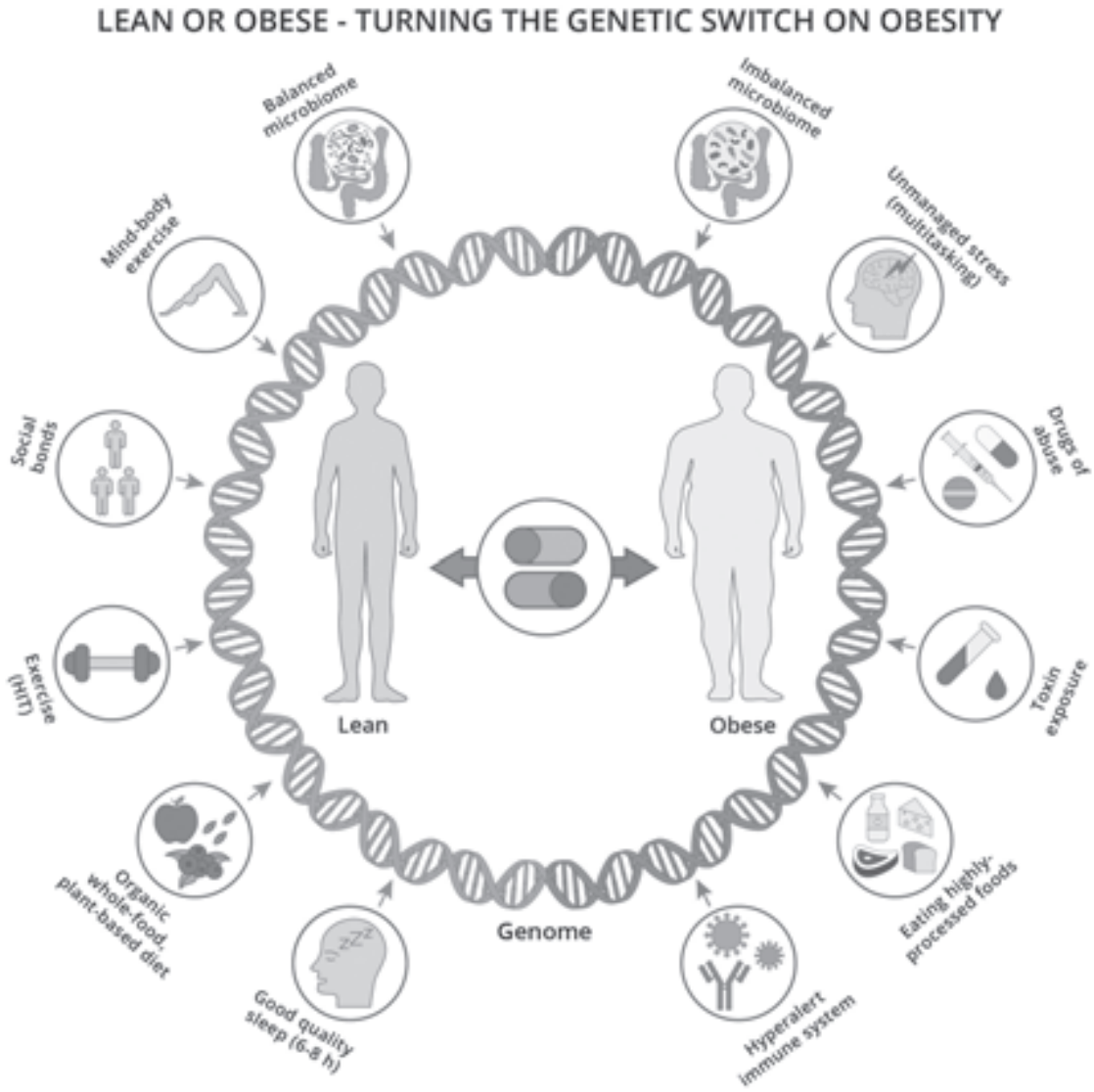
"When it comes to being obese – Genetics load the gun, environment pulls the trigger."

Of course, this also means that your lifestyle can trump your genes. In other words, when you subject your genes to a healthy lifestyle, you are creating healthy genes. This is a major breakthrough because it means we can choose to live a life that has a proven, positive genetic impact not only for ourselves, but also for our successors with whom we share this genetic blueprint.

Enter Epigenetics.

Switching Your Fat Genes Off

Our genes don't function in isolation. Every one of our life events is an opportunity for our DNA to interact with our experience. And based on the nature of the event – whether pleasant or unpleasant – this information gets firmly stored in our genes when such an experience related to the event is repeated over a period of time.



Healthy Gut Microbiome → Empowers Protective Genes
Unhealthy Gut Microbiome → Empowers Disease-causing Genes

Herein lies the possibility that how you experience your daily life, physically and psychologically, forms a part of your DNA and can be passed on to future generations. This is the reason families and communities sharing common living experiences (food, lifestyle, etc.) also share common risk profiles for developing particular diseases. An entirely new field of gene study has been born, and titled ***Epigenetics*** – the study of heritable changes in gene expression or cellular phenotype caused by mechanisms other than changes in the underlying DNA sequence. "Epi" means "on top of" and so epigenetics is the study of what is above genes. We now know that genes can be turned on or off (like a light switch) or turned up or down (like a thermostat), and that the kind of interactions that our genes have with our surroundings determine such changes.

But what if the type of gut bugs we have can also control these switches?

What Gut Bug Type Are You?

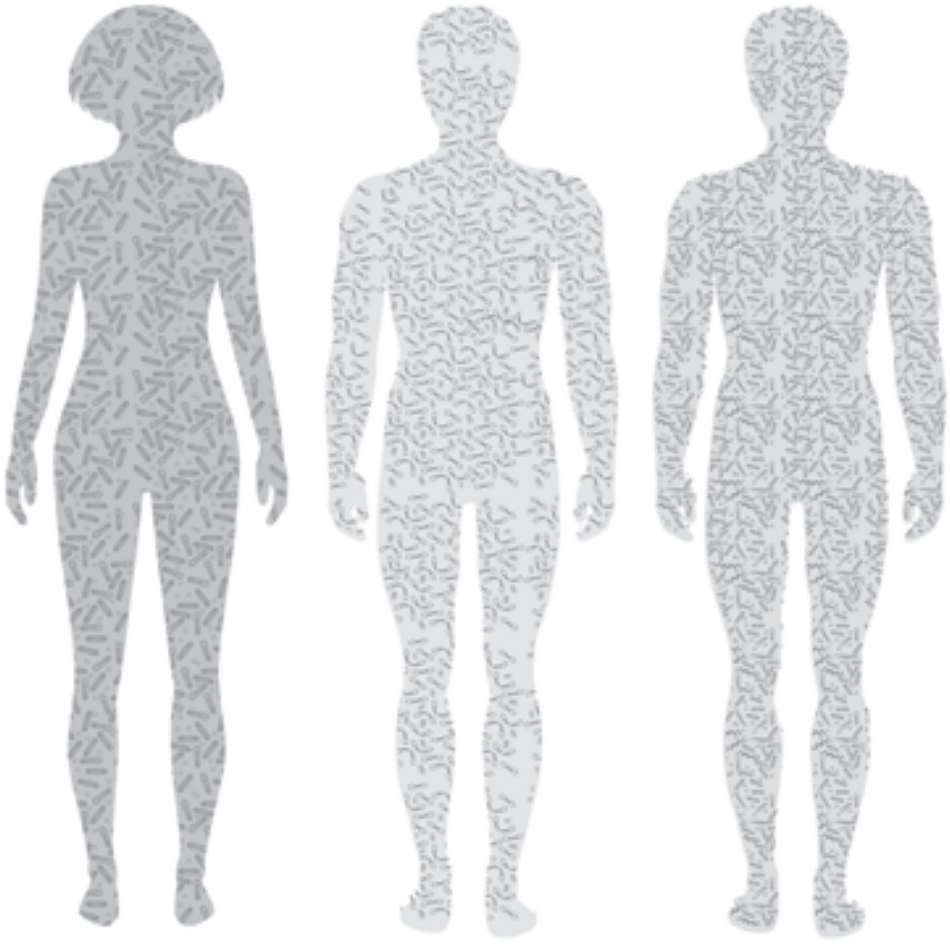
Babies. We know that babies contain more bacterial genes involved in digesting breast milk than adults do.

The Obese. The guts of obese people are often found to have more bacterial genes involved in breaking down carbohydrates.

Asians. Gut bugs in Asians have superior abilities to digest seaweed and tofu

Diabetics. It is quite likely that your gut bug type is reflective of not only your ethnic origin but also any chronic disease that you may harbour. In this study, European and Chinese citizens with type 2 diabetes had different gut microbiome compositions, with the Chinese having more diverse species. [65]

WHAT GUT BUG TYPE ARE YOU?



Blood Types and Bug Types

Similar to the classification of blood types (A,B,AB,O), the bacteria in our guts appear to fit into certain categories that have no relation to our nationality, age, sex, or other characteristics.

Researchers from Heidelberg, Germany combined genetic information from about three dozen people in six countries in 2011, revealing that everyone falls into one of three categories which they called Enterotypes (type of bugs), and which they believe are spread around the globe just like blood types.[66] The enterotype of a person does not appear to have any connection to their personal characteristics, such as gender, age, body mass index, or nationality.

Given that 90% of a body's cells are microbes – and that they are "loaded" with a large amount of "gene power" – the big question here is whether or not our gut microbes have the ability to alter or modify our genetic predisposition to a disease.

Modern researchers are referring to the genetic material in our gut microbes as *"the second human genome."*[67]

These microbes living in our guts have tremendous "gene" power which they exert by educating our immune system and by preventing disease. The interaction between human and bacterial genes has been going on for zillions of years; however, we are only just beginning to understand the link between our microbes and chronic diseases. The link between gut microbes and irritable bowel disease (IBS), for instance, is understandable and reasonable to comprehend. The link between gut microbes and obesity is stretching it slightly, but still understandable. However, the link between one's microbiome and diabetes, cancer, and even mental illnesses like schizophrenia sounds almost bizarre… but, at the same time, it is proving to be true!

Creating Genetic Impact

Stress and prolonged negative emotions (anger, fear, or worry) have a pro-inflammatory influence on our brain and mental machinery. Whether this influences or is influenced by our gut bacteria – our microbiome – is probably not an easy question to answer, but modern research does point to one bit of information: that there is a very strong interplay between the organism, the microbiome, and the neurobiome (the nervous system).

Not only this, but damage caused because of stress and inflammation is imprinted on the genetic blueprint, on our very DNA, and is passed on to the next generation.

Trans-generational genetic influence has now been reported in plants and also in animals.[68] Studies in mice models have shown that, if a baby mouse had good or bad mothering, the behavior led to biologically measurable markers reflecting the genetic impacts of the nature of mothering it received. Nurturing behaviour by good mothers reduced anxious behaviour in their offspring and also lowered markers for stress hormones.

Creating Impact Through a 'Circle of Optimal Health"

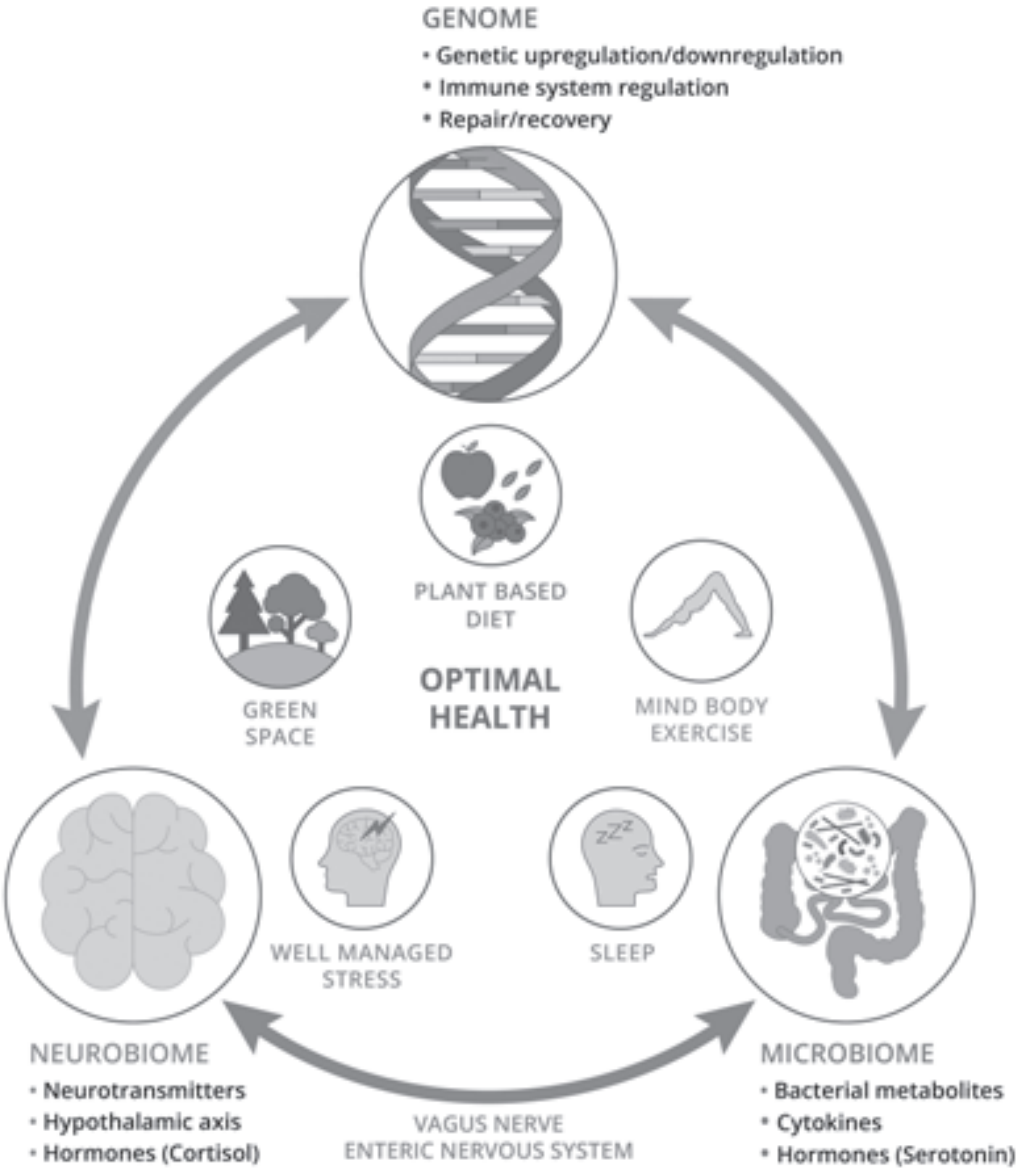
When we talk about creating a *"Genetic Impact,"* we now know that any impact we create has to be at the cellular level – or at the genetic level, precisely speaking. Modern scientific research has confirmed that, out of all of the genetic material we carry, only 5% or less has the ability to cause disease with a 100% certainty. The remaining 95% is variable in its "impact" – or, rather, in its ability to cause disease.

Simply put – 95% of our genetic material is modifiable.

So, if you label yourself as "big-boned" or as "someone who is large due to their ancestry – think again!

The Circle of Optimal Health

Change is inevitable… however, positive change is a choice!



Making a Positive Genetic Change Through our Microbiome

Now that we know of the rich mixture of over a million genes that comes from our guts' bacterial hosts – outnumbering the human genes over a hundred times – it almost seems like we are a few human cells hanging off of a large colony of bacteria.

One of the key functions of this large quantity and quality of genetic material from our bacterial hosts (we would like to think that way, at least, for the moment) is to educate our immune system on how to prevent disease. For generations now, bacterial genetic material has not only co-existed alongside human DNA, but has become a part of human DNA.

This inter-dependence, and perhaps the imbalance of it, holds the key to not only diseases of the intestinal tract, such as irritable bowel syndrome and ulcerative colitis, but even more far-flung ailments such as heart disease, cancers, type 1 diabetes, and even obesity.

Additionally, gut bacteria produce chemicals that interact with our brain cells and may also cause our genes to turn on or off.

As we saw in our earlier discussions, the gut-brain connection is real, and so is the microbiome-gene connection!

The Microbiome-Gene Connection

We discussed the gut-brain connection in the previous section; however, when it comes to the microbiome-gene connection, obesity and cancer are the most researched areas.

In either area, the issue remains that there's a lack of clear association between cause and effect. Based on the current understanding we have of the microbiome-gene connection, we know that although the genes may be amenable to study and analysis, the microbiome itself is in constant flux (and hence nearly impossible to track).

But unfortunately, the prevalence of obesity in our society cannot be explained on the basis of the time-worn model of "Calories in, Calories out." We instead know that weight gain has been associated with a variety of influences, such as poor eating habits, associations, external influences or distractions while eating, and most importantly stress-induced comfort eating. This is not an exhaustive list of causes, but one can clearly note that it spans a variety of disciplines of medicine – from nutrition, genetics, and endocrinology on one end of the spectrum to psychiatry, sociology, and gastroenterology on the other.

The common denominator through all of these complex influences on our weight can be boiled down to the microbiome, which not only assists in digesting food but also exerts a major influence on hormones, immunity, the stress response, inflammation, and most certainly on our genes.

The point to be made here?

Look after your gut microbiome and it will look after you.

And how you do that is what we discuss in the next Chapters.

Summing Up

- Obesity is caused by a combination of genetic and lifestyle factors.
- Practices such as healthy eating, exercise, stress management, and positive social interaction, along with reduced exposure to toxins like smoking, will alter the ability of the harmful genes to cause disease.
- The gut microbes exert tremendous "gene" power on our native genes, which educate our immune system – thereby preventing or causing disease.
- The interaction between our genome (genes), our microbiome (the gut bacteria and the neurobiome), and our brain function is the major determinant of our physical and mental health.
- Our diet can influence the composition of our gut bacteria, which exerts a major influence on hormones, immunity, the stress response, inflammation, and our genes.
- Healthy Gut Microbiome à Empowers Protective Genes
- Unhealthy Gut Microbiome à Empowers Disease-causing Genes

Chapter 6

THE METABOLISM – OUR ENGINE OF LIFE

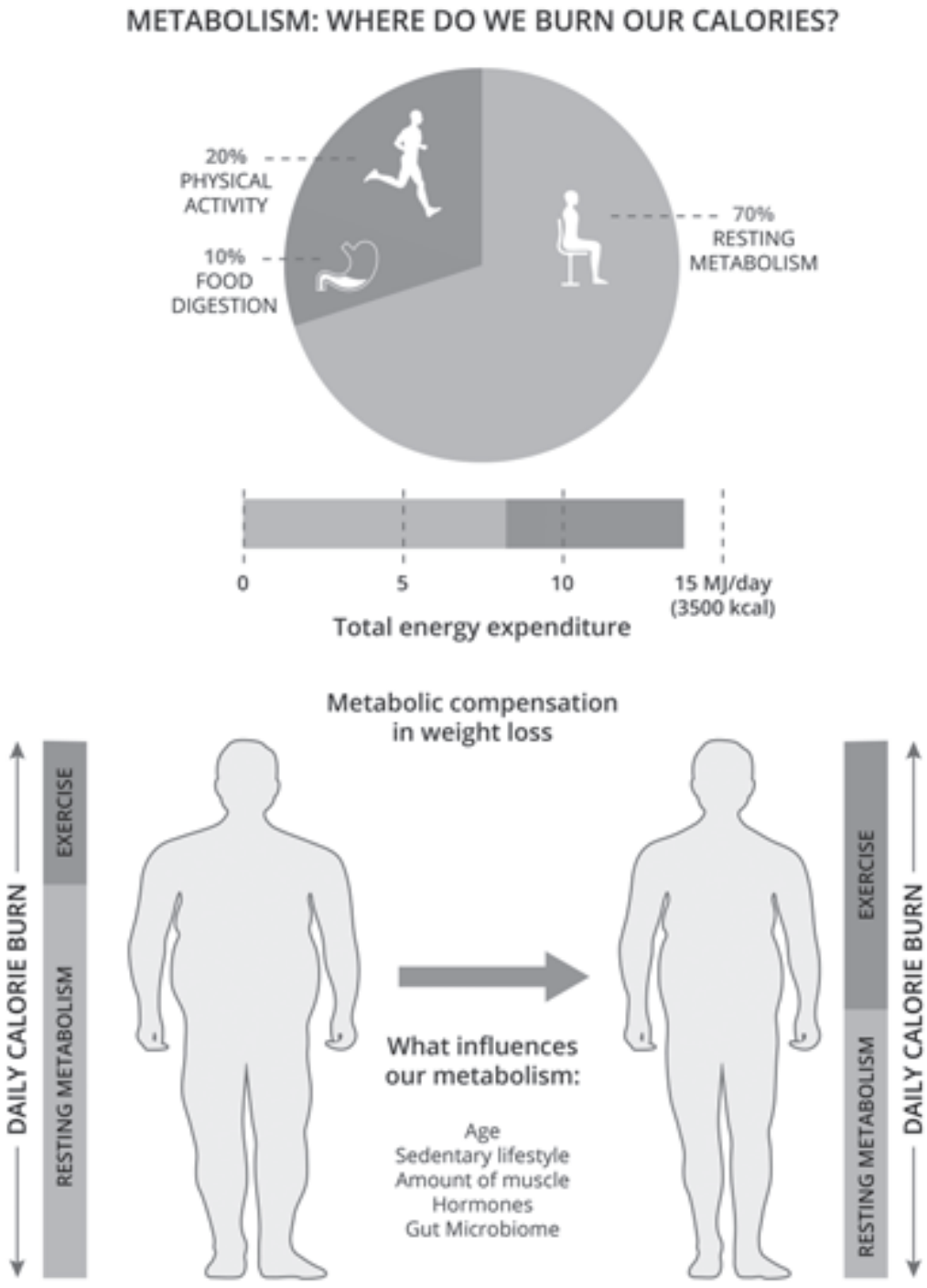
Ever wondered how a nuclear reactor works? It is amazing how nature has packed so much energy into small molecules, so that once their power is released, they have the potential to light up cities for months at a stretch. Breaking open the energy trapped in molecules of certain chemicals and channeling it in a controlled fashion is what a nuclear reactor does.

Stretched over a span of nine meters, the human gastrointestinal tract can be compared to a "long and hollow"-shaped nuclear reactor. This nuclear reactor uses food molecules as its fuel and generates power to keep our engines running. This "engine of life" is called our metabolism.

This "Nuclear reactor" in our body – our *metabolism* – determines how we handle food, how we store it, and also how we get rid of the unwanted or toxic stuff, which if not handled properly has the potential to cause disease. There is a beautifully synchronised and orchestrated series of processes that supplies energy to the dance of life in our bodies. This so-called *intelligence* is truly percolating every life form of nature.

Eating food is the most direct expression of our intimate connection with nature. Each time we eat, we process food through a wonderfully sophisticated series of biochemical events that transform the material from nature into our physical being.

The physical health of our personal nuclear reactor – our *metabolism* in our body's context – determines our health, our fitness, our optimal weight, and our vitality. The daily running and health of this reactor, labeled our *basal metabolic rate* (BMR) – contributes to approximately 70% of our body's energy expenditure.[69] Hence, a sluggish metabolism attracts disease, obesity, and dull-headedness, while an optimal metabolism is the key to health and vitality. Our metabolism and our ability to maintain an optimal weight are intimately linked.


METABOLISM: WHERE DO WE BURN OUR CALORIES?
20%
PHYSICAL
ACTIVITY
10%
FOOD
DIGESTION
70%
RESTING
METABOLISM
0
5
10
15 MJ/day
(3500 kcal)
Total energy expenditure
Metabolic compensation
in weight loss
DAILY CALORIE BURN
EXERCISE
RESTING METABOLISM
What influences
our metabolism:
Age
Sedentary lifestyle
Amount of muscle
Hormones
Gut Microbiome
EXERCISE
RESTING METABOLISM
DAILY CALORIE BURN

What is Slowing Down Your Reactor?

The body's ability to eliminate trash, including toxic trash, is a pervasive factor in our ability to lose excess weight and reach a healthy goal weight. When the systems of our "nuclear reactor" become overwhelmed with build-up of this waste, back-up strategies for dealing with toxic overload get activated. One such strategy includes expanding the number of fat cells and stuffing them with toxins as well as fat. This is likely meant to get the toxic trash out of our circulation and tuck it away where it cannot cause harm. However, it causes easy weight gain and complicates weight loss because our body does not easily give up the toxic fat it has stored.

The Toxic Waste Build-Up

In many ways, our polluted world is a true test of genetic survival of the fittest. The number of toxic chemicals in our environment now threatens the reproductive ability of the human race and is also a large part of the cancer issue. These chemicals contribute to weight gain in various ways, including disruption of the hormone-signaling system that regulates our metabolism and by causing damage to the organs where this toxic fat is stored, such as in the liver, where it eventually leads to Fatty Liver.

The Metabolic Syndrome

The case of expanding waistlines is an increasing cause for alarm.

"Metabolic syndrome" is a cluster of risk factors that include abdominal obesity (reflected in the waistline above 102 cms in males and 88 cms in females), high triglycerides or cholesterol, high blood pressure, and insulin resistance – a precursor to type 2 diabetes.

Metabolic syndrome has been dubbed the new "silent killer" of our times.

No matter what: As it turns out, those "love handles" can be fatal.

Being overweight or obese mostly around the waist contributes to metabolic syndrome, which now affects 1 in 3 adults and about 40% of adults aged 40 and older in the Western world.[70] So powerful is the impact that obesity has on our lives that it has overtaken smoking as the leading avoidable cause of premature death in the world. It is generally accepted that health risks can be determined as much by the relative distribution of body fat as much by its total amount. What is the worst kind? Abdominal fat – the kind that builds up around your internal organs. Those love handles and the pot belly may be a strong predictor of premature death.

Waist Line vs. Life Line

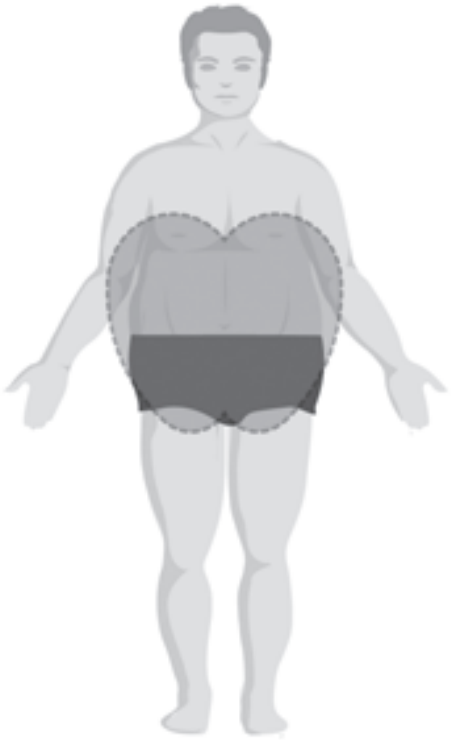
More than 60 years ago, the French physician Jean Vague observed that people with larger waists have a higher risk of premature cardiovascular disease and death than people who have trimmer waists or carry more of their weight around their hips and thighs.[71] Decades later, long-term follow-up studies have showed that so-called *"abdominal obesity"* is strongly associated with an increased risk of type 2 diabetes, cardiovascular disease, and death, even after controlling for body mass index (BMI).

