Heal your heart
Søren Ballegaard

Heal your heart

Prevention and treatment of heart disease without surgery or medication – a combination of Chinese health philosophy and Western medical science

If all the kings stood in a line in all their power and might
They couldn’t ‘pon a simple vine make the smallest leaf alight

_Brorson, 1732_

Borgen
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We strongly recommend that you consult your doctor before applying any treatment method presented in this book. If you currently experience pain, you should consult your doctor immediately. The contents of this book cannot be used as the basis for making a diagnosis or determining a treatment. You, the reader, must therefore take full responsibility for all decisions made concerning your health, and the application of this book. Søren Ballegaard and the publisher disclaim any responsibility for any harmful effects arising from the use or misuse of information in this book.
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Foreword

Is this book for you?

If you brush your teeth each day, and if you have also noticed that you have more energy on some days than others, then this book can be of value to you. The fact that you brush your teeth shows that you are capable of making a regular, daily effort for the sake of your health. In this book you will learn how a similar, regular effort can protect your heart, and hence give you a longer and richer life. This book, or rather the program described in it, is therefore a kind of “toothbrush for your heart”. Furthermore, an understanding and appreciation of the energy which you have observed, is the cornerstone of Chinese health philosophy, going back thousands of years. This book will teach you how to manage this energy, and through it, to prevent or heal illness.

The book is especially aimed at the 12.7 million Americans who have heart disease resulting from atherosclerosis or who have had a balloon angioplasty or bypass operation. It is also written for the more than 107 million Americans who don’t have heart disease at the moment but are particularly at risk of developing it. Those who, for example, have high blood pressure or diabetes, are overweight or smoke, have a family history of heart disease or who are under continuous, daily strain in their lives.

National health systems all over the world are facing great challenges today in relation to heart disease. In many Western countries it is the most common cause of death, and because of the general aging of their populations, there are more and more cases of heart disease. At the same time, more refined treatment methods are continually being developed. These are often expensive and are a burden on the economies of wealthy countries, and are only available to a limited extent to residents of less wealthy countries. The research presented in this book presents one possible way of meeting this global challenge - that is, by integrating a gentle, cheap and effective way of preventing and healing heart disease, into the array of treatment options. Seen from a global, multicultural perspective, it is a positive thing that the research presented here shows that when two such different cultures as the classical Chinese culture and Western culture are integrated, a synergy arises, such that the combined results are
more than the sum of the parts.

The book is a practical guide to what you can do to help your heart to get better or to remain healthy - and I have therefore tried to write it in everyday language. Since it is hard to completely avoid medical jargon I have provided a glossary in the back of the book. I hope that you will be able to find explanations there for any words you might not have heard before.

I believe that we as human beings have a burning desire to be healthy, and that if we receive the right guidance, we all have the potential to succeed. This book gives you a set of practical tools which allow you to make a positive contribution to your own health, and to constantly measure how well you are doing. The self-care program outlined on these pages should be seen as a source of ideas - like a menu card in a restaurant. I have presented a wide range of possible measures from which you can construct a program that suits you exactly, given the amount of time you wish to invest at the moment.

Most importantly: life is allowed to be fun. So the program should never become an unpleasant daily chore, but should contribute each day to your sense of well-being, fun and happiness. Before you get started, I recommend that you carefully read the “Introduction” and “Guide to this book” sections which follow.

Good luck!

Søren Ballegaard
Copenhagen, March 2002
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<table>
<thead>
<tr>
<th>Western</th>
<th>Classical Chinese</th>
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<tr>
<td>Tries to control nature</td>
<td>Tries to live in harmony with nature</td>
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<tr>
<td>Chemical or physiological intervention</td>
<td>Activates the body’s own healing powers</td>
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<td>The primary contribution comes from the treating physician</td>
<td>The primary contribution is one's own</td>
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<td>Focus on cure</td>
<td>Focus on prevention</td>
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<td>Scientific, critical</td>
<td>Poetic, dogmatic</td>
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A Personal Introduction

In order to understand the book’s background and philosophy, especially its pursuit of a synergy between Western science and classical Chinese medicine, it may be appropriate to briefly describe the process I have worked through over the last 25 years.

25 years ago I coauthored my first scientific article as a volunteer scientific assistant at the Medicinsk Anatomisk Institut at Copenhagen University. I was introduced to scientific work here primarily by Paul Rømert, and by his colleague, Martin Ebbe Matthiessen. In this cheerful and inspiring environment I learned the fascination of setting up a scientific hypothesis, designing an experiment to solve the proposed problem, remaining objectively critical of the results I found, and being precise and clear in my written presentation of the results in the accompanying scientific article. They also taught me to trust my own judgement, so that if I found, within my own field of research, that I failed to understand other researcher’s arguments, it was most likely that they themselves did too, or that their arguments lacked scientific foundation. I also began to teach anatomy, which eventually led to me publishing a compendium on Macroscopic Anatomy.

As a young doctor I was attracted by acupuncture, because the technique had survived 2000 years of changing cultural development and arose from a highly developed culture, in which doctors were apparently paid in step with their ability to keep their patients free from illness. It seemed only natural to me that these doctors must have had effective tools to aid them, since as gifted and well-trained people they accepted such a remuneration system. At the same time, their method of working was quite different from the method I had learned as a medical student (see table 1), so I thought it might be an exciting challenge to seek to apply a Western scientific way of thinking to this technique.
The research was kick-started by an astoundingly positive result in a young woman who had angina pectoris because of a genetic fat metabolism defect. On this basis a conventional clinical study was performed for which the results suggested that acupuncture helped the patients, but did not enable us to pinpoint precisely how much the effect was attributable to acupuncture, and how much to normal, good medical care, also called placebo\(^1\). The requirements for a conventional proof could not be met, as neither patient nor treating physician could be blinded, and it was therefore impossible to rule out the possibility that a positive result from the treatment was attributable to a combination of the patient’s and the doctor’s expectation/hope of a positive result. We therefore designed a trial which could address this problem. In this trial we were able to conclude that acupuncture had an independent and positive effect on angina pectoris\(^2,3\). As a result we became interested in researching the magnitude of the effect if the treatment was given in a natural clinical environment\(^4\).

By chance, during a study tour in Japan, we discovered that in healthy people, acupuncture was capable of activating the body’s own balancing physiological mechanisms. If the heart was working too hard during a period of rest, acupuncture slowed it down. If the heart was not working hard enough, acupuncture increased its pace, while acupuncture made no difference if it was working at the right pace\(^5\). The result provided support for the idea that acupuncture could help prevent illness. In addition, a possible explanation had arisen as to how the traditional Chinese doctors were able to help their patients prevent illness. This spurred me on to continue researching into their methods.

After I came home from Japan in 1990 I therefore began to systematically work on addressing this question: was it possible to combine their methods with Western science, and in that way to refine both their method and the Western medical science approach to preventing illness, and hence attain a result which was more effective than either stream on its own?

Table 1 provides a good aid to understanding the scope of that line of thought in relation to heart disease.

In the West, illness is managed by blocking biological mechanisms using medication, by replacing damaged tissue with healthy tissue (a bypass operation), or by mechanically reopening narrowed blood vessels (a balloon angioplasty). In Chinese medicine, the philosophy is that each person should strive to live in balance with nature based on an understanding of things like life energy, Qi. We all know that we have more energy on some days than we have on others, and that when feel weak in terms of energy, we know that we have a
greater risk of getting sick. I found it scientifically fascinating that despite the fact that we all experience the existence of such energy, it was not included in the Western model of health and illness.

Was it possible to explain this phenomenon in such a way that a patient could use it daily as a control mechanism?

Chinese medicine seeks to activate the body’s own capacity to stay healthy and to heal itself. Our trial in Japan showed that acupuncture might serve just such a function. It was not known whether acupressure could work in a similar way, but it was a logical connection to make. Was it possible using an initial period of acupuncture to activate this mechanism and then teach the patient to maintain it themselves using acupressure?

Was it possible that this could supplement the patient’s actual medical and/or surgical treatment and thereby achieve a greater effect?

In Western medicine, the doctor’s contribution is the primary one, while in Chinese medicine it is the patient’s. Could these two paradigms be combined?

Preventative dental care has been successful by focusing on acquiring new habits with a positive influence on health, rather than seeking to change existing habits with a negative influence on health. Could such a strategy be sustainable, and sufficient to compensate for existing habits with a potentially negative influence on health? Would such an experience of success give the patient greater self esteem and thereby contribute to bad habits being curtailed in the longer term?

In Western society, more than 90% of our healthcare budget is spent on treatment, and only a very small proportion on prevention. If you think of the airline industry, it’s not hard to see that it might be more effective to prevent than to cure. Again, was it possible to combine the two ways of managing illness?

Western medicine, because of its critical, analytical way of thinking, has achieved outstanding technical progress in just about every area of life. The classical Chinese way of thinking was dogmatic, so they did not think it was relevant to subject the techniques and knowledge they used to critical questioning. For this reason, the acupuncture/acupressure techniques have been used, virtually unchanged, over the last 2000 years. Was it possible to refine or further develop these techniques, if they were subjected to critical, analytical, testing?

The Western understanding of illness is largely rational and mechanistic,
while the Chinese understanding of illness is poetic and holistic. Could the two paradigms be combined to the benefit of patients?

On the basis of these hypotheses, the treatment and training program described in this book was developed, under the name, “Integrated Rehabilitation”. It is therefore quite unique in nature. With regard to self-care, an ongoing review has been undertaken of all the available Western medical scientific literature which can serve the classical Chinese strategy: prevention and healing of ischemic heart disease, without the use of medicine or surgery. With regard to the classical Chinese health philosophy, it has been adapted to a Western way of thinking and presented in pictures and language that make it easy for an individual to incorporate it into their daily routine. With regard to acupuncture and acupressure, these have been developed, drawing inspiration from an airplane cockpit, so that the treating physician follows this process during every treatment session: 1) measure, 2) treat, and immediately afterwards, 3) check the effectiveness of the treatment in the form of reduced soreness in well-defined acupuncture points. The analogy has been carried over to acupressure, such that each individual can, wherever and whenever they want: 1) measure their state of health, 2) change this immediately, if necessary, using acupressure, and, immediately afterwards, 3) check whether the effects have been adequate. The patient receives instruction on how to perform these measurements and treatments on a daily basis, both for prevention and/or to relieve heart pain.

Since 1992 we have carried out quality control analyses on the results of the program and these reports have been publicly available since 1995.6,7,8.

The program is therefore under constant revision, being adjusted based on the collected experiences and new scientific studies. One quite significant factor was that we noticed in our initial quality control analyses that the great effect which patients had initially achieved, was reduced in most patients after 2-3 years. The patients told us that, after that period of time, they felt so well, that they stopped carrying out the habits they had acquired. As a result, we have done more to impress upon them the value of following the daily program. This has been apparent in the results of the latest quality control analysis (see chapter VIII), where the patients have achieved a mortality rate which is equivalent to that of the normal population; the number of days in hospital has fallen by more than 90%, medication use by more than 75%, while at the same time, 80% of the patients achieved such an improvement that they no longer required invasive treatment.
The magnitude of the effect must be viewed tentatively, since we have not been able to make comparisons against an identical control group (see chapter VIII for an in-depth discussion), and, of course, other patients can only expect similar results if they are willing to put in a similar, daily effort.

**The philosophy behind the training program**

The scientific articles which are referred to in the book are intended to cover the subject widely and are drawn from continuous and systematic scanning of this field of research. There is a complete reference list at the back of the book so that you can further explore the topic yourself. Scientific references which relate to classical Chinese medicine have been mentioned where these exist. This applies to acupuncture, acupressure and qigong (breathing exercises).

As far as the philosophical reflections are concerned, I have referred to my sources and to supplementary reading. Where I have made personal estimates or comments, these are clearly identified.

I can’t produce any evidence to support the connection between life energy (qi) in Chinese philosophy and the body’s health balance as it can be observed in each individual and in accordance with Western medical thought. The program is based on the hypothesis that the degree of soreness in particular acupuncture points reflects the activity of the nervous system. As a consequence of this, I believe that there is a connection between reduced soreness and a reduced risk of heart pain, and between long-term reduced soreness and a reduced risk of atherosclerosis.

In this way, the degree of soreness can be used as a biological feedback mechanism - that is, a way of checking the effectiveness of your self-care, the goal being to reduce the level of soreness in the acupuncture points.

I can’t produce any evidence either to show that soreness in an acupuncture point can be used to check the effectiveness of acupressure. This relationship builds on a similar hypothesis: If you manage to reduce the soreness in an acupuncture point through acupressure, this is taken as evidence that a reflex has been activated that can reduce increased nerve activity and thus relieve any actual heart pain or help reduce or prevent atherosclerosis.

Each one of us can observe that when acupressure is done correctly, the soreness decreases. Likewise, people who have heart pain as a result of athero-
sclerosis can observe that the pain disappears or decreases when acupressure is done correctly. I can’t produce any evidence for or against these hypotheses simply because the necessary research has not been carried out.

EXPERIMENTS ON ANIMALS
Nordic Heart Center is opposed to experiments on animals. We actively strive to have the treatment methods tested on humans as far as is possible - and we also encourage this through our Internet based research program. Scientific research involving experiments in which animals are made to suffer is only mentioned in the book if it has crucial significance for the understanding of the treatment or recommendation being considered.

Why run an Internet research program?

Ideally, the goal of research is to ask critical questions and to seek to find trustworthy answers which have universal validity. That is, a validity which reaches beyond the individual researcher’s special interest, and touches normal, everyday people.

The Internet has made it possible for people to share knowledge with each other to a degree which was unheard of until recently, and at a very modest price.

We have placed the complete contents of the book on the Internet, together with supplementary documentation and scientific articles.

You can use the Internet, any time, any place, to contact us for professional advice and to share your experiences with other people in the same situation. The database, which records each user’s experience with and gains from the program, represents a unique opportunity to gather knowledge about how self-care can be used to prevent and relieve heart disease. The experience which we gain can easily be passed on to all users, as can any updates in the form of new and relevant research results.

The project is a “grass roots” research project, in that the experiences of each individual user provide the foundation for the gains others can obtain. The more people who contribute, the better equipped we will be to further develop the training program.

I also call the project “popular research”, because it gives you back control
of your own health. It enables you to much better look after yourself and to limit your use of medical services, hospital operations and pharmaceutical medications - and you get a richer, longer life into the bargain. That this is not utopia but today’s reality is evident from the summary of our results (see chapter VIII).

Twenty years ago, atherosclerotic heart disease was seen as an incurable illness which became gradually worse with grinding certainty and which was very likely to shorten your life. Medication and surgery were primarily seen as pain relief without any pronounced long-term influence. Both medication and surgical treatment have made a meaningful contribution to the improved prognosis for people with heart disease which has happened in the last 20 years. We have also come long way within the field of research into and treatment of illness without medication or surgery in the same period. Against this background it is clear that a new breakthrough can take place when the knowledge presented in this book and at www.drballegaard.com becomes widely practised and available. It would also be very interesting to see how much further we could go if this field of research was allocated the same amount of resources as conventional treatment. Might it also be fruitful to invest a similar, systematic research effort into other life-threatening or debilitating illnesses which are seen as incurable today - for example, cancer, diabetes and arthritis?

An Internet project like www.drballegaard.com naturally costs money. We have been very fortunate in receiving many generous donations, which have made it possible to provide this service for free - at least for the moment.

If you would like to support the research, financially or otherwise, please contact us directly through our website or write to or call us at:

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Guide to this book

About the self-care program

The training program builds on the following principles, which we believe have contributed to the fact that the majority of our heart patients continue to follow the program daily, several years after their initial instruction.

- You learn what you can do, here and now, to improve your health.
- The acupressure you do twice a day keeps reinforcing the fact that your personal effort is leading to measurable and immediate results (in less than a minute).
- Twice a day, at any time, and wherever you happen to be, you can measure and check the results of the combined self-care measures, using acupressure as a biological feedback mechanism.
- You learn to set goals for your self-care – goals which you have a 90% chance of reaching.
- By doing acupressure as soon as you wake up, you start the day with a success.
- By doing acupressure just before you go to sleep, you end the day with a success.
- By doing acupressure when you experience heart pain, you learn that acupressure can get rid of pain the same way nitroglycerine does – but without causing a headache. You learn that a small effort each day makes a difference, and that it is possible to gain control over your health.
- It is easier to learn new habits which have a positive influence, than it is to change existing habits which have a negative influence on your health.
- You therefore learn new habits which can compensate for any negative health consequences resulting from your less ideal habits. If, for example, you smoke or are overweight, the primary goal of your self-care will not be, that you have to stop smoking or lose weight. The focus will instead be on the new habits which compensate for the negative influ-
ence of smoking and being overweight. When you experience that this is possible, it will make it easier for you to perhaps adjust your smoking habits and weight later on.

- Your spouse/girlfriend-boyfriend/partner is actively involved, both in giving you acupressure twice a day, and in using acupressure as a biological feedback mechanism to check the effects of your self-care.
- You learn about how your way of life and the way you tackle the ups and downs of life can affect your health, and how you can perhaps handle these more appropriately.
- You learn that a modest, daily effort is more effective than a big, occasional effort.
- You learn to incorporate changes into your lifestyle, as a natural part of your routine, with no great difficulty.

How to get the most out of this book

If you want to get the most out of this book, there are two indispensable attitudes which you need to have:

1. a deep desire to learn, and
2. the willingness to make a personal effort.

You might ask how you are supposed to develop these attitudes, if you don’t already have them. You might even say: “Why do I have to be responsible for my health?” I can only answer: “Who has a better reason than you do to take on the responsibility and accept the need to do something. You’re the one that is going to reap the benefits.” Perhaps it’s difficult for you to see that this is necessary, or that the potential gain is worth the effort. It’s often those who are most sick who are most motivated to take action, and luckily in this situation they will quickly be able to observe the effect of their efforts.

If you aren’t sick, let me be so bold as to ask: “If you spend a couple of minutes, morning and night, looking after your teeth, what’s to stop you spending the same amount of time on staying alive?”

I am personally convinced that the treatment program will make a positive contribution to your life – whether you are sick or not. But you can use two of
the books tools to find out if you are at risk:

1. Fill out the health check schedule in chapter III and evaluate your personal health balance
2. Do acupressure exercise 1 for beginners (chapter IV)

If, based on schedule III.1, you find there are areas where you don’t have a good balance, or if the acupressure point (CV 17) feels sore – then the program is for you.

Below is some good advice to help you get the most out of this book:

1. Read over the statements in the “action schedule” at the beginning of each chapter, to get an overview of the issues that will be raised in the chapter before you read it. As you read each chapter, keep asking yourself things like “how can I apply this?”, “how do I make this part of my life?”.  
2. Stop occasionally and think about what you have been reading. How and when can you put it into practice, without it becoming a burden?  
3. As you read, use a pencil or highlighter to mark the things you think are important. That will make it easier for you to come back to the chapter later and refresh the main elements.  
4. Use the book’s practical tools actively and whenever you have the chance, so that the book becomes part of your daily armory. It can be good to keep the book on your bedside table as “bedtime reading”.  
5. Use acupressure to check your actual health balance daily.  
6. Take time each month or each quarter to take stock of your efforts, and the results you have attained. Note also the times where you were perhaps unsuccessful and why, and what you can learn from this for the future. Unfortunately we quickly forget, and each day is so full of other things to do that it is difficult to make new habits part of our routine. That’s why it’s important to regularly take stock and take time to appreciate how far you have come. (See also the follow-up schedules in chapter X).
Structure of the book

The first seven chapters of the book present the training program which has both a theoretical and a practical component.

In the theoretical component you learn about the classical Chinese philosophy of life, about how atherosclerotic heart disease develops from a Western scientific perspective, and how the two perspectives can be combined constructively.

In chapter I you will learn what acupuncture and acupressure are and how they work.

The theoretical part of the training continues with a description of how atherosclerosis can arise (chapter II). The chapter describes how illness arises from a complex interplay of physiological, environmental, psychosocial, mental and spiritual factors.

The last part of the theoretical training (chapter III) discusses the body’s health balance. Here the Chinese understanding of health – where illness is understood as an imbalance in the body – is coupled with the scientific background to how a condition like atherosclerosis arises, and you will learn to identify the conditions which can affect the balance positively and negatively.

This chapter also gives you the first tools to help you work out your own, personal, health plan.

The theoretical knowledge and recommendations in these individual chapters provide a substantial foundation for beginning to use the program and to sketch out your health plan and incorporate the recommendations into your daily routine. I therefore strongly recommend that you begin by reading the recommendations in the “action schedules” in the individual chapters, to get an overview of the elements that can be part of your personal health plan, before you begin to draft it. The reason I stress this is, that experience shows that it is important not to start on too many things at the same time.

The practical component of the training program starts in chapter IV, where you will learn how to do acupressure. A set of exercises will be used to teach you how to use acupressure – both for pain relief and to check your health balance. The acupressure exercises are illustrated with drawings, to help you locate the right points. In the beginning you will want to read the instructions at the same time as you consult the pictures. When you have learned the exercises, you may find it easier just to refresh your memory from
the pictures. They have therefore been collected together in the back of the book as well.

Chapter V talks about life circumstances and attitudes, things like your relationship with family and friends, your way of handling the ups and downs of life, your self-image, and how these can affect your health.

The focus of chapter VI is your physical health. You will learn how exercise can affect your health, and about relaxation and yoga.

The training program concludes in chapter VII with a look at what you eat and drink. You will learn how various items of food and drink, and vitamins affect your health, and be given a set of recommendations about what to include in your diet.

In many of the sections in the practical part of the training program, I list a set of recommendations derived from the scientific articles. The sections are structured so that the recommendations come first, in the form of “action schedules”, which should help you to choose elements for your personal health plan. The last part of each section is a summary of the scientific articles which form the basis for the recommendations.

The training program forms part of the treatment, Integrated Rehabilitation (self-care plus acupuncture), which I have been giving to seriously ill heart patients at my clinic, the Nordic Heart Center. The effects of this treatment are investigated in an annual quality control review. The latest published review can be found in chapter VIII. Chapter IX goes through the various treatments offered by the health system and lists some questions which are good to answer when choosing a treatment. Chapter X contains a schedule to be used for doing a follow up check.

Enjoy the book!
I

Classical Chinese medicine

What is acupuncture?

The word acupuncture comes from the Latin words *acu* (needle) and *punctura*. Acupuncture is therefore the treatment of illness by sticking needles through the skin.

Acupuncture originated in China. The first acupuncture needles, made of flint, can be dated back to about 800 years before Christ.

Acupuncture is thought to be based upon the discovery of the existence of points on the body’s surface through which symptoms of illness could be influenced.

A systemization of these points was first described in the second century B.C., in the book Huang-di Nei-jing.

At that time scholarship was flourishing in China. The learned were individuals who had personally acquired wisdom and who passed it on to their students through many years of training, following the master-apprentice model; a model which can still be seen in the Far East today.

In addition to observing nature, they formulated theories to explain what they observed. These theories put the many and various observations into systems, making it possible to pass on their experience to their students in a meaningful way. These theories were a kind of glue which held the many independent observations together. The formulation of these theories was based on, to put it simply, the world view that predominated at that time - Taoism. In Neijing, the historical and empirical discovery of sensitive points - and their effects on disease - has been chained together in a Taoistic model. Points with related functions are held together by binding them with lines called meridians. The book also describes how the body works and how illnesses arise and can be treated.

The individual masters developed their own personal variations on the common theoretical theme. That is why today there are many different ways of doing acupuncture, not only different from country to country, but even with-
in China’s borders.

The role of the doctor in classical Chinese society was quite different from the modern, Western role. The doctor was only paid if he kept his patients well. Once a year, at the end of the year, people gave the doctor his pay, based on how effectively he had helped them to look after their health in the previous year. In addition, he had to hang a red lamp outside his practise every time one of his patients was sick. This enabled travellers to gauge the quality of his work, and to avoid the doctors who had many red lamps hanging outside their door.

Patients made it possible for their doctor to keep them in good health by seeing him regularly, while their complaints were minor and before their illnesses were so advanced that they couldn’t work.

When these Chinese patients went to their doctor, he made a thorough analysis of their total life situation. All symptoms from every part of the body were considered and viewed as a significant part of the total problem. The patient’s psychological and social situation was also evaluated. The doctor had many different ways at his disposal to guide and help the patient. Acupuncture was just one of these. Chinese society had formulated various fixed rules of life which its citizens were advised to follow in order to keep in good health. There were various gymnastic exercises which the patient was meant to do every day - something we also see in modern China. They had developed certain breathing exercises and special techniques to enable each individual to maintain control over his own body. This is a fundamental element in the Eastern fighting disciplines like judo and jujitsu. In terms of purely medical options, in addition to acupuncture the doctor could offer a large range of herbal medicine. The various treatment options were often combined so that the patient received acupuncture and dietary instructions and was required to do gymnastic and breathing exercises and take various herbs.

In order to understand how acupuncture can be used to treat an illness in its very early stages, we have to assume that the Chinese diagnostic system is very sensitive and picks up signals very early in the progress of the illness. That means the body must give off signals at a very early stage. The signals that the Chinese discovered were sore points which developed on the skin with certain illnesses.

We also have to assume that the body has a healing system - a system which, when stimulated, can lead to the healing of the patient’s illness. We have to assume that sticking a needle in the sore points on the skin, the acupuncture points, activates and stimulates such a healing process.
The idea that the body has its own healing system is something that people are also aware of today. Just think of how a broken bone grows back together, without being asked, and how the wound closes and heals when we have cut our finger. What is brilliant about the Chinese system is that they have observed the existence of these very early signals indicating illness in the body, and through these have developed a system which can activate the body’s own healing resources, specifically aimed at the patient’s particular complaint.

As described later in this chapter and in chapter IV, it has been possible in recent years to confirm the observations the Chinese made concerning a body’s own healing system through experiments on animals in the Western world.

**Classical Chinese medical theory**

When you begin to talk about classical Chinese medical theory, you run into words like Tao, yin, yang and the five elements: wood, fire, earth, metal and water.

It is important to understand that these concepts belong to a philosophical model which the Chinese constructed in order to explain the natural phenomena they saw around them.

The Chinese world view is characterized by a holistic understanding, since all phenomena in the universe are a part of the same ultimate reality - Tao.

Tao can never become demonstrable knowledge or be described adequately with words, since it lies in that region between the senses and the intellect.

Our words and concepts come from our intellect and can therefore never be used in a “true” description of Tao. In the book “Tao Te King”, Lao Tse says:

“That Tao which can be expressed in words, is not the eternal Tao.”

Tao, which is unity, reality, harmony in the universe, is split up into two opposing forces, yin and yang.

The relationship between them is described as “the law of the unity of opposites”. They shape, consume, support and transform into each other.

The idea that they shape each other points to the fact that they don’t exist in isolation, but only in their interaction with their opposite part. Yin and yang symbolize respectively minus and plus, cold and warm, woman and man, inward and outward, downward and upward, darkness and light, passive and active, earth and heaven.
Something which is yin in one situation can be yang in another, since they are relative concepts. For example, the skin on the back is yin (back) relative to the skin on the chest which is yang (front). At the same time, the skin on the back is yang (outward) relative to the inner organs which are yin (inward).

Because of their relationship of mutual opposition, the weakening or loss of one will automatically influence the other. In this way, weakening of yin leads to the relative strengthening of yang, and a strengthening of yin will lead to a relative weakening of yang and vice-versa. The balance between them is not static but always dynamic. Under normal conditions they will be in relative balance, but under conditions of strain, one of them can dominate too much and the other become too weak, and then illness occurs. The goal of treatment is then to reestablish the relative balance.

The idea that yin and yang are transformed into each other points to the fact that when a thing or phenomenon has developed sufficiently in one direction, a change towards the opposite direction is unavoidable. The changing seasons illustrate this. The warmth of spring begins to set in when the winter cold has reached its peak.

The five elements - wood, fire, earth, metal and water - are considered to be the basic components of the material world. A relationship of mutual interdependence and control exists between the elements which is used to classify natural phenomena, body tissues and organs and human feelings\(^3\).\(^4\).

In practice, the theory of yin and yang and the five elements are tied together so that the individual elements are divided into yin and yang parts. For example, the liver and the gallbladder belong to the element wood, where the gallbladder is the yang part and the liver is the yin part.

The theories of yin and yang and the five elements are not seen as stiff theoretical systems, but rather as poetic models which can be applied as needed. In Chinese medicine they are used to describe the body’s functions and the development of illness. They also assist in diagnosis and treatment in the daily clinical work.

Man is seen as a miniature universe, a microcosm with an indwelling life force, ”qi”, which balances between the two opposing forces, yin and yang. Man is not viewed as an isolated phenomenon, but on the contrary as tightly connected to the whole, the universe. The goal of human life is to live in harmony with this.
The body’s composition

According to traditional Chinese medicine, the following components are the basic elements in the human body:

1. the inner organs
2. meridians and communications channels
3. qi ("life energy", pronounced “chee” as in “cheese”)
4. blood and body fluids.

An important assumption in traditional Chinese medicine is that the inner organs are connected to the body’s surface through a complicated network of channels (meridians), whose main purpose is to supply all the parts of the body with life energy, “qi”. These meridians generally lie deep beneath the skin, and only touch the body’s surface at particular points, the so-called acupuncture points. There are 12 meridians that are connected to the body’s various organs. Energy flows through the organs in a very fixed order, and then starts again at the end of each cycle. A full cycle is thought to take 24 hours. The individual organs are thought to be most active when their energy level is at its peak.

Qi is described as the sum of the qi one is born with, which the embryo receives from its parents at the time of conception, and the qi derived from the air and from nutrients.

Traditional Chinese medicine has a view of man which differs from the Western view in two key ways. Man is seen as an integrated part of the total universe and the human biological processes are seen to be controlled by the circulation of qi. The concept of qi does not exist in Western medicine. Neither do the meridians which qi is assumed to circulate through.

Even the description of the body itself differs from the Western model. Although the same words are used from time to time, they mean different things. For example, the spleen is not the same in classical Chinese medicine as it is in the West, since it also looks after the functions which we believe belong to the pancreas. The pancreas does not exist in Chinese medicine, nor do the hormone producing glands or the nervous system, including the brain.

While organs are considered to be well-defined structures in Western medicine, in Chinese medicine they are not thought of as solid components
whose existence can be proven. They are defined instead by their functions and their mutual relationships.

In this way, Chinese medicine describes organs which don’t exist in the Western sense. The Sanjiao organ does not exist as an anatomical structure, but as a functional relationship between the organs which influence the body’s water metabolism.

Feelings are also attached to the organs; anger and a hot temper, for example, are linked to the liver, while happiness is linked to the heart.

The ancient Chinese masters were not particularly interested in proofs - the fact that these things (qi, meridians and organs) don’t exist in the physical sense doesn’t matter. The important thing is that the system works, and the descriptions should therefore be understood as a poetic expression of the things we can observe.

Can poetry be proven? It can be used, and we can decide whether it is worth listening to.
How acupuncture works according to Chinese theory

Acupuncture generally works by harmonizing the body’s energy balance. In parts of the body where there is too much energy, the needles help to remove the excess and bring the body back into balance. Acupuncture in the foot to treat a headache, works by taking the surplus energy away from the head. Another type of headache is best treated using needles in the neck, but from a Chinese perspective, the mechanism is still the same - the removal of an energy surplus in an acupuncture meridian. This time it is just a different meridian which is out of balance.

It is important to understand that headaches can be treated in many different ways in Chinese medicine, depending on the nature of the headache and the patient’s general state. The Chinese doctor will construct a complete picture of the patient’s situation and then work out his treatment based on this.

If the Chinese doctor decides that there is an energy deficiency somewhere, the goal of the acupuncture treatment will be to supply the person with energy and to harmonize the energy that already exists in the body. This is the theory behind moxibustion, where a special herb is burnt on the needle, which then heats up, and this heat is transferred to the patient’s body.

As one of the cornerstones in the process of working out an acupuncture treatment, the Chinese doctor will examine the patient and identify sore points (trigger points). The existence of these points assists him in his diagnosis since their testimony can be weighed against the patient’s own account of their symptoms.

Such trigger points always constitute an important element in the treatment of the patient, and are usually combined with other acupuncture points which don’t necessarily have to be sore. Of the roughly 400 Chinese acupuncture points, only some of them can be used for diagnosis, whereby soreness has implications for the patient’s treatment. Many of the acupuncture points are not sore even when the patient is sick, just as certain acupuncture points can be sore without the patient necessarily being sick.

We can use the cockpit of an airplane as an example to illustrate how the classical Chinese acupuncture system works.
Before a pilot takes off, he has to work through a long series of checks, and when something goes wrong, an indicator light will turn on. However, he doesn’t have to get out of his seat, but merely has to press another button and the appropriately qualified person comes out to the plane and repairs the problem. When the problem has been dealt with the pilot can check the control panel again, and if the problem has been solved he can start the airplane.

In the same way, the Chinese doctor, as he talks to the patient, is able to home in on where the problem might be. By examining the patient’s body he may find sore points, which can confirm him in his diagnosis. He can than treat the patient with acupuncture, and if the patient’s problem has been helped, the same points will be less sore or free from soreness. The patient can even be trained to be familiar with his own acupuncture points and massage them by hand when they flare up, and in this way start treatment early. This is the foundation for the training in acupressure which forms part of our program.

Another cornerstone of acupuncture is an understanding of the meridians’ course. Although the existence of these meridians is speculative, I have encountered situations as a doctor, where the patients ailment could not be fully explained using my Western medical knowledge, and where only a knowledge of the meridians’ flow has helped me to understand and treat the problem.

Inge Petersen’s illness is one such example. Four years ago she had to have a tissue sample taken from her lung. A surgical cut was made in the skin over her breastbone, perpendicular to the bone. The scar healed, but some time later it began to hurt. The discomfort increased very gradually, until she had constant pain in her scar for the last few months. The pain had also spread to the skin around the scar. The skin in the whole region had become incredibly oversensitive, so that even the touch of clothing or the wind caused her discomfort.

She couldn’t get any explanation or any treatment that relieved the pain within the realm of conventional medicine. Two further operations had not even helped.

From an acupuncture perspective, her discomfort could be explained by the fact that the surgical cut over her breastbone had been straight across a meridian, and unfortunately the “energy” could no longer find its way. The treatment was simple. Since I knew which way the “energy” had to run in the meridian, I put a needle through the scar in the direction of the energy flow. The patient immediately described a feeling of “pins and needles” on the other side of the scar. After waiting some time I put a needle in the scar in the opposite direction.
The patient then said that the “pins and needles” stopped - she felt a calmness and a normal, comfortable feeling.

At the end of the treatment the scar and the surrounding area were hot. On her next visit she told me that the discomfort had been gone for 2 days. I repeated the treatment, and after a few visits the patient’s discomfort was alleviated.

If we imagine energy streaming along the meridians like water in a river, it’s not difficult to see how a scar across the direction of flow could make a blockage, like a dam in a river. We can also understand how pricking a hole in the blockage could allow the energy to flow again.

If we compare the way acupuncture works with the way common medical and surgical treatment works, there is a significant difference.

Let’s take the treatment of stomach ulcers as an example. Just 25 years ago, the common way to treat ulcers was using surgery which sought in various ways to relieve the patient’s discomfort (stomach pain resulting from too much acid being produced). In the beginning they cut out part of the stomach, leading to severe side effects in many patients. Later the technique was refined so that they only cut the nerves that supply the stomach with the message to produce stomach acid. Today doctors have abandoned surgery and only use medication, to either block the release of acid from the stomach’s mucous membrane or to kill certain bacteria in the stomach. These treatments can also lead to side effects, but these are much milder than with surgical treatment.

Both the treatment using medicine and the surgical treatment influence the cause of the ulcer at the same level - by reducing acid production. If one treats the same problem using acupuncture, it works in a very different way. From a Chinese perspective, a stomach ulcer is typically an indicator of a disturbance to the energy in certain meridians. Acupuncture works by stimulating the body’s own healing resources to reestablish a balance.

While both medicine and surgery can be seen as treatment of the symptom through an active intervention which tries to block biological processes, acupuncture works purely by stimulating the body’s own healing resources, so that the body heals itself.

I have asked patients having an ulcer treated using acupuncture, what the effects are that they experience. While their comments can’t be taken as proof that these things are true, they are certainly thought provoking.

The needles make them relax, so that when they face situations that normally make them stressed and irritable and lead to stomach ache, they instead find they are much more relaxed. They also discover, to their surprise, that they
don’t get a stomach ache. They describe it as a striking contrast to treatment with medicine, which indeed prevents their stomach ache, but doesn’t change their feeling of stress.

Acupuncture and Western research

Over the last 30 years, the contribution made by research within medical science has meant that we today have scientifically trustworthy explanations for the effects of acupuncture. It has also been possible, through carefully planned studies, to document the positive effects of acupuncture on a series of complaints.

Clarification of the way acupuncture works is, however, still incomplete. The research done to date suggests that acupuncture works in different ways, depending on whether it is used to block the experience of pain or to prevent and treat illness. These areas will therefore be handled separately.

In this last century, support for the Taoistic world view has come from a completely unexpected quarter - from atomic physicists. This will be touched on at the end of the chapter.

ACUPUNCTURE’S EFFECTIVENESS AS AN ANAESTHETIC

The first operation in the world which used acupuncture as an anaesthetic, was carried out in Shanghai in China in 1964. From the beginning of the 1970’s, a substantial research effort began both in China and in the West, to try to understand how acupuncture could have such an effect.

A series of studies carried out under the leadership of the Swedish physiologist, S.A. Andersson, have helped to shed light on the way acupuncture can block pain. In these studies, electric current was run through the teeth of volunteers, and the current level at which they each experienced pain was recorded. Each person then received acupuncture, and after various time intervals, the experiment was repeated.

The trials showed that if the needles weren’t activated, the pain threshold was unchanged. If the needles were electrically stimulated, the person had a higher pain threshold, and the effect increased as more current was applied.

The frequency of the electrical stimulation was also shown to be significant. With stimulation at 100 Hz, the needles quickly had an effect, but this effect
also quickly disappeared when the stimulation stopped. With stimulation at 2 Hz the effect took longer to set in, but then lasted for up to two hours after stimulation ceased.

The placement of the needles was also shown to play a role. The needles worked better if they were placed in the cheek, near the teeth, than if placed in the hand. A needle in the hand did work however, just not as well. The stronger effect attained by stimulating a needle in the cheek could however be extended by stimulating the needle in the hand, even though the needle in the cheek was no longer stimulated.

This research showed that acupuncture was able to block an experimentally induced pain under conditions which fulfilled Western scientific research criteria.

The way in which electrical stimulation at 100 Hz can block the sensation of pain can be explained using “gate theory”, which was formulated by Ronald Melzack and Patrick D. Wall⁶.

In order to understand the theory, let’s imagine a train travelling from Boston to Washington and say that this corresponds to the trip taken by a pain impulse going from a finger to the brain. The pain will first be registered when the impulse reaches the brain. If, for example, you burn yourself on a hotplate, you will find that you say “ouch” long after you have pulled your hand away, as you stand there with it suspended in midair. That’s because the body has a reflex mechanism which removes the fingers from the hotplate. The pain impulse goes from the fingers into the spinal cord and then a new impulse goes out from there to the muscles, causing them to contract and remove your hand from the hotplate. Reflexes like this are lightning fast, and much faster than the time it takes for the signal to continue along the spinal cord to the brain. Hence the paradox, that we say “ouch” (feel the pain) as we stand there with our hand in midair.

We are witnessing a similar phenomenon when we see a chicken run around in the chicken yard after its head has been chopped off.

If we go back to the train analogy, the train is going from Boston to Washington but the carriages have to be sorted at New York. Some have to be taken back to Boston, some must continue to Washington, and it is only when they reach Washington that pain is experienced.

According to gate theory, the acupuncture needles work by derailing the train at New York so that it never reaches Washington. That means that during an operation you can feel the surgeon’s knife, but you don’t experience any
pain. The reason you can still feel the knife is that pain and touch sensations travel on different trains, and acupuncture only affects the trains which carry pain.

The reason the theory is called “gate theory” is as follows. It is assumed that only a limited number of trains carrying pain sensations are permitted to continue on to Washington. The trains carrying impulses from the stimulated acupuncture needles, and the trains carrying pain sensations from the surgeon’s knife have to go through the same gate (or along the same track) after New York. The trains carrying the needle impulses take up so much room that there is no room left for the trains carrying pain sensations from the surgery.

A series of other studies\(^7\) have demonstrated how electrically stimulating the needles at 2 Hz can have a pain blocking effect.

If the blood circulation in two rabbits is connected, and one rabbit is given electro-acupuncture stimulation at 2 Hz, the pain threshold is raised in both rabbits. If cerebrospinal fluid (brain fluid) is taken from the animal that has received acupuncture, and sprayed into the brain of the other animal, this will also raise this animal’s pain threshold.

This suggests that the effect of the acupuncture in this situation is by means of chemicals which are transported in the blood or in brain fluid. It has been shown that endorphin, chemically related to the painkiller morphine, is one of the chemicals involved in causing this effect.

If we go back to the train analogy, we see that the train also has to be shunted in Baltimore, and this kind of acupuncture results in a strong glue appearing on the tracks so that the train is unable to continue.

All the trials above have a common prerequisite. If the area on the human or animal which receives acupuncture is anaesthetized, it is not possible to block the pain sensations. \(\text{This shows that the nervous system is the central means by which acupuncture’s pain blocking effect is mediated}\). Pilot studies involving modern SPECT and MR scans have shown that well-defined regions of the brain are activated by acupuncture\(^9,10\).

Other factors might also influence the effects of acupuncture on inflicted pain. The volunteer or patient’s psychological and social situation, and the nature of their interaction with the researcher or doctor might play a role.

No research has yet been done which can resolve these questions, but as we shall see later, these factors seem to have an influence when heart patients receive acupuncture.
PRACTICAL CONSEQUENCES OF THE RESEARCH
It is one thing to show that acupuncture can block the experience of pain. Whether this knowledge has practical consequences is something else.

In China, acupuncture is used as an anaesthetic in just under 10% of all operations, and usually in combination with Western medicine. The combination is meant to result in less anaesthetic being required, and less discomfort for the patient after the operation - e.g. nausea, disturbed bowel function and difficulty breathing. Research carried out by Irish anesthetists has confirmed that acupuncture can prevent the nausea that many patients experience after normal anaesthetic 11. Both acupuncture and acupressure can relieve the nausea associated with chemotherapy and pregnancy 12.

The National Institute of Health in the USA has held a consensus conference on acupuncture. Acupuncture was considered to be effective in treating nausea, pain in general, regulating the immune system, chronic digestive disorders, period pain and symptoms following a stroke 15. The report also points out that there are significant methodological challenges. These are discussed in more detail in chapter VIII. In an English study of 34,000 acupuncture treatments, no serious side-effects were encountered. Thus when compared with medical treatment, acupuncture must be seen as a relatively gentle treatment 14.

Other studies, both in Denmark and abroad 15, 16, 17, 18, 19, have shown that acupuncture and TENS (Transcutaneous Electrical Nerve Stimulation) can relieve pain during childbirth. It has also been possible to use acupuncture to anaesthetize animals. But otherwise it has been difficult to reproduce the Chinese results, in terms of using acupuncture as an anaesthetic during operations, in the West. This might mean that the effects of acupuncture are unstable, depending on factors which are unknown at the moment and therefore difficult to regulate.

ACUPUNCTURE’S EFFECTIVENESS IN THE PREVENTION AND TREATMENT OF SPECIFIC ILLNESSES
It is not easy to understand how a needle stuck in the skin can affect an organ some distance away.

However, the nervous system, which is like the body’s telephone network, is able to bring about such an effect via a reflex.

Reflexes are best explained using an example.

Most of us have at some time or other been asked by our doctor to sit on a stool with our legs dangling, while he hits the spot just under our knee with a
little hammer - a “reflex hammer”. This makes our foot swing forward. You can try it yourself. Sit, for example on a table, with your knees jutting out a little over the edge, and your feet clear of the floor. Feel the hard bone of your knee with your hand, and then find the small, soft area just below it (a 2-3 cm region on an adult), followed again by something hard. Hit this soft place between the two bones gently with a hammer or with the handle of a screwdriver. You will observe that your leg swings forward. What you are seeing is a reflex. When you hit this spot with a hammer, an impulse goes up to your spine (into the spinal cord), and from there an impulse goes back down to the muscles in the front of your thigh, causing them to contract. When they contract, your foot moves forward. It is similar to the reflex that causes us to pull our hand back when we touch a hot hotplate.

Reflexes which basically work like the one above, form a two-way communication channel between the inner organs and the skin. The nervous system can at this point be likened to a stick of salami, in that the body can be divided into 31 salami slices. The individual slices form a unit, so that messages from the center are communicated to the edge of the slice and vice-versa. In humans, each slice corresponds to one vertebra, so that the skin is connected with the inner organs that lie behind it. For example, the skin on the chest is connected with the heart and lungs, and the skin on the abdomen is connected with the stomach and intestines.

The validity of these claims can be shown in animal trials. If you irritate part of the intestine in a cat, the skin corresponding to the same slice of salami immediately becomes pale. If you irritate another part of the intestine, the pale patch on the skin moves. Likewise, you can stimulate the skin and see a similar reaction in the inner organs.⁡

Such a reflex can not only be stimulated by a needle, but by any kind of irritation of the skin.

*The existence of these reflexes is fundamental to the understanding of the acupuncture system. It explains why the points on the patient’s skin are sore, and also why sticking needles in these points can relieve the patient’s symptoms.*

It is remarkable that the Chinese, more than 2000 years ago, were able to describe a connection between the skin and the organs, which today corresponds to the composition of the nervous system. For example, the points which the classical Chinese texts describe as being sore with heart disease and which were therefore stimulated, correspond to the areas on the skin which we today
know to have common nerve connections with the heart.

An Austrian vet has carried out some studies which illustrate these things. He observed that raised, sore points, corresponding to the Chinese acupuncture points, appeared on the skin of cows which couldn’t get rid of the afterbirth after delivering their calf. He discovered that the afterbirth was delivered if he stimulated these points with a needle. If he put the needles in other places, the cows did not benefit. He found this phenomenon surprising, and did some experiments to seek an explanation. He implanted a pressure sensor inside the uterus of pregnant cows, and an electrode in the musculature of the uterus wall to measure the strength of the contractions. He then monitored the cows and again observed sore points on the backs of the cows which couldn’t deliver the afterbirth. The points were not sore when things went well during the actual delivery of the calf. Nor did they appear on the cows which were able to get rid of the afterbirth.

When he stimulated the sore points on the cows which couldn’t get rid of the afterbirth, he could see that the pressure in the uterus increased, and that the contractions became stronger, shorter and directed towards the neck of the uterus, following which the afterbirth was delivered without difficulty. If he stuck the needle in a point on the back which wasn’t sore, there were no measurable changes either in the character of contractions or in the pressure inside the uterus. If he stimulated the sensitive points by sticking in a needle at an earlier point in the labor, before they had become sore, this also had no influence on the birth process.

These experiments suggest that these reflexes between the inner organs and the skin are fundamental to the way acupuncture works. They cause sore points to appear on the skin when something is out of balance in the body - so-called “trigger points”, or in classical Chinese terminology, “ashi points”. Reflexes also appear to be the mechanism by which irritation of these sore points can bring about a reaction in the body that brings things back into balance again. In humans, acupuncture has been shown to increase fetal activity in the womb and to help correct a breech presentation.

These observations also help us to understand how acupuncture can prevent illness.

Most illnesses develop gradually so that we see the warning signs before the disease is so advanced that it requires bed rest in order to recover. If the above reflexes are activated in the earliest stages of an illness, it will be possible to stop the advance of the illness and prevent a full outbreak.
Scientific trials have demonstrated that acupuncture can prevent the onset of certain conditions. This is true of period pain\textsuperscript{24} and headache or migraine episodes.

A trial at the Dental College in Århus, Denmark, showed that an acupuncture needle in the foot can reduce the number of headache episodes\textsuperscript{25} experienced. The research results have since been confirmed at the Århus municipal hospital\textsuperscript{26}. This effect cannot be explained using the salami model above, so perhaps the nervous system is more complicated than we have imagined, or perhaps there are other systems which also contribute.

These systems could be “energy” systems.

The nervous system is traditionally divided into two parts. One part is under the control of our will, and helps us to move our limbs and so on, when we want that kind of thing. The other part is called the autonomic nervous system, based on the assumption that the system functions autonomously - i.e. is self-governing. Reflexes in the inner organs operate within this part of the nervous system, and we will now look at how these reflexes affect the body.

The autonomic nervous system is seen to consist of two opposing systems - the sympathetic and the parasympathetic. The two systems work in opposition to each other, and the balance between the activity in each system determines the body’s state. The sympathetic nervous system is active when we are afraid or stressed. It causes the heart to beat quickly, it supplies blood to the muscles so that we can run fast, and it makes us alert. It siphons activity away from the digestive and reproductive organs.

The parasympathetic nervous system activates digestion, causes the heart to beat slowly and stimulates the reproductive organs. Many complaints are accompanied by an imbalance in the autonomic nervous system and there is much to suggest that acupuncture operates by bringing it back into balance.

If, for example, you have tension (pain) in a muscle where it attaches to the bone, this tension will lead to an increased sympathetic activity in the blood vessels in the area. This will cause the blood vessels to contract, and together with the associated inflammation reaction, this will further reduce the blood supply. When the blood vessels contract, the temperature in the area falls, leading to a further contraction in the blood vessels. This makes it harder to dispose of waste chemicals, including the chemicals which lead to pain. The constriction also interferes with the supply of repair cells. All in all a viscous cycle, which is easily made worse if the whole body is in a state of heightened sympathetic tone because of other stress factors.
If this kind of state is treated using needles, their effect seems to be to cause the blood vessels to dilate by blocking the overactive sympathetic nervous system. This leads to a greater supply of fresh blood. Waste chemicals are washed away more easily, pain inducing chemicals are washed out and there is an increased supply of cells for clean up and repair. Basically, a positive cycle is started, and if the painful region is left in peace, it will be able to heal. This explains the well-documented effectiveness of acupuncture in treating tennis elbow 27, chronic back pain 28 and tension headaches.

An important element of asthma is that the muscles in the walls of the air pipes which carry air to the lungs (bronchial tubes), contract too much, making breathing difficult.

These muscles form rings in the air pipes. If they contract, the opening is narrowed, and it is more difficult for air to pass through. There can be many different factors which cause these muscles to contract too much - both allergic and non-allergic. What they all have in common is a disturbance in the nervous system’s regulation of these muscles.

The extent to which acupuncture has an effect on asthma by normalizing this overactivity is unknown. Scientific studies into the effects of acupuncture on asthma have given conflicting results. Some foreign trials have demonstrated a positive effect 29. A Danish study was done at the University hospital in Copenhagen. This trial was based on a traditional medical science design and compared genuine and fake acupuncture. The results were unable to show a long-term difference between the effects of the two. At the same time, the patients who received genuine acupuncture had improved health. The study’s conclusion was cautious, recommending further research to clarify the problem 30.