In fact, waist to height ratio is a better tool than BMI in predicting the health risks of body fat. The circumference of your belly (halfway between the top of your hip bones and the bottom of your rib cage), should be half your height – ideally, less. If that measurement is more than half your height, it's time to start eating healthier and exercising more, regardless of your weight.

It is indeed true that the "Longer the waist line, shorter the life line."

Abdominal obesity results in an "apple-shaped" body type, which is more common among men. Women typically accumulate fat around

the hips and thighs to develop a "pear-shaped" body type (although they can certainly develop "apple-shaped" body types, as well).In people who are not overweight, having a large waist may mean that they are at higher risk of health problems than someone with a trim waist.

APPLE SHAPED OBESITY	VS	PEAR SHAPED OBESITY
		
Excess amount of fat is accumulated **above the waist line** i.e. in belly region	1	Excess amount of fat is accumulated **below the waist line** i.e. around hips and thighs
Associated with excess visceral and subcutaneous (somatic) fat	2	More commonly associated with excess subcutaneous fat
Abdominal girth is bigger than hip circumference	3	Waist is relatively thinner as compared to apple shaped obesity but has large hips
Health risk highest if waistline >102cm	4	Health risk highest if waistline >88cm

Fatty Liver: Is Fat the New Liver Toxin?

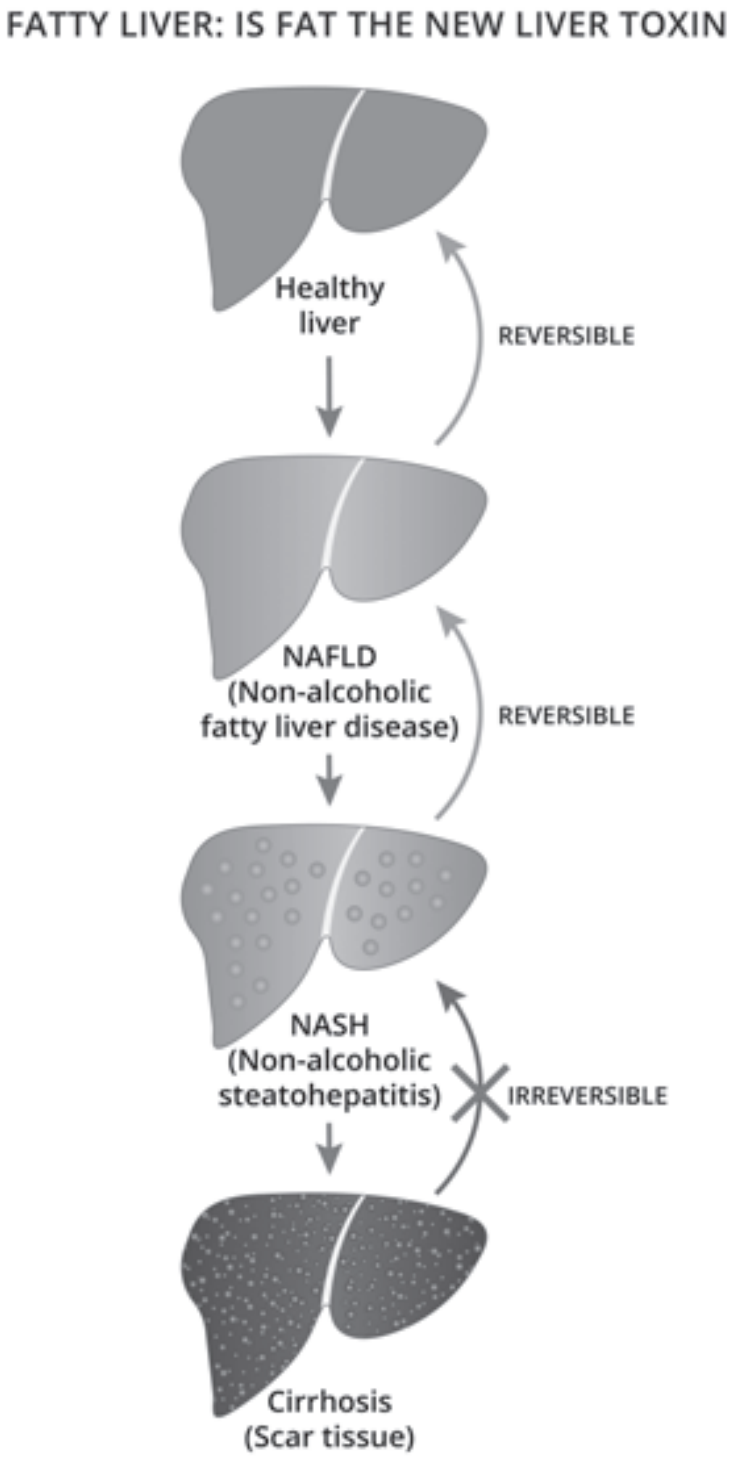
We saw earlier that build-up of fat around the waist can cause more serious complications than obesity, and development of *non-alcoholic fatty liver disease (NAFLD)* – commonly called Fatty Liver – is one serious problem on the rise. It is estimated that almost 80% of obese individuals will have Fatty Liver.[72]

Fatty Liver, or NAFLD, is a condition in which fat builds up in the liver. In some cases, this accumulation of fat can cause inflammation of the liver and eventually lead to permanent scarring (cirrhosis) – something that's commonly seen with heavy alcohol intake. This condition can seriously impair the liver's ability to function and can also lead to liver failure. As the figures stand, NAFLD is now the number one reason for liver transplantation in the developed world – an extreme treatment for a condition that can be reversed with lifestyle changes, if picked up early.

Clearly, Fatty Liver is more prevalent in obese individuals; however, where you are carrying your fat is probably more pertinent. As mentioned, research is confirming that one's waistline, and not just one's weight, is a more powerful predictor of an individual's risk for complications associated with fatty liver disease. This goes back to the earlier discussion of a longer waist line, and abdominal obesity and its associated risks.

People with simple Fatty Liver don't have inflammation or scarring in their liver and don't appear to be at high risk for liver complications. However, even having simple Fatty Liver affects insulin sensitivity and puts people at higher risk for diabetes and cardiovascular disease.

Put simply, increased liver fat is never normal.



The advanced form of Fatty Liver, called *Non Alcoholic Steato Hepatitis (NASH)*, is far more serious. This form causes inflammation and liver cell damage. Liver cells get destroyed and progressive scarring occurs, which can lead to liver cirrhosis and even liver cancer.

The name Steatohepatitis literally means that the fat is causing irritation and inflammation of the liver cells. The same fat that was considered inert a few decades ago is now turning toxic for the same liver. Probably, this fat is laden with all the toxic by-products of our metabolism.

Fatty Liver is Another Reason to Sit Down Less

Most cases of Fatty Liver have no symptoms, though it may be diagnosed if elevated liver enzymes are noted during a routine blood test, or if a fatty liver is discovered during an unrelated CT scan, ultrasound, or surgical procedure. Despite the rising rates and known health risks of Fatty Liver disease, however, there are no drugs approved to treat the condition. Losing weight through diet and exercise is the most effective tool to help reduce fat in the liver and related inflammation.

Whether it is Fatty Liver, diabetes or heart disease, these conditions all share the underlying common denominator of an impaired metabolism, and adopting healthy living principles (as mentioned later in this book) will address all of them.

Fatty Liver can be Caused by a Poor Gut Microbiome.

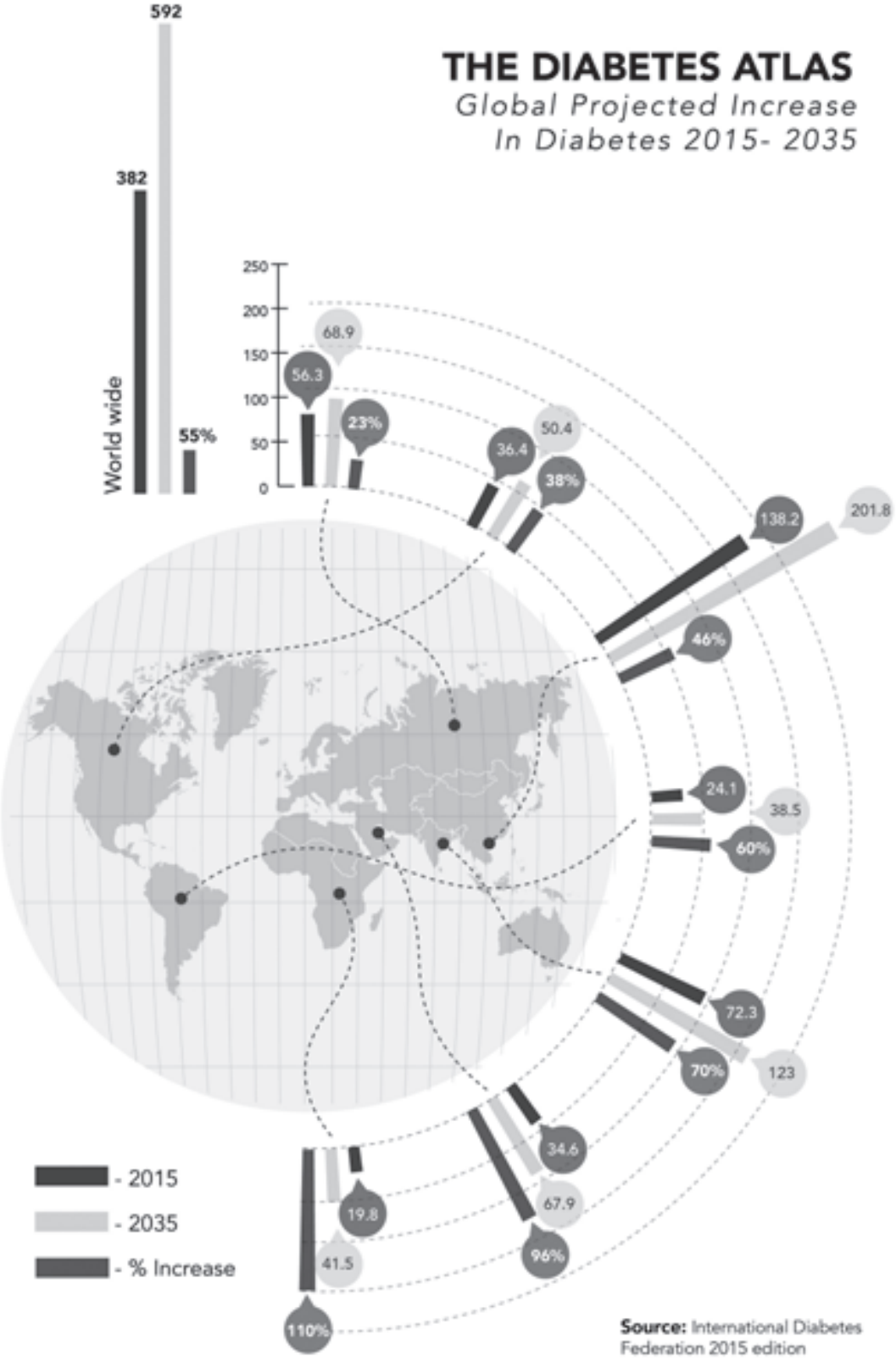
We know that an unhealthy gut microbiota plays a central role in development of obesity and obesity-related problems such as insulin resistance and metabolic syndrome. These unfavorable bugs produce chemicals that alter the signalling pathways in the gut, causing abnormal accumulation of fat in the liver. Combined with this progression is the process of insulin resistance which causes the

liver cells to accumulate more fat – which is pro-inflammatory. This process of insulin resistance and inflammation caused by abnormal fat distribution in the liver cells sets up a vicious cycle which causes further progression of Fatty Liver disease to cirrhosis and ultimately liver failure.

The Obesity and Diabetes epidemic of our World Today

Most of us know someone living with diabetes – a coworker, a friend, or even a loved one. The condition now affects one in eleven adults worldwide, and rates continue to rise. It is a major health concern in all corners of the globe, especially due to its close association with obesity. An estimated 9% of the worldwide adult population suffers from this chronic metabolic and hormonal disease, which can significantly reduce quality of life and often has serious consequences, with an increased risk of heart disease, stroke, kidney failure, and overall mortality.[73]

The International Diabetes Federation has noted a global increase in the incidence of this disease, and the numbers look worrisome.


THE DIABETES ATLAS
Global Projected Increase
In Diabetes 2015- 2035
592
382
55%
World wide
250
200
150
100
50
0
68.9
56.3
23%
50.4
36.4
38%
201.8
138.2
46%
24.1
38.5
60%
72.3
70%
123
34.6
67.9
96%
19.8
41.5
110%
- 2015
- 2035
- % Increase
Source: International Diabetes Federation 2015 edition

The complex relationship between abdominal obesity, diabetes, and gut microbiota is being uncovered, little by little, with emerging evidence. Scientists now agree that gut microbes are key players in the management of blood glucose, and they now need to gather more information about the related mechanisms so that they can develop new therapeutic approaches for those individuals suffering from diabetes.

Researchers have observed differences in gut microbiota composition between those with diabetes and healthy adults. The bacteria that differ between the groups appear to be microbes which primarily influence inflammation and energy balance.[74]

As research on gut microbes explodes, manipulation of the gut's microbial flora to manage obesity and metabolic syndrome may be on the cusp. One pivotal study involved faecal transplantation from lean "donors" to overweight male recipients with metabolic syndrome.[75] Six weeks after the faecal transplant occurred, the insulin sensitivity of the male recipients improved (based on the pathology results).

Does this mean a faecal transplant may be indicated in every obese individual with metabolic syndrome or pre-diabetes? Probably not, as the gut bacterial flora can be altered in a much simpler way – by changing the diet. However, this research certainly opens up newer dietary and pharmacological treatment approaches for lifestyle-related diseases like diabetes and obesity.

Summing Up

- Our ***metabolism*** is akin to a nuclear reactor that determines how we handle food, how we store it, and also how we get rid of the toxic waste. Hormonal imbalance, loss of gut microbial diversity, toxins, and inactivity slow down the metabolism.
- ***Metabolic Syndrome –*** is a cluster of three of more risk factors that include abdominal obesity (reflected by excess belly fat), high triglycerides or cholesterol, high blood pressure and insulin resistance, a precursor of type 2 diabetes.
- ***Fatty Liver –*** Fat around the waist can lead to non-alcoholic Fatty Liver disease (NAFLD), commonly called Fatty Liver. This condition is on the rise and can lead to liver cirrhosis and ultimately liver failure. It is estimated that almost 80% of overweight individuals have Fatty Liver.
- ***The "Diabesity" Epidemic –*** A combination of Type 2 Diabetes with obesity – "Diabesity" – has reached epidemic proportions in our modern society,causing a significant burden on health care systems and a poor quality of life for the individual.

PART III

HEALING THE GUT

Chapter 7

FOOD AS MEDICINE

When the diet is wrong, medicine is of no use;
When the diet is right, medicine is of no need."
-Ayurvedic Proverb

What food is medicine? It is real food – in other words, whole food from the earth: fruit, veggies, nuts, seeds, whole grains, healthy oils. Only whole food will provide the essential nutrients – vitamins, minerals, phytonutrients, essential fatty acids, fiber and more – to give you excellent health, vitality, and longevity, and do so with the least number of calories.

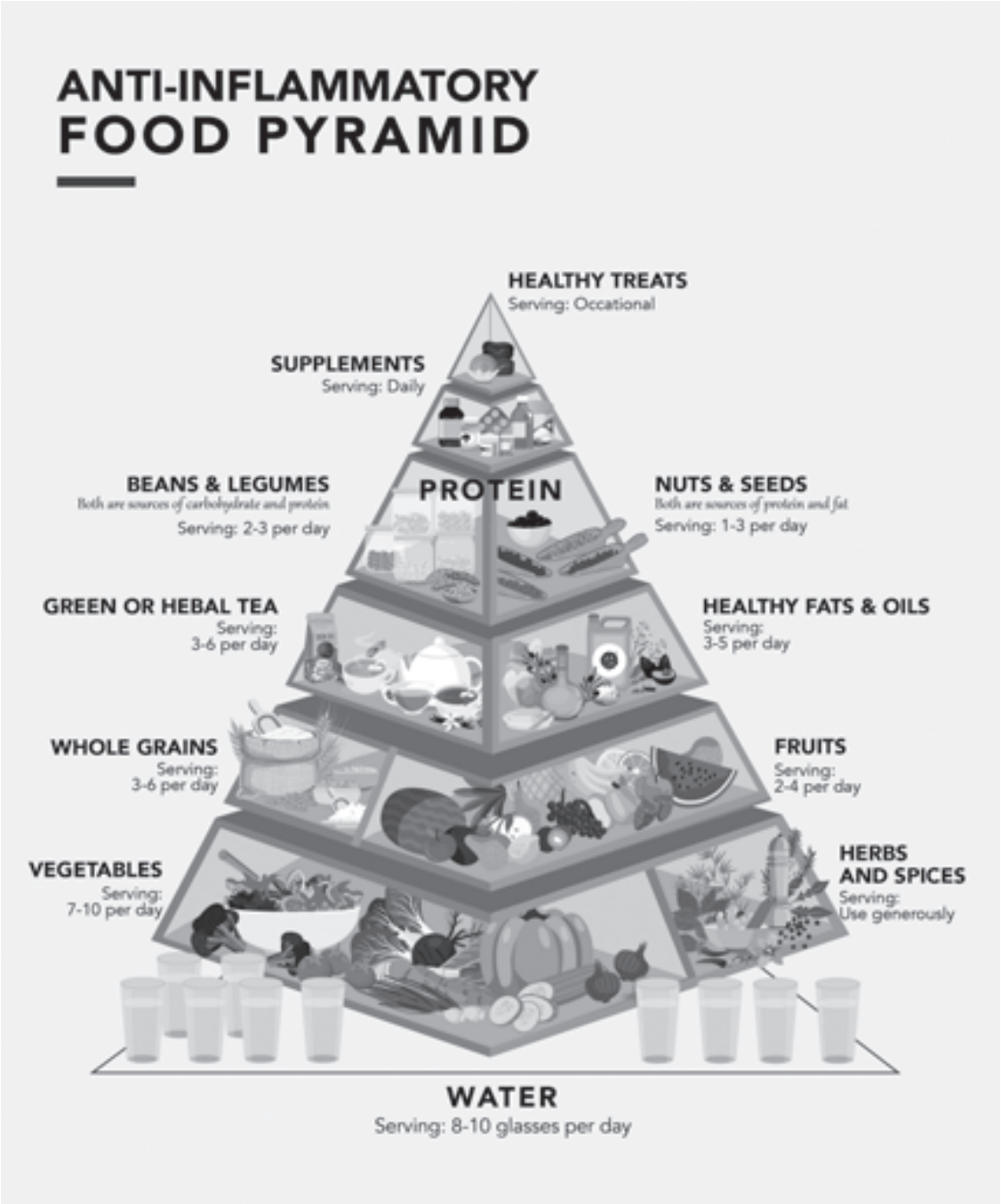
Processed, packaged, and refined food is instead laden with fat, salt, sugar, and chemicals. These are inflammatory foods that rob you of the nutrients your body needs to stay healthy. They are essentially poison, and they make you sick, fat, tired, and achy while shortening your life.

And they starve your gut microbiome. Here's how. Just like us, the bacteria in our gut also need food. And the best foods for the job are fiber-rich plant foods like leafy greens and resistant starches like potatoes, legumes, and raw oats, as well as non-gluten grains, bananas, and even dark chocolate.

Talking about fiber: according to a review in *Advances in Nutrition*, good bacteria feed on and ferment this plant based fiber into a fatty acid known as butyrate.[76] Higher levels of butyrate reduce inflammation in your body and also act as a defense against the bad guys in your gut. Inflammatory foods typically lack the natural fibers needed to not only keep you fuller longer, but also to feed your friendly gut bugs.

In other words, as you can see, food that is medicine feeds good gut bacteria while food that is poison starves the good guys, allowing the bad guys to flourish. The result is inflammation which, as we've discovered, fuels a battery of illnesses.

Below is an anti-inflammatory food pyramid to give you some idea of the kind of dietary suggestions we'll be talking about in this chapter.


ANTI-INFLAMMATORY
FOOD PYRAMID
HEALTHY TREATS
Serving: Occational
SUPPLEMENTS
Serving: Daily
BEANS & LEGUMES
Both are sources of carbohydrate and protein
Serving: 2-3 per day
PROTEIN
NUTS & SEEDS
Both are sources of protein and fat
Serving: 1-3 per day
GREEN OR HEBAL TEA
Serving:
3-6 per day
HEALTHY FATS & OILS
Serving:
3-5 per day
WHOLE GRAINS
Serving:
3-6 per day
FRUITS
Serving:
2-4 per day
VEGETABLES
Serving:
7-10 per day
HERBS
AND SPICES
Serving:
Use generously
WATER
Serving: 8-10 glasses per day

If you've been on a diet of mostly "fake," processed food, the transition to real, healthy food will take some time, effort, and willpower on your part. The good news, though, is that once you get through this "I miss ice cream, chips, and pizza" time, your body will stop craving it and your brain will think "Apples!" instead of "Apple pie a la mode."

The first step in making this happen is to become fully educated about what constitutes good food and bad food.

So, let's get started!

CARBS

Carbs, you may have heard, are bad for your health. But are they really? Yes, if they are bad carbs that drive up your sugar level, like those you get from cookies, cakes, and pasta – and which fuel inflammation. The answer is no if they are good carbs –carbs from plant foods, potatoes, and brown rice – all of which reduce inflammation.

In fact, good carbs are absolutely essential for health. Carbs from plant foods deliver the fiber, vitamins, minerals, phytochemicals, and antioxidants that your body needs to thrive. And they feed the good bacteria your body needs in order to gobble up the bad guys and pave the way for good health. Furthermore, they feed your brain the fuel it needs to function at peak levels.

Complex Carbs

Complex carbs are the good carbs. They are typically found in high-fiber food and slowly break down in your bloodstream, creating a blood sugar level that will remain steady throughout your day. The result is less hunger and irritability when mid-afternoon rolls around and, yes, less inflammation.

For optimal health, load up on complex carbs, starting from the bottom of the pyramid:

- Vegetables
- Fresh fruit
- Non-gluten grains like buckwheat, millet, quinoa, and brown rice
- Nuts
- Legumes
- Non-pasteurized dairy products such as yogurt and butter

HEALTHY EATING TIP: Aim for variety and a minimum of four to five servings per day of vegetables. Some of the best choices for your microbiome include: beets; carrots; cruciferous vegetables (broccoli, cabbage, cauliflower, and kale); dark, leafy greens (collard greens, kale, spinach); onions; peas; salad greens; sea veggies like dulse, kelp, and nori; and squash.

Eat three to four servings per day of fruit (no fruit juice, though; it's too high in sugar), unless you have a problem with sugar regulation. Especially good choices are apples, blackberries, blueberries, cherries, strawberries, oranges, pears, pink grapefruit, and pomegranates.

Simple or Refined Carbs

Simple or refined carbohydrates are the bad stuff that you want to avoid, and especially if you want to maintain a healthy weight, reduce inflammation, and have a healthy microbiome.

Your digestive system breaks these carbs down too quickly and easily, flooding the bloodstream with simple sugars (glucose) and prompting the hormone insulin to surge in carrying the glucose into the body's cells. The result is a spike in your blood sugar. This makes you feel jittery and, within hours, you run back to the fridge to get a

needed fix. Even worse, your brain gets addicted to the high glucose levels and, when feeling grumpy, you crave more and more of these.

This is not all. Too much blood sugar and insulin for too long can lead to weight gain because you burn less fat and store more of it.

A more pressing concern is the malfunctioning of hormones that eventually lead to organ damage and even cancer cell growth.

Stay away from these bad carbs:

- Refined grains like white bread, white rice, and enriched pasta
- Processed foods such as cake, candy cookies, and chips
- White potatoes – especially fried and loaded with table salt
- Sweetened *or* sugar-free soft drinks
- Sugar – Firmicutes (type of gut bugs) are so well-suited to grow on sugars that, in factories, they process sugar-cane into table sugar, and they're known to grow rampantly.[77]

GI Index

A great guide for knowing good from bad carbs is the Glycemic index (GI). The GI describes the difference between carbohydrates by ranking them according to their effects on blood glucose levels. It measures how fast and how far blood sugar rises after you eat a food that contains carbohydrates and other nutrients.

For example, white bread and short grained white rice are converted almost immediately into blood sugar, causing it to spike rapidly. They are classified as having a high GI. Brown rice, in contrast, is digested more slowly, causing a lower and gentler change in blood sugar, so it has a lower glycemic index. Always go for the Low GI foods.

Fiber, Fiber, Fiber

Even though fiber doesn't get absorbed into our bodies, the secret to a carb being good or bad, and to how well it reduces inflammation and feeds the good bacteria in the gut, is in its fiber content.

Here's the great stuff it does for our bodies:

- Lowers our blood sugar level
- Slows the absorption of sugar into the blood and keeps it from spiking
- Cuts cholesterol
- Assists with regular bowel movement reducing the risk of developing hemorrhoids,diverticular disease and may even prevent colon cancer
- Helps you feel full, for longer and promoting weight control

The national fiber recommendations are

- 30- 38 grams per day for men
- 21-25 grams per day for women

To get your daily dose of fiber, eat fiber-rich whole plant foods.

"An estimated 93% Aussie adults and 97% of Aussie kids don't eat enough plant-based fibre – fruits and vegies – to stay healthy."