The effects of acupuncture on atherosclerotic heart disease will be described separately later in the book.

There are certain conditions on which acupuncture has a well-documented effect, but where the effect mechanism is not yet fully understood. This is the case for period pain 24 and reduced fertility in men caused by poor sperm quality 31.

When we talk about effect mechanisms in the prevention and treatment of illness using acupuncture, we also need to look at the patient’s psychological and social situation and the patient-doctor relationship. These factors will be examined in Chapter V.
ACUPUNCTURE AND ATOMIC PHYSICS

We have seen how the way in which acupuncture works can easily be explained from a Western scientific perspective. The Chinese explanation, as I said before, is purely speculative and has its roots in a Taoistic perspective. This perspective has now received scientific backing from theoretical atomic physics - not in the way it explains the effects of acupuncture, but in its view of the world.

In the beginning of the twentieth century, atomic physicists discovered that the world could not be divided into small units which were mutually independent - as had been believed. By studying the smallest components of matter which can be observed (atoms), they found that these were not made up of well-defined particles or independent units. Rather, they found them to be more like abstractions or sets of relations which were mutually dependent, and whose properties could only be described/observed through their interaction with their surroundings.\(^\text{32}\)

In other words, the world could not be described without describing ourselves at the same time.

This way of thinking is called “holistic”, and is consistent with the Taoistic world view. If we ask atoms if they are particles, the answer we get is that they are particles. If we ask if they are waves, the answer we get is that they are waves. This paradox, expressed in Niels Bohr’s complementarity principle in 1927, is perhaps best understood as showing that concepts like particles and waves stem from our intellect. Our descriptions of nature are therefore affected by the limits of our intellect and language. Particles and waves are complementary concepts similar to yin and yang, as Niels Bohr also pointed out.

Atom physicists had to accept that at the deepest level, the world could not be explained from an analytical perspective, but had to be described using more metaphysical concepts - a perspective which is identical with Taoism.
II

How does atherosclerosis develop?

No one knows exactly why atherosclerotic disease is so widespread in the Western world, or exactly what the mechanisms are behind its development. However, it has been possible, through large population studies, to find a large set of factors which have a statistical (but not necessarily causal) relationship with heart disease:

- Smoking
- High alcohol consumption
- Lack of exercise
- Diet rich in animal fats
- Increased levels of cholesterol and triglycerides in the blood
- Being overweight
- High blood pressure
- Genetic disposition
- Psychological strain
- Social strain
- Diabetes
- malnourishment as a fetus or child (see chapter IX: “How do I choose the best treatment?”)
- cataracts

Atherosclerosis appears to be caused by a complex interaction between the physical individual, and emotional, spiritual, social and environmental factors. The nature of this interaction cannot be completely understood from a rational perspective. Its consequence is, that a biological process which was originally a mechanism to protect the blood vessel walls from damaging influences, gets out of control, and becomes itself a disease.

As I mentioned earlier, the twentieth century atomic physicists came to recognize that the world couldn’t be divided up into small, mutually independent
units. If we transfer this admission into the realm of medical science, it means that man can’t be seen as an independent entity or as an object made up of independent units. A person should be viewed as a set of relations which are all mutually dependent, the properties of which can only be defined and observed through their interaction with their surroundings.

**The biological process of atherosclerosis**

Atherosclerosis is a very common disease in our part of the world. It affects the walls of the blood vessels which carry blood from the heart to the various organs in the body. It develops over many years, and can therefore be present for years before expressing itself as illness. The inner lining of a blood vessel is a completely smooth surface, to allow the blood to flow with the least possible resistance. This is enclosed in a layer of muscle cells, which enable it to dilate or contract as the organ it supplies needs more or less blood. The biological process of atherosclerosis begins, and continues, when the body’s own balance mechanisms are no longer able to outweigh the influence of the mechanisms which promote disease. In the heart, the disease plays itself out in the whole network of blood vessels, from the main arteries down to the smallest branches.

The heart’s blood supply derives from three main arteries. In the same way, for example, as a stream can supply a whole wheat field with water. In medical jargon these supply vessels are called the heart’s epicardial blood supply. “Epicardial” refers to the fact that they lie outside the actual heart muscle. When a bypass operation or balloon angioplasty is performed, it is to address narrowing in these arteries; either with a detour (bypass) or dilation (angioplasty), sometimes accompanied by the insertion of a steel net (a stent). The goal of a stent is to maintain the dilation achieved by the balloon treatment.

Blood is distributed inside the heart via a network of tiny blood vessels. The blood vessels branch off the main arteries into smaller and smaller units, like the branches on a tree. The smallest blood vessels, the “endocardial” blood vessels, lie inside the actual heart muscle, and provide nutrition to the individual heart muscle cells. They are tiny (a fraction of a millimeter in diameter) and not accessible to invasive treatment (i.e. an operation). However, atherosclerotic disease is also found in these blood vessels.
FACTORS WHICH CONTRIBUTE TO THE BIOLOGICAL DEVELOPMENT OF ATHEROSCLEROSIS

As I said before, no one knows exactly how atherosclerosis develops, nor is there scientific consensus about what happens. As mentioned at the start of the chapter the reason atherosclerosis begins and continues to occur is tightly linked to the protective mechanism of inflammation and healing of the vessel walls. When too much of this activity occurs, for too long, it can cause damage instead of good, and lead to a chronic state of inflammation and repair which becomes a disease in itself. From this we can deduce the advantages of pursuing a two-pronged strategy, namely to limit the conditions that cause the inflammation, and to strengthen the body’s ability to maintain functional equilibrium (homeostasis).

Below is a simplified presentation of some of the factors which it has been possible to isolate:

The earliest signs of atherosclerosis occur as a result of damage to the blood vessel lining. This attracts inflammation cells, as part of the body’s natural re-
action to damage. The end goal of this inflammation reaction is ultimately to heal the damaged tissue. The inflammation cells take up cholesterol, and can be seen as “fatty streaks” in the lining.

The damage to the lining can be caused by many different things.

A heightened “fight-or-flight” response (over too long a period), as a reaction to an individual feeling that they are in a fight and/or surrender situation, can lead the body to release too much adrenaline, noradrenaline and cortisol\(^2\). This causes the muscles in the blood vessel walls to contract, narrowing the opening. The heart therefore has to pump faster and harder to ensure an adequate blood supply to the various parts of the body. The blood flow in the constricted vessels therefore increases and becomes more irregular (turbulent), and the risk of damage to the lining increases. This can be seen, for example, with high blood pressure (other possible causes of damage are oxidized cholesterol, cigarette smoke, infection and catheter use during balloon angioplasty).

At the same time, the tendency for blood platelets and inflammation cells to adhere to the blood vessel wall increases, and there is a reduction in the release of chemicals from the cells in the lining which keep the blood vessels open during exertion. As a result the blood vessels can actually contract during exertion, and blood flow can deteriorate.

The higher levels of adrenaline and cortisol in the blood lead, in themselves, to an increase in the blood cholesterol level. At the same time, the supply of antioxidants gets used up (they protect the lining from damage and inhibit oxidation of cholesterol). Thus the level of oxidized cholesterol in the blood increases, which in itself damages the lining and exacerbates the situation. Oxidized cholesterol, and the related lipoprotein(a) cholesterol are seen as foreign bodies by the immune system, further stimulating the inflammation reaction. In the next phase, fibrous material from the blood is attracted and forms a fibrous coating on the blood vessel walls. The number of muscle cells in the vessel walls also increases. Eventually, as the process continues, the vessel walls thicken, the opening narrows and the blood supply deteriorates. The final consequence can ultimately be the formation of a blood clot, completely blocking the blood vessel.

The formation of a fibrous deposit in response to damage is by no means unusual. Normal wounds heal in the same way. The thing about atherosclerosis is, that the cause of the damage (high blood cholesterol, high blood pressure, diabetes, being overweight, smoking, etc.) tends to be ongoing. But it is worth noting that the process can, to a large extent, be reversed.
The cholesterol rich deposits in the blood vessel walls are called plaques, and are unstable. Plaques can form anywhere in the heart’s network of blood vessels, but are most often found in vessels with a modest degree of atherosclerosis – without any symptoms of the disease necessarily being evident. Even tests like an exercise ECG, myocardial scintigraphy or coronary arteriography may not show anything abnormal. Naturally such blood vessels are not accessible to invasive treatment. There are often several such plaques.

The increased levels of “fight-or-flight” hormones in the blood increase the adhesiveness of the blood platelets and the blood’s tendency to coagulate, increasing the risk that plaques will form.

The unfortunate thing about these unstable plaques is that they can tear away. They then flow with the blood through the network of blood vessels, until they jam somewhere like a cork, blocking the blood supply to part of the heart. The situation is exacerbated by the fact that the loose plaques can cause the muscles in the blood vessel walls to cramp. The result is that part of the heart receives no oxygen and the affected muscle cells die. In everyday language this is called a heart attack, in medical jargon it is called a myocardial infarction.

The increased levels of “fight-or-flight” hormones in the blood also inhibit the body’s immune defences, hindering the initial healing process when the blood vessel wall is damaged, so that the inflammation more easily becomes chronic. Similarly, any invasion of the blood vessel wall by microorganisms becomes harder to fight. Observations have been made which suggest there is a connection between infection and heart attack. However, later studies indicate it is unlikely there is a pattern of infection by a specific microorganism. The prognostic value of inflammation indicators in the blood (e.g. C-reactive protein, fibrinogen and uric acid) suggests that a chronic inflammation reaction is of central significance in the process.

The reason for the extraordinary increase in the incidence of new areas of narrowing after invasive treatment (30-50%) is thought to be further inflammation, fat deposits and thrombosis.

SOME FACTORS WHICH CAN PROMOTE THE PROCESS
1. An ongoing “fight-or-flight” response:
   • A continued, high degree of contraction in the muscles in the blood vessel walls will lead to a faster and more irregular blood flow, caus-
ing new damage to the lining,

- The ongoing damage and the repeated depositing of cholesterol and fibre will eventually lead to the build up of many layers, thickening the artery walls even further. This further reduces the opening in the artery and the blood flow deteriorates.
- The many lesions in the blood vessel walls cause the liver to release greater amounts of cholesterol into the bloodstream, which in itself promotes the process.

2. An inadequate supply of necessary nutrients:

- Lack of vitamins C and E, and the amino acids proline and lysine will make the lining of the blood vessels less smooth, increasing the risk of lesions forming.
- Lack of vitamin C, magnesium and the amino acid, arginine, increases the tendency of the muscles in the vessel walls to contract too much.
- Lack of vitamin B, carnitine, coenzyme 10 and selenium reduces the heart’s pumping capacity.
- Lack of antioxidants: vitamins E and C, beta-carotene and selenium, leads to insufficient inhibition of the oxidation of cholesterol.

3. A high fat level in the blood, for example, caused by a high-fat diet, promotes the process. After a high-fat meal, the plaques become particularly unstable for up to 24 hours.

4. If levels of HDL cholesterol are too low, the concentration of the harmful LDL cholesterol in the blood will increase.

5. Increased levels of fibrous material in the blood, promote plaque formation.

6. The process is also promoted if the blood platelets become more adhesive or if the level of coagulation factors increases (a group of substances in the blood which ensure that the blood can clot).

How atherosclerotic heart disease becomes evident

This combination of factors can cause the artery openings to narrow and restrict the blood flow to such a degree, that the heart no longer gets enough
oxygen (fuel), and signs of illness become evident.
The small lesions in the lining of the blood vessels cause a “contrary” reaction in the muscles surrounding them. If you have healthy blood vessels, the heart’s blood supply increases during physical or psychological strain, so that it can pump more blood out to the muscles. In blood vessels affected by atherosclerosis, the opposite occurs.

The muscles in both the large and small arteries contract instead, resulting in an insufficient blood supply to the heart. Patients experience this as chest pain in situations which require more oxygen, that is during physical and psychological exertion.

The disease can manifest itself in various ways:

- Chest pains or tightness during physical and psychological exertion (angina pectoris). If the disease develops further, oxygen shortages can occur even when the demands on the heart are not very great, making it difficult to engage in life’s many activities.
- The heart can beat irregularly. That in itself can feel uncomfortable, but it can also reduce the heart’s pumping efficiency. This can be seen, for example, in shortness of breath during exertion.
- In a heart attack (infarction) the blood supply to part of the heart is blocked and that part of the heart muscle dies. The dead section is replaced by scar tissue, but since that cannot contract, the heart’s pumping efficiency can be permanently reduced. This may show itself in shortness of breath, or swollen legs.

For treatment purposes, it is important to understand that the above process can go both ways. That is, that the body can restore itself, the disease can be healed and the patient can become healthy again, if the conditions causing atherosclerosis are removed. The goal of our treatment program is to change these conditions. And, as the results of our research show, such a goal is achievable (see chapter VIII).

Local surgical treatments (bypass operations or angioplasty) are not always the best conceivable solution in the treatment of a disease that can affect the heart’s entire network of blood vessels, from the main arteries down to the tiniest branches. The dangerous breakaway of an unstable plaque, which causes heart attack, can also happen in blood vessels with only modest atherosclerosis and which are simply not accessible to surgery.
DIAGNOSIS
Ischemic heart disease is diagnosed using a bicycle test, in which the patient rides on an exercise bike as the gradient is gradually increased. As the patient pedals, their heart’s operation is monitored on an electrocardiogram (ECG), which can show whether the heart lacks oxygen as the workload increases. The blood supply has to be reduced by more than 50% before a bicycle test can detect it.

Myocardial scintigraphy can supplement a bicycle test. In this test, a radioactive substance is added to the blood stream and a device to measure radioactive emissions is placed over the heart. In this way the blood supply to various parts of the heart can be observed. Doing a bicycle test at the same time can help expose whether the heart lacks oxygen during exertion, and if so, in which areas.

During coronary arteriography, a contrast media is added to the blood stream and chest x-rays are taken which show the blood in the main arteries. These images can tell the surgeon which arteries might be candidates for balloon angioplasty or a bypass.
The body’s health balance can be compared to a household budget. A family has a healthy economic balance when its income exceeds its expenses, and is not quite as healthy when the opposite is the case. You can’t live without spending. But if you spend more than you earn for too long, you run the risk of getting into debt and having an economic imbalance. If the imbalance becomes extreme, the bank may act to limit your economic freedom, which may result in payments being blocked and ultimately in bankruptcy.

If we apply this way of thinking to the body’s health balance, it means that it is wise to have a balance between the conditions of life which consume your energy, and the conditions that give you energy. Even though the existence of such energy is not proven in Western science and is not taken into account in the Western concept of “health”, it is a phenomenon we all know from our experience. If the body’s energy and resources are eroded too much and for too long, it is no longer able to maintain the natural balance in the function of its organs. The capacity to repair itself can also be reduced, creating an environment in which processes which lead to illness can arise, like atherosclerosis. With time this can lead to real illness or even to premature death.

Is it possible to turn around a trend like this, to heal yourself - to return to a good health balance - in the same way you can turn around your personal economy?

The answer is yes!

The body’s capacity to heal itself after strain and illness is known both to science and Chinese philosophy.

In Chinese philosophy, it is explained based on the confidence that man’s goal is to live in balance with nature - and based on an understanding of yin, yang and qi.

Life energy, qi, provides the foundation for life and is divided into the two
complementary strands, yin and yang. Yang is the name used for active, creative and resource consuming processes, while yin is the name used for passive, preservative and resource consolidating processes. The creative activity, yang, is necessary in order to build up the organism’s resources, yin, and to preserve qi. The preservative activity, yin, is necessary in order to provide the resource base for yang. If the resource consuming yang dominates too much and for too long, the body’s resources, yin, are eroded so much that qi is weakened.

Atherosclerotic heart disease can occur when the body’s qi has been too weak for too long. The human body is seen as a microcosm which is subject to the same natural laws as the surrounding macrocosm. Balance is brought about through a dynamic equilibrium between yin and yang. According to classical Chinese theory, when atherosclerotic heart disease needs to be healed, this is done by bringing back a balance between yin and yang so as to strengthen qi.

In Western thought, the body also seeks equilibrium, called homeostasis - from the Greek for “same place”. Homeostasis is not a fixed balance point or a stable state, but a dynamic balance (as with yin and yang). That is, a state which fluctuates around a state of equilibrium. This state varies from person to person and from situation to situation. Based on information from our 5 senses (smell, taste, touch, hearing and sight), our thoughts and feelings and some basic biological survival criteria, our brain’s superintelligent coordination organ, the hypothalamus, decides what is best for the body right now - from a biological and physical point of view. Then the nervous system and hormone system set off the processes all over the body which will ensure that this happens.

In this way the body has a capacity to recover from strain and illness.

This capacity the body has to heal itself corresponds to what Western medical science calls the ”placebo” effect. This concept covers all factors which have a positive influence on the healing process, but which don’t form part of any specific medical or surgical treatment.

In its classic form, the placebo effect describes the improvement which results from taking a sugar pill when the doctor presents the pill and its effects with confidence and enthusiasm. A “nocebo” is the opposite of a placebo - for example, when a doctor unfairly casts doubt on the effects of a given treatment and it then is ineffective, despite being biologically potent. The very existence of these terms shows that medical science acknowledges that the body has the capacity to heal itself, and that this capacity can be influenced by factors other
than medication and surgery. With regard to the heart it is particularly inter-
esting that the latest research indicates that, contrary to earlier understanding, the heart can repair itself - and thus potentially recreate a normal, functioning heart after part of the heart muscle has died or been damaged as a result of atherosclerotic heart disease\textsuperscript{1,2,3,4}.

The goal of our self-care program is to teach you to manage your health, based on an understanding of these conditions, as illustrated in the figure below, “A healthy heart”.

**A healthy heart**

The picture of the scales on the next page illustrates the philosophy behind the classical Chinese healing arts. It shows which factors influence qi, and how they affect the balance on the scales. Equilibrium should not be seen as something stable, but as something like the Chinese yin and yang. An understanding of this concept of balance is one of the key elements in the theoretical component of the self-care program.

The figure shows how acupuncture and acupressure can affect the heart’s general operation and blood supply (see pages 34 and 88ff).

Nerves in the skin are stimulated and send an impulse to the spinal cord. This is the first sorting station, since some impulses go directly to the heart via a reflex, while others go up to the brain. Much of pain suppression caused by acupuncture and acupressure is played out in the spinal cord, based on so-called gate-control theory. The impulses from acupuncture or acupressure result in less room being available to forward on pain impulses.

The second sorting station is in the thalamus. Here the signal is influenced by our thoughts and feelings before it reaches the command center in the hypothalamus. The release of endorphins resulting from acupuncture and acupressure restrict the transmission of pain impulses through the thalamus, so that the impulses are weaker when they reach the cerebral cortex - the place where we first become aware of the pain.
Figure III.1, A healthy heart
– overview of conditions that affect the balance

- Examples of factors which strengthen life energy – qi:
  1. Way of life:
     - Play, laughter, music, dance
     - Religion and altruism
     - Feeling of being in control
     - Exercise
     - Relaxation
     - Acupuncture
     - Acupressure
     - Diet
  2. Living conditions:
     - Healthy finances
     - Good social life
     - Hope
     - Love
     - Environment
  3. Biological factors:
     - Hereditary factors
     - Check of acupuncture points reveals:
       - Soreness in the points reduces
     - Nervous system’s activity phase
     - Restitution phase
     - Arteriosclerosis/heart pains diminish

- Examples of factors which weaken life energy – qi:
  1. Way of life:
     - Worry, bitterness
     - Feeling of inadequacy
     - Feeling of guilt
     - Performance anxiety
     - Time pressures
     - Unresolved conflicts
     - Anger
     - Powerlessness, hopelessness
     - Diet
  2. Living conditions:
     - Change
     - Loss/grief
     - Long-term strain
     - Environment
  3. Biological factors:
     - Hereditary factors
     - Other illnesses
     - Infection
     - Pain
     - Check of acupuncture points reveals:
       - Soreness in the points increases
     - Nervous system’s activity phase
       - “fight-or-flight”
     - Arteriosclerosis/heart pains advance

The hypothalamus is also the top-level regulatory center for the heart and circulation. Impulses go down to the heart from here through the spinal cord, regulating the heart’s operation more appropriately.

The following information is given on each side of the scales:

- Conditions which push the balance in that direction and their effects on life energy according to Chinese health philosophy
- Biological factors linked to health balance

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HEAL YOUR HEART
• How these things are reflected in the degree of soreness in the control points and in the nervous systems balance between the “fight-or-flight” phase (where the sympathetic nervous system is most active) and the “rest and digest” phase (where the parasympathetic nervous system is most active)
• How these things affect the advance of atherosclerotic heart disease or the risk of heart pain

The diagram in the middle shows the connection between the brain and the heart, between an acupuncture point and the heart, between an acupuncture point and a blood vessel and between an acupuncture point and the brain (see chapter I and page 88ff).

Hereditary factors, diet and environment are listed on both sides of the scales, since they can work either way. While we can’t impact our hereditary disposition, we can influence diet and environment. If music becomes loud noise or if exercise becomes exhaustion they can both swap sides and lead to a reduction in life energy.

THE “FIGHT-OR-FLIGHT” PHASE
In order for the body to be fit and healthy there has to be an appropriate amount of life energy present, and this has to be able to circulate freely. Certain biological conditions consume more life energy than others. This is not necessarily bad, but they will erode your life energy or prevent it from circulating freely if they persist for too long. This opens the door for illness. Using up life energy is sometimes a good thing since it provides for the survival of the body. If, for example, your life is threatened, adrenaline is mobilized to increase battle readiness in terms of increased physical fighting capacity, increased concentration and reduced reaction times. In the body this leads to a faster pulse and higher blood pressure, and blood flows to the muscles and away from the digestive tract. One consequence is a reduced defensive capacity against infection and the suppression of any repair process that were under way. In Western medicine this state is called the “fight-or-flight” state, and is governed by the sympathetic part of the nervous system. Its biological effects are mediated through the hormones adrenaline, noradrenaline and cortisol via an activation of the hormonal axis between the hypothalamus, hypophysis and adrenal gland. This phase dominates when we feel that we are fighting or surrender ourselves.
RESTITUTION PHASE
Other conditions consolidate life energy, ensure the survival of the species by stimulating reproductive capacity, enhance defence against infection and facilitate repair and the continual renewal of worn out cells in the body. The surface skin cells are changed every three weeks, and the stomach lining even more often. In Western medicine this is called the restitution phase, and is governed by the parasympathetic part of the nervous system. It is mediated by a family of hormones called endorphins.

HYPOTHALAMUS
The general coordination takes place in the brain’s hypothalamus. The hypothalamus is the part of the nervous system which integrates impressions from the surroundings with the needs of the body, and which sets an appropriate reaction in motion. It looks after the general regulation of basically all the body’s functions and thereby ensures a stable environment in the body. It is here that the body’s functional status is decided moment by moment - to what extent the sympathetic (consuming) or parasympathetic (consolidating) activities shall dominate. In making this decision the hypothalamus uses information from all the body organs: from the five senses, from our thought processes, from our feelings and from the centers which manage our basic survival requirements (hunger, thirst, sex). Based on the sum of this information it decides what is actually most appropriate for the body, and then sends the right messages to the various parts of the body.

This knowledge can be used constructively in our health philosophy’s energy balance. It can give us insight into how the various conditions in our daily life affect the balance. It can also enable us to observe which phase is dominant in the body at a given moment. That’s because activity in the “fight-or-flight” phase leads to a greater level of activity in the sympathetic nervous system. In practice this means that the soreness increases in certain acupuncture points - and we can observe this when we apply pressure to the point with a finger. Certain acupuncture points have a special link to activity in the heart - and that enables us to gain insight into the heart’s actual activity phase.

Signs of an energy shortfall can be - beyond signs of illness - bad moods, lack of initiative, reduced concentration, poorer memory, reduced tolerance, increased irritability, reduced sexual desire, lack of enthusiasm for life and poor sleep quality.
Your health balance sheet

The first step in working out your personal health plan is to take stock of your present state of health.

Start by doing the following acupressure exercises. If the points are sore, you will benefit from following the program.

1. **Level of soreness in acupressure point CV 17 (p. 76)**

<table>
<thead>
<tr>
<th></th>
<th>Not sore</th>
<th>Slightly sore</th>
<th>Quite sore</th>
<th>Painful</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. **Level of soreness in acupressure point Per 1 (p. 78)**

<table>
<thead>
<tr>
<th></th>
<th>Not sore</th>
<th>Slightly sore</th>
<th>Quite sore</th>
<th>Painful</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. **Level of soreness in acupressure point St 18 (p. 78)**

<table>
<thead>
<tr>
<th></th>
<th>Not sore</th>
<th>Slightly sore</th>
<th>Quite sore</th>
<th>Painful</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next, fill in the schedule III.2 below, to get a picture of your personal health status. The sections correspond to the factors shown in figure III.1.

Note that soreness in the acupressure points indicates imbalance – even if your answers below suggest that your body is in balance. If you find this, I suggest you go through the schedule one more time.

The questions in schedule III.2 have been formulated based on knowledge and experience of the factors that influence atherosclerotic heart disease. The schedule has been crafted so that each question sheds light on a pair of positive and negative factors, representing the two sides of the scales in figure III.1.

Beside each statement, indicate on the 7-point scale the degree to which the statement applies to you, from “very much”, to “not at all”.

The first half of the schedule deals with factors which are potentially good for your health, in that they improve your body’s capacity to maintain or regain good health (and hence if you have a tendency to have heart pain this risk will be reduced).

The second half deals with factors which are potentially resource consuming, and which therefore can bring the body into a heightened “fight-or-flight” state. This state is OK if it only lasts briefly. If it lasts for a long time and
to too a high degree, it can have a negative influence on your health since it can promote atherosclerosis and increase the risk of heart pain.

If you have a spouse or partner, you can let them answer the questions too (i.e. let them indicate what they think is the case in your situation). Your spouse won’t always see things the same way as you do, and the differences may be illuminating.

**Schedule III.2 Your body’s health balance**

*Factors which may have a positive influence on health:*

<table>
<thead>
<tr>
<th></th>
<th>Very much</th>
<th>Not at all</th>
<th>cat. I,II,III</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acupressure (chapter IV)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do acupressure for my heart twice a day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>My relationship with myself (chapter V)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I love myself</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I acknowledge the negative sides of my personality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am at peace with my negative sides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am able to forgive myself</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humor is a regular part of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have an optimistic outlook</td>
<td></td>
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</tr>
<tr>
<td>I have a strong will to live</td>
<td></td>
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</tr>
<tr>
<td>I have a big appetite for life</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I am confident of reaching my goals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a religious affiliation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am aware of my feelings and needs</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I can motivate myself to reach a goal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often achieve my goals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am content with my achievements in life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am active in and take responsibility for my health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe my health can improve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>My Social life (chapter V)</strong></td>
<td>Very much</td>
<td>Not at all</td>
<td>cat. I,II,III</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------</td>
<td>------------</td>
<td>--------------</td>
</tr>
<tr>
<td>My family is supportive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I appreciate my family</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I give attention to my family life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My friends are supportive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I appreciate my friends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I give attention to my friends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular tender love and care is part of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Play, laughter and affection with another person</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>is a regular part of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have someone to confide in and have close contact with</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I live together with such a person</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a pet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I give attention to my working life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I give attention to my leisure time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I care for the people around me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I meet people with confidence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can forgive others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I help others without counting the cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I express my thoughts and opinions without hurting others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I take time to listen to others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I empathize with other people’s feelings and needs</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I am engaged in the life around me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I resolve conflicts without any losers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>My way of looking at my life circumstances (chapter V)</strong></td>
<td>Very much</td>
<td>Not at all</td>
<td>cat. I,II,III</td>
</tr>
<tr>
<td>I am happy with my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I face life with confidence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am happy with my sex life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am working at avoiding burnout</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(loss of interest in life, initiative, mood and energy)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am humble when things are going well</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I am patient when times are tough  
I feel that I have influence on my life  
I feel that I have enough control over my life  
I am working at learning to tackle life’s setbacks  
I am working at learning to tackle any anger, hostility or feelings of powerlessness  
I believe the future will bring good things  
I am often lucky  

**My lifestyle (chapter V)**

I give attention to my life dreams  
Play is a regular part of my life  
Creativity is a regular part of my life  
Music and dance are a regular part of my life  
I learn from stress  
I plan my day  
I prioritize my time  
Peace and quiet are a regular part of my day  
There is a positive balance in my personal finances  
I avoid the simultaneous occurrence of extremely stressful circumstances like divorce, serious financial problems, job uncertainty and ongoing legal proceedings  

**Life circumstances (chapter V)**

Hereditary factors  

**Exercise (chapter VI)**

I exercise for at least half an hour without a break each day (e.g. take a brisk walk, swim, cycling, sex)  
I do winter bathing  
I will lose weight (if overweight)  

**Relaxation (chapter VI)**

I do 10-20 minutes of combined relaxation and breathing exercises twice a day
I do yoga, breathing and stretching exercises for 10 minutes each day ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I have a 1 hour massage twice a week ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

**Diet (chapter VII)**

Mediterranean diet forms part of my diet ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

Vegetarian diet forms part of my diet ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I eat fish (1-2 times a week) ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I take fish oil as a dietary supplement ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I eat a variety of fruit each day ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I eat a variety of vegetables each day ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

Whole-wheat products form part of my diet ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I eat 100g of nuts each week ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I have a high fibre diet (fruit, vegetables and cereals) ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I avoid trans fats ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I drink 1-3 glasses of red wine (or other alcohol) each day (men) / each week (women) ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I drink 1-2 cups of good cocoa (min. 55% cocoa) each day ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I drink black or green tea each day ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I take a selenium supplement (if levels low) ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I take supplements of folic acid, vitamin B6 and B12 (if homocysteine levels in the blood too high) ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I am stopping smoking ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I will try herbal medicines ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌

I will be a blood donor (if male) ❌ ❌ ❌ ❌ ❌ ❌ ❌ ❌
**Factors which may have a negative influence on health:**

<table>
<thead>
<tr>
<th>My relationship with myself (chapter V)</th>
<th>Very much</th>
<th>Not at all</th>
<th>cat. I,II,III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety fills much of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fear fills much of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worry fills much of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a strong need to “win”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am impatient and restless</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Things don’t often work out for me</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I often feel inadequate</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I often act before I think</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I am often in a bad mood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impatience fills much of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can’t get rid of tension</td>
<td></td>
<td></td>
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<tr>
<td>I feel guilty about even small mistakes</td>
<td></td>
<td></td>
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<tr>
<td>I am a perfectionist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have no self-confidence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anger fills much of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am quite self-absorbed and touchy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hopelessness fills much of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Powerlessness fills much of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have trouble keeping interested in life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel drained of energy</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>My social life (chapter V)</th>
<th>Very much</th>
<th>Not at all</th>
<th>cat. I,II,III</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel under pressure in my daily routine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I let conflicts remain unresolved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can’t get rid of my hostile or vengeful feelings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am consumed by vengeful thoughts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am angry I keep it to myself</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I easily get irritated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel lonely</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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64 HEAL YOUR HEART
### My way of looking at my life circumstances (chapter V)

<table>
<thead>
<tr>
<th></th>
<th>Very much</th>
<th>Not at all</th>
<th>cat. I,II,III</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am often unlucky</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am bitter about what life has given me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am not confident of anything good in the future</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### My lifestyle (chapter V)

<table>
<thead>
<tr>
<th></th>
<th>Very much</th>
<th>Not at all</th>
<th>cat. I,II,III</th>
</tr>
</thead>
<tbody>
<tr>
<td>I overlook signs of stress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a very busy life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is a negative balance in my personal finances</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Life circumstances (chapter V)

<table>
<thead>
<tr>
<th></th>
<th>Very much</th>
<th>Not at all</th>
<th>cat. I,II,III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hereditary factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Many things have changed in my life (e.g. job, moved)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have lost people dear to me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grief fills much of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I keep my feelings, needs and desires to my self</td>
<td></td>
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<td></td>
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</tbody>
</table>

### Biological factors:

<table>
<thead>
<tr>
<th></th>
<th>Very much</th>
<th>Not at all</th>
<th>cat. I,II,III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other illnesses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic pain</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Exercise (chapter VI)

<table>
<thead>
<tr>
<th></th>
<th>Very much</th>
<th>Not at all</th>
<th>cat. I,II,III</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t get any exercise</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Diet (chapter VII)

<table>
<thead>
<tr>
<th></th>
<th>Very much</th>
<th>Not at all</th>
<th>cat. I,II,III</th>
</tr>
</thead>
<tbody>
<tr>
<td>I consume a lot of stimulants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(e.g. alcohol, coffee, medicine, tobacco)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am overweight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I eat without regard for my heart</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Guide to your health balance sheet

Take a quick look at figure III.1 again. The schedule you have just filled in can help you identify the things in your life which give you energy – and the things which consume energy. It should give you an initial overview of your own, personal health balance.

No answer is more “correct” or “better” than another. Most people would probably agree that it is “good” to have a strong “will to live” and peace about your negative sides, and that it is “bad” to be full of suppressed anger. But the degree to which the different factors affect your body, positively or negatively, is an individual thing.

The guide which follows should not, therefore, be seen as an “answer sheet”, but aims to illustrate how to begin to work with these things, and how to put into words the things which bring you happiness or grief.

If your spouse or partner has also filled in the schedule, note the places where your answers differ by 3 or more points, and use this information constructively.

Start by looking at the things which may have a positive influence on your health and consider each section in turn. The further to the left you have made your cross, the more positive the influence of that particular factor.

Let’s take the section on “My lifestyle” as an example. This section contains 22 questions. Mark the first four columns of boxes (e.g. circle them as shown below) and see how many of your answers lie in this region. If it is all 9, you probably have adequate control of your life. If it is zero, go through the questions again and check that you have answered correctly. If you have answered correctly, it might be a good idea to work on this area.

There will often be 2 or 3 questions which stand out. For example, you might have put a cross in box 7 for these questions (as shown): “Playing is a regular part of my life” and “Peace and quiet are a regular part of my day”. If so, think about these questions a bit more. You might decide it is wise to work on these two things, or you might decide they are not significant. In any case, by going through the questions you will have considered the various elements that make up your self-image.

Answers in box 1 or 2 indicate areas where you have resources (e.g. “I learn from stress”).
Next, look at the things which weaken life energy, consider each section in turn. The further to the right you have made your cross, the more positive the influence of that particular factor. Note that in this category, what is “wise” is reversed in relation to the questions in the categories that deal with factors which strengthen life energy, including the example shown.

In these sections, mark (e.g. circle) the last four columns of boxes and note how many of your answers lie in this region. Again, find the questions which stand out.

When you are finished, the schedule should give you an overview of the things which are as they should be, and the things that require attention. You will use this information when you work out your personal health plan.

**Contact your doctor**

If you think you are ill or if you are particularly at risk of developing heart disease, contact your doctor, who will be able to evaluate your risk based on a number of conventional risk factors. The tables below present an overview of these risk factors. You can probably fill in the first table immediately. The second table will require consultation with your doctor to have your blood pressure taken and to organize the relevant blood tests. These tests can be quite expensive. If you feel you are in good health, as a “rule of thumb” you can say that if you are female, or male and less than 50 years old, and don’t have a stack of other risk factors (diabetes, overweight, smoking), blood tests are not acutely necessary.
Working out a health plan

**DRAW UP YOUR HEALTH PLAN**

What does the balance on your scales show?

A balance sheet is a good point from which to look forward. In order to be able to make a health plan, divide your answers (in schedule III.2) into three categories (right column. “cat.”):

1. Those which you can influence and which are easy to change right now
2. Those which you can influence in principle, but which are difficult to change quickly
3. Those which you can’t influence

Once you have an overview of your current health balance and of the factors you are able to influence straight away, you are ready for the next step. Based on your answers, and inspiration from the action plans in the chapters which follow, you can choose which items to incorporate into your health plan. *Note:*

**Table III.3**

<table>
<thead>
<tr>
<th>Conventional risk factors</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genetic disposition:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Family history of atherosclerotic heart disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Family history of diabetes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Family history of high blood pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI&lt;25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI = weight in kg / height x height in meters). e.g. weight: 60kg, height: 1.65m, BMI = 60/1.65 x 1.65 = 22.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aged over 60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### If your test results are given in mg/dl instead of mmol/l, consult the conversion table at the back of the book.

** Total cholesterol: A value between 4.2 - 5.2, reduces your risk by 50% and between 5.2 - 6.2, by 25%. A level above 6.2 is very undesirable for anyone less than 75 years old (see page 157ff).

*** Triglycerides: A value under 1.8 reduces your risk by 25%, and a value under 1.23, by 50% (see page 165ff).

** Acupressure should always be a top priority, especially if your acupressure points are sore.

** GET STARTED ON YOUR HEALTH PLAN

Integrating a health plan into your daily routine is a challenge. You need to set modest and realistic goals and be patient as you try to achieve them. It can take up to a month before you will be able to notice any improvement, and you need to be prepared for possible setbacks.

In order to stick to the program, it is important to quickly establish some

<table>
<thead>
<tr>
<th>Table III.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk factors to be tested by your doctor</td>
</tr>
<tr>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>** Critical value **</td>
</tr>
<tr>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>** Systolic blood pressure **</td>
</tr>
<tr>
<td>** Total cholesterol **</td>
</tr>
<tr>
<td>** HDL cholesterol **</td>
</tr>
<tr>
<td>** LDL cholesterol **</td>
</tr>
<tr>
<td>** VLDL cholesterol **</td>
</tr>
<tr>
<td>** Triglycerides ***</td>
</tr>
<tr>
<td>** Lipoprotein (a) **</td>
</tr>
<tr>
<td>** Homocystein **</td>
</tr>
<tr>
<td>** Selenium **</td>
</tr>
<tr>
<td>** Magnesium **</td>
</tr>
<tr>
<td>** C - active protein **</td>
</tr>
</tbody>
</table>
routines, so that they become a natural part of your day – just like brushing your teeth. Here I am referring to acupressure, exercise and relaxation (not things like weight loss and stopping smoking). Self-care focuses in the initial phase on acquiring new habits with a positive effect on health, rather than stopping negative habits. Recent research into intelligence supports this strategy. In practical terms, our capacity to make more correct choices can be increased by training. The daily successes you experience with your new habits (acupressure etc.) make it easier, in time, to change your negative habits.

The best idea is to start where you can make a difference straight away – the short term battle plan. Later you can work on factors in the second and third categories – the long term battle plan. Of course you can’t do anything about the factors in the third category, but hopefully you can change your attitude towards them, so that they are not permitted to affect your health more than absolutely necessarily. This is not easy, so it’s not the best to place to start if you want to be able to feel the results of your efforts fairly quickly.

USING THE ACTION SCHEDULES
Chapters IV, V, VI and VII present the tools and resources which you can employ in your health plan. It’s a good idea to wait until you have read the whole book, before you mark in priorities (I, II or III) in the action schedules, e.g:

I. right now
II. in 3-6 months, or after group I dealt with
III. possibly next year

SUGGESTIONS
It’s a good idea to write down your health plan. Keep a little notebook handy (e.g. pocket size) to write down your ideas.

Set realistic goals for you efforts and health improvement. Let a double dose of realism balance out your desire to get better. That will help you on the way to a steady and stable improvement. Be honest with yourself when you set goals, and only set goals which you think you have a 90% chance of achieving in the set time frame.

Make your plan for well-defined periods, e.g.: first week, first month, first quarter, first half year and first year.

In my experience, success can best be described as “what was achieved minus what was expected”. That means, that the more realistic and modest your
expectations, the greater your chance of experiencing a success.

Write down your goal for the individual period, and give yourself a pat on the back, and perhaps an appropriate reward, when the goal is achieved.

- Do your best to strengthen the body’s capacity to heal itself, by strengthening factors which have a positive influence on your health
- Do your best to remove or reduce factors with a negative influence on your health
- Try to keep the following things separate in your health plan:
  - Yourself
  - Your illness
  - Your lifestyle
  - Your family
  - Your finances
  - Your work
  - Your friends
  - Your leisure
  - Your life dreams

Eating an elephant can be quite a mouthful. The trick is is take one bite at a time. After one month it’s good to take stock of your health again, because you might begin to see the first signs of improvement by then.

Try to spread your category 1 initiatives over a longer period. For example, begin a new category 1 project in 3, 6 and 12 months – so that you are regularly working on something which is not too hard to succeed at.

You may find the following Chinese proverbs helpful:

*He who wins against himself is greater than the general who wins a whole battle* – therefore set modest success criteria for your efforts.

*Running water never goes stale* – how much effort you make, and how quickly you progress is not that important. It is far more important that you set manageable goals for both, so that you don’t get worn out or lose patience.

*With time, even the hardest granite has to give way to soft water* – a small but persistent effort can take us a long way.

You may be able to relate to the following episode:

I spent an evening in the company of good friends, eating, smoking and drinking a fair bit. On the way home I decided that I wouldn’t smoke or drink
the next day, but would take a long walk. Things went well to start with, and I had a lovely walk in the forest that afternoon. But as dinner approached, the wine was still opened and the pipe was lit while I prepared the food. “It doesn’t matter, it tastes good and it reinforces the pleasant atmosphere”, I thought to myself. Later I wondered at the way my will had changed – even though at the deepest level I knew it hadn’t. It’s as if my will has several layers with conflicting desires which can nullify each other. In my experience, if the “good will” is to win out to any reasonable extent, I have to continually help it to have small victories, rather than setting such big goals that they end in defeat.

FOLLOW UP
In chapter X you will find some follow up schedules which you can use to keep track of your progress and make a note of your goals for the next period.
Acupuncture and acupressure for the heart

Acupressure is the most important element in the training program and in your health plan. The main goal of acupressure is to relieve your discomfort and heal you if you are sick, or to prevent disease developing if you are healthy.

Acupressure can:

1. Relieve your immediate discomfort.
2. Give you a daily measure of the balance in your nervous system (see the figure, “A healthy heart”, chapter III) and thus enable you to see how effective your self-care has been.
3. Illustrate that the daily effort is worth doing. As you do preventative acupressure two times a day, you will observe that this modest effort can affect the balance in your nervous system, giving you greater confidence that the strategy presented here is effective – also in your case.
4. Enable you to immediately observe the effects of your self-care. The direct connection between efforts and results helps maintain the motivation to continue.
5. Show you that you are personally able, anywhere, any time, to measure and change the balance in your nervous system, and thus your risk of resulting heart pain.

The combined effect is a tool which allows you to gain control over your health, leading to a positive influence on your perspective of the future (e.g. anxiety about whether your next attack might be the last, etc.).

You do the acupressure yourself, by applying firm pressure to carefully chosen points on your skin with your fingertips.

The idea is, that with a relatively modest daily effort, you can help to improve your own health. The acupressure stimulates special acupuncture points, which cause the muscles in the walls of the small blood vessels in the heart to relax. As these blood vessels dilate, your heart receives more oxygen. If you have heart disease, your discomfort will be relieved. Acupressure can also help if you
suffer from heart pain. It takes away the pain just like nitroglycerine.

If you don’t suffer from heart disease, you will help prevent the disease from developing, in the same way as brushing your teeth each day prevents tooth decay (see chapter II for details).
Practical exercises – acupuncture and acupressure for heart disease

The effects of acupressure can be illustrated by comparing the body with a violin. If the music is to sound good, the strings have to be tuned regularly. Acupressure is the tool you can use to activate your own inner violin tuner. By checking the soreness in your acupressure points every day, you can investigate whether the body – the violin – is in harmony or over strung, and if so, which strings need tuning.

As you do the acupressure you activate the inner violin tuner. A violin tuner tightens the strings which are too loose, loosens the strings which are too tight, while not touching the ones which are correctly tuned. In the same way, acupressure leads to an adjustment of the activity in the nervous system. At the same time you can check whether you successfully got a message through to the violin tuner, since the soreness in the treatment points will reduce if you have. You can then investigate the soreness in the feedback points again and note that it has reduced, indicating that the violin is playing better – that is, that the body’s nervous system is in better balance.

The acupressure is divided into 3 levels:

A. Acupressure for beginners
B. Intermediate acupressure
C. Advanced acupressure

At each level you will be introduced to acupressure exercises in which you will pre-examine, treat and re-examine points on the skin. You will be guided, step by step, from level to level.

For the first two levels, all the points are on the chest, underarm area and foot. In the third level you will learn to find points on your back.

If you press too hard on certain acupuncture points, you can provoke chest pain (angina pectoris), if you have the disease. It is therefore important to:

- stop the acupressure if you experience chest pain (angina) while you are
pressing
- always have nitroglycerine tablets with you when you do acupressure, and take one if you experience pain
- consult a doctor if the episode doesn’t pass within a few minutes.

Note: In my 18 years of experience with acupuncture, I haven’t seen a single case where an angina episode provoked by acupressure did not quickly pass. The reason I have written this strong warning is to ensure against uneasiness, since the training takes place at home, without direct contact with me.

The illustrations for the individual exercises can also be found at the back of the book.

An acupressure treatment involves pre-examination, treatment and re-examination.

1. Pre-examination
During the pre-examination you note the degree of soreness in the special feedback points, as a measure of the balance in the nervous system surrounding your heart.

The purple region on figure 1 is a neutral point, which shouldn’t be sore. To help you evaluate the degree of soreness in the acupuncture points, you can compare them with this neutral point during the pre-examination.

It’s best to examine all the feedback points, before you begin treatment.

2. Treatment and re-examination
The actual treatment involves acupressure on the relevant treatment points for 1 minute, using your fingertips. It is possible during the treatment to check that you are doing it correctly. Note that you should do the acupressure on both your left and right arm and leg, even though the control points are only located on the left side of your chest.

During the re-examination you check whether the soreness in the feedback points has subsided after the acupressure. This quality control step is to ensure that the treatment has given the desired result, and thus helps to motivate you to continue your daily effort.

It’s easiest to do the treatment and re-examination step by step. For example, after treating Per 6, you check the corresponding Per 1, and after treating St 43, you check St 18.
A. Acupressure for beginners

A.1. Pre-examination – CV 17

*Find the neutral point:* Press along your collar bone with your fingertips and then compare the sensation from this region which is not sore, with the soreness in the acupuncture point, CV 17.

*Find acupuncture point CV 17:* Find CV 17, in the middle of your breastbone, at about nipple height. Work out from the middle of your breastbone, moving your fingertips up a little and down a little, and a little out to the sides, until you find the place which is most sore. Press here until you are able to register the degree of soreness on a scale from 0 to 3.

0. Not sore
1. Slightly sore
2. Quite sore
3. Painful

Compare with the (not sore) neutral point to help in this evaluation.

*Figure 1 – CV 17*
The degree of soreness in the acupuncture point reflects the balance in your nervous system. The less sore it is, the better the present balance is in your nervous system (see “A healthy heart” in chapter III).

Note: the movement between pre-examination and treatment in this exercise just involves a subtle change in the pressure you are applying – you don’t need to lift your fingers between the steps.

A.2. Treatment and re-examination
Immediately commence treatment by beginning to press gently on the point, hard enough that you can feel it clearly, but without pain. Adjust the pressure a little, until you can feel (after 20-30 seconds) that the underlying soreness has subsided. Then hold that pressure for a total of 1 minute. If the soreness increases, this is a sign that you have pressed too hard. Stop pressing immediately, and then try again in 10 minutes. However, if the underlying soreness doesn’t subside, you haven’t pressed hard enough (or long enough). Carefully increase the pressure until you achieve a reduction in the soreness.

B. Intermediate Acupressure
In this section we will expand on the introduction so that you learn the most important rules and exceptions behind the acupressure. Of course the things that you learned in exercise A will still apply. In this exercise, the new treatment and feedback points are different points. It is best to do the treatment and re-examination for each set of points in turn.

After each treatment you can check whether the treatment was done correctly in precisely the same way as for CV 17 (last exercise). If the acupressure is done correctly, the soreness in the actual treatment point will subside after 20-30 seconds of acupressure. After this, the pressure should be maintained until 1 minute, in total, has passed.

As a new step, you have to find the feedback points again. Press with your fingers on the region where the soreness is greatest, until you are able to register the degree of soreness on a scale from 0 to 3. If the treatment has been done correctly, the soreness in the feedback point should have significantly subsided.
B.1. Pre-examination

B.1.1 Pre-examine CV 17

*Find the neutral point*

*Find CV 17*

(see figure 1 and exercise A)

B.1.2: Pre-examine Per 1

*Find the neutral point*

(see figure 1 and exercise A)

*Find Per 1*

Find Per 1 on the left side of your chest (see figure 2a), halfway between your nipple and the anterior axillary fold (located on the border of the greater pectoral muscle). Start at the nipple and move your fingertips up a little and down a little, and a little out to the side, halfway towards your armpit, until you find the place which is most sore. Press here with your fingertips until you can register the degree of soreness on a scale from 0 to 3.

B.1.3: Pre-examine St 18

*Find the neutral point*

(see figure 1 and exercise A)

*Find St 18*

Find St 18 on the left side of your chest (see figure 3a), between ribs five and six (from the bottom). You can either find it by starting at the nipple and feeling the area directly under the nipple with your fingertips, or by lifting your breast and feeling along the region where your breast attaches to your chest. Move your fingertips up and down a little, and a little out to the sides, until you find the place which is most sore. Press with your fingertips until you can register the degree of soreness on a scale from 0 to 3.

B.2. Treatment and re-examination

Acupuncture points are found on both sides of the body, and you have to treat both sides, even though you have only pre-examined the points on your left side.
B.2.1. Treat and re-examine CV 17
(as in exercise A)

B.2.2. Treat Per 6 and re-examine Per 1

*Treat Per 6*
Find Per 6 between the two long tendons near your wrist which feel like two long guitar strings (see figure 2b). Start 2 cm above your wrist and move your fingertips up to about 6-8 cm above your wrist, until you find the point which is most sore. Start to press gently on the point, hard enough that you can feel it clearly, but without pain. Adjust the pressure a little, until you can feel (after

![Neutral point](image1)

![Feedback point, Per 1](image2)

*Figure 2a – Feedback point, Per 1*

*Figure 2b – Treatment point, Per 6*
20-30 seconds) that the underlying soreness has subsided. Then hold that pressure for a total of 1 minute. If the soreness increases, this is a sign that you have pressed too hard. Stop pressing and try again in 10 minutes. Note that you must press on both your left and right arm, the order is not important.

Remember to treat Per 6 on both arms, in the same manner.

One person in ten does not have the second tendon on the inward side. If that’s the case for you, the point is on the little finger side of the tendon you do have.

**Re-examine Per 1**

Find Per 1 again on the left side of your chest (figure 2a). Again find the place which is most sore and note the degree of soreness on a scale from 0 to 3.