GI INDEX FOR ASSORTED FOODS

LOW		MEDIUM		HIGH	
FOOD	G.I	FOOD	G.I	FOOD	G.I
Peanuts	14	Apple juice	40	Life Savers	70
Plain yogurt	14	Snickers	41	White bread	70
Soy beans	18	Peach	42	Bagel	72
Peas	22	Carrots	47	Watermelon	72
Cherries	22	Brown rice	50	Popcorn	72
Barley	25	Strawberry jam	51	Graham crackers	74
Grapefruit	25	Power Bar	53	French fries	75
Link sausage	28	Orange juice	53	Grape-Nuts	75
Black beans	30	Honey	55	Shredded wheat	75
Lentils	30	Pita bread	57	Gatorade	78
Skim milk	32	Oatmeal plain	58	Corn flakes	81
Fettuccine	32	Pineapple	59	Rice cakes	82
Chickpeas	33	Sweet potato	61	Pretzels	83
Chocolate milk	32	Coca Cola	63	Baked white potato	85
Wheat spaghetti	37	Raisins	64	Instant rice	87
Apple	38	Cantaloupe	65	Gluten-free bread	90
Pinto beans	39	Whole-wheat bread	67	Dates	103

FIBER CONTENT FOR ASSORTED FOODS

FOOD	SERVING	FIBER(g)	FOOD	SERVING	FIBER(g)
Avocado (raw)	1 medium	11	Spinach	1 cup	2.5
Artichoke	1 medium	10.3	Eggplant	1/2 slice	2.3
Raspberries (raw)	1 cup	8	Summer Squash	1/2 cup	1.9
Blackberries (raw)	1 cup	8	Peach (raw)	1 medium	1.8
Lentil	1/2 cup	7.9	Grapefruit (raw)	1/2 cup sections	1.5
Black Beans	1/2 cup	7.3	Tofu, Firm	1/5 pkg	1.5
Broccoli	1 cup	6	Cauliflower	1/2 cup	1.3
Soup, Vegetable Beef	1 cup	5	Asparagus	4 spears	1.2
Pear (raw)	1 medium	4.5	Cabbage	1/2 cup,shredded	1.2
Apple (raw)	1 medium	4	Popcorn	1 Cup	1.2
Oatmeal	1 cup	4	Arugula (raw)	1 cup	1
Barley	1/2 cup	3	Olives	10 olives	1
Pumpkin	1 cup, mashed	2.9			

***HEALTHY EATING TIP*:** To easily get 9 or 10 grams of fiber into your diet, add a few tablespoons of coconut dietary fiber to smoothies, casseroles, soups, and warm cereal.

To help you sort good from bad carbs, always read the Nutrition Facts section on food labels.

Rainbow Diet

When choosing your daily fruits and vegetables, fill your salad plate with the colors of the rainbow. Choose as many different colors as possible, as the more color you have on your plate, the higher the Phytonutrients,which act as antioxidants and protect you from harmful affects of inflammation. For instance, choose red peppers vs. green peppers, red cabbage vs. white cabbage, and butternut squash vs. zucchini.

Eat Organic

To ensure that you don't consume harmful ingredients that will deplete your microbiome and create inflammation – such as pesticides, herbicides, antibiotics, artificial chemicals, hormones, and genetically modified organisms (GMOs) – eat organic food.

But organic is more expensive, you might lament. True.

Eating organic costs more.

True.Eating organic food does cost more than eating food grown with pesticides, herbicides, antibiotics, and hormones as well as other harmful substances, but is far less expensive than paying for drugs and surgery from diseases that come from toxicity down the line. The other possibility is to consider growing your own veggies, which has the advantage of giving you additional green space time – a magnificent stress buster.

If you cannot always eat organic, it's important to at least know what foods are the most pesticide-laden – the so-called dirty dozen fruits and vegetables:

DIRTY DOZEN

1. Peaches
2. Apples
3. Cherries
4. Strawberries
5. Grapes
6. Pears
7. Nectarines
8. Sweet bell peppers
9. Lettuce
10. Celery
11. Spinach
12. Potatoes

ALSO SUSPECT

1. Cantaloupe
2. Red raspberries
3. Apricots
4. Cucumbers
5. Green beans
6. Winter squash
7. Tomatoes

LOWEST LEVELS OF PESTICIDES

1. Onions
2. Avocados
3. Frozen sweet corn
4. Pineapple

5. Bananas
6. Mangoes
7. Asparagus
8. Frozen peas
9. Kiwi
10. Cabbage
11. Broccoli
12. Papaya

GOOD FAT/BAD FAT

The modern diet consists of roughly 34% to 40% calories coming from fat. That's almost half of your calories, the majority of it coming from the bad fat of high fructose corn syrup, animal sources, and partially hydrogenated soybean oil, which are ingredients in virtually every processed food. These bad fats lead to inflammation, and as we've discovered, inflammation leads to disease and weight gain.

Does this mean you should go on a fat free diet? Absolutely not. Fats are essential for health and especially for how well your brain works.

What it does mean is that you should eliminate bad, saturated fats from your diet.

Saturated Fats

Saturated fats put on pounds, especially since most of our diets have too much of them. Recall that firmicutes (not being favorable to weight maintenance) are needed to absorb fats, and higher fat diets cause you to have more of them, leading to weight gain.

Saturated fats also make us sick, as they lead to inflammation.

Saturated fats are found primarily in animal sources: red meat, whole milk dairy products, and eggs. The worst of them are the hydrogenated or man-made fats. This includes the fat found in corn,

soy, safflower, and sunflower oils, and, worst of all, trans fats that are found in vegetable shortenings, some margarines, crackers, candies, cookies, snack foods, fried foods, baked goods, and other processed foods made with partially hydrogenated vegetable oils.

HEALTHY EATING TIP: Coconut oil, though saturated, is very healthy and should be a staple in your diet. This is because it is digested and processed differently than other fats, making it more like a carbohydrate. For this reason, the body uses coconut oil to make energy rather than store it as body fat. Additionally, coconut oil contains a potent anti-viral, caprylic acid which can help improve bacteria and gut health by destroying bad bacteria and candida or yeast overgrowth.

Good Fats

The good fats are polyunsaturated fats, including omega-3 fatty acids and monounsaturated fats. A concentrated source of energy, they are essential for proper nerve activity, vitamin absorption, immune system function, and healthy cells.

And they help decrease inflammation to give healthy gut bugs a chance to flourish. With less inflammation, you'll also have lower bad cholesterol in the blood, a decreased risk of heart attack, and a lower risk of breast and prostate cancer. The Rolls-Royce of fats, and omega-3 fats especially, reduce inflammation, stimulate the metabolism, and support brain development.

These good fats must be eaten on a daily basis. That's not hard since they are delicious and – good news here – filling, as well, so they stop you from reaching for the cookie jar.

They include:

- Flaxseed oil
- Extra virgin olive oil

- Coconut oil
- Avocado oil
- Grapeseed Oil
- Grassfed butter
- Nuts and seeds

Healthy nuts and seeds include:

Nuts

- Almonds
- Walnuts
- Filberts
- Pine
- Pecan
- Macadamia

  Note: *Peanuts are not considered healthy nuts as they contain mostly saturated fat and may also contain a toxin called Aflatoxin(a soil based fungus).*

Seeds

- Hemp
- Chia
- Sunflower
- Pumpkin
- Sesame
- Flax

Essential Fatty Acids

Essential fatty acids, especially omega-3's, are necessary for physical and mental well-being, normal growth and development, and for reducing inflammation and inflammatory conditions. Inadequate levels of these fatty acids lead to cardiovascular, digestive, and

immune problems, along with allergies, diabetes, depression, memory problems, and foggy thinking.

It's important that omega-3 foods, as well as healthy omega-6 foods (these to a lesser extent), become a central part of your daily diet. Here's a list.

Foods High in Omega-3 Essential Fatty Acids (Linoleic Acid)

- Flaxseed oil, flax seeds, flaxseed meal
- Cold-water high-fat fish (especially wild Alaskan salmon), sardines, anchovies, mackerel, shad, herring, and trout
- Hemp Seed oil, hemp seeds
- Grapeseed oil
- Avacados
- Pumpkin seeds and raw sunflower seeds
- Nuts, including pine nuts, walnuts, and pistachios
- Borage oil, evening primrose oil, black currant seed oil
- Acai

TAKE HEED: While fatty fish is a great source of omega-3 fatty acids – especially when we're talking about salmon, mackerel, sardines, and herring – they also contain mercury. Mercury can be damaging to the brain and kidneys, and cause developmental problems for kids. While farm fish may seem to be a better option, they are also loaded with toxins, pesticides, and antibiotics, as they are raised in crowded underwater pens. So limit your fish intake to no more than a serve (140 gms) a week and insist on finding the source of the fish- prefer high fat wild Alaskan Salmon where possible.

PROTEIN

We need protein for strength and energy, for building tissue, and for the growth and repair of muscles. But, we need less than is popularly

believed, and therefore don't need to make our main meal a big steak with a small house salad on the side.

Instead, do the opposite – make your main meal a huge salad with a rainbow of different colored veggies and eat it with very little or no meat, chicken, cheese, or eggs thrown in. I'll talk more about going meatless and dairy free later; however, let's look at some great sources of protein and some commonly held myths around this subject.

Tackling the topic of protein can be a touchy subject in the health world – especially when it comes to animal vs. plant-based protein. And, just so you know, this section isn't about converting you to veganism or even vegetarianism. It's about helping you make healthier, more conscious food choices. No judgement. Just knowledge.

The Complete Protein Myth

Proteins are long strings of amino acids. There are twenty different amino acids you need for good health, but our bodies can only make eleven of them. The remaining nine are referred to as essential amino acids. Because we can't make them, it is essential for us to get them from our diet. Foods that contain all nine essential aminos are known as complete proteins, although they are not necessarily better protein sources.

While animal flesh is a complete protein, it's also "complete" – with potentially harmful saturated fat and cholesterol, plus hormones, antibiotics, and often times other unsavory party poopers like E. coli. And unlike their plant-based counterparts, they lack phytonutrients, water, antioxidants, enzymes, and fiber. And did you know that many plants have complete proteins? Such plants are: quinoa, soy products, buckwheat, and hemp seeds. Other plant proteins are only slightly incomplete, so as long as you're eating a variety of them, then you've got a complete protein powerhouse on a plant-based

diet. You don't even have to eat them all at the same meal or even on the same day.

Is more protein in your diet really helping you?

Dr. Garth Davis, in his book *Proteinaholic*, writes that the belief that we need enormous amounts of protein to be healthy and strong is one of the most pervasive myths. In fact, overdosing on protein is one of the reasons we've become so unhealthy. Studies show that, as protein consumption goes up, so do the rates of chronic diseases like obesity, kidney diseases, certain cancers, and even early death.[78] Hello, inflammation! In truth, protein deficiency is virtually nonexistent in industrialized countries; besides that, too much protein in your diet can cause constipation and halitosis – bad breath!

Is protein important? Absolutely! But, as you just read, in large quantities, it could actually harm your health.

The trick is to change ourselves over to consuming more plant-based sources of proteins and to bring in variety on a regular basis.

How much protein do I really need?

The U.S. Food and Drug Administration recommends a daily allowance of about 0.8 grams of protein for every kilogram of body weight for an average adult.[79] So, at 60 kilos (132 lbs), you'd need about 48 grams (1.7 ounces) of protein daily.

Reality check: The average adult in a Western nation consumes between 100 and 120 grams (3.5 – 7 ounces) of protein every day. Not only is that nearly two to three times what we need, but it comes mostly from high-fat animal products. Unless you're an athlete trying to build muscle, are pregnant or lactating, or are under physical stress, this is overdosing yourself on protein that your body then has to process.

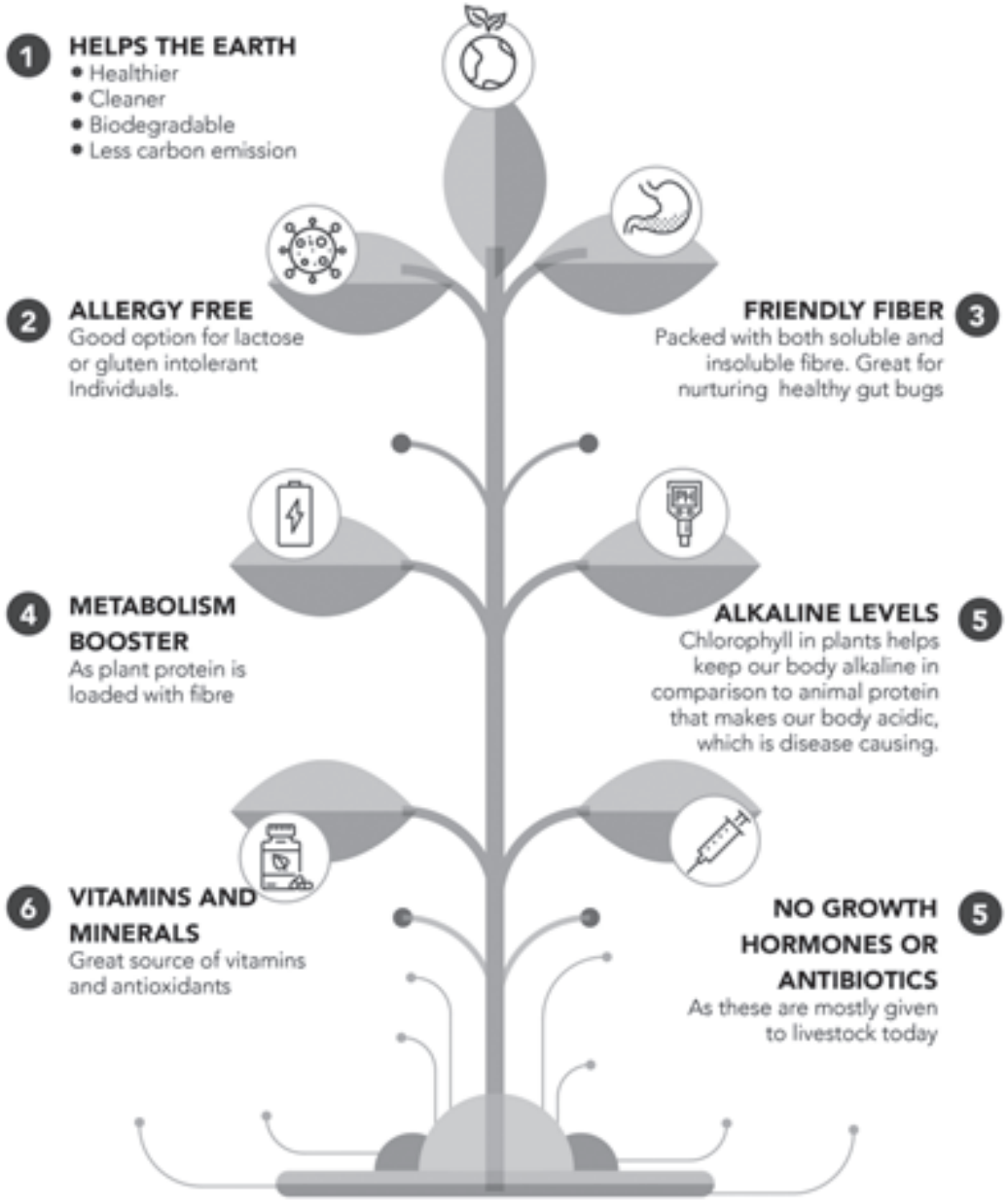
Can I meet my protein needs with a plant-based diet?

A moderately active adult who weighs 70 kilos (155 lbs) can easily meet their protein needs (approximately 50 grams per day) with the options mentioned below.

Eating a well-balanced, plant-based diet – meaning that you're consuming a wide variety of high-quality foods like vegetables, greens, sprouts, legumes, tempeh, beans, nuts, grains, and so on – will certainly meet your protein needs. Even the higher protein needs of pregnant and breast-feeding women, as well as athletes, can easily be met just by eating more of the good stuff.

POWER *of* PLANT BASED PROTEIN

BENEFITS of Plant Based Proteins



Plant Foods packed with proteins:

Quinoa

Quinoa (pronounced "keen-wah") is a great vegetarian protein option and should have a special place in your daily diet. It is s a complete protein – one of the few plants that have a similar amino acid profile to meat. If you haven't yet tried it, or even heard of it, you're in for a treat. It has a wonderful nutty flavor and serves as a great substitute for wheat products like pasta.

Beans

Beans are an excellent source of protein, with one-half cup containing as much protein as an ounce of broiled steak. And they are loaded with fiber to keep you feeling full for hours. Moreover, they are among the very best foods to raise your gut bacteria._Two to three servings per day is best, especially when it comes to adzuki beans, black beans, black-eyed peas, chickpeas, and lentils. Try them with buckwheat, quinoa, or black rice.

Tempeh

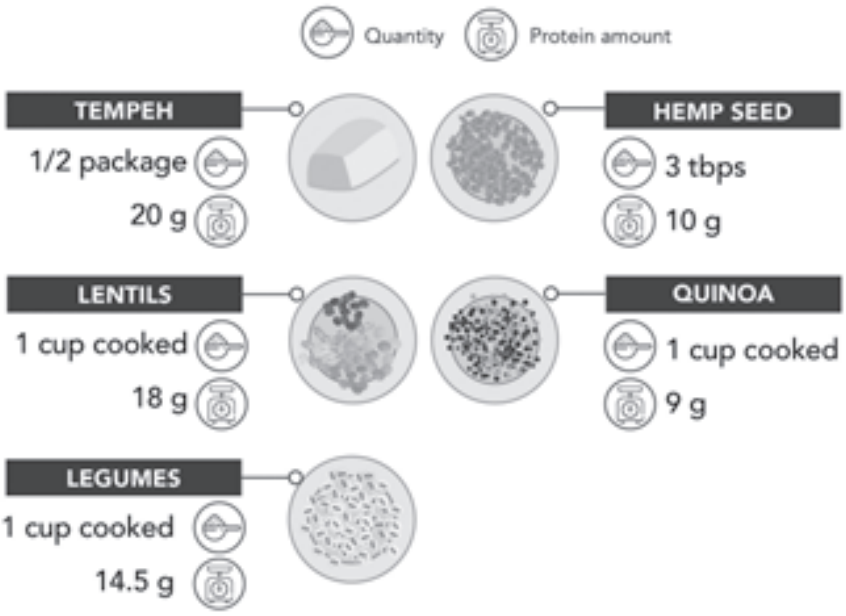
Tempeh is fermented soy, and fermented foods help build up our microbiome. Tempeh is also a great meat substitute for vegetarians.

Sprouts

Sprouts are loaded with protein, particularly sunflower and pea sprouts, and should be a mainstay in any healthy diet.

With a bit of creativity and information, you can easily get your protein – and perhaps better quality protein – from plant-based sources, and don't need to rely on meat, poultry, or dairy for the same.

Plant Based **PROTEIN SUPERSTARS**



More **PLANT BASED** Protein sources

	Tofu-Extra Firm	3 oz	9 g
	Brocoli-chopped	1 cup	8 g
	Almonds-raw	1/4 cup	8 g
	Sunflower seeds-raw	1/4 cup	7 g
	Chia seeds	2 tbsp	6 g
	Kale chopped	2 cup	4.5 g

ANIMAL-BASED PROTEIN: THE BIGGER PICTURE

Whether or not a particular food is healthy for us doesn't solely relate to its nutritional value. It's also about how your dinner got to your plate. When evaluating the health consequences of animal products, we must also consider the way the critters were raised and treated. Compassion aside, this is also about your well-being.

How an animal is cared for from birth to slaughter truly and deeply affects your body. Unhealthy animals create unhealthy food. The unsanitary and inhumane practices of factory farms threaten our food supply. Would you knowingly drink from a polluted well? We must remember that we humans are at the tippy-top of the food chain. This means that we eat everything that the critter below us ate, and what the organisms below them ate, and so on.

What if you want to include animal products in your diet?

That's your choice, and I totally honor it. My advice would be to keep it to a minimum (two or three times per week), as a garnish or side dish, and make the best selections. According to the American Dietetic Association, a portion of meat shouldn't be larger than a deck of cards, or the palm of your hand (about 3 ounces or 85 grams).

Additionally, do your best to say "no way" to factory-farm products. Instead, look for the Certified Humane Seal, which is the gold standard in farming. As for seafood, Food and Water Watch is a terrific resource you can use to learn what seafood products are safest and, therefore, healthiest. Unfortunately, farm-raised fish often experience confinement and health issues which are similar to animals from factory-farms. As for wild fish, our oceans aren't what they used to be and, as a result, high levels of mercury (especially in deep sea fish) and other heavy metals (such as lead) are abundant. These elements have been associated with neurological disorders

both in kids and adults.(Refer to section on Omega 3 Fatty acid on recommended consumption of fish)

Dump Dairy

Removing or reducing dairy is one of my top recommendations for better health and weight. Dairy is high in saturated fat (which can lead to stroke and heart attacks); it's inflammatory (the root cause of many chronic diseases); and the growth hormones in dairy (e.g. IGF1 and the like) can stimulate malignant cell growth and proliferation. My own personal experience, and also the experiences of thousands of my clients, have confirmed to me that saying *adieu* to dairy can totally transform your health. Reducing the amount of dairy you consume can even make a difference in how you feel.

Milk, Cheese, and Yogurt

Dairy foods like milk, cheese, and yogurt are excellent sources of protein and contain valuable calcium; however, pasteurization makes them high-allergen foods and removes most of the vital qualities that make them healthy. Besides that, most of the flavored yogurts are laden with sugar under the pretext of it being able to fulfil your calcium requirements and provide healthy gut bacteria.

IMPORTANT NOTE: If you are, or wish to be vegan, take heart. You do not need dairy products, and especially milk, to get your calcium intake. You can get as much as and even more calcium from non-dairy products. For instance, a cup of quinoa has the calcium content of a quart of milk. The same goes for tofu and bean curd.

Interestingly, although osteoporosis is believed to be caused by insufficient calcium, it is uncommon in countries like Japan and China where citizens consume large amounts of soy (non-GMO) and little if any cow milk.

Eggs

It is interesting that eggs are dubbed a great source of protein and, more importantly, choline – something that the egg industry actually boasts about. A study published in the *New England Journal of Medicine* found that once-a-day egg consumption doubled the risk of cancer progression.[80] And it may be the choline which could explain this. Men who had been diagnosed with prostate cancer were studied to look at the impact of choline consumption by way of eggs. Researchers found that those men who consumed choline by way of eggs had a 70% increased risk of lethal prostate cancer. In fact, choline is so concentrated in cancer cells that, if you follow its uptake, you can track the speed with which the cancer spreads through the body. These findings were also confirmed in a subsequent study completed byHarvard researchers.[81]

Besides this, eggs contain a high amount of cholesterol, plus saturated fat. And, all this material still overlooks the other aspects of sanitation and hygiene, given that hens producing these eggs are faced with tightly crammed pens and generally exposed to antibiotics and pesticides

HEALTHY EATING TIP: There are plenty of other sources of protein and good quality fat beyond eggs. However, if you do feel the need to keep eating eggs, be sure to buy eggs from free range chickens or they will have been fed antibiotics, hormones, and unhealthy grains loaded with pesticides.

The truth about three meals a day!

In this universe, timing is everything.

Whether it comes to launching a new business or trying to conceive a child, timing is everything.

Similarly, in terms of living a healthy life, eating patterns are crucial in determining our healthy weight. It is now proven beyond doubt that our body has a natural daily rhythm or cycle that allows for optimal functioning, metabolism, and repair. When we do not heed the body's natural rhythm to slow down its metabolism after sunset – the beginning of the resting phase for the body – it starts to create a breeding ground for sickness and disease.

We are conditioned to believe in our established pattern of three meals a day. While this was a healthy and needed practice in times of farming and heavy manual labour, this practice may not be serving us well anymore. Eating fewer and larger meals promotes weight gain and fat retention. What is even worse is that the heaviest meal of the day seems to be the one at the end of the day. It is set up like a reward the body demands for all the day's hard work. Yet, eating light at night is one of the most basic and simple, yet rarely followed, age-old wisdoms.

Studies indicate that three larger meals a day lead to higher increases in the cholesterol and triglyceride levels than when we eat five smaller meals – even if we consume a similar number of calories with each pattern. Likewise, one is less likely to gain weight when one chooses smaller, more frequent meals, even if they overeat. Several animal experiments have pointed to the fact that feeling stressed and having larger, less frequent meals is more likely to cause an increase in weight, and also an increase in belly fat – the fat that hurts our health the most.

Eating frequent meals throughout the day not only helps control your appetite, and helps to prevent overeating at meal times by controlling your blood sugar, but also keeps your metabolism firing throughout the day, preventing weight gain.[82]

While a six-meal plan per day may not be for everyone, however, what matters most is what you eat, rather than how much you eat.

Alkaline and Acidic Foods

Our body works to maintain a constant temperature of 98.5F, or 37C. It's called homeostasis. What you may not have known is that your body works to maintain homeostasis through the right amount of oxygen in your blood – a pH of 7.365, which is slightly alkaline.

A pH more acidic than alkaline creates a health crisis, as your blood cannot absorb enough oxygen. Without sufficient oxygenation, your body's organs and fluids don't work well and you feel fatigued and depressed; you also gain weight and have poor digestion. Eventually, cancer, heart issues, arthritis, candida infections, and diabetes result.

What is interesting is that food's *acid- or alkaline-forming* tendency has nothing to do with the actual pH of the food itself. For example, lemon, apple vinegar, and lime are all very acidic, but after they are digested, they produce an alkaline environment in the body. Likewise, meat will test alkaline, but upon being digested it leaves very acidic residue in the body.

What creates over-acidity in the body? Eating acidic foods – meat, poultry, dairy and cheese products, eggs, sugar and refined foods, excess fatty and rich foods, and coffee, tea, and alcohol. The typical modern diet.

These foods increase the amount of time it takes for food to travel through your digestive tract, and vitamins and minerals might not be adequately assimilated. The worst offender by far, though, is meat, as it can stay in the body for at least three days and produce much acid waste. The amount of energy is takes to digest meat is why you feel fatigued after a steak dinner.

Alkalizing foods, in contrast, like raw green leafy vegetables, non-sweet fruits, and wheat grasses are "quick exit" foods that travel quickly through the digestive tract.

The following list of *alkaline foods* and drinks will show you what foods and drinks can help your body to heal itself from most diseases:

Food

- Vegetables – especially raw, green leafy vegetables
- Fresh herbs and spices – parsley, basil, cilantro, cayenne, and ginger
- Fruits – watermelon, avocado, and young coconuts
- Wheatgrass
- Sprouts: sunflower, pea, buckwheat, alfalfa, clover, mung bean, adzuki, etc.

Drinks

- Alkaline water
- Young coconut water
- Vegetable juice
- Wheatgrass juice

Finding out your body's pH is simple. Buy some pH test strips (litmus paper) at a health store and pee on it. The color of the paper tells you instantly what your pH is, and thus how alkaline or acidic you are.

FOODS THAT PROMOTE INFLAMMATION:

- Refined vegetable oils
- Pasteurized dairy products
- Refined carbohydrates and processed grain products
- Conventional meat, poultry, and eggs
- Added sugars
- Trans fats/hydrogenated fats

ANTI-INFLAMMATORY FOODS

- Fresh vegetables
- Whole pieces of fruit (not juice)
- Herbs, spices, and teas like turmeric, ginger, basil, oregano, and thyme
- Probiotics like yogurt, kombucha, kvass, kefir, or cultured veggies like sauerkraut
- Healthy fats (Avacado, Grapeseed, Olive oils)
- Ancient grains and legumes/beans
- Red wine and dark chocolate/cocoa – organic and in moderation

POLYPHENOLS

Polyphenols, or free-radical-fighting antioxidants, are micronutrients that we get through certain plant-based foods. They are essential for reducing inflammatory, disease-causing oxidative stress, as well as for improving or treating digestive issues, weight management difficulties, diabetes, neurodegenerative disease, and cardiovascular diseases.

But the biological properties of polyphenols are greatly dependent on their bioavailability (the ability to be free to be absorbed by our gut lining). The gut microbiota play a key role in this process by breaking open the bonds that hold the polyphenols locked within the food. In other words, the more good bugs we have, the more polyphenols we get from eating these antioxidant foods.

A 2010 study in the *European Journal of Clinical Nutrition* identified the 100 richest foods in polyphenols and antioxidants.[83] Here are the highest ranked foods identified.

- Cloves (highest), peppermint, star anise
- Cocoa and dark chocolate

- Blueberries (highest), blackberries, strawberries, red raspberries
- Black currents, plums, sweet cherries, apples
- Beans, especially black and white beans
- Nuts – especially hazelnuts, walnuts, almonds, pecans
- Vegetables – especially artichokes, chicory, red onions, spinach
- Black and green tea
- Red wine

Eliminate GMO Foods

Our bodies are not designed to process genetically modified food (GMOs), which have been shown to cause harm to humans, animals, and the environment. Yet, despite growing opposition, more and more foods continue to be genetically altered.

The only way to completely steer clear of GMOs is to eat food that is certified organic. Also, you can seek out food grown by local farmers so that you can be ensured that the crops aren't GMO.

Here are the top 9 worst GMO foods that you must make every effort to avoid, or eat only organic:

1. Corn
2. Soy
3. Sugar
4. Aspartame
5. Papayas
6. Canola
7. Dairy
8. Zucchini
9. Yellow squash

IMPORTANT NOTE: If you're going to eat soy, follow these guidelines:

- Eat imported soy products or products listed as "not genetically modified."
- Eat primarily fermented versions of soy, such as tempeh and miso.
- Eat unfermented products like tofu, soymilk, and soy beans (edamame) rarely.
- Avoid eating all soy cheeses, burgers, and meats.
- Consult your doctor prior to giving your infant, soy formula.

PASS THE SALT

The modern diet is loaded with salt, both because of our tendency to pour salt on our food and because the processed, refined foods that so many of us eat as mainstays in our diet are loaded with it. All this salt, conventional doctors tell us, is bad for us because it causes high blood pressure and leads to other health problems.

But is it really? In truth, the body needs salt, and low-salt diets increase the likelihood of heart disease, hypertension, cognitive decline, osteoporosis, insulin resistance, and erectile dysfunction.

What we don't need is processed salt, which is devoid of the full spectrum of minerals and other nutrients that protect and enhance your health.

Natural salt, like *Himalayan salt*, contains 84 minerals and trace minerals, including iodine. Use this liberally in your foods.

PROBIOTICS

The peasants who live in the Balkans in Bulgaria are known for their longevity and routinely live to 100. This rare phenomenon is presumably because of their consumption of yogurt, a staple in their diets. And while many might think that this knowledge was

discovered fairly recently, it was actually discovered at the beginning of the 20th century by microbiologist Ilya Metchnikoff at the Pasteur Institute in Paris.

Yogurt contains the 'Bulgarian bacillus.' Metchnikoff's research, for which he won the Nobel Prize in 1908, demonstrated how this healthy bacteria in yogurt helps digestion and improves the immune system. The term *probiotics* was coined to reflect Metchnikoff's idea.

TAKE HEED: The commercial yogurt bought in supermarkets is *not* your elixir for finding the fountain of youth. The peasants noted above regularly consume yogurt produced from *unpasteurized milk* and especially from goat's milk – recall Miss Muffet's curds – and in many of the Balkan villages, the inhabitants subsist mainly on goat yogurt. Commercial yogurt contains far fewer probiotics and is loaded with sugar. Further, the Bulgarian peasants eat more fermented foods than just yogurt, including a variety of fermented foods and drinks throughout the day.

Metchnikoff worked to popularize yogurt as a foodstuff throughout Europe. Unfortunately, with the advent of antibiotics, the most powerful healing intervention of the 20th century, his work fell to the wayside.

Getting Probiotics into Your Diet

There are two ways to get probiotics into your diet: eating cultured and fermented food, and taking a probiotic supplement. The first method is far superior, as eating and drinking your bugs confers many more probiotics than you will get from supplements.

Foods loaded with probiotics

- Cultured vegetables such as sauerkraut and beets (not commercially made)

- Cultured dairy, such as yogurt and kefir (organic and preferably unpasteurized)
- Tempeh and miso
- Kim chee
- Kombucha tea

Ideally, fill your daily diet with a variety of cultured foods and beverages, as each food will inoculate your gut with a variety of different microorganisms.

Eat sourdough bread: Try replacing your white bread with sourdough bread, which is fermented. During the process, wild yeast and friendly bacteria break down the gluten and sugar in the wheat flour and turn it into bread that is actually healthy for you. Before the advent of commercial yeast, most bread was made in the sourdough style, with its cavernous holes.

Magic with Kefir: Fermented foods have been known to humans for centuries. Prior to refrigerators, our forefathers would rely on fermented foods like kefir, pickles, tofu, kimchi, sauerkraut, and the like.

I have had my clients experience particularly beneficial results with Kefir – a fermented milk drink from north Caucasus, which is made from goat or sheep milk and is easy to digest. Keifer can be easily cultured and can also be blended in smoothies and other dishes. Start your own culture today!

How Much to Eat

To get as many good bugs as possible into your gut, make fermented food a daily part of your menu. Shoot to eat at least a quarter- to a half-cup of fermented vegetables or other cultured food, such as raw yogurt, with one to three meals per day. Try throwing raw sauerkraut

or beets into your salad, and having an unpasteurized organic yogurt with some berries on top.

Start with very small servings and increase slowly to half a cup. Your body has to get used to the fermented food and, if you eat too much too quickly, you may detoxify too quickly and experience die-off symptoms like headaches, fatigue, and skin eruptions.

How to Culture Your Own Vegetables

Finding non-commercial fermented food can be a challenge, but you can easily make your own.

Raw sauerkraut should be a staple of your diet. Here's how to make it.

Raw Sauerkraut

Ingredients

- 3-4 heads of organic red cabbage
- A few celery stalks
- Two tablespoons of Himalayan pink salt mixed in a pint of filtered water
  or
- A Veggie Culture Starter Kit

Directions

1. Shred and cut the cabbage in a food processor until it's juicy.
2. Juice some celery to use as the brine, as it contains natural sodium and keeps the vegetables anaerobic. Mix the celery juice with the Himalayan salt or a starter culture kit. Don't use sea salt, which prevents the growth of certain bacteria.
3. Place the shredded cabbage into a 32-ounce wide-mouthed canning jar.
4. Top it with a cabbage leaf or two, tucking it down the sides.

5. Add the brine. Make sure the veggies are completely covered and that the brine comes all the way to the top of the jar to eliminate trapped air.
6. Seal the jar. Keep it loose for the first few days as the jar releases some brine. After that, seal it tightly and store it in a warm, slightly moist place for 5-7 days. Ideal temperature range is 68-75 degrees Fahrenheit (85 degrees max), as heat kills the microbes.
7. When done, store it in the refrigerator to slow down the fermentation process.

HEALTHY EATING TIP: To vary your sauerkraut recipes, add different veggies like carrots, sweet potatoes, beets, turnips, and other hard root veggies. Be sure, though, that cabbage comprises at least 80% of your vegetable blend.

Probiotic Supplements

Probiotics are defined as "live microorganisms which when administered in adequate amounts to confer a health benefit on the host".

If you don't wish to eat cultured, fermented food or if you desire even more probiotics in your diet, you may wish to consider taking probiotic supplements that contain acidophilis, bifidus, and other friendly bacteria.

When it comes to affecting weight loss,certain probiotics have been shown to inhibit the absorption of dietary fat, thereby increasing the amount of fat excreted with feces .[84]

Some of the probiotics may influence our hunger hormones and also reduce gut inflammation thereby,protecting against obesity and other diseases.

However,it is important to keep in mind that these mechanisms are poorly understood and as more research emerges,we expect it to translate into a better understanding of how probiotics can affect our health.

TAKE HEED:

Probiotics are typically measured in colony-forming units (CFU). Generally, higher CFU has been found to produce the best results in most studies [85]

Look for probiotics that include various strains of *Bifidobacterium*, *Lactobacillus* and *Saccharomyces,*as they have the most investigated health benefits.

Remember,for Probiotics to work,your diet must have plenty of plant based fibre- Prebiotics.

PREBIOTICS

Just like us, the bugs in our gut also need food. And the best foods for the job are fiber-rich foods. Such food is considered as prebiotics, which are foods that selectively feed certain beneficial microbes over others. These include leafy greens, resistant starches (including potatoes, legumes, raw oats, bananas, raw garlic, raw onions, raw leeks, dandelion greens, asparagus, dark chocolate, and flax and chia seeds). Also consider supplementing these foods with inulin or resistant starch.

When these bacteria (most of which reside in our large bowel) feed on the undigested plant fiber – also called *resistant starches* – they produce SCFA (Short Chain Fatty Acids).

These SCFAs have several very useful functions, including:

- feeding the cells of the gut lining of the large bowel
- preventing the development of a leaky gut and so preventing bacteria or undigested food from entering circulation

- improving immune function
- preventing constipation
- preventing bowel cancer

RESISTANT STARCHES: A recent study in the *Journal of Functional Foods* found that eating resistant starch gives our gut bugs quite a workout in digesting the stuff, and this strengthens your gut biome.[86]

Foods that provide resistant starches:

- Whole grain cereals
- onions
- leeks
- brown rice
- barley
- beans
- lentils
- asparagus
- Jerusalem artichokes

Needless to say, you should not eat any of the above foods if you're sensitive or allergic to them.

ENZYMES

Do you suffer any of the below symptoms?

- Bloating
- Belching
- Gas
- Bowel disorders
- Abdominal cramping
- Heartburn
- Food allergies/sensitivities

If so, you may be enzyme deficient.

Enzymes are essential living proteins that enable the body to digest and assimilate food and clear out toxins. Particular enzymes break down food we eat into proteins, carbohydrates, fats, vitamins, and plant fibers.

If you are deficient in enzymes, you won't digest your food well. The result comes in the form of digestion issues like lactose and fructose intolerances. And this will happen even if you eat healthy salads all day. For it's not what you eat, but what you assimilate! Stress, fatigue, aging, low body temperature, and most importantly medications all create enzyme deficiencies which produce different symptoms.

Replenishing Enzymes

To replenish your enzyme potential and conserve your bodies' limited enzyme-producing capacities, you must eat natural sources of enzyme rich foods, preferably raw.

Of course, most of us don't. We have a small side salad at best, and cooked potatoes and vegetables. The problem is, if you cook food above 118° F for any extended time, you kill active food enzymes.

Even worse, this impacts your blood. In 1930, Swiss researchers at the Institute of Nutritional Chemistry discovered that consuming foods after heating them beyond a certain temperature increased the number of white cells in the blood, a reaction found only when a dangerous pathogen invades the body. The worst offenders were:

- Refined, processed foods such as white flour and white rice
- Pasteurized foods, where milk is flash-heated to high temperatures to kill bacteria
- Homogenized foods, where the fat in milk is subjected to artificial suspension, or preserved by adding chemicals to delay spoilage, or to enhance texture or taste

Enzyme Rich Foods

For optimum digestion and health, consume the following enzyme rich foods on a daily basis.

- Pineapple is rich in the enzyme Bromelain, which helps breaking down proteins
- Papaya or Paw Paw contains the digestive enzyme papain
- Mango contains the digestive enzyme amylase, which breaks down carbs
- Unprocessed honey contains a variety of digestive enzymes, including diastase, amylase, invertase, and protease
    - Bananas contain glucosidase and amylase enzymes
    - Ginger contains the enzyme zingibain, which helps with constipation
    - Avacados contain lipase, an enzyme that helps with fat digestion
    - Fermented foods such as Keifer, Miso, and Kimchi contain many digestive enzymes, besides having healthy bacteria, too.

Enzyme Supplements

Sometimes digestive enzyme supplements may be required to address the problems of digestion mentioned above. These should be taken under medical supervision, and generally thirty minutes to an hour before a meal.

AVOID ANTIBIOTICS AS MUCH AS POSSIBLE

While antibiotics can save lives from a ravaging infection, they're often overprescribed and misunderstood. Because antibiotics kill the good bacteria along with the disease-causing bad bugs, take them only if you absolutely have to. If you do need to go on a course of

antibiotics, take probiotic supplements at the same time. This will help you maintain the balance of your gut flora.

SUPPLEMENTS

While a healthy, anti-inflammatory diet can provide you with most of your nutritional needs, it's helpful to take some additional supplements, as well. Here are some suggested supplements to help keep inflammation under control while maintaining a balanced immune system.

- Co-enzyme Q10
- Carotenoids
- Alpha lipoic acid
- Vitamin D3
- Omega-3 oil (preferable flaxseed oil)
- Tumeric
- Selenium
- L-Glutamine

(These are best discussed with your own Naturopath or Functional Medicine expert.)

SUMMING UP

Here are suggestions to maintain gut health and reduce inflammation:

- Eat whole, unprocessed, unrefined foods.
- Make 75% of your plate vegetables and plant-based, gut-supporting fiber foods. Remember, your gut bugs really love these high-fiber plant foods.
- Eat the good fats – omega-3 fats and monounsaturated fats from plants and seeds. By decreasing inflammation, these good fats give healthy gut bugs a chance to flourish.
- Replace inflammatory omega-6 rich fats like vegetable oils with healthier oils like extra-virgin olive oil and coconut oil.
- Load up every day on fermented foods like sauerkraut, kimchi, kombucha, and tempeh so your healthy gut bugs can be fruitful and multiply.
- Eat enzyme rich foods and fermented foods where possible.

Eliminate Destructive Foods that Destroy Your Good Gut Flora:

- Inflammatory foods like fried foods, refined flours, hormone- and antibiotic-laden animal products, synthetic sweeteners, artificial food additives, and gastric irritants like alcohol and caffeine.
- Sugar is fuel for disease-causing bacteria, fungus, and yeast – besides killing beneficial bacteria. It comes under various disguises, such as fructose, maltose, malt sugar, or corn syrup.
- Gluten from highly-processed breads, which can negatively impact gut bacteria, even in people who are not gluten-sensitive.

- Avoid taking antibiotics where possible and safe. If you're a regular meat eater, you're probably giving yourself enough antibiotics already.
- When it comes to reading the labels on pre-packaged foods: If you can't read it, don't eat it.

Chapter 8

RESTORING GUT HEALTH

HEAL YOUR GUT – HEAL YOUR SELF

"Take good care of your body; it's the only place you have to live in."
- Jim Rohn

Managing Lifestyle Stresses on the Gut

Can you tell whether or not you have a healthy gut?

Sally, a 44-year-old mother of two and a nurse, came to see me for ongoing bowel issues. She would wake up every morning feeling bloated from the night before. She was alternating between having diarrhea some days and then suffering from constipation for the rest. Her worst nightmare was having to control the sudden urge to rush to the bathroom while on the way to work. Lethargy and fatigue predominated most of her day, which made her rely on stimulants (caffeine) and relaxants in the evening – generally, a glass of red wine most nights. Sally had body aches and a poor ability to concentrate. Her mood was low and she lacked motivation. Over the course of the last few months before she came to me, she had been stacking on weight, as the desire to go exercise had almost entirely died off. Life like this would go on until this would be intermittently interrupted with a bout of viral flu, which was not only happening more often, but would last for much longer, leaving this mother of two even worse off – as the various roles she had, especially that of a mother (and wife) never really stopped. Sally had had several consultations with clinicians who had done several tests and endoscopies, but all results came back "Within normal limits."

Does the above story sound familiar?

When Sally came to see me, she was most concerned about the excess weight gain of over 30 kilos over the last three years or so. She was desperate and was considering weight loss surgery.

Little did Sally realize that most if not all her health issues were emanating from poor gut health. Anti-histamines for frequent flu, antacids for reflux and bloating, and antidepressants for lack of motivation were only scratching the surface of the problem that lay elsewhere.

Initial assessments confirmed the suggestions of impaired gut bacterial balance and an over-alert immune system. Sally could not come to believe that all her symptoms were related. Even though she was a bit sceptical to begin with, though, she undertook the Gut ReGen Programme under the supervision of naturopaths who monitored her progress over the next few months. She practiced stress management techniques and introduced fermented foods to her diet, along with a plant-based diet, besides taking recommended supplements. By the end of the first phase of the program (three weeks long), she was feeling much better and, to her surprise, had already lost three kilos – something, that was hard for her to believe.

Sally completed the Gut ReGen Programme and, in her words, "Each passing day convinced her to persist." At the end of three months, she was a new woman, positive in her attitude and healthier in her body. Now eleven kilos lighter, Sally had glowing skin, shiny hair, and an aura of good health… and all this happened without weight loss surgery.

Towards a Healthy Gut

Our gut is an internal garden and requires tending just like a garden would. Just like a garden that is not tended naturally becomes a home to weeds, similar "weeds" make their home in our gut – if we don't adjust to what our body is telling us.

We now know that the gut is an amazing ecosystem that has over one hundred trillion microbes – ten times more than the cells in our body. All these microbes form the body's best defence against disease. As the skin forms a barrier to the world "outside" our body, the gut forms a barrier "inside" our body. The gut has tiny finger-like projections called "Villi" which come in contact with broken-down food, with which they can "touch and feel" all that goes down our gut. To give you an estimate of the surface these villi would cover

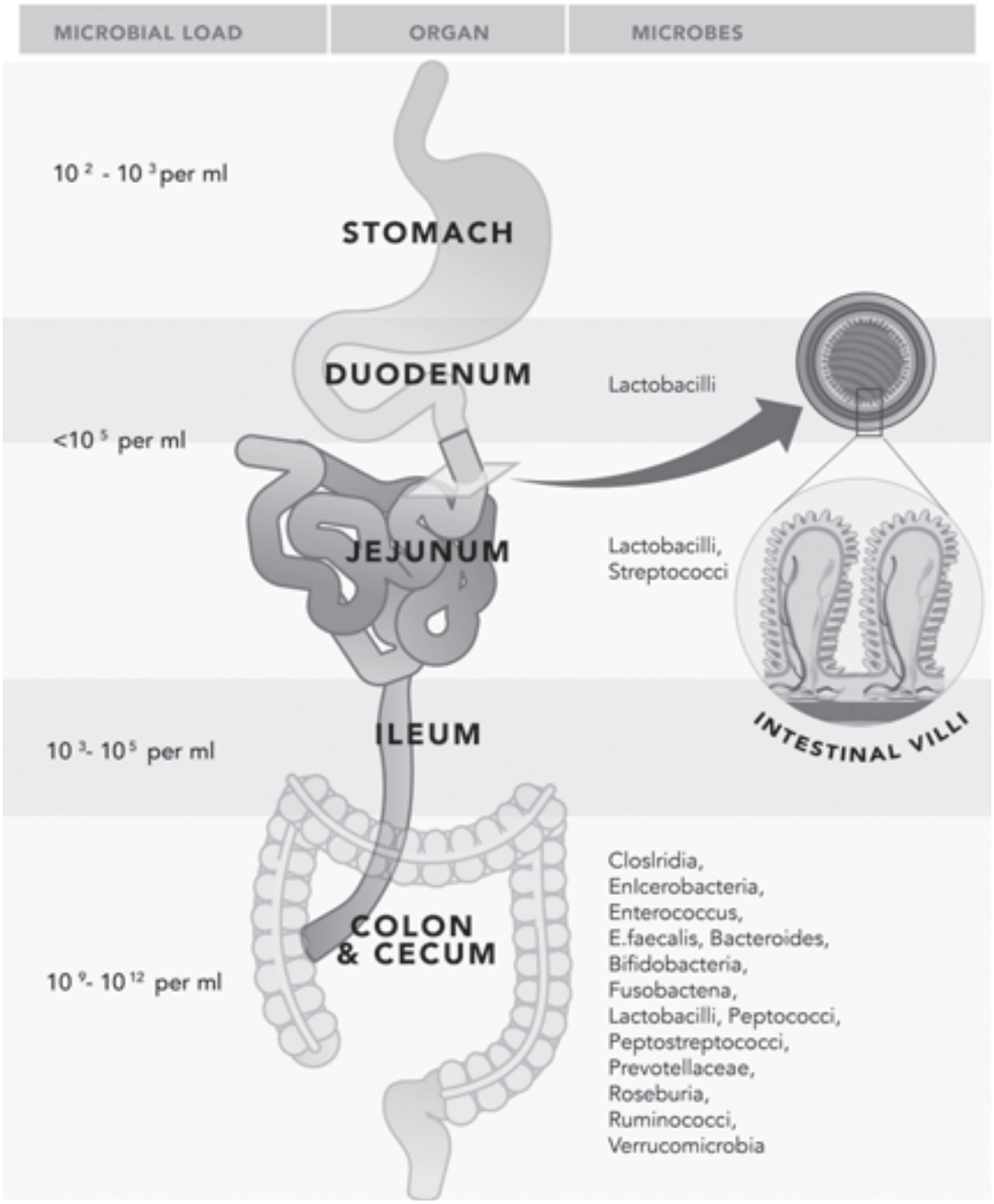
if stretched flat, they could fill up an entire soccer field. These villi are like "gatekeepers" of the fortress – as they have to seperate the vitamins and nutrients, which the body needs, from the toxins, additives, and bugs which need to be kept out and expelled.

As we have seen in the previous chapters, within the healthy gut lives a world of friendly bacteria required to digest the food we eat, produce vitamins, stimulate the vibrant gut lining, and keep unfriendly organisms in check. This happens in a beautiful, well-orchestrated manner, such that you enjoy the vitality offered by a healthy, well-functioning eco system.A healthy gut remains one of our best defences against disease. A gut that loses its balance and harmony will be the root of your problems, however,even though the symptoms may not be entirely related to the gut's function – as was the case with Sally.

A healthy gut is one where:

- All food is digested into its component parts (DIGESTION)
- The digestive surface is vibrant and able to absorb nutrients while blocking the entrance of larger, partially digested food particles, bacteria, yeasts, and parasites (ABSORPTION)
- The gut-associated immune system is only activated when necessary and is not overstimulated. (IMMUNITY)
- All of the above take place when there is harmony or "symbiosis" with the trillions of favorable gut microbes. (SYMBIOSIS)
- Finally, the gut serves the important function of detoxification. The liver and the cells lining the intestines remove toxic substances from our food and from our body's metabolism (which is analogous to the fumes that are generated from the running of any machinery). (DETOXIFICATION)

GUT ECOLOGY & STRUCTURE



Lifestyle Stresses on the Gut

Our gut bacteria are extremely sensitive to our lifestyles. If we look at things somewhat differently, we can say that whatever we do, feel, or eat affects our gut bacteria just as much as it affects us. Some scientists would go a step further and say that whatever you feed yourself will first feed your gut bacteria before it feeds you.[87] And this is indeed very true.

The point here being that our lifestyle has a lot to contribute to our health. Let's look at a few key causes of poor gut health:

- **Diet:** Poor diet, particularly one which is loaded with processed foods and sugar, is the number one enemy of healthy gut bacteria. I mention below three key components of processed foods that can wreak havoc in our guts:
  - **Sugar**: Processed foods are loaded with sugars and are a major fuel for harmful bacteria in your gut. Sugar also aggravates inflammation in the body, including your brain.
  - **Refined grains**: These are rapidly converted into sugars in your body, creating the same effect as having sugars.
  - **Genetically Engineered Ingredients or GMO**: Primarily corn, soy, and canola are being genetically engineered to make them more resilient. Consuming corn and foods containing High Fructose Corn Syrup turns your gut flora into a live pesticide factory producing toxins from within. This is because beneficial gut bacteria are very sensitive to glyphosate, the active ingredient in Roundup – a weed killer, which the GMO crops are resistant to. This causes a significant upset in the gut microbiome balance.

- **Antibiotics**: Antibiotics can kill bacteria that can make you ill. Without a doubt, they have also saved many, many lives,

which is why they are used in medicine. The problem comes when we use antibiotics so liberally that the good bacteria never get a chance to repopulate. Moreover, 80% of the antibiotics that a healthy individual gets are not given through a doctor's prescription, but through meat.[88] Concentrations of antibiotic residues vary between different edible muscle tissues in poultry.[89]

- Yes farm animals (including poultry) are fed antibiotics to keep them from catching infections due to the poor conditions they are kept in. Interestingly, antibiotics also help the animals to gain weight faster.
- **Chlorinated water**: If you are drinking unfiltered, chlorinated tap water, remember that chlorine kills not only water-borne pathogens, but also your beneficial bacteria.
- **Environmental toxins and chemicals**: We have seen the example of how herbicides such as Roundup find their way through the food chain and into our diet. This is harmful for gut bacteria and can throw the gut out of balance. This load of environmental toxins is also affecting fish. Because fish are higher in the food chain, they concentrate toxins like mercury, cadmium, PCB, and dioxins, which have been linked to risk of developing Type2 Diabetes, brain and kidney diseases, and certain cancers.

Stress: ***Is decision fatigue building our stress?***

We live in a world where stress is the new norm. The information overload that we all have to face carries a need for us to make decisions every day, hour upon hour, and builds up what we call *decision fatigue*. This is a state of exhaustion that results from constant and continuous mental activity. In an era of social media, email, smart phones, and smart TVs, there is no end to mental activity. So, no matter how rational and high-minded you try to be, you can't make decision after decision without paying a biological price. This builds up a subtle stress on your "system" – which begins to

manifest as poor behavior (termed ADHD or Autism spectrum disorder in kids, which is also known in adults), poor eating habits causing weight issues, and poor sleep patterns leading to a work-life imbalance. As has been detailed in Chapter 3, stress can have a multi-pronged, detrimental impact on the quality of our gut bacteria, causing gut dysbiosis. Dysbiosis is a state of imbalance inside the gut which is characterised by increased levels of harmful bacteria, yeast, and parasites, as well as reduced levels of beneficial bacteria. Gut dysbiosis is one of the main reasons for gut inflammation that leads to so-called "Leaky Gut" and a whole heap of medical issues that are borne out of the inflammatory cascade which puts the immune system on high alert at all times.