If you have done the acupressure well, the soreness in this feedback point should have reduced noticeably (but won’t necessarily have disappeared). If not, redo the acupressure until you achieve a noticeable reduction.
B.2.3. Treat St 43 and re-examine St 18

Treat St 43
Find St 43 in the gap between the second and third metatarsal bones (see figure 3b). Start in the gap between your second and third toe, and move your finger-tips up towards your ankle, staying between the two metatarsal bones which are connected to your second and third toes. The location of the treatment point can move several centimeters from day to day, but will always lie between these two bones. Treat this point as for Per 6. Note that you must press on both your left and right foot, the order is not important.

Re-examine St 18
Find St 18 again on the left side of your chest (figure 3a). Again find the place which is most sore and note the degree of soreness on a scale from 0 to 3.

If you have done the acupressure well, the soreness in this feedback point should have reduced noticeably (but won’t necessarily have disappeared). If not, redo the acupressure until you achieve a noticeable reduction.

C. Advanced acupressure
We will now extend the exercises to include points on your back. You should ask your partner/spouse to the acupressure on these points.

C.1. Pre-examination
First examine all the feedback points on the front of your body (figure 1, 2a and 3a) and then on your back (figure 4a). Only treat the points corresponding to the sorest spinous process on your back and to sore points on your chest, plus CV 17 (figure 1).

Ask for help. The points on your back can be difficult to find without help. You should ask another person to be available the whole time to help you evaluate the level of soreness in the feedback points. If this is not possible, skip the pre-examination and try to do the treatment by yourself (go straight to “Treatment”).
Find the spinous process which is most sore: Turn your attention to the section of your spinal column which runs between your shoulder blades. Start at the 7th spinous process, which is on the spinal column, between the bottom edge of your shoulder blades, when both arms are hanging down.

Count the spinous processes upwards from here, 6, 5, 4 and 3. They sit in order on the spinal column 1, 2, 3 and 4 vertebra respectively, above the 7th spinous process.

Your spouse/partner should press with their fingers, until you can register a difference in the level of soreness in the various spinous processes. Note the level of soreness at the sorest one, on a scale from 0 to 3.

C.2. Treatment based on the the sorest spinous process

Each spinous process lies at the centre of four treatment points which are placed like compass points around it. These treatment points lie northwest, northeast, southwest, and southeast of the spinous process, outwards towards the shoulder blades (figure 4b). Note that you should only treat the points corresponding to the sorest spinous process.

There might well be more than one sore spinous process. The reason I suggest that you should only treat the points around the one which is most sore, is purely to prevent the task becoming so big and time consuming that it ends up being a source of irritation to your spouse/partner each time they have to do the acupressure. Treating the worst one is sufficient to achieve a good result.

During periods in which you both have more time, or feel the need is particularly great, you can do a bit extra by doing acupressure on more of the spinous process treatment points.

C.2.1. Treating the corresponding treatment points

The four treatment points just described exist as sore, dense points in the musculature of the back, between the shoulder blades or occasionally on the edge of the shoulder blades. The treatment points typically sit on top of elongated knots of tense, sore muscle between the spinal column and the shoulder blades.

Treat each point with 1 minute of acupressure, in the same way as described before (Per 6).

Note: The 4th spinous process will often be the most sore, and it has therefore been illustrated in figure 4b. The treatment points are situated in the same rel-

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ative manner – that is, higher up, if the 3rd spinous process is the sorest, and lower down, if 6th spinous process is the sorest.

C.2.2. Re-examination of the sorest spinous process
Find the sorest spinous process from the pre-examination again (figure 4a) and note the degree of soreness on a scale from 0 to 3.

If you have done the acupressure well, the soreness in the feedback point should have reduced noticeably (but won’t necessarily have disappeared). If not, redo the acupressure until you achieve this result. Please note that the neighboring spinous processes will not necessarily have become less sore. That doesn’t mean that the treatment was done incorrectly, but simply happens because the acupressure has not been able to affect these spinous processes as well.

Doing the acupressure without help
If it is difficult to get help to do the acupressure on your back, you can practise treating the points yourself.

Stand against a door frame or a wall so that your hips are close to the wall and your upper body is slightly out from the wall. Hold a golf ball, table tennis ball or something similar (e.g. the ball off the end of a wooden curtain rod) in a sock over your shoulder, so that the ball sits between your shoulder blades. Adjust the height until the ball is placed over a sore point, corresponding to the instructions above. Then you can lean against the wall and adjust the pressure using your body weight. Note that the soreness subsides within one minute, and then move the ball to the next treatment point.

Some people find it easier to use a back scratcher. Scratch the skin between your shoulder blades. If it is going to help, the area you have to scratch will be identifiable by a heightened sensitivity. That is, as you move the back scratcher up and down along your spinal column, you will be able to notice an area right between the shoulder blades where the scratching will feel more intense, compared to the areas above and below.
Frequently asked questions (FAQ)

Is it necessary to check every feedback point after every treatment point?
It’s wise to check each point after treatment, since it ensures that your acupressure has given the desired result. At the same time it should be mentioned that other feedback points can certainly be less sore after acupressure is done on a point which has no apparent connection with them. That is because the acupressure has both a specific and a general effect.

What do CV, St, Per and UB mean, and why do they have numbers?
There are about 360 acupuncture points in all, according to classical Chinese theory. They are organized into rows of points with the same function – in so-
called meridians. The individual meridians have names which correspond to the organs/functions they are linked to. However, these organs are defined differently in Western medicine, so don’t let yourself be confused by the names. The numbers represent the various points on the individual meridians.

   CV: conception vessel  
   St: stomach  
   Per: pericardium  
   UB: urinary bladder

*After pressing on CV 17, it has, if anything, become sorer – like a bruise – in the days which followed. Have I done something wrong?*

If you press too hard on a point, it may well get sorer as a consequence, and feel like a bruise. Let the point rest for a few days, and resume acupressure with milder pressure. If you press too hard it is still possible to experience that the soreness in the point actually subsides, and to therefore think that you have done the acupressure correctly. However, you are unable to use the level of soreness in the point as a measure of the balance in your nervous system. In the next section (page 92), I refer to trials on cats which showed that chemically irritating the skin increased the blood supply to the heart. An irritation like that causes an inflammation, and you cause the same reaction (just milder) if you press too hard and damage the tissue, and the point then feels like a bruise for some time after.

*Do my fingers have to be in direct contact with my skin when I press?*

No. Your fingers don’t have to be in direct contact with your skin, but it does make it easier to find the points. You can easily do acupressure through your clothes – while taking a walk, for example – as long as you can locate the sore point.

*Should the pressure always be the same?*

No. The pressure varies in proportion to the point’s soreness. A very sore point might only need touching, while a point which is only mildly sore will require greater pressure, for example, equivalent to about a 1 kilogram pressure on kitchen scales. If the initial acupressure doesn’t give the desired effect in terms
of reduced soreness after 10-20 seconds, you can increase the pressure slightly until you are successful.

How many – and which – fingers should be used when doing acupressure?
Use one finger on one point at a time. The choice of finger is up to you, but thumb and index finger work well for most people.

What limits the region of the acupressure point?
The acupressure point can cover a larger area, especially if it is very sore. If so, you can shift your fingers just a few millimeters and repeat the exercise. You will feel soreness again. It is therefore important to keep your fingers still while you do acupressure, since it can otherwise be difficult to notice that the soreness subsides in the exact place you are pressing. If the point is widely distributed, massage can be used, but should still be done without causing pain.

What does it mean if there are no sore points?
If you can’t find any sore points, check again in the locations described and also in the surrounding region (up to 5 cm around). If there is still no soreness – congratulations! Your nervous system is in good balance. But keep checking daily anyway (twice daily if you know you have heart disease).

What does it mean if there are different points in one region that are sore?
If there are several sore points in the area examined, treat the one which is most sore. The existence of several sore points underscores that the nervous system is under tension.

Is it possible to confuse soreness in an acupuncture point with, for example, muscle pain?
Yes, a big workout can lead to soreness in parts of the musculature. This applies, for example, to Per 1.

How much should I expect the soreness to subside?
If you do the acupressure correctly, the soreness should subside noticeably, but won’t necessarily disappear. Many people experience a fringe benefit from their acupressure in the form of better general physical well-being and/or less
tension in general.

**How important is it that I press for exactly 1 minute?**
I recommend 1 minute of acupressure for every treatment point because more than 90% of people can register a reduced soreness after that time interval if acupressure is done correctly. However, many experience that after only 20-30 seconds, but I still recommend that they stick to the one minute (maybe even with a slightly increased pressure), since that strengthens the effect. The ultimate success criterion is that the soreness reduces, since that indicates that the desired reflexes have been activated.

**How often should I do each exercise? When should I go on to the next exercise? Is there a master plan for the daily acupressure program?**
Acupressure should be done twice a day – like teeth brushing. That will ensure that it becomes a solid habit and an uncomplicated part of your daily routine. Beyond that, you can do it whenever you want – when you have pain, or otherwise feel the need. You can do it several times an hour if you want, but then it is doubly important that you don’t press too hard and damage the tissue.
Scientific studies
- the effects of acupuncture and acupressure on coronary heart disease

Angina pectoris is caused by a complex and dynamic process which creates an imbalance between oxygen requirements and oxygen supply, and the supply of nutrients and the removal of waste products. No-one fully understands how this happens\(^1,2\). The same is true of the relationship between oxygen shortage and pain\(^3\). It is not absolutely clear, either, how acupuncture relieves pain from coronary heart disease. But acupuncture and acupressure are thought to affect oxygen demand and supply by:

- Increasing the blood supply to the heart
- Reducing the amount of oxygen required
- Increasing the heart’s pumping capacity, so that less oxygen is needed to do the same work

These changes can be achieved through a complex interaction of the following factors:

- Stimulating the body’s ability to self-regulate the heart’s operation
- Changes in local reflexes in the autonomic nervous system which determine the relationship between the blood supply and oxygen use
- Locally releasing chemicals which help to dilate the blood vessels and thereby increase the blood supply
- Directly suppressing pain
- Inhibiting the actual process of atherosclerosis
- The placebo effect
- Positive influences on the patient’s psychosocial state

Each of these topics will be discussed individually. To simplify the presentation,
the effects of acupuncture and acupressure will be described side-by-side with other treatments which stimulate nerves in the skin. These related treatment methods involve electrical stimulation of the nerves, either through the skin or through an electrode implanted in the spinal cord. Even though these are different kinds of treatments, they all employ the same basic mechanism - stimulating nerves in the skin. The trials involving these various methods are therefore all grouped together, and their effects are used here to describe the effect of acupuncture and acupressure.

It is my hope that this fairly comprehensive description of the underlying effects will help maintain the motivation to do daily acupressure. The most important difference between acupuncture and acupressure is that acupuncture results in a stronger stimulation of the nerves. Acupressure, however, can be done frequently and whereever you want, as you need it or as opportunity permits.

DOES ACUPUNCTURE INCREASE THE HEART’S BLOOD SUPPLY?
There are many studies which suggest that it does. There are two possible ways that this can happen.

1. The first is by directly increasing the flow of blood through the large blood vessels surrounding the heart itself, as measured by inserting a sensor directly into these blood vessels\(^4\).
2. The second way is by redistributing the available blood in the heart. This is possible by changing the level of contraction in the muscles in the walls of the small blood vessels in the heart which distribute blood to the individual muscle cells. In other words, this is a kind of “Robin Hood” effect, where blood is transferred to the areas of the heart muscle which lack blood, from the areas that have plenty. A series of trials suggest that this mechanism plays an important role\(^5, 6, 7, 8, 9, 10, 11\).

Other trials have shown that acupuncture can increase the blood supply to other parts of the body when this is lacking. For example, in skin grafts\(^12, 13\), in the mucous membrane of the intestine\(^14\), associated with atherosclerosis in the legs\(^15, 16\) and in the umbilical cord when the placenta does not deliver enough blood to the foetus\(^17\).

So there seems to be solid support for the fact that acupuncture and acupressure can increase the heart’s blood supply.
DOES ACUPUNCTURE REDUCE THE HEART’S OXYGEN REQUIREMENT?
Throughout the whole body, the smaller arteries and the even smaller arterioles are fitted with muscles in the blood vessel walls which regulate the blood supply. When these muscles tense up, the opening narrows and the heart then has to pump harder to bring the required amount of blood out to the various body organs. This is the mechanism behind “high blood pressure”. A series of trials suggest that acupuncture makes these muscles relax so that the heart doesn’t have to pump quite as hard to supply the blood required \(^{18,19,9}\). It has also been shown that this effect results from a reduction in the amount of adrenaline in the blood, leading to reduced activity in the sympathetic nervous system \(^{20}\). This makes the blood vessel muscles relax, the vessels dilate and the heart then requires less oxygen, since it doesn’t have to pump as hard. In trials on cats, a relative oxygen shortage was created by activating a reflex which increased the activity in the sympathetic nervous system and hence the heart’s oxygen needs also. It was possible to reduce this oxygen shortage by stimulating the nerve near the armpit which is employed in acupuncture treatment of heart disease \(^{21}\).

It is also likely that one of the reasons why acupuncture and acupressure affect heart disease is that they reduce the heart muscle’s need for oxygen.

DOES ACUPUNCTURE INCREASE THE HEARTS PUMPING CAPACITY?
As soon as the heart muscle begins to lack oxygen, the contraction capacity of the individual heart muscle cells begins to decline and the heart pumps less effectively, supplying less blood to the body \(^{3}\).

Acupuncture has been shown to improve this reduced pumping capacity in patients with high blood pressure \(^{22}\) and with heart disease confirmed by angiography \(^{23}\). Other results from acupuncture and acupressure treatment of patients with angina pectoris also support these findings \(^{9,24}\).

DOES ACUPUNCTURE STIMULATE THE BODY’S CAPACITY TO SELF-REGULATE THE HEART’S OPERATION?
The operation of the heart and the relationship between its blood supply and oxygen requirements are basically controlled by the part of the brain called the hypothalamus (see “The body’s health balance”, chapter III). Endorphins \(^{25,26}\) are used to regulate the heart’s operation by monitoring and adjusting the ac-
tivity in the autonomic nervous system\textsuperscript{27}.

Trials on dogs have shown that acupuncture will reduce blood pressure if it has been artificially raised, increase blood pressure if it has been artificially lowered and leave it unchanged if it was normal\textsuperscript{28}.

In other trials in Gothenburg, there was no change in blood pressure in rats and humans with normal blood pressure\textsuperscript{29,30,31}. But if the blood pressure was raised, it fell when acupuncture was given and activity in the sympathetic nervous system lessened\textsuperscript{32,30}. This fits in well with observations suggesting that activity in the sympathetic nervous system is heightened when blood pressure is too high\textsuperscript{33}.

In a Danish-Japanese trial on healthy medical students, the effects of acupuncture on the heart’s operation and blood flow through the skin were compared against a placebo pill. If the initial parameters of the heart’s operation or the blood flow in the skin were high, acupuncture (but not the placebo) caused them to reduce. If the initial parameters were low, they increased after acupuncture. If they were in the middle, they did not change\textsuperscript{34}.

Chinese trials on rabbits have shown that if the hypothalamus is destroyed, acupuncture is no longer able to raise the pain threshold\textsuperscript{35}. Another trial on rabbits showed that acupuncture led to a quicker return to normal operation after the heart was artificially deprived of oxygen. This effect vanished if the hypothalamus was destroyed\textsuperscript{36}. The protective effects of acupuncture against an oxygen shortage in cat’s hearts, induced via a sympathetic reflex\textsuperscript{24}, was annulled if the cat was given a substance (naloxone) which interfered with the endorphin’s regulation of the activity in the sympathetic nervous system\textsuperscript{37}.

It therefore seems likely that the effects of acupuncture and acupressure on atherosclerotic heart disease are due in part to an activation of the heart’s own regulation mechanisms, since the release of endorphins in the hypothalamus adjusts the activity in that part of the sympathetic nervous system that regulates the operation of the heart.

DOES ACUPUNCTURE STIMULATE A LOCAL REFLEX WHICH INCREASES THE HEART’S BLOOD SUPPLY?

In trials at the University Hospital of Copenhagen we were able to show that heart patients who benefitted from acupuncture reacted to it with a reduced activity in the sympathetic nervous system (measured as a rise in skin temperature)\textsuperscript{9}. The same method has been used to identify Chinese patients for whom acupuncture could be used as an anaesthetic\textsuperscript{38}. 
Animal trials have shown that pain experimentally induced on the skin affects the organs whose nerve supply comes from the same area in the spinal cord\textsuperscript{39,40,41}, and electrical stimulation of the spinal cord in patients with angina pectoris has been shown to suppress the transmission of impulses in the sympathetic nervous system from the heart to the brain\textsuperscript{42}.

Chemical irritation on cats' chests led to dilation of the heart's small blood vessels\textsuperscript{43}. This subject has been thoroughly reviewed by others\textsuperscript{44}.

It seems that the improvement patients with atherosclerotic heart disease experience after acupuncture and acupressure is due in part to its impact on a reflex in the sympathetic nervous system that improves blood flow in the heart.

**DOES ACUPUNCTURE LEAD TO THE RELEASE OF CHEMICALS WHICH DILATE THE BLOOD VESSELS?**

Many studies, primarily conducted in Norway and Sweden, suggest that acupuncture can also lead to the release of chemicals which directly cause the blood vessels to dilate, so that the heart gets more blood\textsuperscript{45,46,47,48,49}.

This might also be one of the factors contributing to the benefit heart patients receive from acupuncture and acupressure.

**DOES ACUPUNCTURE INHIBIT HEART PAIN?**

There are probably several different mechanisms involved in acupuncture’s pain relieving effect on heart disease\textsuperscript{50,51}, including:

1. Suppressing pain impulses from the heart, in the spinal cord
2. Releasing endorphins in the central nervous system

The body’s pain regulating system is closely connected with the system which regulates the hearts operation\textsuperscript{52}. Both the brain’s endorphin system in the hypothalamus\textsuperscript{26} and the sympathetic nervous system are involved\textsuperscript{53,54,55}.

When the heart has an oxygen shortage, the activity in the sympathetic nervous system increases\textsuperscript{5,1}, leading to increased demands on the heart’s oxygen supply. At the same time the muscles in the blood vessels in the heart contract, both in the larger supply vessels and in the small arterioles. In this way, a modest narrowing caused by atherosclerosis can suddenly become critical\textsuperscript{56,14,1,2} (compare the description of the “contrary” reaction on page 50).

When acupuncture suppresses pain impulses in the spinal cord, activity in the sympathetic nervous system will fall and the muscles in the blood vessel
walls will relax somewhat, allowing the vessels to dilate and let more blood through to the heart\textsuperscript{53, 20, 57, 58}.

The release of endorphins in the hypothalamus resulting from acupuncture can also contribute to a reduction in pain associated with an oxygen shortage in the heart\textsuperscript{59}. The endorphins released can also reduce the activity in the sympathetic nervous system associated with oxygen shortage and heart pain\textsuperscript{60, 61}.

It seems reasonable to assume that the pain relieving effect of acupuncture and acupressure associated with oxygen shortage in the heart involves an interaction between the parts of the nervous system responsible for pain suppression and heart regulation.

**DOES ACUPUNCTURE AFFECT THE PROCESS OF ATHEROSCLEROSIS?**

The process of atherosclerosis is a complex one involving damage to blood vessel walls, inflammation and the formation of plaques (see chapter II)\textsuperscript{5, 2}.

A series of studies, conducted primarily in Stockholm, have illustrated that acupuncture can have a positive effect on inflammation\textsuperscript{62}, also in connection with atherosclerosis\textsuperscript{46, 47, 1, 63}.

As regards damage to the blood vessel walls, heightened activity in the sympathetic nervous system plays a decisive role\textsuperscript{5, 1, 4}, since the attendant contraction of the muscles in the blood vessels increases blood pressure and causes irregular blood flow. This increases the risk of damage to the blood vessel walls. When acupuncture reduces the degree of tension in the blood vessel muscles, this reduces the risk of blood vessel damage.

Blood vessel damage makes it easier for blood platelets to attach and therefore encourages the formation of plaques. In a study of patients with angina pectoris, blood platelets showed a reduced tendency to stick after acupuncture. The build up of fibrin deposits was also inhibited\textsuperscript{64}.

There is therefore reason to believe that acupuncture inhibits the actual process of atherosclerosis. This may have contributed to the good long-term results among people with angina who have received Integrated Rehabilitation (see chapter VIII).
DOES THE PLACEBO EFFECT PLAY A ROLE IN THE EFFECTS OF ACUPUNCTURE ON HEART DISEASE?
The answer is yes, definitely, since this element is present in all treatments, including treatment of heart disease with medication and surgery. Placebo heart operations have even been shown to improve exercise tolerance, measured on an exercise bike. This doesn’t mean, however, that the effect of acupuncture is exclusively a placebo effect.

In our trials examining the effects of acupuncture at the University Hospital of Copenhagen and at the University in Kurume, Japan, we were able to construct a research design which made it possible to distinguish between a placebo effect and the effect of the actual acupuncture. Every time we were able to show that acupuncture had an effect in its own right.

Both the placebo effect, and its opposite, the nocebo effect, have been shown to have a physiological basis. The placebo effect is mediated by endorphins and the nocebo effect by the stress hormone adrenaline.

DO PSYCHOSOCIAL FACTORS INFLUENCE THE EFFECTS OF ACUPUNCTURE?
As detailed in chapter V, psychosocial factors have a significant influence on the course of heart disease. These factors will naturally apply, regardless of which treatment the patient receives.

CONCLUSION
Based on the information I have presented, we can assume that acupuncture and acupressure help patients with atherosclerotic heart disease, since:

- Acupuncture and acupressure may increase the blood supply to the heart muscle
- Acupuncture and acupressure may reduce the heart’s oxygen requirements
- Acupuncture and acupressure may increase the heart’s pumping capacity, so that less oxygen is required to do the same work
- Acupuncture may activate the body’s own stabilizing mechanisms
- Acupuncture and acupressure may result in a direct suppression of pain
- Acupuncture and acupressure may inhibit the process of atherosclerosis
V

Life circumstances and attitudes

Life force, life skills, and your health

Life force is like the wind and the soul like the sail which propels the ship. Common sense is the rudder which keeps the ship under control. Good seamanship is all about matching your course and sail area to the wind, to the strengths and weaknesses of the crew, and to the waters, so that ship and crew come safely into harbor, even when conditions are difficult. If, for example, the wind is severe and visibility is poor, the good seaman knows that extra lookouts and reduced speed are called for. And even in ideal conditions, the ship must be carefully maneuvered if there are rocks under the water, whose locations are unknown or not marked on the map.

This picture illustrates in many ways the conditions of life, with the small difference that life is more like one, long voyage. The better we know where we want to go, the easier it is to move in that direction and to gather information about how to get there. The better we know our own strengths and weaknesses, the easier it is to allow for them and to employ them wisely in our endeavors. We can’t avoid meeting “storms” on our journey through life, but we can do a lot to prepare ourselves for the encounter and to tackle them as sensibly as possible.

In what follows you will find a summary of a series of scientific studies which show how the risk of heart disease and the way it develops, depend on a set of factors which could be called life skills: the way we relate to other people, life events, attitudes to life, ways of tackling life and the meaning we attribute to the pronouncements of people in authority.

I have divided them into two categories, those with a positive influence on life, and those with a negative influence. That makes it possible for you to read them individually. It’s not always pleasant reading when the researchers try to uncover the factors with a negative influence on health. At the same time, they are included to give you the best possible appreciation of the conditions that influence human life. As in the sailing voyage analogy, I believe that the more
we know about the existence of various rocks and reefs, the better our chances of avoiding shipwreck and actually being able to enjoy the voyage. And even if the boat runs aground now and then, it doesn’t matter, as long as the speed is not too great.

The acupressure exercises presented in chapter IV, as well as being a treatment method, are a tool which can help you to check that you are on the right course and speed. The degree of soreness in the acupressure points reflects your actual health balance (see chapter III), and therefore gives you a picture of how the various areas of your life are affecting your nervous system, positively or negatively.

Schedule V.1 summarizes the scientific findings which will be presented in this chapter as a set of positive statements representing an ideal situation. You can use the schedule later to construct an action plan by marking in priorities (I, II or III) next to each statement. Let me suggest that you start by taking action on your lifestyle and your social life as these are easier to deal with than your relationship with yourself and your way of looking at life circumstances. I have made a tentative estimate of the gain (i.e. reduction in risk) associated with a complete turn around in each area, to help you prioritize. By “risk” I men the risk of developing heart disease – or if you already have it, of death or heart attack. Of course many of these percentage gains overlap when you address more than one factor and cannot simply be added together.