Making a Positive Change Through our Gut-Brain Connection

The concept that gut microbes can regulate our brain and immune response is now accepted. This exerts a protective effect against development of disease and dysfunction.

As we saw earlier, stress and inflammation are being pinpointed as the two main reasons for an unhealthy neurobiome – another complex name for our brain chemistry.

Asking people to have less stress is like asking a fish to drink less water. We can try to shrug off stress as normal, because it is so prevalent, but the body cannot. Modern life is stressful and we have gotten addicted to living in a world of busyness. Yet, evolution has provided each one of us with the machinery to handle stress – to a certain extent. The body tries to restore the normal balance after a stressful event or the stressor has been removed.

When the stress is acute – or short-lived like the stress of being honked at by a nearby car while driving over the lane on a freeway – the stress hormones (mostly adrenaline and cortisol) surge and, after

the stressor has been removed, the hormones return to their normal levels.

A surge of these hormones can be interpreted as a thrill by some – as happens during a rollercoaster ride – however, the end result is pleasure in this scenario. In either scenario, the hormones return to their normal levels.

When prolonged and repeated, a state of "chronic stress" occurs, where the stress response starts to damage our cells, tissues, and eventually our organs, thus manifesting as disease. Disease really reflects dysfunction or *"dis - ease"* at a cellular level.

The hidden danger is from this chronic stress, which is so constant and low-lying that we fool ourselves into believing we've adapted to it.

Subtly and slowly, though, the body begins to tell a different story … which translates into a medical diagnosis.

And as one of my mentors,Dr Joe Dispenza says "Our personality truly starts to create our personal reality."

The Antidote to Stress

Stress causes you to gain weight, it causes disease, and it messes with your microbiome. The answer, of course, is to find its antidote.

The antidote switches the "stress response" into a "relaxation response," thereby transforming how you eat, how you feel about food, and your ability to regain health.

Let's discuss some of lifestyle activities that can switch the stress response into a relaxation response.

EATING WITH POSITIVE IMPACT

"Food is not just a commodity. It is also a community. It's a web of relationships that connects us to all of life. What you eat literally becomes you. When you bring your food choices into integrity with your values – with what you truly want for your life and your world – something extraordinary happens. Your life takes on a deeper sense of meaning. Your thoughts become clearer. Your world becomes more congruent."

-Ocean Robbins
Founder of the Food Revolution Network

Here are the many ways that an act as simple as eating can be transformed for lasting health.

Enjoy the Family Meal

Some decades ago, meal times had a strong meaning for a family. Everybody would converge on the dinner table, laughing and joking, everyone feeling safe and connected. Distractions like TV and other more modern technologies didn't exist.

A lot has changed, and with some unwanted consequences. Technology has now taken over the family meal, removing the family connection. With easy access to food, we, unlike animals, don't wait to eat with the family, but eat, whether hungry or not, what is often unhealthy food on the go. In this state, we cannot digest our food well. Digestion requires parasympathetic nervous system activity, meaning that the body needs to be calm – vs. sympathetic nervous system activity where the body is riled up and stress chemicals stream through your bloodstream to ready you to flee or fight.

For better or worse, we humans have a complicated relationship with food: food is not just a source of energy, but the means of a strong bond between families and cultures. When you eat in an atmosphere

of love and connection, you feel more relaxed and digest your food better, burn more fat (thus raising your metabolism), and experience greater satisfaction.

When relaxed while eating, you are more likely to eat foods that satisfy your body and help you on the journey towards health and inner healing. Besides this, relaxation allows the body to metabolize the food better and, ultimately, to better achieve and maintain a healthy weight.

Sleep and Eat on Regular Schedules

Just like our sleep cycles, our intestinal bacteria also have a rhythm that changes throughout the day. Shift work, jet lag, and erratic meal times can hurt our good bacteria just like antibiotics can. So, try to eat at the same time every day when it comes to breakfast, lunch, an afternoon snack, and dinner.

Invoke Gratitude and Appreciation

Never underestimate the power of saying grace, if this is your religious belief, and expressing gratitude before you start a meal. I always remind myself to PAUSE and take three deep breaths of gratitude and appreciation for the food I'm about to eat, before I sink my teeth in. Some people find it helpful, as well, to appreciate all the links in the food chain that brought you your meal – Mother Nature, the farmer, the transport personnel, the grocer, and finally the chef.

Pausing and showing appreciation before eating soon becomes your new habit and improves digestion and weight. For, in this mood, one befriends the millions upon millions of microorganisms in the food that enter the body to nurture, nourish, and strengthen it.

The act of appreciation also calms the mind and body, reducing the stress response that leads many individuals to overeat and gain weight, and also causes us to poorly digest our food.

Mindful eating

Focused or "mindful" eating comes from the Buddhist teachings of mindfulness. Put simply, mindful eating is staying present and connected while you are eating, and experiencing and savoring the taste, smells, and texture of your food – *not* texting on your phone while gulping down a meal.

Mindful eating programs train you in meditation and help you cope with stress, and also change your consciousness around eating. You learn to slow down and tune into your sensory experience of food – its taste, texture, smell, and sight. Furthermore, you discover how to tune into your feelings of hunger or fullness and learn to eat when you are hungry, rather than eating because it's mealtime or food is in front of you. This program works even for those whose eating is way out of control. For instance, in one well-designed study of binge-eaters, participating in a mindful eating program led to fewer binges and reduced depression.[90]

You do not have to be a Buddhist monk to practice mindful eating.

Here are some simple ways to help you learn and practice this technique.

- **No technology or distractions on the table***:* Avoid commencing a meal with a screen, book, or newspaper around you. This prevents you from connecting with the food you are eating and numbs the taste, textures, and aromas, making you insensitive to the pleasure involved in eating.

- **Breathe:** Before you take the first bite of food, take three deep diaphragmatic breaths. This will stimulate your vagus nerve and prepare your body to digest your food.
- **Chew slowly:** Experience the feeling of food in your mouth – its texture, taste, and aroma. With practice, you can learn to chew well before you swallow your food, allowing more pleasure and satisfaction for your food and breaking you from the habit of stressful, distracted eating. Chew each bite thoroughly, enjoy every flavor, and take at least one deep breath after every couple of bites.
- **Respect your body and what it's experiencing:** Rebuilding your trust with food starts with honoring your hunger levels. Wait after a meal until you feel hungry again to eat again. And, only eat when you're hungry. In this way, you learn what true hunger is, and this will help prevent binge eating.
- **Fullness:** Observe the signals that let you know when you are comfortably satisfied vs. overly full. Take a break between bites and continue to assess your fullness levels as you eat.
- **Honor your health:** Instead of focusing on calories, find food that makes you feel your best. You don't have to eat perfectly to be healthy. It's what you eat consistently over time that matters most. Work on progress, not perfection, in forming nutritious eating habits. Honor your health and your personal preferences.Most importantly – *Eat Guilt free.*

When you eat mindfully, you also eat with a purpose, with an insight into whether the foods being consumed "heal or hurt." You respect what your body is communicating and this also contributes to an abundance of health and energy.

MEDITATION – The Axle of Health and Vitality

Life can be found only in the present moment. The past is gone, the future is not here, and if we do not go back to ourselves in the present moment, we cannot be in touch with life.

~ Thich Nhat Hanh, The Heart of Understanding

Mindfulness-based meditation helps you calm the "chitter chatter" of the mind that constantly goes on in the background. It involves purposefully paying attention to the present, neutrally and non-judgmentally. And, it's a powerhouse.

For me, one of the key benefits has been the ability to stay grounded and have a positive mindset. Just like a neglected garden will become home to weeds, so will the mind – weeds of self-doubt, worry, negativity, and frustration will flourish spontaneously. Meditation will pull these weeds out and give you inner peace. And it will also give you "hunches" – messages that Nature or the Universe is trying to get to you. With practice, meditation will strengthen this channel of communication.

At least once a week, a new study comes out touting the enormous benefits of mindfulness meditation – physically, mentally, and spiritually. Recently, a pilot study from Harvard University affiliates, the Benson-Henry Institute for Mind Body Medicine at Massachusetts General Hospital and the Beth Israel Deaconess Medical Center, found that meditation could significantly impact irritable bowel syndrome and inflammatory bowel disease. Forty-eight patients with either IBS or IBD took a 9-week session that included meditation training, and the results showed reduced pain, improved symptoms, stress reduction, and a change in the expression of genes that contribute to inflammation.[91]

Meditation and Eliciting the Relaxation Response

The human body has an immense capacity to heal itself, given the right conditions. Stress and inflammation can interfere with this healing process taking place naturally. In order to facilitate healing, therefore, one needs to remove the impediments. This is true of the mind. The mind will naturally move towards happiness, peace, and tranquility if it is given the right conditions. And, surprise surprise – this has very little to do with your external circumstances. Science lends support to the idea that a coordinated, calm state of mind and body is associated with peak efficiency and effectiveness.

When it comes to achieving our healthy weight, meditative practices can prove to be very effective. A study looked at the effectiveness of a six-week mindfulness program for obese individuals called Mindful Eating and Living (MEAL). The program included meditation training, mindful eating, group discussion, and awareness training for body sensations, emotions, and triggers to overeat. The study followed changes in weight, BMI, eating behavior, and psychological distress, as well as markers for heart disease. Participants in the meditation program became – no surprise – more mindful![92] They also found it easier to manage the impulse to eat, especially when not hungry. The participants also experienced a better ability to regulate mental and emotional attitudes, which was the main driver for emotional eating patterns.

Dr. Dean Ornish from the UCSF has also researched lifestyle and meditation-based programs that have confirmed benefits for not only weight management, but also heart disease and cancers.[93]

Summing Up

Helpful tips for stress-free eating

- **Don't eat while working**
- **Don't skip meals**
- **Do chew your food thoroughly**
- **Do savour your food – enjoying the taste, aroma, and texture of every bite you eat**
- **Do focus on your food while eating or eat food in enjoyable company**

Detoxify to Purify

The Deadly Trio: Obesity, Cancer, and Toxicity

The rise in worldwide obesity rates parallels the increase in environmental toxicity. While sedentary lifestyle and poor eating habits will contribute to gaining weight, the toxic build-up of waste and chemicals in the body is one of the leading causes of a sluggish metabolism and altered body physiology. Meanwhile, cancer rates continue to rise, and the world health organisation (WHO) believes that cancer rates may increase by more than 50% by 2020.[94] Also, more studies show that cancerous tumors are store houses of high concentrations of toxic, man-made chemicals.

Over the past 80 years, more than 70,000 industrial chemicals have been created and are now part of our environment. The worst occupational, environmental, or lifestyle toxins include cigarette smoking and exposure to hazardous chemicals such as herbicides, pesticides, and cleaning chemicals. For a complete list and detailed explanation of the worst offenders and how to avoid them, see Appendix E.

All of these chemicals wreak havoc on our bodies and cause diseases that range from auto immune ailments to cancer.

Nor can you escape some level of environmental toxin exposure, no matter how cleanly you try to live, for they are everywhere, from our processed food with its additives, sweeteners, and preservatives, to the poisonous chemicals that we breathe in and that touch our skin through cosmetics, on to other toxins such as alcohol, medications, coffee, and cigarettes.

Every second of our lives, this heavy toxic load stresses our livers and other organs which were never designed to deal with such

an overwhelmingly toxic load. Little wonder that many of us feel unwell, sluggish, fatigued, and depressed most of the time.

All this only hurts us every day. As we've learned, these toxins affect the state of our internal gut flora and therefore our overall health. And they lead to weight gain and hormonal imbalance. This happens because of the toxic build-up of waste and chemicals in the body which hampers the mitochondria (the energy engines that support metabolism), which itself leads to a sluggish metabolism. In fact, the rise in worldwide obesity rates parallels the increase in environmental toxicity.

Bottom line: Toxins in what you are consuming can make you fat, and that fatness (obesity) by itself is a risk factor for diseases like diabetes and cancer.

Don't despair, though. You can do much to rid your body of this toxic load through detoxification.

DETOXIFYING – *First, do no harm*

Before we get excited about fixing our health issues by taking exotic foods and probiotics, let's pay heed to the famous words of Hippoctrates – the father of modern medicine – who said, "*Primum non nocere."* Meaning: *"First, do no harm."* Not only do these words form a part of the famous Hippocratic Oath which every medical doctor takes prior to graduating, but these words are rather meant to alert every one of us to stop hurting ourselves before we look out for what can heal us.

Having a healthy, plant-based organic diet in a calm, relaxed, and mindful manner can alone have far more benefits than taking the most expensive supplements while continuing to live in a frantic, high-stress mode.

This first step also means removing harmful substances and organisms from your body, such as parasites, yeasts, or unfriendly bacteria, besides avoiding foods containing harmful toxins.

These are processed foods in the form of:

- **Trans Fats:** Food with trans fats raises your "bad" LDL cholesterol and triglycerides, and lowers your "good" HDL. They also increase your risk of blood clots and heart attack. Most so-called junk food is in this category containing trans fats, including donuts, pizzas, and margarine sticks.
- **Hydrogenated Vegetable Oils:** Shortening or partially hydrogenated oil clogs your arteries and causes overweight tendencies and obesity. They also increase your risk of metabolic syndrome. They're commonly found in cookies, pasta, snacks, and microwave popcorn. You'd do better to choose monounsaturated fats, such as olive, peanut, and canola oils, and foods that contain unsaturated omega-3 fatty acids instead.
- **High Fructose Corn Syrup (HFCS):** According to researchers at Tufts University, an average Western diet has more calories from HFCS than any other source.[95] It's in practically EVERYTHING: sodas, ketchup, bottled juices, sweetened yogurts… everything processed and tasting sweet. It increases triglycerides, boosts fat-storing hormones, and drives people to overeat and gain weight.
- **BHA (Butylated Hydroxyanisole) & BHT (Butylated Hydroxytoluene):** These food preservatives have been declared carcinogens by the International Agency for Research on Cancer. It's also been found that they disrupt hormones and impact male fertility.[96] They're found in processed meats, chewing gum, butters and margarines, cereals, and frozen potatoes.
- **Recombinant Bovine Growth Hormone (rBGH/ rBST):** This hormone produces elevated levels of insulin-like

growth factor-1 (IGF-1) in dairy products. Besides this, it's a significant factor in breast, prostate, and colon cancers. These are commonly found in dairy products, such as milk, yogurts, ice creams, etc.

- **Genetically Modified Organisms (GMOs):** Almost 70% of processed foods are made of GMOs, which may cause organ damage, gastrointestinal and immune disorders, accelerated aging, and infertility.[97]
- **Sodium Benzoate and Potassium Benzoate:** Benzene is a known carcinogen linked with serious thyroid damage. These substances are normally found in sodas, juices, jams, and syrups. Dangerous levels of benzene can build up when plastic bottles of soda are exposed to heat (such as when they're left in your car) or when the preservatives are combined with ascorbic acid (vitamin C contained in any citrus fruit).
- **Monosodium glutamate (MSG):** This is a processed "flavor enhancer," so it's common to find it in packed snacks, instant soups, chicken-broth substitutes, etc. High levels of free glutamates have been shown to seriously mess with brain chemistry.
- **Artificial colors:** Added to supplements and foods to make them look more attractive, some of the artificial coloring comes from toxic coal tar (used inside exterior paints and roofing), and it's been linked to many health problems such as autism, ADHD (attention-deficit hyperactivity disorder), and cancer.
- **Artificial sweeteners:** Many of our supposedly diet-friendly sweeteners may actually be doing more harm than good. Studies suggest that artificial sweeteners trick the brain into forgetting that sweetness means extra calories, making people more likely to keep eating sweet treats without abandon.[98]
- Also, when we eat highly processed, refined foods, or what I call *fake foods*, our colons become laden with the unhealthy debris – a breeding ground for disease.

Also avoid self-care, cosmetic, and cleaning products that contain harmful chemicals. Instead, buy "natural," chemical-fre, self-care, cosmetic, and cleaning products.

CLEANSING

The next step in any cleansing program is to give your gut a gentle but natural cleanse, and that should begin in the colon.

Death Begins in the Colon

"Every human being is the author of his own health or disease" – Buddha

Our colon, or large intestine, is the body's sewage system. But like all healthy and properly functioning sewage systems, it needs to be cleaned, emptied, and maintained to function properly.

You may think that all the gut does is break down what you eat and then poop out what the body doesn't need, but this is far from the truth. In fact, debris remains in the colon for long periods of time. Individuals with diverticular disease – where the bowel develops small pouches in the bowel wall, are prone to develop blockage of the bowel due to this debris, besides other serious complications like infection.This debris also impairs the absorption of nutrients and the removal of waste from the system eventually affecting one's health.

Not only this, it also makes you fat and bloated because backed-up fecal material rounds out your body and belly. It's not unusual to lose as much as 20 pounds on a colon cleanse, just by getting rid of all the excess debris.

What does a healthy colon feel like?

Could your colon be backed up with debris? The answer is yes if you are constipated or struggle to have one bowel movement every 2 days.

A clean colon leaves you feeling lighter, healthier, and more energetic, besides having clearer, brighter skin and more mental clarity and emotional stability (which develops with time).

Colon Cleanse

There are many ways to cleanse the colon, including eating a high-fiber diet, flushing out debris with herbs, enemas, occasional fasting, and a colon cleansing kit. I personally advise against a colon cleaning kit because most of these products are 'fad detox' kits. Save your money.

Instead, eat a healthy, high-fiber, largely raw food diet and do a semi-annual colon cleanse – both of which I'll soon describe. The *sine qua non* of health (literally, *without which, there is not*), this will remove old fecal matter and waste from the colon, as well as heavy metals and drug residues. It will also strengthen the colon muscle, reduce progression of diverticular disease and also reduce the risk of developing inflammation of the colon (diverticulitis) besides rebuilding friendly bacterial cultures that should ideally line virtually every square inch of the tube – from mouth to anus.

As with any intervention, it is safest to run this information past your medical practitioner before starting the colon cleanse.

Here are some ways that I especially recommend my patients to cleanse their colon.

Aloe Vera Juice

Drink aloe vera juice or tablets. Aloe acts like scrubbing bubbles in the intestines, besides being very safe and gentle on the bowel. Aloe also offers anti-inflammatory, anti-spasmodic, and cellular protective properties that benefit the gut. (Consult your Naturopath before you commence with this step.)

Raw Food Detox

Engaging in a raw food detox is the best way to improve your health and give your body the help it needs to get rid of toxins. The healthiest and cheapest way to do this is via the Daniel Detox.

The Daniel Detox

If you read the Bible, you've likely heard of Daniel. To purify himself, Daniel went through a three-week fast that consisted of eating only fruits, vegetables, and drinking water.

I highly recommend this regimen as the easiest and healthiest detox you can follow. Consume only freshly prepared, raw, whole foods like fruits, veggies, vegetable juices, and pure, preferably filtered, high alkaline water. Try to add in garlic, ginger, wheatgrass, blue algae, hemp protein and hemp seeds, flax seed, legumes, nuts, extra virgin olive oil, along with herbal and green teas.

How long you do this detox for depends upon your state of health and prior lifestyle habits – including eating, exercise, alcohol and/or drug use, smoking habits, and exposure to pollutants in the workplace or elsewhere.

I suggest starting with one week and, if you handle it well, working up to three weeks. Even a day a month is a great start! I always say: start somewhere, and work your way up. The benefits you experience will convince you to keep going.

Intermittent Fasting

Intermittent fasting has been described in ancient Eastern cultures and is widely practiced in many communities even today.

While fasting might sound too onerous to many people, a growing body of research suggests that fasting can not only be a very effective approach for weight loss, but can also help with diabetes prevention.[99] Some research is also indicating that intermittent fasting may hold the key to increasing your life span.[100]

Some Practical tips on fasting.

- Overnight fasting: If you think that fasting can be hard, then try overnight fasting. What this means is that you try to fit your meals of the day between 7 AM and 3 PM. This will give you a fasting time of almost 16 hours. Studies published in *Cell Metabolism* in May of 2018 showed that the metabolic effects of intermittent fasting not only improve insulin sensitivity, but also blood pressure and weight loss.[101]
- Let your body burn fat in between meals. Do not snack, be active throughout your day, and try to build muscle tone.
- Have a sensible, plant-based, Mediterranean-style diet.
- Avoid snacking or eating at night.

Following a detox, I generally recommend that people in a maintenance phase fast one day out of the week or every two weeks. If you have any pre-existing health conditions, it's best to first consult with your health care practitioner for suggestions and precautions.

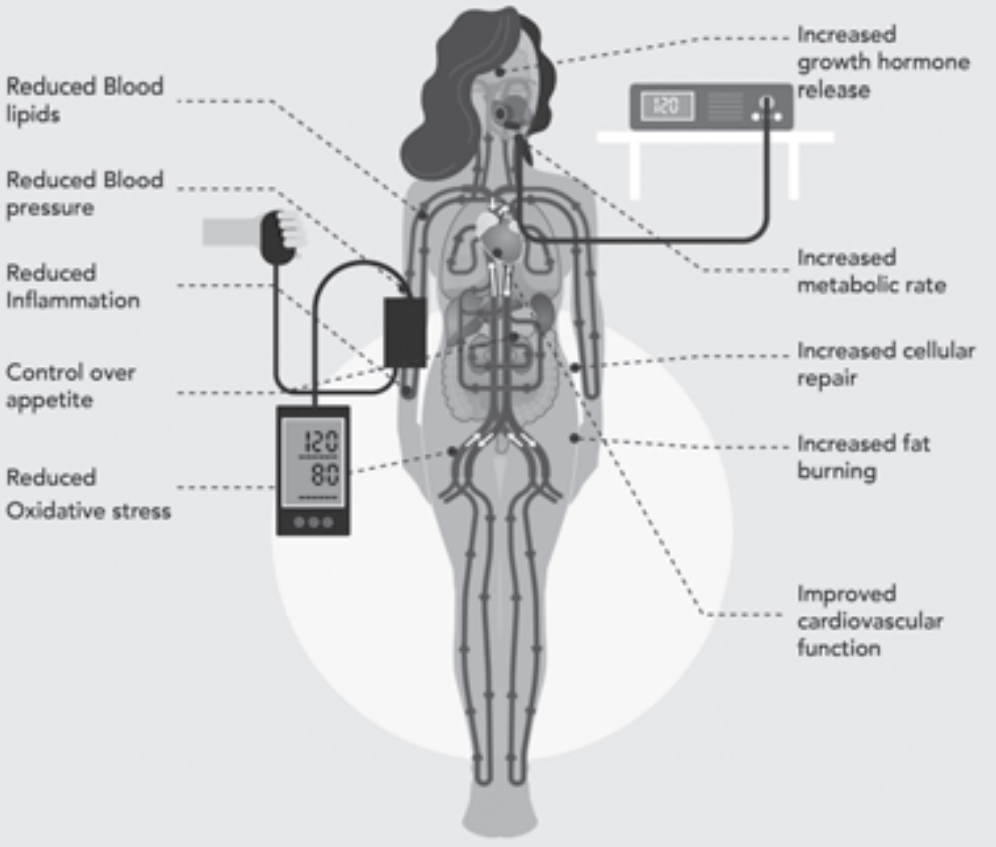
INTERMITTENT FASTING

Intermittent fasting **is an eating pattern where you cycle between periods of eating and fasting.**

Several studies suggest that intermittent fasting can do more than help people lose weight; it also may improve blood pressure and help the body process fat.

Important note: Always consult your physician before commencing a fasting programme

BENEFITS OF INTERMITTENT FASTING



HOW TO DO INTERMITTENT FASTING

1

OVERNIGHT FASTING

Fast for 14 hours (women) and 16 hours (men) and only eat during a six to eight hour window. Sleep is included, so it's not as tough as it may sound. For example, if you eat breakfast at 9 AM, and your last meal at 5 PM, there's a 16 hour break in between.

2

EAT STOP EAT

This one is about fasting for 24 hour periods once or twice a week. You can drink calorie-free beverages during this time. Green teas, organic coffee, coconut water, infused water. Definitely no sugar free carbonated drinks.

3

UPDAY DOWNDAY

This one is pretty simple, just eat very little one day, then eat like normal the next. So on down days, you eat one fifth your normal caloric requirement. Very similar to the popular 5:2 diet.

Major benefit of this one is weight loss, and the ability to boost our metabolism, specially if you can stick to a predominantly plant based diet.

Liver Cleanse

The next step after cleansing the colon is to cleanse your liver. This is essential since the liver is in charge of sending toxins to the appropriate organ to exit the body – a hard job that the liver is required to do well, given all the stress, pesticides, food chemicals, environmental toxins, caffeine (and more caffeine), nicotine, and prescription, over-the-counter, and recreational drugs that define modern living.

Here are some broad tips on how to detoxify your liver; however, it is best done under the supervision of a qualified medical practitioner:

- Start your morning by drinking filtered water, the juice of 1 lemon, 1 to 2 tablespoons of extra-virgin, cold-pressed olive oil, 1 to 2 crushed garlic cloves, and a dash of cayenne pepper.
- Load your plate with preferably organic, cruciferous vegetables (broccoli, kale, cauliflower, collards, Brussel sprouts, etc.), along with celery, artichokes, radishes, asparagus, cilantro, and beets.
- Add turmeric (curcumin), rosemary, and lemon peel (instead of just squeezing the lemon juice) to your dishes.
- Consume flaxseeds daily. (Must first be soaked in water.)
- Eat foods containing glutathione, such as avocado, asparagus, squash, potato, watermelon, potato, and vegetables like spinach and parsley.
- Eat chlorophyll-rich foods like chlorella, spirulina, wheat grass juice, or barley juice.
- Take the herb milk thistle.

Detoxify Heavy Metals

In today's world, we are constantly exposed to mercury, lead, arsenic, and other heavy metals, and many of our systems are overloaded with

heavy metals. Following a colon and then a liver cleanse, you must do what you can to rid your body of these dangerous substances.

If you suffer from an autoimmune disorder or feel constantly fatigued, or have allergies and skin conditions and autoimmune disorders, it's best to start by having a physician test your heavy metal levels. If they're high, you may need a physician to chelate them out of your body.

Any attempt to reduce your heavy metal load should be done under the supervision of a qualified medical practitioner.

- If you have silver amalgam tooth fillings (..check with your dentist), remove them, as they are the greatest source of mercury poisoning.
- Chlorella is an algae that is used to make nutritional supplements and medicine. It binds to toxins such as mercury and expels them from your system.
- Zeolite is a naturally occurring mineral formed from the fusion of lava and ocean water. Containing a unique, negatively charged, crystalline structure, zeolite has a chelation-like effect in removing heavy metals (particularly lead, mercury, cadmium, and arsenic), pesticides, herbicides, PCBs, and other toxins from the body.
- Supplemental glutathione is an amino acid that exists within the body and is a very powerful antioxidant- that can clear the damage causing free radicals. Glutathione helps to eliminate heavy metals and comes in supplement form as well, which can be taken as a glutathione patch too.

Sweat It Out

The skin is our largest organ, and sweating is an important way to detoxify the skin. You can do this in several ways:

- Exercise
- Infrared sauna or steam
- Hot bath
- Foot bath
- Exfoliating the skin with a fiber brush

Get out in the Sun

We've been made to believe that being out in the sun is bad for you. In truth, you must get your vitamin D from the sun, as it brings profound benefits for not just the bones, but everything from brain to overall health. And the sun's rays are the biggest killer of toxins and the most powerful immune system builder. Even Hippocrates, the ancient Greek physician from 400s B.C., was a big advocate of the sun because of its healing properties.

Depending on the place where you live and season,it is best to get sun exposure early in the morning or just before dusk in order to avoid the damaging effects of the harsh afternoon sun.

Massage – Relax, it is Detox time!

A massage can kick-start your body's own *natural* cleansing processes. If you haven't been taking the best care of yourself, a detoxifying massage can be a good start.

The rhythmic strokes and pressure applied to muscles, tissues, and organs during massage therapy help stimulate the circulatory system. It works sort of like a sponge: When pressure is applied to the tissue and fat, toxins are literally "squeezed" out from in between the muscle fibers and cells. They're released into the circulatory system for easier elimination.

A sluggish lymphatic system causes toxins to accumulate, and immune cells struggle to get carried to the areas of the body where they're

needed. A massage triggers the flow in your lymphatic system and is a great starting point for the detox process.

Water – The Purifying Elixir of Life

Water is one of the most popular tools for weight loss to come around in a long time, and for great reasons. Not only can you drink water to lose weight, but it tastes delicious when infused with natural flavors and helps flush your body of toxins.

Drinking water is one of the best things you can do for fast weight loss and better health, and when infused with the flavors of natural fruits like strawberries or watermelon, it tastes delicious. It has no calories and fills your stomach so you don't feel as hungry. Studies regarding water and weight loss have even shown that just drinking water raises your metabolism! [102]

When you're dehydrated, you can't function at your best and may be sluggish or have trouble concentrating – imagine what that's doing to your organs, your skin, and your brain!

When you're dehydrated, your body also can't flush out toxins or regulate itself as easily. By not flushing out these toxins, you will be more susceptible to sickness, disease, weight gain, and premature aging.

How much water do I need to drink?

The amount of water your body needs depends on age, weight, health, level of physical activity, medications, and also the weather.

Generally speaking, a healthy adult should drink 1.5-2 liters of water every day. This equates to 10-12 glasses of water per day.Refer to anti inflammatory food pyramid.

How can I supercharge the benefits of drinking water?

The benefits of drinking water can be multiplied by warming it up. Studies indicate that drinking warm water in the morning, usually with polyphenol-rich lemon immersion, is significantly more beneficial. It not only helps in training your gut, but also boosts your metabolism and improves blood circulation. This is helpful for not just flushing out the toxins that hamper our metabolisms, but optimizing the metabolism. A little hint of lemon in water makes it alkaline, too.

Oral Health: Window to Your Gut Health

Given the current knowledge we have on the bacteria that live in our mouth, it is fair to say that *your mouth is the gateway to total body wellness.*

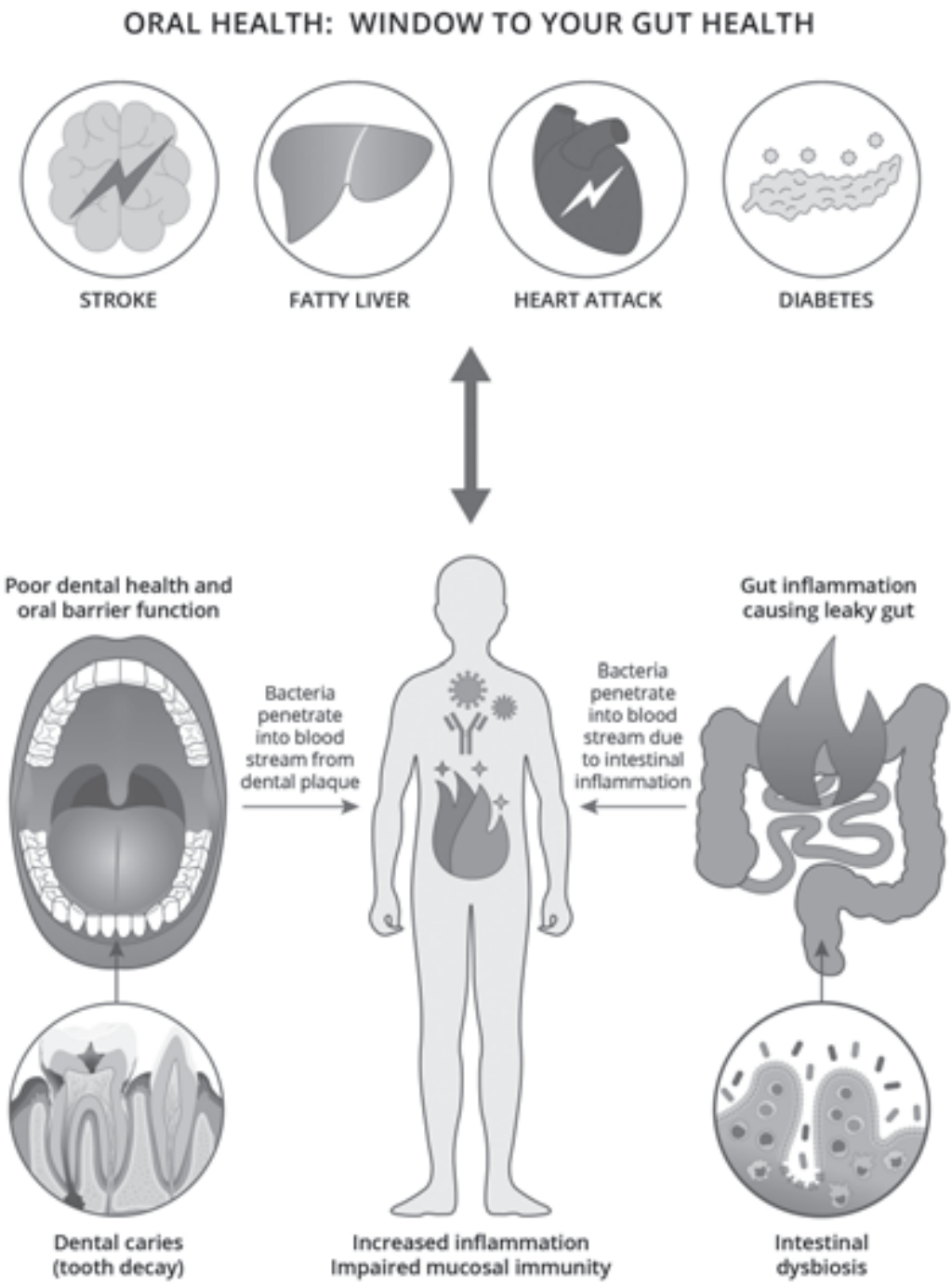
Thousands of studies have linked oral disease to disease elsewhere in the body. Inflammation – the well-known fuel for disease – has been linked to gum disease and other dental problems. In fact, advanced dental or gum disease can raise your risk of fatal heart attack, stroke, and diabetes by up to 10 times.

Studies point to inflammation that sets up in your mouth due to gum and dental disease, which then leads to an imbalanced flora of bugs in your mouth.

But how does the microflora in your mouth cause inflammation, you might ask?

When the bacteria that cause tooth decay and gum disease enter into your circulation system, it causes your liver to release C reactive proteins, which have inflammatory effects on the entire body.

There are some estimates that up to 80% of systemic disease has manifestations in the mouth – everything from blood problems, diabetes, and even certain types of cancers.[103]


ORAL HEALTH: WINDOW TO YOUR GUT HEALTH
STROKE
FATTY LIVER
HEART ATTACK
DIABETES
Poor dental health and oral barrier function
Bacteria penetrate into blood stream from dental plaque
Bacteria penetrate into blood stream due to intestinal inflammation
Gut inflammation causing leaky gut
Dental caries (tooth decay)
Increased inflammation Impaired mucosal immunity
Intestinal dysbiosis

The importance of your oral microbiota

Part and parcel of oral health is attending to the balance in your oral microbiota. Achieving oral health is really about promoting balance among the bacteria in your mouth. And contrary to popular belief, antimicrobial agents and alcohol mouthwashes designed to kill bacteria actually do far more harm than good.

The oral microbiota are responsible for not only protecting you from the deadly viruses and bacteria that enter the body, but are also responsible for initiation of digestion.

TIPS on Looking after your oral health

- *Attend regular check-ups and cleaning sessions with your dentist*
- *Do not use an alcohol-based mouthwash*
- *Practice regular flossing*
- *A healthy plant-based diet is the key to feeding your healthy oral microbiota*
- *Try to avoid fruits and vegetables laden with pesticides and preservatives*
- *Limit the use of fluoride-based toothpastes*

Summing Up

- **Your gut is like an internal garden that requires tending.**
- **Lifestyle stresses of the modern world take a toll on our digestion, which becomes a breeding ground for disease.**
- **Managing these stressors with a healthy diet, plenty of filtered water, and through practising mindfulness is key.**
- **Mindful eating involves eating without distractions, with gratitude, and in a manner that is enjoyable and nourishing for the body and soul.**
- **Consider detoxing once in 6 months under the supervision of a doctor without resorting to high-risk options (such as colonic hydrotherapy or irrigation).**
- **Use exercise, massage, and intermittent fasting as options for detoxing.**
- **You oral health is a window to total health – follow the dentist's advice and support your oral microbiome with nutritious, alkaline, plant-based foods.**

Chapter 9

SUPERCHARGING YOUR METABOLISM

"Look well into thyself; there is a source of strength which will always spring up if thou will always look."
-Marcus Aurelius

This final chapter of the book will allow us to tie all of the previously discussed concepts into a single package thereby empowering us to put theory into practice.

Tuning in to Gut Feelings

In our fast-paced world of "*busy-ness"* we have disconnected from our natural instincts. As Paula Tursi,well known Yoga teacher,describes in her work, "In adding the layers of civilisation, we have distanced ourselves from what our physical existence is trying to communicate to us." We have lost connection with the rhythm of life and with our own internal rhythms. Our bodies need movement to stay healthy, and movement is an essential part of gut health too.

EXERCISE TO ENERGISE

"If you cannot make time for exercise, then you will have to make time for illness" –Edward Stanley

Motion has the ability to elevate your emotion. We are surrounded by motion in nature, and our bodies were designed to move. Nothing fills the spirit and lowers stress hormones like a walk in the woods or by the seashore. Exercise helps us burn calories and also produces the "feel good" hormones that help prevent fatigue and depression. To maintain sound health and endurance, you must get into the habit of exercising daily to the point where you work up a sweat.

Motion and the Gut Microbiome

Staying active also promotes a healthier microbiome, helping your body process, break down, digest, and eliminate more efficiently – which all aids weight loss.

And it may also help torch belly fat by altering the kinds of bugs that live in our guts.

A 2013 study by the University College Cork, published in the journal *Gut,* examined the differences in the gut microbiota of athletic rugby players and a group of sedentary, overweight men.[104] The rugby players had far more diversity in their gut microbiomes than the men in the sedentary group, as well as a greater number of Akkermansiaceae, a bacterium linked with decreased risk for obesity and systemic inflammation.

What kind of exercise should you do?

For many, exercise means going to the gym and running on the treadmill or spending forty-five minutes on the elliptical. This can feel more like taking medicine than enjoyment.

When it comes to the choice of exercise, just like with your diet, variety is the key. It's important to vary your exercise routine in order to get the absolute best results, all while remaining committed to a daily routine.

Your muscles simply get used to the same activity and they require a level of muscle confusion if they are to continue to improve and grow stronger.

I've been exercising for over thirty years, but for much of that time I focused on running, walking, or other cardio exercise. While this is an important type of exercise, there are others that are equally if not more important – namely, strength training, developing your core muscles, and interval training.

Although I highly recommend finding a personal trainer to help you reach your fitness goals, if you cannot afford it or live in an area without access to one, you can still reap the benefits of exercise if you focus on varying your exercise routine.

Here are some good exercise choices to consider.

Aerobic exercise.

This strenuous exercise has a one-two punch. It can decrease cortisol and trigger a release of chemicals that relieve pain and improve mood. It can also help speed up your metabolism so that you burn off the extra indulgences. However, as we saw in Chapter 6, it's never a good idea, and certainly not in the long term, to use intense aerobic exercise to overcome guilt over binging on those indulgences. The reason is that such exercise will only influence up to 30% of your energy expenditure, while the remaining comes mostly from the resting metabolism called Basal Metabolic Rate (BMR).

HIIT.

High Intensity Interval Training (which is not suitable for all individuals) has significant benefits over other cardio type workouts, and is one of the best workouts for resetting your metabolism. As the name suggests, the principle is to exercise intensely in bursts of 90 seconds and then rest. This cycle is repeated 8-10 times based on your endurance.

This type of exercise can dramatically improve your cardiovascular fitness and fat-burning capabilities.

Save time with HIIT

Another major benefit of this approach is that it radically decreases the amount of time you spend exercising while giving you even more benefits. For example, intermittent sprinting produces high levels of chemical compounds called catecholamines, which allow more fat to be burned from within the exercising muscles. The resulting increase in fat oxidation increases weight loss. So, short bursts of activity done at a very high intensity can help you reach your optimal weight and level of fitness, and in a shorter amount of time.

Creating a Weight Loss HIIT

One significant benefit of high-intensity interval training is the increased production of human growth hormone [26], also known as the "fitness hormone". HGH is a synergistic, foundational, biochemical underpinning that promotes muscle and effectively burns excessive fat.

While this type of exercise is more successful at fat burning and weight management, it can also benefit your heart and lower your risk for certain chronic diseases like diabetes. The reason is that high-intensity interval workouts can help improve insulin sensitivity and glucose tolerance – two things that are crucial to optimal health.

HIIT benefits associated with interval training include:

- Reduced body fat
- Improved speed and athletic performance
- Improved muscle tone
- Younger-looking skin
- Increased energy

A Note on HIIT

It is important to know that HIIT type exercise is very strenuous for some individuals. It should not be done on a daily basis because your body needs more time to heal in between sessions.

It is a good idea to combine these exercises with some aerobic, strength training, and core exercises. Always listen to your body and adjust accordingly.

5 ways to SUPER CHARGE YOUR METABOLISM

1 Diet

- Nuts
- Seeds
- Beans
- Fruits
- Berries
- Green Tea

2 High Intensity Interval Training

Exercise as hard and fast as you can for 30 secs. Recover for 90 secs. Repeat this exercise and recovery cycle 7x. Choose any of the exercise mentioned below :

1. Standing mountain climbers
2. Pushups
3. Speed squats
4. 4 point plankers
5. Burpees
6. High plank punches
7. Sprints
8. Y-W-T holds

3 Mind Body exercises

Allows you to not only exercise the physical body, but also develop a connection your the higher self

1. Yoga
2. Pranayam
3. Taichi
4. Qigong

4 Green Space Time with Nature

Promotes emotional wellbeing. Enhances cognitive and motor skills. This includes activities such as:

- Walk
- Hiking
- Swimming
- Trekking
- Gardening

5 Reduce Sitting time

- Behind the wheel
- At the desk
- In front of a screen

It improves health and reduce risk of cancer and strokes

Core Exercises: Your body has 29 core muscles, these being located mostly in your back, abdomen, and pelvis. This group of muscles provides the foundation for movement throughout your entire body, and strengthening them can help protect and support your back, make your spine and body less prone to injury, and help you gain greater balance and stability.

Exercise programs like pilates and yoga are great for strengthening your core muscles, as are specific exercises you can learn from a personal trainer. I have been a student and practitioner of yoga for many years now, having experienced and witnessed many healthy benefits of this practice.

I was once asked, "What is the best exercise for weight loss?"

The answer really is: "The one that you will be willing to do regularly."

Do not think *exercise*… think *activity.*

The knowledge of different kinds of exercises will be useless unless it's put into practice on a consistent basis. Whatever you try, take your mind with you, such that you are seeking pleasure and meaning in your activity, which is what will make you persist.

The sitting disease

It has been proven that, independent of your individual health, the number of hours we sit in a chair – per day – is causing damage to our bodies. There have been several studies that have attested to this fact, to a point where medical experts have started referring to long periods of physical inactivity and its negative consequences as the "sitting disease."[105]

"If it were not for the fact that the TV set and the refrigerator are so far apart, some of us would not get any exercise at all." – Joe Adams

It is astonishing to know that, if we added the time we spend sitting – on our commute to and from work, at work, and upon returning from work, it averages out to 7.7 sitting hours per day!

Studies done by the American Cancer Society in 2010 revealed that men and women who sat for over 6 hours per day were up to 94% more likely to die prematurely than their counterparts who spent less than 3 hours of sitting time per day.[106] These findings were independent of physical activity levels, reflecting that even if you exercised, but sat for an extended period of time, you would still experience a high health risk.

So, here are a few tips you can easily practice to reduce your risk of medical problems arising from sitting for too long:

- Set a reminder
- Get up every 30 minutes
- While watching television, take a walk during commercials
- Do gentle stretches in between tasks

Yoga.

This ancient mind body exercise helps build balance in the body, develop resilience, and create a flow of positive energy that nurtures sound physical and mental health.

The word *yoga* literally means union – the union of the self with our higher self.

When it comes to building this mind-body and gut connection, the practice of yoga has a special place. In a world where are our senses are overwhelmed with the glitter and the glamour of the outside, the practice of yoga introduces us to listening and connecting with our inner self. This helps quiet the mind and release tension stored

in the gut and other places in the body, which can serve as trigger points for disease.

Breath Better to Feel Better

Breath control remains the main axel of any yogic exercise.

Your breath is a sign of life and the sole reason it is there is to nourish your soul.

Breath is nonmaterial, or, at least, it straddles the border between material and non-material reality. It has inherent movement and rhythm, and is the source of life and vitality. In many languages, the words for spirit and breath are the same:

in Sanskrit, *Prana*; in Greek, *penuma*; in Herbrew, *ruach*; in Latin, *spiritus*.

Conscious, relaxed breathing puts you in touch with your own body. This practice of deep, relaxed breathing allows you to listen to your own inner wisdom, such that we find the answers that are within ourselves.

"Breath is aligned to both body and mind, and it alone can bring them together."

Thich Nhat Hahn
Buddhist Monk and creator of Breathing Meditations

On a metabolic level, deep, relaxed, conscious breathing is the key to warming and waking up your metabolism – which, as we read earlier, is the key to achieving and maintaining a healthy weight. *Dr Robert Giller, MD.* wrote in his book *Maximun Metabolism* that breathing and metabolism are inseparable. And oxygen is the key that unlocks your metabolic rate.

"If oxygen were invented today, it would be a prescription item."

– Robert Fried, PhD., molecular biologist

When you breathe more oxygen into your body, several things happen to speed up your metabolism:

1. The heat in your body rises. This is because you are now providing more oxygen, the fuel for your body's engine – the metabolism. The more oxygen you get, the better the metabolism gets at burning calories. Thin people burn fat faster, and hence are said to have a higher *thermic rate...* akin to the metabolic rate.
2. Your body's ability to cleanse metabolic waste rises. Every day, your body burns through billions of cells. As many as 700 billion cells are replaced over a few days with new ones. The old cells, however, are toxic and must be removed from the system. Someone who is not getting enough oxygen into their system may have old cells and metabolic wastes loitering in the body, demanding large chunks of their energy. This energy could instead be used for processing food and taking off weight.
3. You stimulate blood flow in your circulation and also open up lymphatic channels. The lymphatic system can best be compared to a sewer or dump truck – when the garbage collection system doesn't work properly, it turns any beautiful city into a nightmare.

Deep breathing allows the lymph and blood to flow through the organs, thereby filtering away all the toxins and allowing a fresh supply of fuel – oxygen – for life.

Your breath can blow your kilos away!

Regular practice of yoga provides an opportunity to learn breath control through pranayama, the formal practice of controlling the breath.

Here's one exercise to practice which is called the Skull Shining Breathing Technique (Kapal Bhati Pranayama..Refer to Resources section for video link).

- Sit comfortably with your spine erect. Become aware of your breath – is it deep or shallow, smooth or choppy?
- Place both your hands on your knees,.
- Inhale deeply and slowly exhale
- Towards the end of the exhalation, pull your navel in back towards the spine. Go as far in as you comfortably can.
- Take 20 such breaths for one round of Kapal Bhati pranayama.
- After completing the round, keep your eyes closed and observe the sensations in your body.

PRACTICAL TIP:

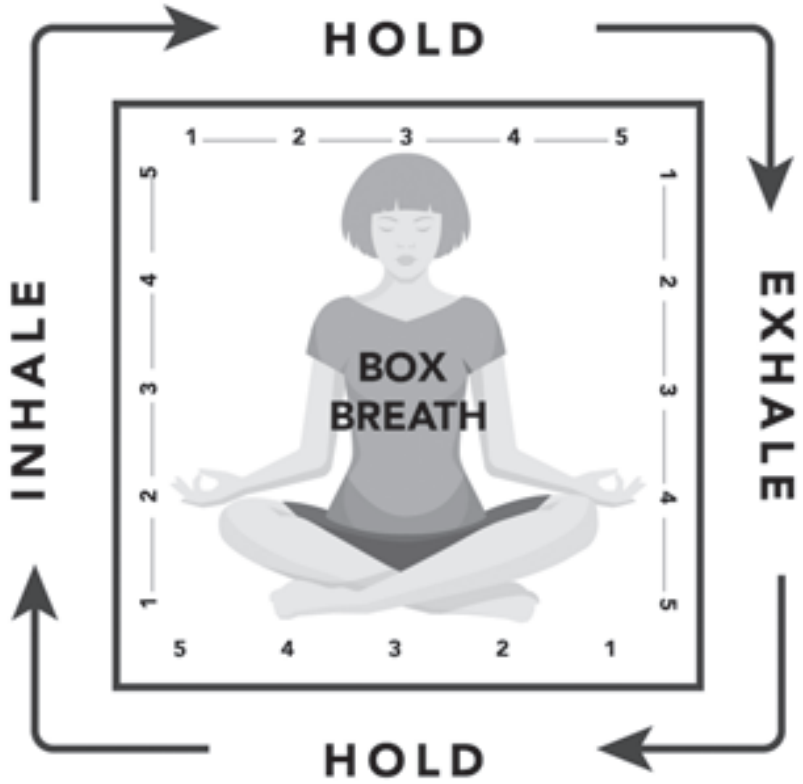
BOX BREATHING

A simpler way of practising mind-calming breath exercise is to follow a "box breathing" technique.

Box breathing is a powerful and yet simple relaxation technique that aims to return breathing to its normal rhythm. This breathing exercise also helps clear the mind, relax the body, and improve focus.

BOX BREATHING

5 X 5 X 5 X 5



Repeat minimum 5 times,
or longer as time allows

The box breathing method

Box breathing is a simple technique that a person can do anywhere, including at a work desk or in a cafe. Before starting, people should sit with their back supported in a comfortable chair and their feet on the floor or sitting in a crossed leg posture.

1. Close your eyes. Breathe in through your nose while counting to four slowly. Feel the air enter your lungs.
2. Hold your breath inside while counting slowly to five. Try not to clamp your mouth or nose shut. Simply avoid inhaling or exhaling for five seconds.
3. Begin to slowly exhale for five seconds.
4. Repeat steps 1 through 3 at least three times. Ideally, repeat the three steps for four minutes, or until calm returns.

If you find the technique challenging to begin with, then try counting to four instead of five. Once comfortable, you may choose to count to six or seven and also play with the inhale and exhale hold durations.

FIND REWARDING ACTIVITIES UNRELATED TO FOOD

Set aside your to-do list and take a weekend excursion out of town, read a great book, go to a yoga class, get a massage, pet your dog, or make time for friends and family – all will relieve stress without adding on the pounds.

Remind yourself that, when refreshed, we all think more clearly and feel more upbeat, making us less likely to overeat.

WRITE IN A JOURNAL

If you don't own a journal, get one.

Simply writing down your thoughts and feelings allows you to understand them more clearly. For some people, journaling can be a type of therapy which provides them with mental and emotional clarity, and helps them achieve deeper understanding of their self.

Keeping a journal has many advantages.

- Writing strengthens your self-discipline. And as they say, discipline begets discipline. Like a muscle, the more you exercise it, the stronger it becomes.
- Writing gives insight into why you're feeling so stressed, thus helping you better control it.
- Writing down your healthy eating and exercise goals makes you more conscious of the need to live a healthier lifestyle and intensifies your commitment.
- Writing expressively about life goals helps improve both mood and health.
- Most importantly, writing gives you clarity on the bigger picture – where you're heading.

GET ENOUGH GOOD-QUALITY SLEEP

"Sleep is the golden chain that ties health and our bodies together."

– Thomas Dekker

Sleep is essential for good health. A healthy adult should have at least six to seven hours of good quality sleep each night, and preferably eight. Sleeping fewer hours than you need may increase your risk for a number of diseases, including heart disease, diabetes, and depression. Furthermore, inadequate sleep lowers your metabolic rate and increases your dependence on stimulants like caffeine and nicotine, besides increasing your likelihood of weight gain.

Sleep rhythm is equally important. Being able to go to bed and wake up at a consistent time is crucial for our body to function optimally. Studies have found that jet lag upsets the microbiome. Researchers in Israel have also shown that the bacteria inhabiting the digestive tract are vulnerable to circadian rhythm alterations.[107] And when the gut microbiome is disrupted, glucose intolerance and obesity result, as well, as do other maladies.

Additionally, a review of multiple studies published in the *University of Toronto Medical Journal* found evidence that artificial lights, computer screens, irregular sleep schedules, and shift work all contribute to a perturbed diet and circadian rhythm, and, in turn, a sick gut community.

LISTEN TO YOUR GUT

Information Technology professionals use a term known as *GIGO* – Garbage in, Garbage out. The converse is also true: Good in, Good out. And that includes what we are putting into our minds.