**Schedule V.1: Action schedule - life circumstances and attitudes**

<table>
<thead>
<tr>
<th>My relationship with myself</th>
<th>Gain %</th>
<th>See page</th>
<th>Prio.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I love myself</td>
<td>50</td>
<td>132</td>
<td>☐</td>
</tr>
<tr>
<td>I acknowledge the negative sides of my personality</td>
<td>10</td>
<td>132</td>
<td>☐</td>
</tr>
<tr>
<td>I am at peace with my negative sides</td>
<td>10</td>
<td>132</td>
<td>☐</td>
</tr>
<tr>
<td>I am able to forgive myself</td>
<td>10</td>
<td>132</td>
<td>☐</td>
</tr>
<tr>
<td>Humor is a regular part of my life</td>
<td>30</td>
<td>102</td>
<td>☐</td>
</tr>
<tr>
<td>I have an optimistic outlook</td>
<td>50</td>
<td>102,106,111</td>
<td>☐</td>
</tr>
</tbody>
</table>

V - LIFE CIRCUMSTANCES AND ATTITUDES 97
<table>
<thead>
<tr>
<th>Statement</th>
<th>Score</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have a strong will to live</td>
<td>50</td>
<td>111</td>
</tr>
<tr>
<td>I have a big appetite for life</td>
<td>10</td>
<td>111</td>
</tr>
<tr>
<td>I am confident of reaching my goals</td>
<td>30</td>
<td>23</td>
</tr>
<tr>
<td>I have a religious affiliation</td>
<td>25</td>
<td>113</td>
</tr>
<tr>
<td>I am aware of my feelings and needs</td>
<td>10</td>
<td>132-3</td>
</tr>
<tr>
<td>I can motivate myself to reach a goal</td>
<td>30</td>
<td>20,122,124</td>
</tr>
<tr>
<td>I often achieve my goals</td>
<td>25</td>
<td>20,122,124</td>
</tr>
<tr>
<td>I am content with my achievements in life</td>
<td>10</td>
<td>132</td>
</tr>
<tr>
<td>I am active in and take responsibility for my health</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>I am content with my achievements in life</td>
<td>10</td>
<td>132</td>
</tr>
<tr>
<td>I believe my health can improve</td>
<td>25</td>
<td>102</td>
</tr>
<tr>
<td><strong>My Social life</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My family is supportive</td>
<td>25</td>
<td>100,104</td>
</tr>
<tr>
<td>I appreciate my family</td>
<td>25</td>
<td>100,104</td>
</tr>
<tr>
<td>I give attention to my family life</td>
<td>25</td>
<td>100,104</td>
</tr>
<tr>
<td>My friends are supportive</td>
<td>25</td>
<td>100,104</td>
</tr>
<tr>
<td>I appreciate my friends</td>
<td>25</td>
<td>100,104</td>
</tr>
<tr>
<td>I give attention to my friends</td>
<td>25</td>
<td>100,104</td>
</tr>
<tr>
<td>Regular tender love and care is part of my life</td>
<td>60</td>
<td>101</td>
</tr>
<tr>
<td>Play, laughter and affection with another person</td>
<td></td>
<td></td>
</tr>
<tr>
<td>is a regular part of my life</td>
<td>50</td>
<td>101</td>
</tr>
<tr>
<td>I have someone to confide in and have close contact with</td>
<td>30</td>
<td>101</td>
</tr>
<tr>
<td>I live together with such a person</td>
<td>50</td>
<td>101</td>
</tr>
<tr>
<td>I have a pet</td>
<td>30</td>
<td>101</td>
</tr>
<tr>
<td>I give attention to my working life</td>
<td>25</td>
<td>110</td>
</tr>
<tr>
<td>I give attention to my leisure time</td>
<td>25</td>
<td>110</td>
</tr>
<tr>
<td>I care for the people around me</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>I meet people with confidence</td>
<td>25</td>
<td>132</td>
</tr>
<tr>
<td>I can forgive others</td>
<td>25</td>
<td>132</td>
</tr>
<tr>
<td>I help others without counting the cost</td>
<td>25</td>
<td>132</td>
</tr>
<tr>
<td>I express my thoughts and opinions without hurting others</td>
<td>25</td>
<td>132</td>
</tr>
<tr>
<td>I take time to listen to others</td>
<td>10</td>
<td>132</td>
</tr>
<tr>
<td>I empathize with other people’s feelings and needs</td>
<td>10</td>
<td>132</td>
</tr>
<tr>
<td>Description</td>
<td>Score</td>
<td>Pages</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>I am engaged in the life around me</td>
<td>10</td>
<td>132</td>
</tr>
<tr>
<td>I resolve conflicts without any losers</td>
<td>10</td>
<td>109</td>
</tr>
<tr>
<td><strong>My way of looking at my life circumstances</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am happy with my life</td>
<td>25</td>
<td>111,124</td>
</tr>
<tr>
<td>I face life with confidence</td>
<td>25</td>
<td>133</td>
</tr>
<tr>
<td>I am happy with my sex life</td>
<td>25</td>
<td>101,120,122</td>
</tr>
<tr>
<td>I am working at avoiding burnout</td>
<td>50</td>
<td>105</td>
</tr>
<tr>
<td>(loss of interest in life, initiative, mood and energy)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am humble when things are going well</td>
<td>10</td>
<td>133</td>
</tr>
<tr>
<td>I am patient when times are tough</td>
<td>10</td>
<td>133</td>
</tr>
<tr>
<td>I feel that I have influence on my life</td>
<td>30</td>
<td>108</td>
</tr>
<tr>
<td>I feel that I have enough control over my life</td>
<td>30</td>
<td>20,122,124</td>
</tr>
<tr>
<td>I am working at learning to tackle life’s setbacks</td>
<td>30</td>
<td>133</td>
</tr>
<tr>
<td>I am working at learning to tackle any anger, hostility or feelings of powerlessness</td>
<td>50</td>
<td>108</td>
</tr>
<tr>
<td>I believe the future will bring good things</td>
<td>25</td>
<td>103</td>
</tr>
<tr>
<td>I am often lucky</td>
<td>25</td>
<td>133</td>
</tr>
<tr>
<td><strong>My lifestyle</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I give attention to my life dreams</td>
<td>25</td>
<td>122,124</td>
</tr>
<tr>
<td>Play is a regular part of my life</td>
<td>30</td>
<td>102</td>
</tr>
<tr>
<td>Creativity is a regular part of my life</td>
<td>10</td>
<td>102</td>
</tr>
<tr>
<td>Music and dance are a regular part of my life</td>
<td>30</td>
<td>144</td>
</tr>
<tr>
<td>I learn from stress</td>
<td>30</td>
<td>102</td>
</tr>
<tr>
<td>I plan my day</td>
<td>25</td>
<td>54</td>
</tr>
<tr>
<td>I prioritize my time</td>
<td>25</td>
<td>54</td>
</tr>
<tr>
<td>Peace and quiet are a regular part of my day</td>
<td>10</td>
<td>54</td>
</tr>
<tr>
<td>There is a positive balance in my personal finances</td>
<td>10</td>
<td>105</td>
</tr>
<tr>
<td>I avoid the simultaneous occurrence of extremely stressful circumstances like divorce, serious financial problems, job uncertainty and ongoing legal proceedings</td>
<td>50</td>
<td>105</td>
</tr>
<tr>
<td>I do acupressure twice a day</td>
<td>50</td>
<td>54ff, 72ff</td>
</tr>
</tbody>
</table>
Scientific studies into factors with a positive influence on health

SOCIAL SUPPORT DURING EMOTIONAL STRESS PROTECTS AGAINST A HIGHER RISK OF DEATH
Serious economic problems, job uncertainty, ongoing legal proceedings and divorce, tripled the risk of death, where two or more of these stress factors were present – in a study of 700 Swedish men followed for 7 years. The high risk disappeared for those men who were married or who had good friends. However, marriage conflicts have a negative influence on the immune system.

10,000 men from 6 different regions in Europe, the Middle East and North Africa, were followed for 5 years. Of the men who were subject to stress, those who experienced good support from their wives had only half as many new cases of angina pectoris as those who lacked such support. For the men who were not subject to stress, the risk of getting angina pectoris was already lower, and a supportive marriage didn’t lead to any further reduction in risk. A study of 887 patients who had had a heart attack showed that good social support could protect against the negative prognostic consequences of depression (see page 106).

An analysis of more than 100 scientific studies confirms the above findings, with a combined benefit of 20-40% in terms of risk of heart fatality, where adequate social support was available.

SOCIAL SUPPORT MAY PROTECT AGAINST A HIGHER DEATH RISK FROM OTHER LIFESTYLE FACTORS
Several population studies have shown that men from Crete only very rarely get heart disease, compared to men in the rest of Europe, especially Northern Europe where the incidence is 10-20 times higher than on Crete. Researchers from the University of Lund in Sweden sat down to try to uncover the possible causes. They did a thorough medical investigation of a representative segment of the adult population on Crete (445 men and women in all).

As many as 44% of the men aged 45 to 64 were smokers, they also had a high
alcohol consumption (48% drank more than 20 standard drinks a week), they had high blood cholesterol levels (6.2 mmol/l on average), many had high blood pressure (21%) and diabetes (11%), and their average BMI was 26. So it was quite surprising not to find a single case of heart attack among the men under 63 years old, and only 3 cases in the oldest age group. However, measured against psychosocial criteria, their risk of heart disease was low. There were basically no divorces or people who lived alone, no unemployment, a tight social network, and when asked directly, 89% said that life was “good”.

Comments

Other studies which have sought to explain the lower death rate from heart disease in the countries around the Mediterranean sea have focussed on diet, and have shown that it has a big significance (see the section “Mediterranean diet” in chapter V). Social factors were not examined in these studies. Psychosocial factors were very positive in the population group investigated on Crete. So it is quite likely that these factors contributed to the even lower death rate on Crete, despite the high incidence of conventional risk factors in this population.

SUCCESS INCREASES YOUR CHANCES OF A LONG LIFE

760 actors who had won an oscar were matched against contemporary actors who did not win. After taking into account known biological risk factors, the successful actors lived an average of four years longer, equivalent to a 28% reduction in the risk of death.

TENDER LOVE AND CARE PROTECTS AGAINST ATHEROSCLEROSIS

In one trial, rabbits were given a diet containing 2% cholesterol. They were divided into 2 groups. One group received extensive, individual attention (visits, petting, were played with). The other group (the control group) received only essential care. The group which received a lot of attention had 60% lower atherosclerosis compared to the control group after 5 weeks.

PETS IMPROVE SURVIVAL RATES IN HOSPITAL HEART PATIENTS

96 people admitted to a heart ward due to atherosclerotic heart disease were followed for 1 year. Of the 39 people who didn’t have a pet, 11 died (28%), and of the 53 people who did have a pet, only 3 died (6%). The study was later
repeated on 370 patients who had had a heart attack. Of the 87 patients who had a dog, only 1 died (1%), but among the 282 patients who didn't have a dog, 19 died (7%) 11.

YOUR PHYSICAL RELATIONSHIP INCREASES THE CHANCE OF A LONGER LIFE
918 healthy men, aged from 45 to 59, were followed for 10 years, and the risk of getting heart disease was compared with the frequency with which they had sexual intercourse – divided into three categories: 1) less than once a month, 2) less than twice a week, and 3) two or more times a week. For the men in the third group, the risk of death from heart disease or from any cause was only half as great as for the men in the first group 12.

Comments
There is a positive connection between sexual activity (not necessarily intercourse) and a better chance of a long life.

STRESS MANAGEMENT REDUCES THE RISK OF DYING FROM YOUR HEART DISEASE
170 patients with angina pectoris were divided into two treatment groups and a control group. The first treatment group received 4 months of physical training, with exercise 3 times a week. The second group received 16 lessons in stress management which involved relaxation and exercises in body awareness. Both treatment groups did better than the control group, and the group that was trained in stress management had the best results. They had 70% fewer serious heart attacks and these attacks were milder, and an ultrasound scan showed that their heart muscle was functioning better 13.

A program which sought to train heart patients to handle anger more appropriately has been shown to reduce the risk of a new heart attack by 40% 14.

LAUGHTER INCREASES PHYSICAL STRESS TOLERANCE AND CAN LIFT YOUR MOOD
The value of laughter was compared with relaxation and ordinary diversion (see page 145). The laughter group was able to tolerate a higher pressure, measured with a blood pressure arm band, than both the relaxation group and the
control group. Six women with chronic joint and muscle pain and depressed mood benefitted greatly from a 13 week laughter training program, conducted in a Swedish general practise.

OPTIMISM IMPROVES THE COURSE OF HEART DISEASE
120 men were followed for 8 years after their first heart attack. Of the 25 most pessimistic men, 21 had died after 8 years (84%), while only 6 of the 25 most optimistic men died (24%) . 1300 men were followed for 10 years, and compared to the pessimists, there were only half as many cases of heart disease among the optimists.

Comments
The German thelogian, Dietrich Bonhoeffer (1906-45), wrote about optimism while he sat in a concentration camp during the second world war: “By nature, optimism is not a perception of the current situation but a life force - the power to hope where others give up - the power to cope with defeat - the power to not give up the future to the pessimists, but to claim it for hope.”

A POSITIVE OUTLOOK ON THE CONSEQUENCES OF THE DISEASE HELPS
143 first-time heart attack patients were asked about their expectations as to the duration of the illness, its consequences and the likelihood of being cured of it. Three to six months later these patient expectations were compared with the actual course of their illness, by investigating the patients’ participation in rehabilitation programs, resumption of employment, and social and sexual activities. The patients who expected only a short period of illness were more likely to be back at work. The less negatively a person viewed the consequences of their illness, the greater the degree to which their social and sexual activities were back to normal.

A similar result was found among 250 Norwegian patients who had had a heart attack. Of the patients who didn’t expect the illness to lead to a reduction in their working capacity, 3 times as many were back at work after 6 months, compared to the people who expected the illness to significantly affect their ability to work.
A VIEW CAN SHORTEN YOUR STAY IN HOSPITAL

23 patients who had had a gallstone operation were given a room which looked out on green surroundings. When compared to an equivalent group which didn’t have a view, the 23 patients had a shorter stay in hospital after their operation and used less pain relieving medication.²²

Comments

When you take your walk (see the section “Exercise protects against heart disease”, chapter VI), do it in green surroundings.
Scientific studies into factors with a negative influence on health

In order to understand how various social and psychosocial factors can affect our health, it can be useful to view our present existence in the light of the full history of the development of humanity, and attach some basic physiological reaction patterns to this\textsuperscript{23, 24}.

Stress is defined as an influence which is potentially threatening to an individual. One can therefore become mentally stressed by psychosocial challenges and react to them by becoming mentally strained, which we show by our feelings. The expression of these feelings is reflected physiologically in the body as an activation of the sympathetic nervous system and/or an activation of the hormones in the Hypothalamus-Hypophys-Hypophys-Adrenalin gland axis (see chapter III: The Body’s Health Balance). And it is when this is a long-term and pronounced activation that it becomes the cause and common denominator for our so-called “civilization diseases” (atherosclerosis, cancer, obesity, high blood pressure, depression, reduced productivity and diabetes). The feelings which give rise to such an activation are listed in chapter III: Your health balance sheet.

The repertoire of forms of emotional expression which mammals have, which are all designed to protect the individual and the species in the fight for survival, are more than 100 million years old. There is an astonishing genetic uniformity between the species, from mice right up to humans, in terms of the structure of the nervous system and the the emotional and physiological consequences of stress. It’s actually because of the high practical value of the connections between feelings and the body that our species has managed to handle the constant threat to daily existence over millions of years. Seen in this perspective: 7-800 years of agricultural society, 2-300 years of industrial society and 20-30 years of information society represent the last meter, decimeter and cen-
timeter of a 42 km marathon race. Now that these ancient reaction patterns have today become an enemy of our health, we should place the blame on our modern, man-made, artificial, hectic competitive society, rather than complaining about humanity’s psychobiological inheritance.

Humans, in contrast to animals, can suppress the physical component of the stress response (e.g. refrain from striking back), but we can’t suppress the reaction in the nervous and hormone systems, because these reactions are not under the control of our will. These processes therefore run their course in vain, and if it happens often enough and seriously enough, disease arises.

The scientific studies which follow substantiate these points, as they represent variations on the basic reaction patterns associated with fighting and surrendering.

**SOCIAL ISOLATION INCREASES THE RISK OF ILLNESS**

A study of 37,000 people, followed for 20 years, revealed that those people who didn’t have anyone to share their private thoughts with, or have close contact with, had twice the risk of illness or death.\(^{25,26}\)

In a study of 2,300 men who had survived a heart attack, feelings of stress and social isolation led to a tripling of the risk of dying in the ensuing years, compared to the men who didn’t have such feelings.\(^{27}\) 888 men and women who had had a heart attack were followed for 10 years, and those who lived alone had only half the chance of being alive 10 years later, compared to those who were married.\(^{28}\)

200 Swedish men from Gotenborg who had had a heart attack were followed for 5 years. Being single (unmarried, divorced, widowed) doubled the risk of having a new heart attack or dying. The same was true of the men who took nerve medication – regardless of whether they were single or not.\(^{29}\)

A Finnish study followed a cross-section of the population, consisting of 13,000 men and women, for 5 years. After allowing for known heart disease risk factors, the group with the poorest social contact had a 50% higher risk of death during the observation period, compared to the people with the best social contact.\(^{30}\) The same thing was seen even more strongly in a cross-section of the American population.\(^{31}\)

In a study of 190 people who had had a heart attack, an absence of social support led to a doubling of the risk of being dead 6 months later, compared with people who had close contact with at least 2 people.\(^{32}\)
1,200 people who had had a heart attack were followed for 2 years, and those who lived alone were found to have a 50% higher risk of having a new heart attack or dying. An earlier divorce had no influence. In a study of 700 healthy, 50 year old Swedish men, followed for 6 years, the two risk factors most strongly linked to the development of heart disease were smoking, and level of social support. Heart disease was 3 times as prevalent among the men who were socially isolated as it was among the men who had social support.

The respected American scientific journal, Science, has collated the scientific studies and concluded, that after the known heart disease risk factors have been allowed for, a person’s social network contributes independently to their risk. Social isolation increases the risk of dying by a factor of 2-3.

**TYPE OF AREA YOU LIVE IN AFFECTS THE RISK OF HEART DISEASE**

13,000 Americans were followed for 9 years and the incidence of new cases of heart disease were correlated against residential area, divided into 3 groups based on income, education and employment. After taking known biological risk factors into account, living in the area with the poorest socio-economic standing was associated with three times the risk of developing heart disease over the 9 years, compared to living in the best area.

**A COMBINATION OF DIFFICULT CIRCUMSTANCES CAN TAKE ITS TOLL ON YOUR HEALTH**

As mentioned before (page 100), a study of 700 Swedish men, followed for 7 years, found that the risk of death was tripled if two or more of these circumstances of life were combined: serious economic problems, job uncertainty, ongoing legal proceedings and divorce.

800 Swedish patients with angina pectoris were found to be burdened by a greater number of difficult circumstances than an equivalent control group.

**DIVORCE (YOUR PARENTS’ OR YOUR OWN) CAN SHORTEN YOUR LIFE**

1500 American boys and girls born in 1921-22 were followed up until 1990. While the death of their parents did not affect the childrens’ life span, children whose parents were divorced before the child was 21 years old, lived an average of four years less than children whose parents did not get divorced. Among
the subjects who were themselves divorced in 1950 (i.e. when almost 40 years old), a doubling of the risk of death (from any cause) was observed, and among those who were married for the second time, there was a 40% increase. Both their parents’ and their own divorce had an independent influence on the risk\textsuperscript{38}.

**EMOTIONAL STRESS INCREASES BLOOD CHOLESTEROL LEVELS**

Emotional stress increases blood cholesterol levels by 10-20% in less than an hour\textsuperscript{39}, and they remain high for weeks if the strain continues\textsuperscript{40, 41}.

**EMOTIONAL STRESS AFFECTS THE COURSE OF HEART DISEASE**

A study of 126 people investigated the effects of psychological strain on the course of angina pectoris. The patients were subjected to both physical strain (bicycle test) and psychological strain (e.g. having to speak publicly on a contemporary topic, after 1 minute’s preparation). The percentage fall in the heart’s pumping capacity was used as a measure of the degree of oxygen shortage provoked by the physical or psychological strain. 57% of patients experienced a fall in their heart’s pumping capacity during psychological strain, compared to only 36% during the physical bicycle test. The former group had twice the risk of a blood clot or death from heart disease compared to the latter group over a 4 year observation period\textsuperscript{42}. These results have since been confirmed by others\textsuperscript{43}.

An investigation was made into the causes of fatal heart attacks in 141 men with advanced heart disease (see page 138). Heart attacks were nearly twice as prevalent for patients under psychological strain as for resting patients. The psychological strain was from things like giving a speech, appearing in court or fighting a fire\textsuperscript{44}.

**Comments**

If you have advanced heart disease it is best not to push yourself, physically or psychologically, but rather stop what you are doing if symptoms arise.

**BURDEN OF CARING FOR AN ILL SPOUSE**

800 people, aged from 66 to 96, who lived with an ill spouse, were followed for 4 years. The level of care they provided was divided into 4 categories: 1) spouse
not disabled, 2) spouse disabled, but they provided no special care, 3) spouse
disabled, and they assisted, but did not feel it was burdensome, and 4) spouse
disabled, and they assisted and did feel it was burdensome.
The death rates for the 4 groups were compared. Over the 4 years, 103 of the
participants died. After allowing for known risk factors, there was a 60% high-
er incidence of death in the fourth group, compared to the other three
groups \(^{45}\).

**Comments**
If your spouse is ill and requires care, make sure you get adequate help so that
you are not burdened beyond a level you can manage.

**DEPRESSION WORSENS HEART DISEASE**
When you suffer from depression you feel despondent and lose your initiative.
You experience black moods and you are tired and often experience some level
of anxiety.

1,250 Danes with confirmed heart disease were followed for 19 years and
the death rate was compared for three groups: 1) those who weren’t depressed,
2) those with mild depression, and 3) those with moderate to serious depres-
sion. There were 38% more deaths from heart disease in the group with mild
depression, and 69% more in the more seriously depressed group, compared to
the group who weren’t depressed. If one includes all causes of death, those with
depression had a 78% higher death rate than those who weren’t depressed \(^{46}\).

In a study of 222 patients who had had a heart attack, the risk of a new
attack within 18 months was 7 times as high for patients with depression \(^{47}\).
Depression has similarly been shown to be associated with an increased risk of
apoplexy, reduced heart pumping capacity and a worse prognosis after a by-
pass operation \(^{48, 49, 50, 51}\).

1,200 medical students were followed for 40 years to investigate a possible
link between being depressed as a student and later developing atherosclerotic
heart disease. 15% of those who had depression later developed heart disease.
This is twice as many as for those who weren’t depressed, after allowing for
known risk factors \(^{52}\). In other groups of healthy people, a corresponding in-
crease in the risk of developing heart disease could be shown after just 4 and 6
years of observation \(^{53, 54}\).

In a study of 200 people with heart disease, the degree of narrowing in the
coronary arteries was measured using arteriography. Their level of anxiety and depression was measured at the same time. There was a direct correlation between the patient’s exercise tolerance, and the number of narrowed coronary arteries and their degree of anxiety or depression. However, the changes in their exercise tolerance over the following year showed no correlation with the degree of narrowing in the coronary arteries, but did still correlate with their degree of depression and anxiety.\(^{43}\)

In a study of 77 patients with confirmed heart disease, the degree of narrowing in the coronary arteries was measured using angiography, along with the incidence of known risk factors and their degree of depression. The patients with depression had a 10% higher resting pulse than the patients who weren’t depressed, but there were no differences in terms of other biological risk factors. The faster pulse rate might be caused by an increased activity in the sympathetic nervous system, which promotes atherosclerosis.\(^{56}\) In another similar study of 630 American soldiers, it was not possible either to show a correlation between the degree of atherosclerosis and the degree of depression, anxiety, animosity or stress.\(^{57}\) However, the lack of correlation could have resulted from measurement uncertainty and having too few people in the study.\(^{58}\)

**Comments**

Depression has a significant, negative impact on the course of existing heart disease and appears to have a greater influence on its progress than even the level of physical atherosclerosis in the coronary arteries. The reason for this could be that an increased level of stress hormones in the blood in depressed people can cause atrophy in the areas of the brain related to the person’s capacity to learn and to handle stress appropriately. In this way a vicious circle arise between stress, depression and atherosclerotic heart disease.\(^{59}\) Antidepressant medication, including the so-called “happy pill”, is often employed in the treatment of depression. However, sound medical advice has been shown to be just as effective as medication in an English study in which 200 patients were randomly given either medication or advice and followed up for 1 year.\(^{60}\)

**WORRY AND ANXIETY INCREASE THE RISK OF HIGH BLOOD PRESSURE**

A study of 1,200 men and women, followed for 20 years, has shown that people with a strong tendency towards worry and anxiety have the highest risk of developing high blood pressure.\(^{61}\)
FEELING POWERLESS OR HOPELESS IS BAD FOR HEART DISEASE
Feelings of powerlessness and hopelessness led to a higher risk of death among 3,000 men and women with heart disease, followed for 12 years. The 5% who suffered most strongly from such feelings had four times the incidence of death, compared to the people who did not experience these feelings.  

BURNOUT WORSENS ANGIOPLASTY OUTCOME
127 patients who had had a successful balloon angioplasty were followed for 18 months, and the end result was correlated against the degree of burnout they had felt at the time of the operation. Feeling “burnt out” was defined as being tired, irritable and having lost one’s enthusiasm for life. 35% of those with burnout experienced a heart attack or needed another angioplasty, compared to 14% in the group without burnout.

STRONG FEELINGS INFLUENCE BLOOD PRESSURE IN HEALTHY PEOPLE
The pulse rate and blood pressure of 32 healthy people were measured during artificially induced anger, fear, grief, anxiety and happiness and during relaxation, and in a neutral control situation.

The artificially induced feelings generally caused blood pressure to rise relative to the levels in the control situation and the relaxed state, with anger leading to the greatest increase. All of the feelings caused the heart rate to increase, but especially anger and fear.

The participants also did a bicycle test to investigate whether these feelings could affect the body’s reaction to the demands of hard physical exertion. Anger was found to have the biggest influence on blood pressure. Anger led to a longer time lag before the blood pressure normalized again after the cycling. Anger similarly led to a bigger rise in pulse rate during exercise, compared to the other induced feelings, the neutral control situation and the relaxed state.