While a healthy diet is crucial in maintaining a healthy body, the kind of information we are putting into our minds hugely influences our thought processes, and hence our mindsets.

"Be careful with what you feed your mind, for what you're putting in your mind is shaping your future." – Jim Rohn

All health – and for that matter anything we can touch, feel, or experience – begins in the mind. If you have belief and confidence in yourself, backed by action, you will be convinced that sound health is possible. This mindset will raise your mental and physical energy, and positively influence ANY area of your life.

If you have a poor mindset, sooner or later, the problems of a diseased mind will start to emerge and you will be less likely to do what is needed for your health and to manage your weight.

To improve your mindset and achieve greater health and energy, follow the following FIVE practices which we've discussed earlier in this chapter. Please note that each and every of the practice we have discussed is influencing, either positively or negatively, your gut microbiota, which are in a constant state of dynamic interaction with your genes and your neural chemistry (mindset).

Let's get started.

STEP ONE: Meditate: Start with a 10-15 minutes of meditation first thing in the morning in a quiet room. Focus by becoming mindful of your breath throughout the meditation. Once you get into the habit, you'll find yourself using this technique throughout the day and becoming more aware of your thoughts, helping you make better choices.

STEP TWO: Breathe: Use your breath to create inner peace. Breathing allows you to ground yourself in the current moment. It is not only a source of life and energy, but also detoxifies us of negative energy. Refer to the breathing exercise above.

STEP THREE: **Listen to and trust your inner voice:** With patience and persistence, you will develop a clearer connection with your unique, authentic self. When you do, you will achieve inner peace, and thus happiness and fulfilment. Writing in a journal will help to evoke this inner emotional intelligence.

STEP FOUR: **Find your center in stressful situations**: ***Respond vs. React***

To respond is to pause and to recognise the gap before you provide a reply to any situation, whereas to react is when we fail to recognise the gap. This gap is very brief, depending on the urge, but it is always recognisable.

With practice, you will learn to *MIND THE GAP* – a great exercise in developing awareness to respond. Ultimately, we are in control of whether we *respond or react* to a particular situation. When you feel that urge to react, and know that your actions will not serve you, recognise that there is a gap in time between choosing to react or respond. Taking control of this gap, even though it may only be a fraction of a second, gives you the power of choice. Take a deep breath, pause, and always choose to respond rather than react. This exercise is indeed very powerful in reducing collateral damage (both to oneself and others) that otherwise occurs when you react rather than respond. Going for the chocolate in a stressful situation might be an easy reaction; however, if you *mind the gap*, you can turn the reaction into a response and go for some fruit instead.

Practice, practice, practice.

STEP FIVE: Practice acceptance and gratitude: Both these qualities are intimately interlinked and help you to learn to accept what you are experiencing and feel grateful for what you already have. They are a profound means to helping you achieve greater good – be it in health, wealth, or meaningful relationships.

Microbiome with Meaning

Scientific studies have proven that individuals who live with a deep sense of meaning or life purpose – which they see as something bigger than themselves – have a healthier genetic expression, hence better physical and mental health.[108] While people who lacked such meaning had immune systems that were progressively deteriorating, thus producing inflammation in the body. In our society today, inflammation is the main risk factor for a variety of chronic diseases, including obesity.

The world of modern medicine is truly in a state of paradox where, on one hand, we have vastly increased life expectancy and significantly

extended the quality of life for people as they age. On the other hand, we are facing an ever mounting avalanche of allergies, cardio vascular conditions, cancers, and obesity.

Sadly, the human race today is the heaviest it has been in history known to mankind while we deal with such a large variety of diets available to us. This only goes to prove that none of these diets will work unless we understand what is at the core of this epidemic.

In my opinion, imbalance in the gut microbiome is the key driver of all the chronic diseases that we are seeing in our society, including cancers, diabetes, and obesity. Just as the destruction of rain forests, climate change, oil spills, and melting snow caps threaten the outer ecology of our planet, so also does the loss of diversity and imbalance in our own microbiome threaten our inner ecology.

So, as you begin to implement concepts from the Happy Gut - Healthy Weight program, I would like to invite you to rekindle your own search for meaning. The food we eat, the air we breathe, and the water we drink is so intimately connected to the world we live in.

This food you put in your mouth was only possible because of the labor put in to grow, harvest, package, and transport it to you. When we eat with a sense of gratitude and appreciation, we digest better, heal faster, and reset our metabolism, which primes us for health rather than disease.

Ultimately, the interplay between our genome (Good genes vs. Bad genes), our microbiome (Balanced vs. Imbalanced), and the neurobiome (mental state – relaxed vs. stressed) makes up the determinant of our biological destiny.

While we humans are not subjected to the experiments we subject animals to in a laboratory, we do in a very real way live in this huge laboratory called *life*.

So, here's to your health and wellness as you unlock the doors to your best self and also tap into the power of your gut microbiome – taking inspiration from the concepts in this book.

Dr. Arun Dhir, FRCS, FRACS, MD.

SUMMING UP

Follow these strategies to switch the "stress response" into a "relaxation response."

- **EATING WITH A POSITIVE IMPACT**

-Enjoy the family meal

-Sleep and eat on regular schedules

-Invoke gratitude and appreciation by saying grace or gratitude before you start a meal.

-Eat mindfully by staying present and connected while you are eating, and by experiencing and savoring the taste, smells, and texture of the food that you are eating – *not* texting on your phone.

-Have no technology or distractions on the table.

-Chew slowly.

-Respect your body and what it's experiencing by eating only when you are hungry.

-Recognize Fullness.

-Honor your health by eating food that makes you feel your best.

-Breathe deeply three times before you take the first bite of food.

- **MEDITATE**

Mindfulness-based meditation helps you calm the "chitter chatter" of the mind that constantly goes on in the background.

- **EXERCISE**

Exercise helps us burn calories and also produces the "feel good" hormones that help prevent fatigue and depression.

Exercise: the best exercise is the type that you will do regularly. Bring in a variety and exercise with an "accountability" partner when possible in order to build a routine.

Yoga and Focussed breathing: Activities that not only build physical endurance but also allow promote the mind-body-soul connection – such as yoga or gentle deep breathing – allow you to focus your attention towards your inner self and truly feel energised. After all, energy flows where attention goes.

- **Write a daily journal**
- **Ensure you get enough good-quality sleep**
- **Listen to and trust your inner voice**
- **Practice acceptance and gratitude**

APPENDIX A

A SAMPLE HAPPY GUT ROUTINE

"We first make our habits, and then our habits make us." – John Dryden

Routines or rituals are what define us. What we repeatedly do will soon become our known, such that the body does it without even thinking. It is crucial to develop a routine that is conducive to taking us where we want to be.

Below is a sample routine to help you consider a plan that will not only keep you fresh and energised all day, but will also address the issues related to poorly functioning metabolism causing weight issues. It is simple, inexpensive, and only requires a fraction of your time to prepare.

Upon Awakening:

Drink a glass of water with squeezed lemon or Apple Cider Vinegar (two spoons), or Green Tea with some lemon.

Benefits: Hydrates the body and gets your bowels cleared

Breakfast:

Smoothie (See the recipe below for a Gut Reset Smoothie)

(1/2 hour later) Cereal: raw oats with strawberries and ½ cup kombucha

Mid-Morning:

Kefir-based drink with gluten-free bread or carrot sticks with hummus

Lunch:

Large salad with a variety of veggies – "rainbow salad," raw fermented sauerkraut, and a choice of healthy dressing with a few tablespoons of flax oil

Mid-afternoon snack:

Raw, unpasteurized yogurt with fresh blueberries and walnuts

Dinner:

Organic pumpkin soup with coconut oil, steamed broccoli, and a cup of quinoa with mushrooms. Green salad with fermented sauerkraut. Side dish of kimchi.

After-Dinner

Cup of kombucha or kefir.

Recipe: Gut Reset Smoothie

If you're like me, then I am sure you like to get up early and go through a morning routine before work. I believe that waking before sunrise and not eating after sunset has been the secret of longevity and sound health for thousands of years. While this principle requires some commitment (and may even seem impossible to many at the start), turning this action into habit and then a ritual will become easier when you begin with small steps and start to see the benefits.

Out of all the elements in my morning ritual, the "Gut Reset" smoothie (as I like to call it) is the shining star.

Start your day the right way.

Smoothies are a great way to start the day, as they sneak greens and other healing foods into our systems without us having to take them all in separately. There's no denying that eating greens on their own can be boring, bland, and maybe even make you feel like a cow in green pasture.

Starting your day with a liquid meal is also a good way to avoid bloating and that "food coma" feeling. Smoothies require less energy to digest them when compared to a heavier meal, and will leave you feeling lighter and more energetic throughout your day.

Besides, there's no better feeling than getting in several servings of leafy greens before 9 a.m., even if your day devolves into an orgy of chocolate chip cookies and french fries… You can be safe in knowing that whatever direction your day heads in, you've still filled yourself with all that great fiber, vitamins, minerals, and phytonutrients.

This smoothie has staying power.

In the past, I've changed my smoothie recipes pretty frequently, but this one seems to be sticking around. I've found myself making it four or five times a week for the past couple of months, and I think

it's a perfect staple for a morning kicker. I often use a Nutribullet to create this smoothie, but any blender will do.

Here are the ingredients:

- ½ - 1 banana, chopped
- 500mls coconut water or almond milk
- 20 spinach leaves (approx.), washed
- 5-7 blueberries and strawberries (each)
- 2-3 pieces of medium-size beetroot, cut up
- 5 walnut kernels
- 5 almonds
- 1 tbs chia seeds
- ¼ tsp turmeric/broccoli sprouts powder (by Enduracall)
- Two scoops of plant-based protein powder (I use pea-based powder with vanilla flavoring)

Spinach has anti-inflammatory properties, as it contains omega-3 fatty acids, including alpha-linolenic acid. It is also high in B group vitamins and Vitamin E. Amongst its many health benefits, spinach can boost eye health and has strong anti-ageing properties.

Walnuts and Almonds

Walnuts are the richest source of anti-inflammatory omega-3 fatty acids among nuts. They are also thought to inhibit the production of certain chemicals that increase pain and inflammation. **Almonds** are rich in Vitamin E (powerful antioxidant) and contains high amounts of unsaturated fats that reduce inflammation and assist in keeping joints lubricated. Both walnuts and almonds are rich in dietary fiber.

Blueberries and Strawberries are rich in antioxidants called anthocyanins, which protect against inflammatory conditions such as arthritis. These anthocyanins give them their vibrant colors. They are also fiber-rich, which is crucial for healthy digestive function.

Beetroot helps to promote regularity for a healthy digestive tract due to its high fiber content. Beetroot also contains choline, a very important nutrient that helps with sleep, muscle movement, learning, and memory, and reduces chronic inflammation.

Give yourself a powerful start to the day!

Morning rituals are powerful in themselves, and this Gut Reset Smoothie is a simple and uncomplicated way to start your day off with a positive boost for your microbiome. The best part about this recipe is its simple nature, using ingredients you can find and acquire easily. I hope you can see how incorporating this powerhouse of health can benefit your well-being in many different ways.Refer to resource section for more smoothie ideas.

APPENDIX B

GUT MICROBIOME AND WEIGHT LOSS SURGERY

When your BMI exceeds 35 and you are experiencing medical complications such as diabetes, associated with being overweight – in this case called Morbid Obesity – weight loss surgery may need to be considered.Several studies have attested to the efficacy of weight loss surgery as the most powerful and durable option of long term weight loss,acknowledging that surgery is a riskier option too.[109]

Situations where weight loss surgery may be considered:

- When BMI is more than 40 or the person is more than 45 kilos overweight
- BMI of more than 35 with obesity-related conditions such as:
  - Type 2 Diabetes
  - Sleep Apnea
  - Fatty Liver Disease
  - Hypertension

    - Severe arthritis that limits ability to exercise
- Previous failed attempts at weight loss

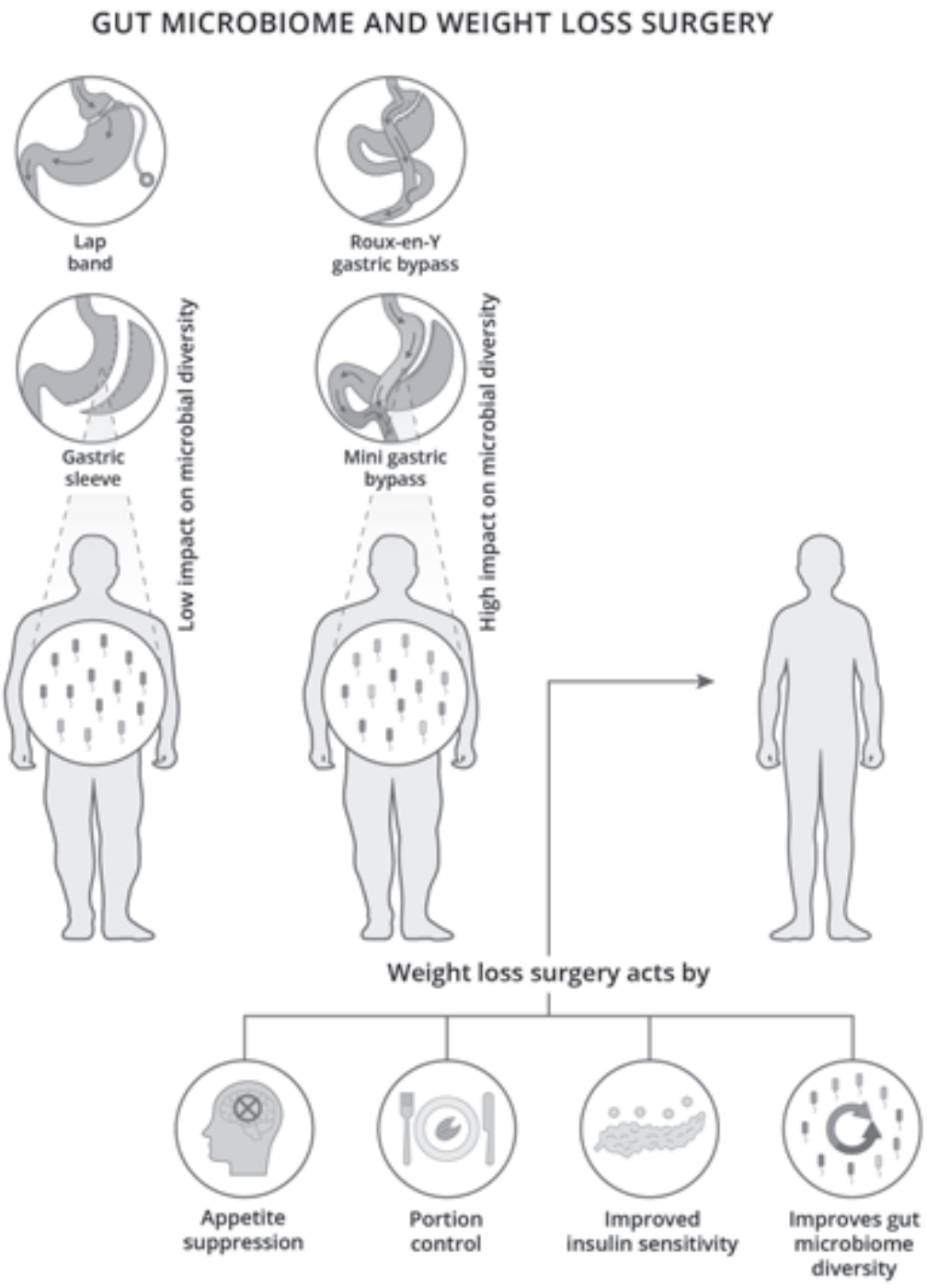
Bariatric or weight loss surgery comes in a few different forms – there is the gastric banding, the gastric sleeve, and also the gastric bypass, which is not only powerful, but has significant effects on the metabolism.

Each bariatric surgery procedure not only restructures the topology of the human gut, but also brings about profound physiological changes, creating a completely new environment.

The exact mechanism of how weight loss surgery brings about its beneficial effect is not clear; however, there is most certainly a combination of the following three mechanisms:

- The reduced size of the new stomach translates into reduced portion sizes of food
- Change in the hormones that regulate appetite (Ghrelin, Leptin)
- Increased insulin sensitivity due to an increase in GLP1 and PYY

Over and above these three reasons, researchers have found that weight loss surgery not only causes significant changes in the hormonal physiology of the gut, but also – surprise surprise – *changes the composition of the gut bacteria!*[110]


GUT MICROBIOME AND WEIGHT LOSS SURGERY
Lap band
Roux-en-Y gastric bypass
Gastric sleeve
Mini gastric bypass
Low impact on microbial diversity
High impact on microbial diversity
Weight loss surgery acts by
Appetite suppression
Portion control
Improved insulin sensitivity
Improves gut microbiome diversity

Put simply, different weight loss surgery procedures impact your gut's bacterial diversity differently.

In an article published in the *Journal of the National Academy of Sciences*, researchers at the University of Arizona studied several individuals who had undergone a Roux en Y Gastric bypass – one of the most intense kinds of weight loss surgical procedures performed today.[111] They found that the gastric bypass surgery was associated with qualitative and quantitative changes in the gut microbiota, observing an increase in the Bacteroides group three months after surgery with a greater amount of bacterial diversity. What is difficult to answer is whether the change in the microbiome is a cause or an effect of the beneficial changes seen after weight loss surgery – significant weight loss and improvement in Type 2 Diabetes.

Allowing for the differences in mechanism of restrictive (band and sleeve) and malabsorptive (bypass) type weight loss procedures,research is beginning to point out that the durability of results from weight loss surgery can be prolonged by incorporating a diet that allows greater diversity of the microbiome. Taking probiotics and fermented foods will improve the amount of weight loss and also your ability to keep it off after surgery. Although early,but there are an increasingly large number of well-controlled studies that suggest the potential benefits of probiotics in weight control and diabetes management. This area of medicine, termed *Pharmacobiotics*, involves targeted administration of live probiotic cultures – either directly or as adjuvants – and is a rapidly advancing area of medicine that can shift our current understanding of managing chronic diseases including obesity.

APPENDIX C

THE GUT REGEN PROGRAMME : THE WINNING FORMULA FOR CREATING A NEW YOU

THE GUT RE GEN PROGRAMME – *An Outline*

The Gut ReGen (*ReGenerate*) programme has been designed to assist your body so you can be at your healthiest and fittest.You would be able to lose the bloat,drop the weight, feel energetic and eliminate brain fog.The programme will not only help restore the balance of the microbial flora in your gut,it will also help restore and repair gut activity,thus helping deliver significant benefits to your overall health.

It does not matter,whether you're considering weight loss surgery or not,as this programme really focuses on recalibrating the metabolism from that of an overweight individual to one of a healthy mind in a healthy body.

The Gut ReGen Programme is delivered in a safe, sensitive and practical manner by qualified practitioners of natural and Western medicine. It will generally run over a period of twelve weeks,however there are certain components of the programme such as stress management,clinical testing and nutritional support,which may need to be tailored to individual needs.

4 PILLARS OF
GUT RENGEN PROGRAMME

STEP 1

STRESS MANAGEMENT & GOAL SETTING

- Builds psychological strength - a vital force in healing
- Balances the immune system - 90% of which resides in the gut
- Goal setting and mindfulness based meditation form the basis of this step.

STEP 2

GUT DETOX, DIET & SUPPLEMENTS

- Creates a healthy gut lining helping it to heal and function better
- Help the body get rid of collected toxins
- Help neutralize free radicals that can cause persistent damage

STEP 3

EXERCISE & BREATH CONTROL

- Gut directed exercises assist in recalibrating ones metabolism
- Scientifically proven technique of focused breathing allow restoring optimal gut function

STEP 4

BALANCING GUT MICROBIOME

- A healthy, well balanced Gut Microbiome is crucial for a healthy metabolism and immune system
- This is achieved through multiple dietary and nutritional interventions

Pre Programme Check In:

- Pre Programme Questionnaire and Goals Sheet (This is a reference to compare with a post programme questionnaire).
- Clinical assessment
- Investigations
    - Bloods
    - Body measurements (height,weight,waist etc)
    - Endoscopy
    - Functional assessments (Stool,Blood,Urine,saliva)

STEP 1:STRESS MANAGEMENT AND GOAL SETTING:

Stress Management

Ultimately,The GUT is a part of your being- you cannot expect to have great GUT health with a poor mindset.We have known for centuries that people with high levels of stress are at a higher risk of developing ulcers in the stomach. As we have seen in the chapter on gut brain connection, there exists multiple channels of communication between the gut and are nervous system.The aim of this step is to be able to develop strategies to help you feel calmer,relaxed,more positive and in control of your situation.Stress does not discriminate on age or gender with both men and women feeling the effects of stress at sometime or the other.Also,what is stressful for one person may not be for another,as everybody reacts to stress in different ways.In fact stress can be so ingrained in your daily life that it may feel "normal".Nevertheless it is important not to underestimate the impact stress may have on your physical and mental wellbeing.Taking the action steps mentioned below,will help you identify the "Stressors" in your life and how comfort "drug" seeking is affecting your health.Please note that I include -food,alcohol and cigarettes, in the category of "comfort" drugs.

Goals Setting

Human beings are "teleological" organisms - that is a fancy word to say that we are all goal seeking beings.When we have clear,defined,measurable and time bound goals,we feel at ease. It gives us direction and purpose that brings that sense of ease..and rather curiously takes the stress of unknown away.

Setting clear and precise Goals allows you to develop ***Belief*** in your ability to bring about a positive change.This needs to be backed by appropriate ***Action.***Appropriate action leads to ***Results*** which will help develop ***Confidence***.This heightened level of confidence leads to a stronger **Belief** in yourself -which can significantly help overcome food cravings and emotional eating habits.You can see how these work in synchrony such that one step feeds the other.These principles can be applied to almost any area of one's life - health,wealth or relationships.


THE BELIEF &
SUCCESS CYCLE
(Its a self fulfilling prophecy)
BELIEF
The amount of belief you have determines the amount of potential you can tap into
CONFIDENCE
The amount of confidence you tap into determines the amount of action you take
ACTION
The amount of action you take determines the results you get
RESULTS
The results you get determines the belief in yourself

LISTENING TO YOUR GUT

The following FIVE practices have the potential to RADICALLY transform your **Mindset** and help you achieve greater health and energy,through sensible and sustainable changes.

- Practicing Mindfulness based meditation
- Practicing Mindful eating
- Focussed Breath control exercises
- Learning to Listen and Trust your inner voice
- Learning to find your centre in Stressful situations: Respond vs React
- Practicing acceptance and gratitude

STEP 2:GUT DETOX, HEALING AND NUTRITIONAL SUPPORT

"LET FOOD BE THY MEDICINE AND THY MEDICINE BE THY FOOD" - Hippocrates,Father of Modern Medicine

Restoring GUT health and the "balance" of the Bacterial flora that resides within the Gut will ultimately depends on what we are putting into our GUT.Guided by the assessments made in the above sections,a Gut Wellness Diet is recommended which has allowances made for specific nutritional supplements,Pro and Prebiotics.

Broadly speaking the four components of the Gut Wellness Diet are the **"Four R's",**as below:

- **Remove or Cleanse**:

Removing harmful substances and organisms (such as parasites,yeasts or unfriendly bacteria) is the key step to initiate healing.This also includes foods that may be causing inflammation.

- **Replace:**

Now that the gut has reduced inflammation after Phase 1,the next step is to support gut function and the key here is to replace the digestive enzymes

- **Re inoculate:** Provide high quality foods –called Prebiotics- that allow the "good" bacteria to thrive.This also involves probiotics and fermented foods- a rich source of naturally occuring friendly bacteria - not necessarily that are found in sweetened yogurts found in the supermarkets.Fermented foods like kefir are easy to make and can provide an ongoing source of healthy gut bacteria.
- **Repair**:Provide ongoing support to the GUT lining to repair itself,such that optimal digestive and immune balance is maintained

STEP 3: EXERCISE AND BREATH CONTROL

This step deals with exercise and movement that are a must for our physical AND mental fitness.Exercise not only helps us burn calories but also produces the "feel good" hormones that will keep us from feeling fatigued and depressed.

Many exercises of yoga and breathing can help not only detoxify our gut, but also helps in improving digestive function besides stimulating blood flow. The ***sun salutation pose (Surya Namaskar)*** in specific stimulates the vagus nerve that allows optimal digestive function including regulating bowel movements.

STEP 4: BALANCING THE GUT MICROBIOME

Balancing the gut microbiota begins with conducting diagnostic tests initially based on the individual's symptoms. The aim of these tests is to ascertain any functional or structural abnormalities with

gut function and also any dietary allergies, that could explain for the symptoms.

Based on the results of these assessments, the following strategies are applied to balance the individual's gut microbiota:

- Prebiotics
- Fermented foods
- Probiotics
- Exclusion of dietary allergens
- Nutritional supplements and enzymes
- Antibiotics and antifungals where indicated

The Gut ReGen programme brings an integrative approach to recalibrate an individual's gut health,however there are certain situations that will need longer,more persistent treatment and even so, may only respond partially or incompletely to the interventions.We acknowledge this and appraise our clients of these limitations,without providing any false hopes or guarantees of "miracle cures".

APPENDIX D

PORTION SIZE, SERVING SIZE, AND READING FOOD LABELS

There appears to be a lot of confusion surrounding portion size and serving size. These are terms that are often used in diet and weight loss books, and which often lead to confusion. I felt it was crucial that this topic deserved specific mention in a book of this nature that has an emphasis on weight loss.

A serving size is a set amount stated in *Dietary Guidelines (European or American)*, and this doesn't change. However, your 'portion size' will depend on how hungry you are and what type of meal or snack you are eating. For example, your 'portion size' may be two slices of bread in a sandwich for lunch, but only a ½ slice of bread with a meal when you aren't very hungry.

The serving size is often not the same as your portion size. Portion size is the amount that you actually eat. For example, your 'portion

sizes' at breakfast may be made up of half of a small tub of yogurt on your ½ cup muesli. This would only be half of a serving of yogurt, but two servings of muesli.

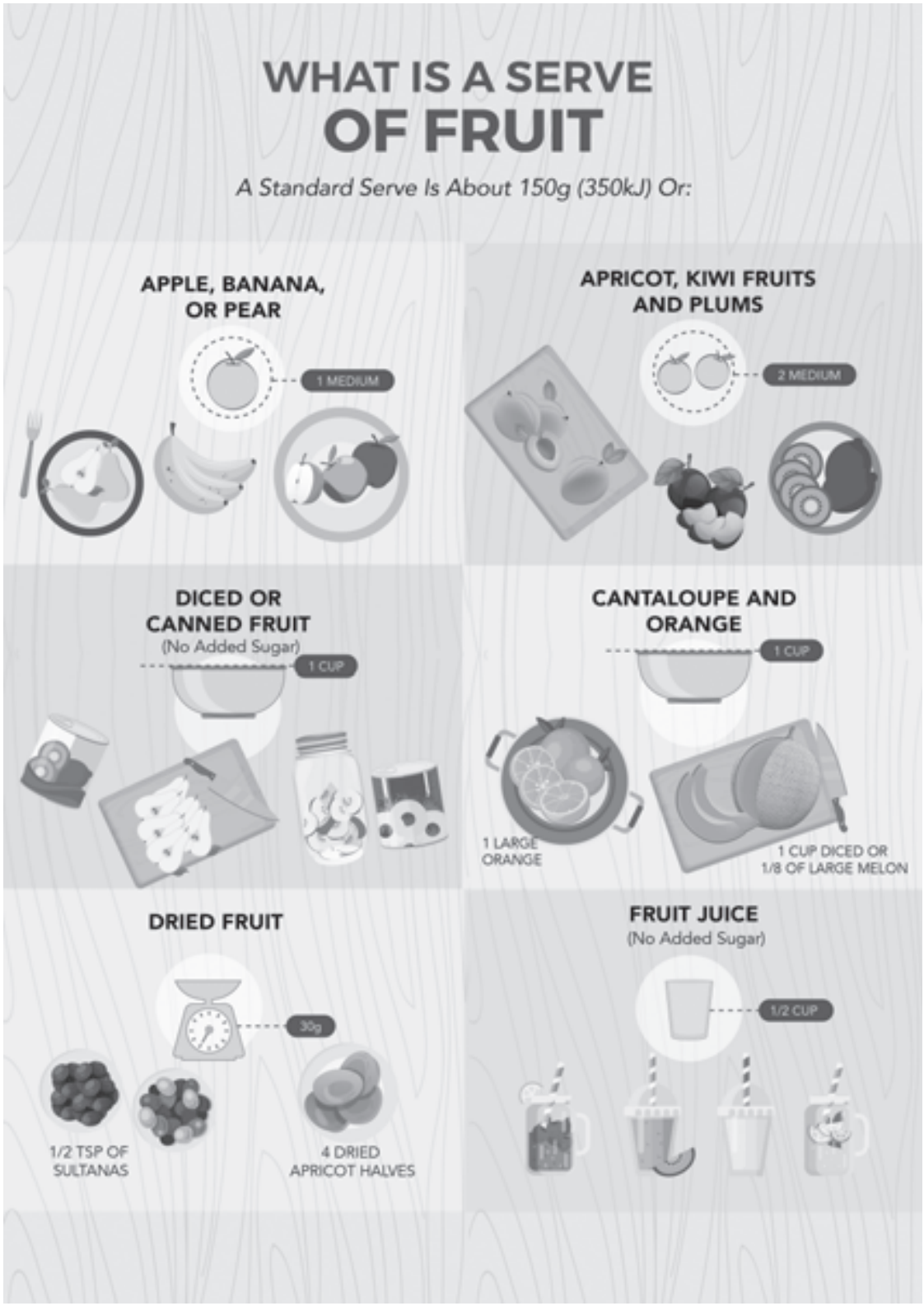
Getting portion size right

It is important for weight control, and essential for weight loss, that you think about your portion size. We tend to ignore our bodies' signals of hunger and satiety (satisfaction) until we've eaten too much and are over-full.

Many people say they rarely feel hungry. Learn to recognise how it feels to be 'peckish', 'hungry', 'ravenous', or 'satisfied', as well as 'full' and 'stuffed'. Perhaps imagine your stomach as a petrol tank with a gauge and aim for somewhere between quarter and half-full. When you eat, think first about how much you really need to feel satisfied and how far away the next meal or snack is.

What is a serving of vegetables?

What is a serve of fruit?



READING FOOD LABELS

Going to the supermarket can become a real challenge *when you're trying to lose weight or simply looking for healthy food*. Shelves are packed with lots of options, each stating that they're the best… but, *how do we choose the food products which best suit our needs?* Here are some tips that will help you make wiser decisions in your grocery shopping.

What are Food Nutrition Labels?

Food labels are the panels found on a package of food, which contain a variety of information about the nutritional content inside a package of food**.** By law, all food manufacturers are required to provide them, and they can help us to:

- Compare food products more easily.
- Find out the nutritional value of the foods we usually consume.
- Better manage our special dietary needs (e.g. low sodium, low-carb, or low-sugar diets).
- Increase or decrease our intake of a particular nutrient (for example, increase fiber, decrease saturated fat).

Decoding Food Labels

Understanding how to decode food labels enables you to compare, relatively easily, different packaged foods in terms of their nutritional quality. It will also allow you to read and understand the nutrition information found on a particular food item.

Here are the 5 very easy steps offered by the American Heart Association that will help you understand the information found in your food labels:

- **Check the serving size**

This will tell you the **size of a single serving and the total number of servings per container** (package). A good idea is to compare the serving size on the package to the amount that you eat. If you eat the serving size shown on the **"Nutrition Facts Label,"** you will get the number of calories and nutrients that are listed.

- **Check out the calories**

Calories tell you how much **energy you get from one serving of a packaged food**. You should pay attention to the calories per serving and how many servings you're really consuming if you eat the whole package. If you double the servings you eat, you double the calories and nutrients.

- **Check the Percent Daily Recommended Allowance (% RDA)**

The % RDA tells you the **percentage of each nutrient per serving, based on the daily recommended amount**. It can help you determine if a food is high or low in a nutrient: 5% or less is low, 20% or more is high.

The %RDA is very useful when you want to consume less of a nutrient (such as saturated fat or sodium), or if you want to consume more of a nutrient (such as fiber). And it can also be used to make dietary trade-offs with other foods throughout the day.

- **Avoid as much of the following nutrients as possible**

- ***Saturated fats or trans fat***s:

  Saturated fats are linked to an increased risk of heart disease and high blood cholesterol, so it is especially important to choose foods low in saturated fat.

- ***Sugars***

    - You can get an idea of whether a food is high in added sugars by looking at the ingredients list. Added sugars must be included in the ingredients list, which always starts with the biggest ingredient. This means that if you see sugar near the top of the list, you know the food is likely to be high in added sugars.
    - Watch out for other words that are used to describe added sugars, such as sucrose, glucose, fructose, maltose, hydrolysed starch, and invert sugar, corn syrup, and honey.

- ***Sodium***

    This tells you how much salt the product contains. Eating too much salt is linked to high blood pressure and can lead to heart disease, strokes, and kidney disease.

    Salt is also added to many foods discretely, as a flavor enhancer or as a preservative. Some examples of such foods are bread, bacon, cheese, and pickles.

- **Get more of these nutrients**

These are the nutrients most of us don't get enough of, and which **can improve your health and help reduce the risk of weight gain and certain chronic diseases.**

- Calcium
- Dietary fiber
- Vitamin A
- Vitamin C

Some additional (and useful) facts

- Food labels are based on a 2,000-calories diet a day. We may need to consume less or more than that depending on our age, gender, activity level, and whether we're trying to lose, gain, or maintain our weight.
- Many food packages contain more than one serving, so if you're eating the whole package, you should multiply the information by the number of servings contained in it.
- Being familiar with %RDA (Required Daily Allowance) can help you to compare foods and decide which is the better choice for you. Be sure to check for the particular nutrients you want more of or less of.
- Sometimes packaged foods are rated at between ½ and 5 stars by local food regulatory bodies. The rating is calculated according to ingredients that increase the risk of obesity and contribute to other chronic diseases. The more stars, the healthier the product.

If you are still unsure of which foods are best for you, get professional advice according to your dietary needs.

APPENDIX E

OUR ENVIRONMENTAL TOXINS AND DISEASE

The following is a list of the most troublesome environmental toxins:

- **BPA (Bisphenol A)**

BPA is a major endocrine disruptor. Endocrine disruptors usually mimic estrogen and are a major cause of cancer. They are found in many everyday products we use, including:

- some plastic bottles and containers;
- food can liners;
- detergents;
- flame retardants;
- toys;
- cosmetics; and
- pesticides.

BPA is a compound that is widely used in the manufacturing of polycarbonate plastics and epoxy resins that are used in food and drink packaging, water and baby bottles, metal can linings, bottle tops, and water supply pipes.

BPA exposure occurs when the chemical leaches out from the product into food and water, especially when plastic containers are washed, heated, or stressed. The highest estimated daily intakes of BPA occur in infants and children.

Over 90 percent of people living in industrialized nations have detectable amounts of BPA in their bodies. Even low-dose exposure to BPA may produce a wide variety of physiological problems, including:

- obesity;
- infertility;
- aggressive behavior;
- early onset of puberty;
- hormone-dependent cancers such as prostate and breast cancer; and
- lower testosterone levels and sperm production.

To reduce exposure to BPA:

- Minimize use of plastic containers with a #7 or #3 on the bottom.
- Don't microwave plastic food containers, and don't wash them in the dishwasher or with harsh detergents.
- Reduce use of canned foods and eat mostly fresh or frozen foods.
- When possible, opt for glass, porcelain, or stainless steel cups, containers, water bottles, and travel mugs.
- Use baby bottles that are BPA-free (or, better yet, use glass bottles) and look for toys labeled BPA-free.

- **Dioxins**

Dioxins are byproducts of incineration and combustion. Chlorinated hydrocarbons, especially dioxins, are everywhere. However, over 90 percent of them are found in dairy and meat products, and stored in the fat. Dioxin exposure is also associated with cancer.

- **Pesticides**

Pesticides are any substance used to kill, repel, or control certain forms of plant or animal life that are deemed pests. This includes herbicides, insecticides, fungicides, disinfectants, and compounds used to control rodents.

In the U.S., over 4.5 billion pounds of pesticides are used each year. Most conventional food production uses pesticides, so people are exposed to low levels of pesticide residues through their diets.

While the health effects of pesticide residues are not entirely clear, research from the National Institute of Health showed that farmers who use agricultural insecticides experience an increase in headaches, fatigue, insomnia, dizziness, hand tremors, and other neurological symptoms, while licensed pesticide applicators have a 20-200% increased risk of developing diabetes.[112]

To reduce exposure to pesticides:

- Wash and scrub all fruits and vegetables, organic or conventional.
- If possible, purchase mostly organic fruits and vegetables, particularly the ones consistently found to have the highest pesticide residues – apples, strawberries, celery, peaches, and spinach.

Check out the Environmental Working Group's Dirty Dozen and Clean 15 for more info.

Key findings:

Dirty Dozen:

- More than 98 percent of samples of strawberries, spinach, peaches, nectarines, cherries, and apples tested positive for residue of at least one pesticide.
- A single sample of strawberries showed 20 different pesticides.
- Spinach samples had, on average, twice as much pesticide residue by weight than any other crop.

Clean 15

- Avocados and sweet corn were the cleanest: only 1 percent of samples showed any detectable pesticides.
- More than 80 percent of pineapples, papayas, asparagus, onions, and cabbage had no pesticide residues.
- No single fruit sample from the Clean Fifteen tested positive for more than four types of pesticides.

- **Phthalates**

Phthalates are plastic compounds used to add flexibility to manufactured items and found in toys, vinyl flooring, nail polish, hair spray, and time-released medications. They are fat soluble estrogenic and anti-androgenic compounds that disrupt hormone function and add inches to your waistline as your liver tries to cope with detoxifying your overburdened system.

Phthalates induce DNA damage and deformity to sperm cells, and reduce the sperm count and increase cancer incidence.

- **Cigarette smoking**

Cigarette smoking is bad for lung and esophageal health, but it also profoundly impacts our reproductive health. The heavy metal found

in cigarettes is cadmium, which reduces blood flow to the testes, resulting in oxidative stress and damage to the testicular cells. This results in low sperm counts, poor sperm motility, and increased sperm abnormalities.

- **Cancer risks**

The cancer risks of environmental toxins have been well researched. Toxins that have been shown conclusively to cause cancer are PCBs (Polychlorinated biphenyls) which, although banned in the U.S., still persists in the environment. PCBs are found in farm-raised salmon because they are fed meal of ground-up fish, which have absorbed PCPs from the environment.

Sixty percent of herbicides, 90 percent of fungicides, and 30 percent of insecticides are known to be carcinogenic.

Pesticide residues are found in 50 to 95 percent of U.S. foods.

You must eat organically to reduce the load!

- **Mold and other fungal toxins**

These can cause cancer, heart disease, asthma, M.S., and diabetes. The major sources are contaminated buildings, peanuts, wheat, corn, and alcoholic beverages.

- **VOCs (Volatile Organic Compounds)**

VOCs are more concentrated in indoor air than in outdoor air because they are emitted in gas from household products such as drinking water, carpet, paint, deodorants, cleaning fluids, varnishes, cosmetics, drycleaned clothes, moth repellents, and air fresheners. They lead to cancer, eye and respiratory irritation, headaches, dizziness, and memory impairment.

- **Chlorine**

This is one of the most heavily used chemical agents and is found in drinking water, and household cleaners or the air if living near an industry that uses it in their production. It leads to a myriad of respiratory problems and is very harmful to your friendly gut bacteria.

ACKNOWLEDGEMENTS

Every person is born with a book inside of them.

Many years ago, I read these lines in a book and wondered about the truth of this statement. As a busy surgeon, educator, father, and husband, I thought it might never apply to me.

In 2015, I was at a phase in my life where I had taken some time off from my hospital commitments and was exploring the emerging science of the microbiome. I had also joined various organizations (mostly non-surgical) to explore what lies outside the realm of surgery that determines healing, outcomes, and overall health. I soon began to realize that even though the evolving science of the microbiome was in its infancy, there were many established principles and practices which had been forgotten or lost in the abyss of the information age that we live in. People needed to know this – or at least my clients needed to know this, such that they could enjoy better health.

What started with a booklet on the essential principles of gut health and wellness slowly started to transform into a primitive form of the book you are reading.

Those who know me are familiar with my strong belief in a supreme Creator from Whom all forms of art, science, and creativity arise. That supreme source is the one that inspires us all to live more fully, love more openly, and be an instrument of better service – for that is what we were all sent to achieve in our Earthly journey. I am ever so indebted to that divine source for inspiring me to take on this task and providing me with the grit to persist despite many struggles and hardships, when I felt lost and so wanted to give up.

My work would not have been possible without the love, support, and strength I received from my dear wife Reetika, my kids Gaurang and Vrinda, and my parents, colleagues, clients, mentors, and ever-supportive friends. To my Mummy and Papa, I thank you for imparting such valuable life lessons and giving me the education to be able to test these lessons in my own life and learn from the mistakes I made in that process. Papa, you inspired me to take up Yoga and incorporate it into my life, such that I could practice before I could preach. In many ways, this is what planted the seed of a "whole person approach" to healing, in my mind.

To my multiple mentors – including Bob Proctor, Baba Ramdev, Brian Tracy, Dr. Wayne Dyer, Brendon Burchard, Darren Hardy, Napolean Hill, Dr. Joe Dispenza, Dr. Avni Sali, Dr. Raphael Kellman, Dr. Viki Kotsarilos, Prof. Hamish Ewing, Dr. Rowan Story, Dr. Garth Davis, Prof. Charles Mackay, Dr Pradeep chowbey and many more – I thank you for your teachings and constant inspiration both in person and through your work.

To my team at Melbourne Gastro Surgery - Centre for Weight Loss, I could not have done this without your help in managing my days and my work life. Bernadette, Rachael, and Lisa, a special thanks to you for being there for me whenever I've needed your help. To my business coach,David Staughton, thank you for allowing me to keep the main thing as the main thing at all times.

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Finally, to all my friends, family, and colleagues who may have felt neglected at any time during this writing project: I hope you find that the final product justifies my absence. You've been in my mind through every day and every page.

RESOURCES

- A Guide to Evidence-based Integrative and Complementary Medicine 1st Edition

  by Vicki Kotsirilos AM MBBS FRACGP FACNEM (Author), Luis Vitetta PhD GradDipNutrEnvironmed GradDipIntegrMed (Author), Avni Sali Prof. Avni Sali AM MBBS PhD FRACS FACS FACNEM

- The sitting disease:
  - www.Juststand.org
- Exercise alone is no good for weight loss
  - https://youtu.be/eXTiiz99p9o
- The Facts about Fatty Liver
  - https://youtu.be/gy5_Z14fQl8
- Skull Shining Breathing Technique
  - https://youtu.be/B6bnFlVkKrE
- The Glyphosphate Documentary
  - https://youtu.be/XDyI10Z8aH0
- Shoppers Guide to Pesticides on Produce
  - https://www.ewg.org/foodnews/summary.php
- "Proteinaholic: How Our Obsession with Meat Is Killing Us and What We Can Do About It" by Garth Davis, MD.

    - https://www.amazon.com/Proteinaholic-Obsession-Meat-Killing-About/dp/0062279319
- People For Ethical Treatment of Animals: Toxins in Fish
    - https://www.peta.org/living/food/toxins-fish/
- Certified Humane
    - https://certifiedhumane.org
- Food and Water Watch
    - https://www.foodandwaterwatch.org
- High Intensity Interval Training
    - https://fitness.mercola.com/sites/fitness/archive/2016/04/02/time-efficient-workout.aspx
- Green smoothies and snack recepies
    - https://simplegreensmoothies.com/green-smoothie-101
- Easy and safe colon cleanse
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Chapter 1

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Appendix B : Gut Microbiome and Weight Loss Surgery

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PRAISE FOR "HAPPY GUT, HEALTHY WEIGHT"

"As a gastro intestinal surgeon, educator and wellness advocate, Dr Arun has done an outstanding job in explaining the pivotal role gut health has on our on our overall wellbeing. A wonderfully informative read for any health seeker."

- Mark Bunn - Best-selling author of 'Ancient Wisdom for Modern Health' & International Speaker on Ayurvedic Health & Business Performance

"As a gastro intestinal surgeon who's conducted hundreds of bariatric operations, Dr. Arun Dhir has seen the obesity epidemic and the human gut up close on a level that few people ever have. He knows what causes weight gain — and more importantly, he knows the solution. And it all starts in your gut! In *Happy Gut, Healthy Weight*, Dr. Dhir shares delivers his potent prescription for lasting wellness. Read it, share it… and thrive."

— Ocean Robbins, CEO, Food Revolution Network
Author, 31-Day Food Revolution

"In his book, *Happy Gut, Healthy Weight*, Dr. Arun provides you with the science behind your gut health and gut microbiome, underscoring the benefits for weight management and overall health and wellness. This book is a must have!"

Dr Neal Barnard, M.D., F.A.C.C.
President, Physicians Committee for Responsible Medicine

"For anyone who has had to face the scourge of obesity…this book is a must read."

Dr. Pradeep Chowbey
M.S., M.N.A.M.S., F.R.C.S. (London)
President–International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO) 2012-2013

"Since implementing the advise in "Happy Gut- Healthy Weight" my energy levels have increased and my resting heart rate has slowed to 64.My troublesome knee pain is much more manageable. I could not believe this could also bring my HbA1c down as I have been a diabetic struggling with adjusting my insulin doses. More importantly, I have lost half a stone, over the last 3-4 weeks since I commenced this programme. Unbelievable!"

Vitty R, London (England)

ABOUT THE AUTHOR

As a GastroIntestinal Surgeon, teacher, health and wellness advocate, Dr Arun has influenced several lives through his practice -embodying an integrative approach towards individuals experiencing the scourge of obesity- in it's various shades. He holds a deep insight in the area of mind, body and gut connection.

His latest book "Happy Gut, Healthy Weight" is a reflection of the inspiration he derives from the results several of his clients have achieved upon incorporating an integrative - "whole person" approach to weight management, regardless of the need for weight loss surgery. Within the pages of this work, you will find amazing information that has the potential to help you achieve and maintain your healthy weight, through simple lifestyle routines, which incorporate all facets of diet, exercise and stress management.

Hear all this from someone who has cut, stitched, healed and studied the human gut - for over two decades. In this book, Dr Arun Dhir, a highly regarded Gastro Intestinal and Bariatric Surgeon, blends cutting edge science on gut health and it's association with obesity. He crafts this information in a "tasteful and easily digestible" evidenced based format, which can be put into practice almost immediately.

If you want to take charge of your health, feel energised by achieving and maintaining your healthy weight -"HAPPY GUT - HEALTHY WEIGHT" is bound to bring you tons of value!

Dr Arun has been a strong advocate for a shift in our approach to managing obesity, the principles of which are shared in his writings .He writes regularly on various aspects of gut health, obesity, gastrointestinal surgery, gut microbiome and healing.

Follow him on www.CentreforWeightLoss.com.au and his YouTube channel.

Achieving and maintaining your healthy weight is like playing a game. You sometimes win and you sometimes lose, however everytime you follow and apply the success principles, you raise the level of your game.

Are you playing at a "kinder level" ,where YoYo dieting, significant weight swings and poor self esteem are common?

Or are you playing as a "pro" –where your mind, body and soul are "tuned in", you're enjoy optimal health everyday and are leading a purposeful life with high self esteem?

Winning the Weight Loss Game – is a 7 step NO SURGERY OR MEDICATION programme that is based on a creative "blend" of the timeless principles of Mind Body connection and that of cutting edge science- on the role of Gut Health in determining our healthy weight and vitality.

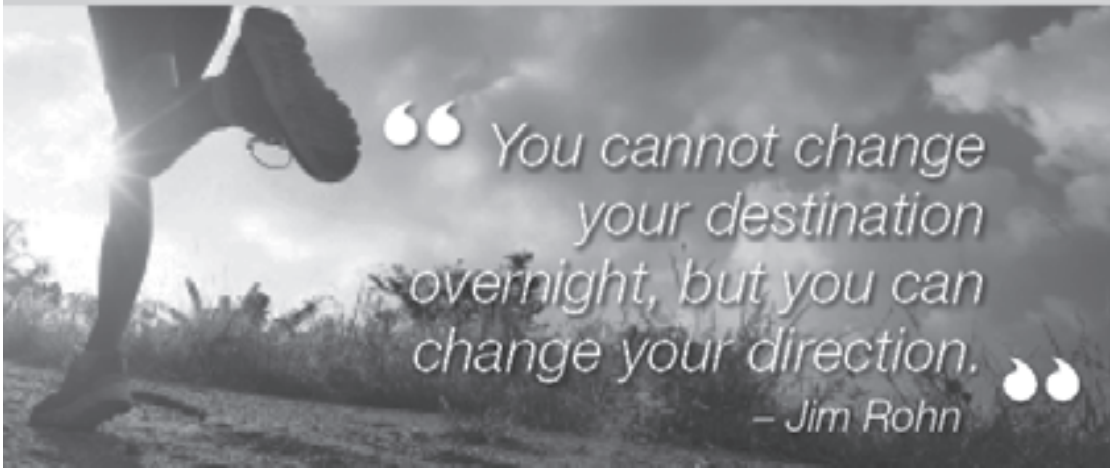
If you desire to not only achieve, but also maintain your healthy weight, then The Gut ReGen Programme is the answer for you.

RAISE YOUR BAR..BECOME A PRO AND WIN THE WEIGHT LOSS GAME!

Is The Gut ReGen Programme For Me?

This programme is for you if:

- You have tried previous attempts at weight loss
- You wish to loose and keep off 10 – 15 kilos
- You are considering weight loss surgery and wish to use elements of this programme to have lasting success
- You have had weight loss surgery,however it has failed in some areas and you wish to enhance your overall quality of health and fitness using this programme
- You have been experiencing Bowel issues like IBS, constipation and bloating besides having weight problems
- You wish to experience optimal health, energy and high self esteem
- You are not considering weight loss surgery at this stage



SEVEN STEP SUSTAINABLE WEIGHTLOSS PROGRAM

Tapping the power of Gut Brain Connection and a Healthy Gut Microbiome
- to help you achieve and maintain your healthy weight

SEVEN STEPS AND THEIR KEY HIGHLIGHT AREAS

1

Taking Charge: Power Of Goal Setting

- Putting your mind & body to action
- Understanding hunger & satiety
- Overcoming inner obstacles
- Changing self talk & letting go of your fears

2

Stress Management

- Can stress influence my food choices
- Eating mindfully
- Sugar: Is it truly a stress buster
- Stress & inflammation
- Is lack of sleep making you fat
- Meditation – The centre piece of health & wellbeing

3

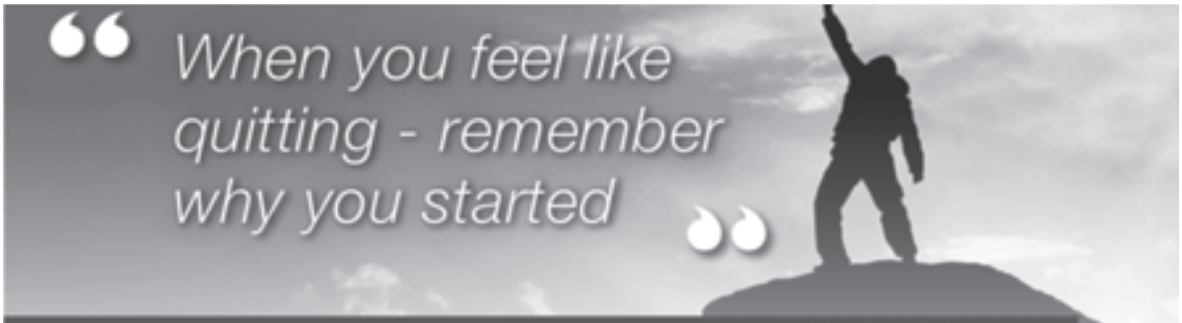
The Power Of Balanced Gut Microflora

- Can your Gut bacteria make you overweight?
- Leaky gut, inflammation & the obesity epidemic
- The power of MIND-GUT-BODY connections
- Creating the metabolism for your Healthy Weight Pro & Pre biotics

4

Gut Detox Diet & Supplements

- Detoxify to purify
- Eating right: healing your gut for weight loss
- Reducing inflammation through food
- The myth around Supplements & Anti Oxidants



5

Exercise & Focused Breathing

- Turning intention into action
- Finding the best exercise for you
- The power of focused breathing can blow your kilos away

6

Happy Hormones: Healthy Weight

- Harmony with Hormones – Magic bullets at work
- Resetting metabolism by resetting hormones

7

The Success Routine

- Will vs Skill
- Turning Intention into Action
- The power of Journaling
- Achieving n Monitoring Success

BONUS

Is Weight Loss Surgery Right For Me?

- Is WEIGHT LOSS SURGERY for me?
- How to maximize results from weight loss surgery?
- Living with weight loss surgery – small steps to lasting success