ANGER AND HOSTILITY WORSEN THE COURSE OF HEART DISEASE
Patients with angina pectoris were subjected to physical and psychological stress. The former, in the form of a bicycle ride, and the latter, by recalling events associated with anger, having to perform a difficult calculation and having to give a short defence against a false charge of shoplifting. Healthy volunteers were used as a control group. Recalling anger led to a reduction in
the patients’ heart pumping capacity, which was not the case with the other stress factors. Anger did not affect the heart’s pumping capacity in the healthy volunteers. A study of 900 men who had had a heart attack, followed for 9 years, showed that the risk of dying from your heart disease is tripled if you are often angry. If you combine this with a high cholesterol level, the risk is 5 times as high. Compared to other feelings, being angry was shown to double the risk of a heart attack in the following two hours. An analysis of 30 scientific articles has confirmed the possible influence of feelings of hostility on the course of heart disease, but the authors did not feel in a position to estimate the strength of this influence. In a study of 400 healthy young people, aged 18-30, the half of the group who showed the greatest level of animosity had more than twice as much atherosclerosis in their coronary arteries (measured using computer tomography) as the less hostile half of the group.

A review of more than 60 scientific studies suggests that the personality traits mentioned above have significance for the course of heart disease. That is, anxiety, depression, anger and hostility.

**SUPPRESSING NEGATIVE FEELINGS INCREASES THE RISK OF DYING FROM YOUR HEART DISEASE**

270 patients who had just had a heart attack, a bypass operation or a balloon angioplasty, were followed for 8 years. Among those who didn’t give expression to their negative feelings, four times as many died in the 8 year observation period.

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**Heart disease and work**

About 1,000 male employees at Volvo and Renault, aged 46 to 50, completed a questionnaire about their life circumstances, mood, level of psychological strain, their ability to express their feelings, level of social support and some known physical heart disease risk factors (Body Mass Index (BMI), blood fat levels, blood pressure, tobacco and alcohol consumption and exercise habits). It was found that negative life circumstances, particularly in relation to work, were linked to bad mood and a sense of psychological strain, but did not strongly impact the physical risk factors.

4,700 healthy Danish men were followed for 17 years, and the number of
fatalities from heart disease was correlated with social class (divided into 5 groups based on their job category and their level of education). The incidence of heart disease was 3 times as great in the lowest social groups as in the higher ones. Other studies have arrived at a similar result.

A study of almost 500 men in Copenhagen who had been exposed to toxic vapors or organic solvents for more than 5 years, found that the incidence of heart disease was roughly twice as high (14%) over a 6 year observation period, compared to men who had not had such exposure.

Five years later the men from Copenhagen were again analyzed in terms of social class, while also taking known risk factors into account. The result showed that although men of lower social class had a higher incidence of heart disease (about 50% higher) compared to men of higher social class, this difference disappeared once allowance was made for differences in known risk factors: age, blood pressure, smoking, blood fat and selenium levels, lack of exercise, body mass index, long term occupational exposure to toxic vapors or organic solvents, and zero or little alcohol consumption. This was confirmed by a similar Finnish study involving 17,000 men and women.

Shift work has been linked to a 30-40% increased risk of developing heart disease. But a study of 5000 Danish men, followed for 22 years, was unable to find such an increased risk, once social class and other known risk factors were taken into account.

In a study of 1,800 Danish men, their level of work related psychological strain was measured, based on: 1) how much influence they had on their own work, 2) the pace of their work, 3) how monotonous it was, 4) their degree of satisfaction with their supervisor, 5) how well they got on with their work colleagues, and 6) how good they were at relaxing after work (i.e. at “not taking work home with them”). The only factor which had influence on the incidence of heart disease, was not being able to relax after work. Out of the 149 who had difficulty with this, there were 9 cases of heart disease (6%), while the rate was only 2.4% for the other 1,400.

Long working hours have been conceived as a possible cause of stress and ensuing heart disease. In a Japanese study in which 940 healthy men were followed for 5 years, the incidence of new cases of high blood pressure were correlated against the number of working hours. It was found that the men who worked more than 11 hours a day had a 60% greater incidence of high blood pressure, compared to the men who worked less than 8 hours a day.
Comments
Apart from the risks associated with long term exposure to toxic vapors or organic solvents, work environment and social class don’t appear in themselves to have any influence on the risk of developing heart disease. Each individual’s lifestyle and their way of handling their work is what counts.

The power of words
In the book by Norman Cousins, “The Healing Heart”, Bernard Lown, Professor of Heart Disease at Harvard University, tells of his experience of the influence words can have on illness:

As a young doctor I once had to examine a middle-aged lady who had been seeing my teacher, Professor Levine, for 10 years, because of a mild heart complaint. She was in good health, managed her job and lived a normal life without being troubled by her illness. I had just finished my examination when Dr. Levine came into the room, greeted her warmly, turned towards myself and the other young doctors and said that her diagnosis was “TS”. Then he left again.

Dr. Levine had hardly gone out the door before her condition worsened. She seemed nervous, her breathing was quick and shallow, her skin was clammy and her pulse rate went above 150 beats/min. I examined her again and found to my surprise that she had water in her lungs. She had not had that before, and it is very rare with her type of valve disorder which virtually protects against water in the lungs. I asked her what had caused this sudden deterioration. She answered: “Since Dr. Levine says I have TS, which means ‘Terminal Situation’, I must be going to die.” I explained to her that TS means something completely different, and much more innocent, namely, “Tricuspidal Stenose”, but I couldn’t convince her and tried unsuccessfully to get hold of Dr. Levine. The treatment was intensified – but in vain, and she died later that same day from heart failure.

Another patient was critically ill. He had had a heart attack, his heart muscle’s pumping capacity was seriously reduced, his blood pressure was low and was only being kept up by giving him medication to stimulate his heart intravenously. He was breathing using an oxygen mask and his pulse was chaotic. All treatment options were exhausted, and the doctors expected that he wouldn’t last long.
During my rounds I listened to his heart and noticed a galloping third heart sound. I asked the other doctors to listen in. A third heart sound indicates the heart is overworked and weak. Not long after this, the patient improved, and to our great surprise, was released one week later in good condition. A month later I met him in outpatients and asked if he had any idea what caused his sudden improvement. He told me that he actually thought he was close to death, and thought we were of the same opinion. “The change came when you told me during your rounds that my heart was galloping, and your colleagues nodded encouragingly in confirmation. If my heart could gallop, there had to be life in it yet, and that meant I was not a dying man. From that moment on I regained my zest for life, and knew that I would recover.”

A 40 year old man came to our clinic because of high blood pressure, which he had had for 20 years. He had a passion for mountain climbing, and at the start of a trip he often experienced a pain behind his breastbone which forced him to drop back for some minutes. After that he was able to walk at a brisk pace and was often the first to reach the summit, without any further pain.

His whole family were marked by heart disease, and his parents and his sister died early. Most of the male members of the family died before their 45th birthday.

One day he came to the clinic to test some medication and to do an exercise ECG while traversing a 2 step step-stool. The ECG indicated an oxygen shortage when he had done 40 crossings, and he began to complain of chest pains. After 5 exercises like this he commented that the situation reminded him of his dog, which always got car sick and vomited on the back seat. After a while, just starting the car was enough to cause the dog to vomit. To avoid having to clean out his car, he would put the dog beside the car and start the engine, and the dog would vomit. When it had finished vomiting, he took it with him for a drive.

He concluded that both his dog’s and his own symptoms were triggered psychologically – a conclusion which is reminiscent of the experiments Pavlov, the Russian scientist, did on dogs.

That inspired me to do an experiment. Next time he came in for a test, we agreed that I would count the crossings silently, until we reached 40, and then I would count out loud.

When he got to the 28th crossing I shouted “40”. On the 29th crossing he
began to complain of discomfort, and had to stop after the 32nd crossing. Strangely enough, the ECG was the same as when he was forced to stop in the other trials (after 44 crossings).

In the weeks which followed he underwent the same tests, but always counting out loud. I stopped him at the 32nd level and he had no pain, and there were no changes to his ECG. We later tried the silent counting again, and I changed the number again at the 28th level. He looked surprised, and shouted, without shortness of breath, that I had counted incorrectly. The ECG showed no change either. I was not shrewd enough to carry the experiment further because of a lack of time, which was unfortunate because it raised his spirits and gave him a way of living with his angina.

### Religion

In a study of 300 practising American doctors, 99% believed that religious belief had a positive influence in recovery from illness. Of 1,000 Americans who supposedly represent a cross-section of the population, 79% shared this view

**POSITIVE EFFECTS OF PRAYER ON PATIENTS IN INTENSIVE CARE**

200 patients in an intensive care heart ward were divided into two groups. Ministers prayed daily for one group of patients, to hasten their recovery, while no-one prayed for the patients in the other group. The patients who were prayed for, had a generally less severe condition and fewer complications. They required less breathing assistance, had fewer infections and needed less medication to boost the heart’s pumping capacity. Neither the patients nor the hospital staff knew which patients were being prayed for. The results of this study were later confirmed in a study involving 900 patients in all.

**Comments**

Two studies are naturally not an adequate scientific base from which to draw definitive conclusions about the effects of a minister’s prayer on illness. But the studies were conducted carefully and seriously, and the results suggest this could be a profitable research area. The results also raise an interesting question: How can prayer help a person, when that person doesn’t know that he or she is being prayed for?
POSITIVE EFFECTS OF FAITH ON HEALTH

Other researchers have shown that people who have a faith, benefit from it in terms of the way they handle life crises, their blood pressure and mental health and their rehabilitation after bypass surgery.\(^7\)

2,000 aged residents in an American town were followed for 5 years to examine the relationship between church attendance (1: never; 2: occasionally; 3: at least once a week) and the likelihood of remaining alive during the observation period. Allowance was made for other factors which might influence the result.

Result: The people who went to church (occasionally, or at least once a week) reduced their risk of death over the 5 years by about 30%, compared to the people who never went to church – regardless of age or gender.\(^8\)

350 men were divided into two categories based on their church attendance: more than once a week, and less than once a week. Over a five year observation period, the men in the first group had a continually lower blood pressure.\(^9\)

In an analysis of 22 scientific studies examining the connection between religious association and health, the conclusion was – despite an initial scepticism – that there very likely was a positive correlation.\(^10,11\)

Comments

No-one could take exception to a person seeking help through faith during illness. But since the weight of scientific evidence is still slight, it seems reasonable to refrain from recommending religious activity as a measure to promote health, just as it is also important to point out that illness is not a result of an inadequate faith.

What follows are some reflections on religion, against the background of a positive, personal attitude towards the subject. I realize that religion – perhaps especially in relation to one’s health – can easily give rise to strong feelings. Hence this little “warning”, so that those who wish to can skip over the following section.

To be diagnosed as having heart disease is a severe blow. It impacts on every area of life and immediately forces you to think about some very central questions like: “Am I going to die soon?”, “Can my life continue as before?”, “Can I keep my job?” An appropriate response requires that all these questions be dealt with to at least the same degree as the purely mechanical/technical problem which has arisen.
Among the tools at our disposal in such a situation, the religious element seems to be a natural one for many people, since it is an ingrained part of our cultural inheritance. Religious factors can have both a positive and a negative impact, and human history is full of examples of both.

Throughout history, illness has often been seen as “God’s punishment”, and within the Protestant faith, for example, it can be a great human challenge to attain forgiveness of sins. We stand alone before God, and confession and forgiveness through taking communion are matters between God and the individual alone, even though the minister can of course assist.

In other denominations, for example, in the Catholic faith, the priest is God’s representative on earth, standing between God and the individual. You confess to the priest – to God’s local representative – and he immediately gives you a direct and personal forgiveness, together with (usually) a manageable penance. This should – in theory – make confession easier.

Whatever the procedure, confession has some strikingly positive aspects:

1. sins and sinful thoughts are shared with another person, without any social consequences
2. forgiveness comes from another person, ideally someone you respect. There is often also a chance to discuss difficult and personal subjects in a non-judgemental way, with a person you respect and who is bound to secrecy.

Feelings of guilt – in this case over getting ill – often lead to feelings of inadequacy. These are well known - if not to others, then to the overweight who have tried in vain to lose weight, the smokers who have tried in vain to quit smoking, or the alcoholics who have tried in vain to stop drinking. The ongoing feeling of guilt can have an unfortunate effect on health and can make it even harder to handle the unavoidable setbacks in life in an appropriate way.

If we take a positive view of religion, God’s presence can be seen in the flowers, in the sun, in poetry and in love between people, when we open our hearts to each other and get close to each other. Jesus, who can be thought of as the divine in human form, is present as a dream, as a hope, as a heartfelt certainty, as a living force in every breath that trembles through the universe. It is born continually and everywhere, every time we give ourselves to each other, straight out, selflessly. Basically, the divine shows itself every time we as people choose life.\textsuperscript{92}
In the section on “The power of words” we saw how an authoritative word can mean life or death, despite the technical medical situation – so that the mildly ill die and the incurably ill survive. We have also seen that people who have had heart attacks, who have an optimistic outlook or who expect to recover quickly, do better than people with a pessimistic outlook. The love and support from marriage has been seen to have decisive influence on how people get through heart disease, and support from a spouse can neutralize the higher risk resulting from the strain of very difficult life circumstances. Similar support among the men on Crete (see page 100) was seen to counteract the risk of other lifestyle factors (being overweight, smoking and high alcohol consumption) which we would expect to lead to heart disease.

If we accept a definition of divinity as being the hope, the dreams, the love and the living force in the Universe, the doctor in “The power of words” managed, by accident, to induce a life hope in that incurably ill heart patient (with the “galloping” heart), and thus awakened the religious or the divine in him. It’s not hard to conceive, that regardless of whether this life force in the person is awakened by a medical authority or another authority, the result must be the same – that their life force is mobilized, leading to recovery.

In conventional medical science it is a well-known phenomenon that a thought can heal – it’s called the placebo effect – just as the opposite can happen – called nocebo. The placebo and nocebo effect mechanisms have been scientifically identified and have a physiological basis.

In relation to the above, the placebo effect arises when the divine intervenes, or when the divine element in the individual is successfully mobilized.

To become religious, can, by extension, mean to become your own authority, to take over responsibility for your own life, to carefully consider your limits and options, your own inner destiny, to bear your own fate, and its pain. And as is shown in chapter VIII, such a strategy is both possible and fruitful.

**Standing face to face with death**

Questions about life and death arise for most people diagnosed with heart disease. It can be best to take an active attitude towards death – that is, to try to come to terms with the unthinkable – the fact that we will die. Being diagnosed with heart disease doesn’t necessarily mean we have to die earlier than we otherwise would, but the risk is there. (As shown in chapter VIII, heart patients following this program have reduced their risk of premature death so that it
matches that of the normal population – or maybe even lower).

The question usually takes on more urgency if the illness causes pain – especially strong and frequent pain which can’t be relieved. The anxiety this naturally leads to seems to fuel itself.

That is why the acupressure exercises are important. They teach you how to remove and prevent pain.

It may also be a good idea for you – possibly together with your partner if you have one – to go through the questions in “Suggestions for your life together” or “Suggestions for single life”. You might especially benefit from setting success criteria for various time frames – ranging from the very short (1 hour), through 1 week or 1 month, to the very long (1 or more years).

Once you have answered the questions – and take your time, use a whole day in peace and quiet if you can – the practical exercises below will give you ideas on how to use your answers.

THE LONG-TERM PERSPECTIVE
The questions with a long time-frame will help you to clarify whether the focus of your life matches your dreams and ideals. They can help you to work out if there are things you can – and want to! – do differently. Assuming, you have dreams, which (if fulfilled) would make your life seem richer.

If so, you can work on these things.

THE SHORT-TERM PERSPECTIVE
The questions with a short time-frame will help you to say good-bye – will help you to meet death feeling that you have lived a full life given the conditions you were dealt.

• Are there people you could have forgiven but haven’t done so?
• Are the people you have hurt and not yet said “sorry” to?
• Are there things in your own life which you haven’t forgiven yourself for?
• Are there people whom you haven’t got around to telling that you care about them?

If the answer is “yes”, it may be a good idea to do it. If it seems wrong to contact the particular person, you can write them a farewell letter – you don’t neces-
sarily have to send it. Test what you write by asking yourself:

   Is it true?
   Is it necessary?
   Is it caring?

This will ensure that the letter is free of accusations. Neither you nor anyone else should come out the loser. It is not possible to write a letter like this in one draft. Be prepared to make a number of redrafts. It might be helpful to use the diary exercise in the next section as your starting point.
Practical exercises – Life circumstances and attitudes

Getting things off your chest – the impact on health

The ability to give expression to your deepest thoughts has big implications for both your mental and physical health.

American psychologists have investigated the phenomenon in 24,000 healthy people from all walks of life. People who wrote about a traumatic or painful experience in a diary, for 20 minutes a day for 4 days, had fewer sick days and fewer physical complaints for up to 6 months afterwards, compared to people who just wrote about the weather. In a study of 60 unemployed people, half of those who got things “of their chest” in the above way got a job within 8 months, while only 14% of those who wrote about everyday events found work.

The first day of writing was often described as being a bit unpleasant, since the old pain was relived. However, by the second and third day, most described a feeling of relief, since they now had new perspectives on the situation. On the fourth day they often experienced a sense of release.

The way we handle the ups and downs of life is possibly more significant than the events themselves. When we store away our pain and anxiety, the brain has to do a lot of “psychological” work. This work is linked to the release of stress hormones which increase blood pressure and heart rate and put strain on the heart and circulation. The defensive capacity of the immune cells is also lowered.

After we give expression to these things, the “psychological” effort is no longer required, and this shows itself physiologically as increased defensive capacity in the immune cells and greater suppleness in the heart’s circulation.

A diary doesn’t have to be used every day, but only as needed, so that it doesn’t become a chore in itself. It can be useful to describe situations which have caused or still cause pain in your soul. They can both be situations in
which you have actively contributed, or things which have simply happened to you.

**Day 1**
Write down your thoughts and feelings uncritically, without worrying about grammar, choice of words and so on. By all means combine facts and feelings.

**Day 2-4**
It doesn’t have to be any more structured, but the guide below might be helpful, especially when the challenge or crisis is here and now:

- What is the worst that can happen?
- Can you do anything concrete – in the short or long term – to resolve the situation?
- How can these actions be implemented?
- When? – and who else might be involved?
- What can you learn from the situation? The assumption being of course, that life wants what is best for you, and wants to teach you something in this present situation which will benefit you for the rest of your life.
- If you can’t take concrete action, what can you do to soften any possible negative influence on your life or your mood?

**Conversation**
Before, during or after this process, it can help to talk to someone you feel close to. Such a person would have to:

- be someone you can trust fully
- not be critical
- not interrupt

**Suggestions for your life together**

My assumption is that you can live together for a lifetime. It follows, that there are in principle only constructive solutions to conflicts. For this to work out, there has to be a continual development in both the relationship and in each
party. This is expressed more poetically in the Chinese proverb: “Running water never stagnates”.

I have made some suggestions for you to consider below:

1. Find one thing to praise or value in your partner each day. Legitimate praise can never be overdone. At least one good hug every day.

2. Life is too short for daily criticism, complaining or whining. Find a time, for example, once a week, where such issues can be taken up. Prepare for this with the goal of presenting your message without any losers, and have the expectation of finding a constructive solution. A good idea is to find an enjoyable setting for this time: for example, a dinner for two. Give yourselves time to be alone together – just the two of you.

3. Take turns to arrange a surprise evening for each other about once a month, and maybe a surprise weekend every six months, without children (if applicable). The element of surprise is important, so the nature of the arrangement should be kept secret. The one making the arrangements should have complete freedom within the agreed financial limits and time frame.

4. Take the time to talk to each other. Coordinate your everyday and long term plans together. Stand by agreements. Talk about and be interested in each other’s lives. Have at least one common interest which you develop together throughout life. Also give yourselves time to be alone and to have individual interests. Let your differences be a source of renewal.

5. Each write down, privately, 5 life dreams, the fulfillment of which would make you feel that life was wonderful. Make these life dreams a reality, one at a time, taking turns. Make a plan of how to achieve this.

6. Take stock of your life, regarding your health, your relationship, family life, personal development, finances, hobbies and life dreams. For each area, list factors which create and consume resources. Also note which factors you have influence over, and which ones you don’t. You might want to set up a positives and a negatives column, to make it easier to get an overview.

7. Work out minimum success criteria for each factor over various time frames:

   - 1 hour
   - 1 day
• 1 week
• 1 month
• ½ year
• 1 year
• 2 years
• 5 years

9. If you are not sure where your life is going, answer the following question individually and in privacy: How would I live my life if, because of illness, I was told that I only had this much time left to live: 5 years, 1 year, 1 month, 1 day, 1 hour?

What’s to stop you from taking up some of these elements today?

How would I live my life if I had total financial independence? Is it possible to implement elements of this already now?

Rekindling your physical relationship

Illness, and especially heart disease, can change a person’s life situation. This change can result in sexual desire being limited or disappearing completely. Impotency can also become a problem, and both these things are completely natural reactions in periods of anxiety and uncertainty. On top of this, many heart patients have a deep-seated fear of straining their heart. The thought of sex might no longer be attractive, but rather raise anxiety about whether their heart can bear it, about a (new) heart attack, about pain or just the fear of not being able to, or not being able to see it through. A high stress level reduces the release of the male hormone, testosterone, which can also reduce the desire for sex (check the soreness in your acupuncture points: see chapter IV).

It is a myth that sex is dangerous for heart patients. You can do whatever physical exertion you want to, as long as you listen to your body’s signals and heed them. It is also a myth that sex and orgasm place more strain on the heart than other physical activity. There are many ways to have sex, and it’s naturally a good idea to start with the less acrobatic forms. In general, sex places no more
physical strain on the heart than a brisk walk.

One of the most effective ways to overcome anxiety about exertion and possible heart symptoms is physical training. The value of starting physical training is that you get to test yourself out, and you discover that you both can and dare to do more than you realized (see “Exercise protects against heart disease”, chapter VI).

It can be a good idea to do a quick barometer check (check the degree of soreness in the acupuncture feedback points). If they are sorer than usual it’s a good idea to do extra acupressure to reduce the soreness, as a purely preventative measure, before beginning sexual activity.

As a supplement to the acupressure, a nitroglycerine tablet can be a good idea, especially in the beginning.

Breaking the silence (if it has developed) is also an important step towards getting started again. So be open with each other about the feelings, thoughts and problems which have arisen in connection with the sexual difficulties. This can help relieve the anxiety about pain, or of not being able to perform.

Affection, tenderness and closeness are always a good idea.

As a start, over the first few weeks, you can being to massage each other in a well heated room, possibly accompanied by subdued music, candles and scented oils. In this way you can rediscover the joy of being touched, and you will become more relaxed with each other. This can optionally be combined with your spouse doing acupressure on your back.

In the weeks which follow you can move on to caressing each other, but without having actual intercourse. Naturally these caresses are allowed to end in orgasm. Both parties can benefit from letting go again in this way.

According to classical Chinese health philosophy, having orgasms too frequently drains a man’s life energy, qi. This can mean it takes longer to build up the energy surplus which can help lead to healing. It can also take time before the desire to to have sex again reaches its full potential. You might consider the following classical Chinese exercise. The is no scientific evidence for its effect, but it might still be both effective and agreeable: According to the Chinese guidelines, a man who is over forty years old can only have an orgasm once a week, when he is over fifty, once a fortnight, over 60, once a month and over 70, only rarely. This in no way means that the frequency of sexual activity has to drop off at the same rate. The Chinese technique actually promotes the desire for sexual activity, when one has first learned to have intercourse without having an orgasm (for detailed instructions on this, read: The Tao of Love and Sex,
by Jolan Chang).

When you both feel you are ready, you can go on to having sexual intercourse, but proceed carefully. It is often at this point that performance anxiety sets in: “Can I maintain an erection?” “What’s the bet I start to have chest pains now”, etc.

If you have trouble with impotence or if your sexual desire has completely disappeared, note that some forms of medication – the so-called beta blockers – can have this side effect. Consider talking to your doctor about getting another medication.

Viagra can be dangerous for people with serious heart disease and should be avoided by these people. There are physical exercises you can do to help with impotency:

Contract your pelvic floor muscles – at both the front and the back. If you aren’t sure if you’re doing it correctly, put a finger between your scrotum and anus and feel that the muscle tenses. Do 10 contractions each morning and evening. Add an extra 5 contractions every fortnight until you are doing 70 contractions morning and evening. As a fringe benefit, you can expect to halve the number of your nightly toilet trips over 3 months.

Every evening give each testicle one gentle squeeze for every year of your age, e.g. 60 squeezes if you’re 60 years old. According to Chinese tradition, that should stimulate the production of male hormone and thus increase desire.

Suggestions for single life

Even if you are single – by your own choice, or because of circumstances – it is important that you continually seek to grow and develop positively. Below are some suggestions for you to consider.

1. Find one thing you like about yourself each day.
2. Write down 5 life dreams, which if fulfilled, would make you feel that life was wonderful. Make them a reality, one at a time. Make a plan of how you can do this.
3. Take stock of your life, regarding your health, your family life, your social life, personal development, finances, hobbies and life dreams. For each area, list factors which create and consume resources. Also note
which factors you have influence over, and which ones you don’t. You might want to set up a positives and a negatives column, to make it easier to get an overview.

4. Work out minimum success criteria for each factor over various time frames:

- 1 hour
- 1 day
- 1 week
- 1 month
- ½ year
- 1 year
- 2 years
- 5 years

5. If you are not sure where your life is going, answer the following question: How would I live my life if, because of illness, I was told that I only had this much time left to live: 5 years, 1 year, 1 month, 1 day, 1 hour?

What’s to stop you from taking up some of these elements today?
How would I live my life if I had total financial independence? Is it possible to implement elements of this already now?
Ideas to improve your sleep

Sleeping well, so that you wake up feeling well rested, is important for your heart. If you have difficulty falling asleep, if you wake up too early or you don’t feel well rested, try out the following advice:

1. Prepare for the night by NOT watching TV, working or reading thrillers in the last hour before you need to go to sleep.
2. Go for a walk, preferably half an hour before bedtime.
3. Drink camomile tea.
4. Avoid black tea, coffee, cola, chocolate and alcohol in large quantities in the last few hours before you go to bed.
5. Read uplifting material which makes you feel good without making you tense.
6. Listen to good music in the last hour before you need to go to sleep.
7. Clear your head of any pressing thoughts by writing them in your notebook.
8. Think through the following day, possibly even the week or month ahead to ensure that your life as a whole is resource building or at least doesn’t demand more resources than you have. If that is not the case, sketch out how you can change this.
9. As you lie in bed, you can use points 3-5 of the relaxation exercise (page 148) to help you relax.
10. As you lie in bed, let your spouse give you acupressure on any sore points, or just a massage. Massaging feet and toes can have a calming effect.
11. Sleeping tablets can be a good idea during a short period of crisis, but are not a good long-term solution. Consider trying valerian root first, a natural substance with no side effects.
12. Don’t be afraid of not sleeping. Anxiety about falling asleep is enough to keep you awake.
13. Only go to bed when you are sleepy. A bed is meant for sleeping (and romance).
14. If you can’t sleep, get up. Find something quiet to do, for example, read a book or listen to music. Don’t watch TV and don’t smoke, since both of these are stimulating.
15. Get up at the same time each day – even if you fell asleep quite late. The
brain has a 24 hour internal clock. This is reset every morning when we get up. That is why it is important to get up at the same time every day – even on Saturday and Sunday – and regardless of how long you slept! Your sleep needs should determine your daily bedtime.

16. Don’t sleep during the day if you have trouble sleeping at night, as it will further reduce your need for sleep. Don’t do point 6 of the relaxation exercise too close to bedtime, as it can increase your energy level.

17. Don’t go to bed hungry or overfull. Both cause stimulation and inhibit sleep.

18. The bedroom temperature should be just right. A bedroom which is too hot or too cold disturbs your sleep and makes it more shallow. Take a hot shower or foot bath if you feel cold when you go to bed. An electric blanket can help.

19. If you have pain during the night, bladder problems or the like, discuss these with your doctor, as many problems can be helped.

20. A good technique for dealing with nightmares is to keep a book beside the bed in which you record the dream in as much detail as possible. This may help you remember the dream later so that you can work through it, and may also cause the dream to lose its poison.

21. If you suffer from recurring bad dreams, it’s a good idea to train yourself to have “conscious” dreams. That is, to be aware that you are dreaming as you dream. You can, for example, repeat the dream to yourself, over and over, while you are awake, so that it is easy to “recognize” it when you next dream it. Often people can then stop themselves – in the middle of the dream – and say, “This is not real!” After that, it’s actually not that difficult to change the events, for example, to turn and tell your pursuer that you are not afraid of him. If, in the middle of the nightmare, you can manage to see that it is just a dream, you gain a level of control over it.

It can help to make a new script, as if it was a film you were directing. First do things like change the color of the clothes, set the film during the day instead of night, etc... After that you can slowly begin to stage the film, as if it was a video, so that it has a more positive outcome. You will find that the new version rubs off on the dream you have at night.
Diary and pain journal

It can be a challenge in itself to follow up on the initiatives you have set in motion as part of your health plan.

As well as regularly taking stock of your efforts and their results, it can be a good idea to keep a diary to help you to gain the best possible insight into how you’re going with the program. To this end I have drawn up two schedules below:

1. The first is a “diary” which you can use to help you observe how various factors in your life impact your health balance, and how this is reflected in the level of soreness in the acupuncture feedback points.

2. The second is a “pain journal”. You might find this helps you, if you have heart disease, to observe how your condition changes over time. This is valuable if you go through a period where everything is going badly, then you can look back and observe the periods where your condition was better, and this will help motivate you to reestablish or to maintain your efforts.

I suggest you find some kind of notebook and draw up columns like the ones I have shown.

REASONS FOR KEEPING A DIARY
– THE DIARY AS A THERAPEUTIC TOOL
Often bouts of illness are brought on by similar situations and events. If you note down the events and how you responded to them in your diary, you can go back later – if similar events occur again – and see which response patterns were effective and which ones weren’t.

A healthy mind-body relationship
Research over the last 20 years has shown that a well balanced relationship between mind and body is crucial in allowing the body to stand against stress and illness and to heal once illness has occurred.

The key to such a balance is:

1. Being able to listen to the body’s signals (staying tuned in, e.g. discom-
fort, pain, tiredness, distress, sadness, anger and happiness).
2. Connecting these signals to your consciousness, with its capacity to work things through (connection with the event, activity, thought or feeling).
3. Taking appropriate action by expressing needs, feelings and thoughts.

The balance between the mind and the body works like an automatic feedback mechanism, such that the body always functions optimally in response to the immediate needs. This happens without any conscious intervention from the brain – via the autonomic nervous system. Acupressure allows us to get an idea of the activity level in the autonomic nervous system (see chapter IV).

HOW DO YOU LEARN TO DO THIS?
1. Gently observe your own response patterns, e.g. through relaxation or awareness exercises.
2. Link these observations to your consciousness and the situations, e.g. using a diary.
3. Learn to express needs, desires and feelings, when necessary, and in a sensitive way.
4. Note the level of soreness in the special acupuncture points in the various situations (see chapter IV).
## DIARY

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Feedback</th>
<th>Event</th>
<th>Thoughts</th>
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**IDEA:** To perform a cautious degree of self observation.

**HOW:** Observe passively without dwelling on the observations.

**WHEN:** Daily if you can - whenever you make an observation, but it shouldn’t become burdensome.

**WHAT:** Symptoms like: headache, flare-up in some illness. Feelings like: anxiety, panic, depression, lack of concentration, etc.

**FEEDBACK:** The level of soreness in the feedback points, on the scale: 0, +, ++, +++.

(0 - not sore, +++ - very sore)

**Other comments:**

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________
**PAIN JOURNAL**

Fill this in every day:

<table>
<thead>
<tr>
<th>Date</th>
<th>Number of pain episodes (per day)</th>
<th>Nitroglycerine (number per day)</th>
<th>General well-being</th>
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General well-being: What has the day been like as a whole, for your heart? Choose the number below which best applies and write it in this field:

1 - Very good
2 - Good
3 - OK
4 - Not good
5 - Very bad

Other comments about the day:

--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
The tyranny of time

Over the last 30 years, those of us who live in Western Europe and the USA have gained more leisure time as a result of shorter working hours and the arrival of many technical appliances to assist us in our daily chores. At the same time, more and more people experience the feeling that they don’t have enough time. This experience of insufficient time activates the body’s “fight-or-flight” phase (see chapter III) and can therefore promote the development of atherosclerosis.

Our time is limited, in terms of each day, each week, each year, and our lives. A person has about 28,000 days available to them.

Each age has had its own conditions under which people have to work out their rhythm of life. The changing seasons give rise to new conditions to which people have to adapt their rhythm of life. The various phases in a person’s life give rise to yet new conditions to which people must also adapt. At any given time we have to also find the rhythm between the present, past and future.

To assess the degree to which you feel the pressure of time, answer the following two questions. On a scale from 0 to 7, to what extent do you feel:

You are in control 0 1 2 3 4 5 6 7
You have enough time 0 1 2 3 4 5 6 7

(7 = you have full control over your time / you have plenty of time)

If you answered “3” or below, to just one of these two questions, the exercise below will probably be of benefit to you.

In order to work out why you feel you don’t have enough time, a good starting point is to record how you spend your time for a period (you can use the week schedule below). Since not all aspects of your life receive attention each week, I suggest that you make copies of the schedule and fill them out over 4 weeks. If you have a spouse or partner, let him or her help you fill out the schedule, so that you both agree on the time spent on each item. Put the schedule somewhere where it will be readily at hand for both of you (e.g. on the door of a kitchen cupboard). It is likely that you will find that even just the exercise of recording how you spend your time will have a positive effect.
Table V.1 - Weekly time schedule

For each item, write in how much time you spend, down to half-hour intervals.

For ideas on various solutions, see, for example, the sections on: Relaxation, Exercise, Suggestions for life together or Suggestions for single life.

Looking after your garden

In a garden there are both weeds and flowers.

The weeds come by themselves, but the flowers require care if you want them to flourish. If you don’t pull out the weeds they have a tendency to spread and possibly choke the flowers. However, if you put the weeds in a compost bin, they will later turn into good topsoil.
Our thought world can be compared to a garden.

Good and bad thoughts seem to be an unavoidable part of human life. Good thoughts have to be nurtured and bad thoughts can lead to personal growth if they are appropriately weeded out.

Bad thoughts are things like animosity, cynicism, suppressed anger, frustration, anxiety, fear, panic, hopelessness, worry, powerlessness, complaining and whining.

An excess of such thoughts has an unfortunate effect on the body, promoting the release of “fight-or-flight” hormones in the brain. These hormones are not harmful in themselves, but if they are released in large quantities over a longer period, they can promote atherosclerosis and weaken the immune system. They can also weaken the body’s immune system and hence its capacity to resist disease.

If these bad thoughts are expressed, they lose their harmful influence on the body. The way they are expressed is not that significant. However, our social context and culture make some options more attractive than others.

Thoughts can be given expression through song/screams, music/noise, painting/graffiti, writing poetry/writing, acting and so on. They can be expressed physically through, for example, sport, sex, by banging your fist on the table or by hitting a tree. You can also get yourself a “brain extension” – a book in which you can write down your thoughts uncritically and store them until their poison has subsided. Later you can read over them, creating the opportunity for a constructive reaction (see the section on “Getting things off your chest – the impact on your health”).

Another way to take the sting out of these negative thoughts is to say STOP, when they arise, out loud in the beginning if you can, and then try to completely relax (sit down). You can learn in this way to apply the brakes to negative trains of thought when they come up. Then you can change to a passive train of thought.

If you have violent or negative dreams which wake you, it can help to write down the dream in as much detail as possible. Put it aside for a week, and then draw out any positive or instructive aspects of the dream. If you wake up before the dream ends, it can be good to take the opportunity, with the help of your conscious mind, to ensure that the dream ends well, i.e. without any losers.

“Grant me the serenity to accept the things I cannot change, the courage to change the things that I can and the wisdom to know the difference.”

Before you air your opinion, ask yourself:
• Is it true?
• Is it necessary?
• Is it kind?

Before you fall asleep each night, note three things you have done that day which have brought happiness, hope or self-confidence.

**Self confidence**

Self confidence is an expression of the value we attribute to ourselves as people. It’s not possible to love or care about other people if you are unable to love or care about yourself.

Accepting yourself as you are doesn’t necessarily mean you value all your actions and every facet of your personality equally highly. But it is easier for you to improve your behavior patterns, if at a basic level you accept yourself.

The highest goal of the “heart” is to love yourself and others.

The following statements reflect a positive and healthy attitude to yourself. They express self acceptance and self confidence.

1. Just because I did or did not have success today, doesn’t mean it will go this way in the future.
2. It is nice to reach your goals in life and to be accepted by others, but I don’t have to have these things in order to be content with myself.
3. Whether I am good at this or that, makes no difference to my value as a person.
4. Everyone makes mistakes. I can accept myself and still regret or dislike the mistakes I make.
5. Even though there may be sides to my personality and behavior which I don’t like, I can fully accept myself as a person.
When the world is against you

When the world is against you, the challenge is much greater:

- Don’t let vengeful thoughts win out, and you prevent your dark side from getting the victory. Make sure you don’t react with bitterness to the smallest provocation – to something which maybe isn’t even intended to be personal or harmful.
- Don’t let anger and bitterness get such a strong hold on you that you can no longer see life clearly. Every impression you see, sense, perceive and interpret can be distorted by bitterness, anger and/or vengeful thoughts. When these feelings take hold of us, they are like a contagious disease, spreading to everything they come into contact with. All our perceptions and actions toward everyone around us can be distorted.
- Maintain your good mood, laughter, sense of humor and love of life – whatever your circumstances. As soon as we let the bitterness of others influence our mood, we have given them power of our mood. Don’t do it.
- Accept that it is time to learn, since:
  - you have to learn patience
  - you have to learn humility
  - you have to learn to be flexible in your thoughts and actions.

- The trick is to see the situation as a challenge. The goal is, that when the bad time has passed, you and those closest to you can sit back with a feeling of gratitude for what has happened, since it has brought you something valuable which you would not otherwise have received. The challenge is to find a way in which you can reach this goal. If it is difficult, a long walk followed by a relaxation exercise can help to calm your mind so that you can hear your inner voice making suggestions about how it can be done. But it can be hard to hear this inner voice, especially if you are still infected by irritation, bitterness, mistrust or vengeful thoughts. You might benefit from working through the sections on “Looking after your garden” and “Getting things off your chest”.
- Just because someone else sees you as their enemy, doesn’t necessarily mean you have to accept that role. You’re allowed to let that person be
bitter in themselves. Accept the fact that you can’t be responsible for their actions, but only for your own. If your reaction to evil is to be evil yourself, you can’t blame others for doing the same – and so the cycle goes on.

• It’s up to you – to a large extent – to choose whom you see, whom you work with and what you work on. If you are treated badly, time after time – without yourself being a guilty party to it, you are allowed to weigh up whether you want to continue that relationship.

• If you yourself hurt others – you are allowed to say sorry, to feel regret, and to forgive yourself, so that the guilt feelings don’t get the better of you. Remember that no-one can claim to be innocent of this kind of thing. If you forgive yourself now, it will be easier for you to forgive others that you feel have hurt you.

• Be aware that there is a “devil” in all of us. The sooner you accept that you also have that side to your character, the sooner you will be able to control it. At the same time, this admission will help you to be more understanding when you feel others have treated you badly.

• Note that any anger which lasts for more than 15 seconds is fueled primarily from within.
VI
Your physical health

As a source of ideas for your health plan, this chapter shows how various forms of physical exertion can have a positive influence on your health. It discusses: exercise and types of exercise, relaxation and breathing exercises, yoga and massage.

Schedule VI.1 summarizes the scientific findings which will be presented in this chapter as a set of positive statements representing an ideal situation. It works in the same way as schedule V.1.

**Schedule VI.1: Action schedule - your physical health**

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<td><strong>Acupressure</strong></td>
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<td>I do acupressure</td>
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<td><strong>Exercise</strong></td>
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<td>sex)</td>
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<td>I do winter bathing</td>
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<td>I will lose weight</td>
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<td><strong>Relaxation</strong></td>
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<td>I do 10-20 minutes</td>
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<td>144ff</td>
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<td>of combined</td>
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<td>relaxation and</td>
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<td>breathing exercises</td>
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<td>twice a day</td>
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<tr>
<td>I do yoga,</td>
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<td>breathing and</td>
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<td>stretching exercises</td>
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<td>for</td>
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<td>10 minutes each day</td>
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<td>I have a 1 hour</td>
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<td>massage twice a</td>
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<td>week</td>
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Scientific studies - exercise and weight

In an American study, 13,000 men who had an increased risk of heart disease were followed for 7 years. The men were divided into two groups. One group did some form of exercise (walking, cycling, gardening, swimming, dancing, playing tennis or something similar) for 30-70 minutes each day. The other group did not exercise. In the first group, the risk of death from heart disease was reduced by 33% compared to the non-exercising group. The exercise group also generally felt better, had increased appetite and less difficulty keeping their weight down. Similarly, exercise was found to reduce the risk of heart disease in a group of 5,000 women with diabetes, who were followed for 14 years.

In a study of 10,000 healthy men, followed for 15 years, it was found that exercise, quitting smoking, maintaining normal blood pressure and avoiding being overweight were linked to a lower death-rate generally, and from heart disease in particular.

Physical activity affects people with heart disease in a positive way, by reducing the nervous system’s sympathetic activity. This leads to a fall in blood pressure and heart rate. The fat levels in the blood are also influenced positively.

Know Your Fitness Level
1,400 healthy men, aged from 42 to 64, were followed for 5 years and their exercise patterns and fitness level (maximal oxygen uptake) were monitored. The men who exercised more than 20 minutes a day or who had an oxygen uptake above 2.7 liters/min., reduced their risk of heart attack by 65% compared to the men who exercised least or who had the lowest fitness level.

In a study of 250,000 Americans, followed for 10 years, an independent correlation was found between fitness level and death-rate, both for the overweight and those with normal weight.
A HALF-HOUR WALK EACH DAY IS ENOUGH
The following study shed light on the significance of the duration of daily exercise. 700 men aged from 61 to 80 were followed for 12 years to evaluate the significance of the length of their daily walk. The men who walked 3 or more kilometers had just over half the risk of death from heart disease, compared to those who walked only 1.5 kilometers.8

In a study of even older men (aged from 71 to 93), the men who walked 3 kilometers each day also halved their risk of death from heart disease over a two year observation period.9 That women who walk benefit just as much has been shown from a study of 70,000 nurses followed for 8 years. More demanding exercise did not lead to any additional benefit.10 This is supported by the results from another study in which the amount of energy used was correlated against the duration of the exercise. The critical factor was not the duration of a particular exercise period, but the total energy consumption for the 24-hour period.11 The total energy consumption increases more for moderate exercise (e.g. walking), than for strenuous exercise (e.g. sport, fitness training).12

A daily walk of more than 20 minutes reduced the risk of developing high blood pressure by 30%, in a study of 6,000 healthy Japanese men followed for 8 years.13 The risk of getting diabetes was similarly reduced by 30% among 70,000 women followed for 8 years. A study of 11,000 American doctors, followed for 13 years, found a similar, 30% reduction in the incidence of stroke for men who walked 3 kilometers each day.14

STOP BEFORE IT GETS TOO MUCH
An investigation of the sudden deaths of 141 men with advanced heart disease, observed an unusually high incidence of fatal heart attacks caused by dislodged arteriosclerotic tissue (plaques). This cause was nearly twice as prevalent in the heart patients who died during exertion as it was in the heart patients who died during rest. The physical strain was from things like pushing a car, mowing the lawn, digging a ditch or shovelling snow.15 The validity of this warning has been confirmed in other studies, and anyone who wishes to take up sport again, after years of abstinence, would be wise to start with a long period of regular, moderate exercise.16

EXERCISE CAN LIFT YOUR MOOD
In a study of 67 healthy men who underwent a 6 week exercise program, the group who were initially depressed experienced an improvement in mood.17
For a group of 12 people with pronounced depression, a half-hour, daily walk was found to reduce their depression markedly over 10 days. Exercise has similarly been shown to lessen anxiety.

EXERCISE STRENGTHENS THE LINING OF THE CORONARY ARTERIES
19 patients who had been referred for balloon angioplasty because of heart disease were randomly allocated to either a program of 10 minutes of cycling six times a day for four weeks, or no special training. The people who cycled achieved a reduction in the “contrary” reaction in the muscles in the heart’s blood supply vessels and capillaries. That is, the blood supply to the heart was increased (see chapter II), and therefore the heart’s blood supply reserve was increased. The effect is thought to be partly due to a strengthening of the blood vessel linings which helps keep the surrounding muscles relaxed and prevent blood platelets and infection cells from sticking to the lining.

EXERCISE BUILDS UP THE HEART’S PUMPING CAPACITY
Regular, moderate exercise has been shown to improve the heart’s pumping capacity in patients with reduced pumping capacity.

TAI CHI BUILDS UP STRENGTH AND INCREASES BALANCE
There are three factors which come into play in maintaining good physical exercise tolerance: muscle strength, oxygen absorption capacity and balance. Tai Chi represents a cheap, low technology technique which leads to improved muscle strength and balance, as evaluated based on to randomized trials among people over 70.

CONDITIONING THE HEART THROUGH OXYGEN SHORTAGE IMPROVES ITS CAPACITY
Many people with angina pectoris have found that their heart’s tolerance or adaptability can be stimulated by one or both of these phenomena:

1. Walking-through-your-angina: Some patients initially get angina during physical exertion, but find that the pain paradoxically disappears, despite continued activity.
2. Warm-up effect: Some find that the angina they get during exertion dis-
appears after a short rest, allowing them to continue the physical activity without angina, possibly even at a more demanding level and for a long period.

It has been shown that these experiences conceal a genuinely increased working capacity in the heart muscle. This is not because the oxygen supply increases, but because oxygen consumption is reduced, or because the relationship between working capacity and oxygen needs is improved\textsuperscript{27,28}, and this protects the heart against heart attacks\textsuperscript{29}.

**Comments**

It can therefore be good for your heart muscle if you carefully provoke angina through physical work. It would be natural to combine this heart muscle training with acupressure, which can easily be performed while taking a walk.

### CONDITIONING THE BODY’S ANTIOXIDANT DEFENCES THROUGH WINTER BATHING AND TIME IN THE SAUNA

The body’s antioxidant defences (see chapter VII, page 171) can also be improved in a similar fashion, if it is repeatedly subjected to a moderate provocation, e.g. bathing in cold water\textsuperscript{30}. Spending time in a sauna represents a similar, mild provocation, although in the other direction. In unverified studies, improvement to the heart’s pumping capacity has been observed, along with a fall in blood pressure, in people with high blood pressure\textsuperscript{31}.

**Comments**

You need to prepare for winter bathing by starting in the summer, while the water is warm, so that you can adjust to it gradually throughout autumn. If you actually have heart disease, it is doubly important to start while the water is warm, and to stop when you observe that the bathing causes angina pectoris. If it doesn’t cause angina, it is a very good sign, since immersion in cold water leads to a big rise in adrenaline levels in the blood, which will cause angina if you have pronounced atherosclerosis. Both winter bathing and sauna visits should be avoided by people with unstable heart disease, and during the first 6 weeks after a heart attack.
Heart disease and weight

One million Americans were followed for 14 years to measure the correlation between weight (measured as BMI, Body Mass Index) and the risk of death. People with a BMI between 20.5 and 24.9 had the best results. Any deviation from this range led to a greater risk of death, both for a higher or lower BMI. The picture was pretty much identical for both men and women. The significance of having a non-optimal BMI lessened with age, and had only a modest impact for people over 75 years old.

A BMI of between 25 and 30 generally led to a 10-40% increase in the risk of death from heart disease, and this rose to 100% for a BMI greater than 32 \(^{32}\).

Comments

In view of the fact that 20% of the American population are overweight (have a BMI over 30) and since a high BMI is most significant early in life, it is very important to work at prevention \(^{33}\).

WEIGHT LOSS ALLEVIATES HEART DISEASE

A study of 22 overweight people with atherosclerotic heart disease showed that a weight loss of 10 kilograms led to an improvement. The lifestyle changes involved appear to be linked to a reduction in the atherosclerosis in the blood vessels, leading to an improvement in angina pectoris symptoms. By way of contrast, 19 patients in a control group kept the same weight, and their symptoms and level of atherosclerosis worsened during the observation period \(^{34}\).

The effects of weight loss were compared with blood pressure medication and a placebo in a group of 55 overweight men with high blood pressure. An average weight loss of 7.5 kg (from 95 kg), led to a greater reduction in blood pressure than both medication (beta blockers) and the placebo. While weight loss was shown to have a positive effect on cholesterol, medication had the unfortunate effect of lowering the concentration of the “good” HDL cholesterol \(^{35}\).

41 overweight women with a BMI over 27 were given dietary guidelines. The first group had to count calories, the second group simply had to eat a diet low in fat and high in calories. The second group had the best results. 65% had maintained a weight loss of at least 5kg after 2 years \(^{36}\).
Comments
It is not good to have a BMI over 26 if you are less than 70 years old. There is a clear benefit if you lose weight, and if you have high blood pressure, weight loss is more effective than medication.

LINK BETWEEN ATHEROSCLEROSIS AND BEING OVERWEIGHT
A study of 17,000 men and women found a link between being overweight and higher levels of C-reactive protein in the blood. C-reactive protein is a marker of infection which increases during atherosclerosis (see chapter 1). Thus, being overweight can lead to a general infection in the body, which increase the risk of disease in the long-term, including atherosclerosis 37. Being overweight has also been shown to increase activity in the sympathetic nervous system 38.
Practical exercises
– exercise and weight

Ideas for exercise

Daily exercise has far reaching positive effects on your health. However, if you have advanced heart disease it is wise not to push yourself, but to stop what you are doing if symptoms arise. A normal daily walk, at a brisk pace, without a break, for 20-30 minutes is enough to lead to significant protection against high blood pressure, diabetes, stroke and heart disease. There is no further gain associated with more demanding types of exercise.

Ideas for weight control

1. It is good if your diet contains:
   • Fewer saturated fats, as found in butter and other animal fats
   • More polyunsaturated fats, as found in fish, soybeans and olive oil
   • Fewer simple sugars, as found in sweets/desserts
   • More complex carbohydrates, as found in potatoes, spaghetti, rice and bread
   • More fibre (both soluble and insoluble), e.g. psyllium husk, half an hour before every meal, since fibre intake appears to work against being overweight 39
   • Otherwise, plenty of vegetables, fresh and dried fruits and nuts, and rolled oats or something similar for breakfast
2. Try to take a 30 minute walk, 6 days a week, with no breaks, so that you feel warm, but not sweaty.
3. You can’t lose weight if you eat to relieve anxiety, to try to fill an emptiness resulting from a lack of love or contact with other people, or if you eat to numb an emotional pain.
4. Understand that your body can only function optimally if you have a healthy mental, emotional and social state.

Body weight is determined by the balance between energy intake and energy
consumption. The overall regulation happens in the hypothalamus, where both the physiological “fight-or-flight” response and restitution phase play a role. Exercise is important here, because it stimulates the regulating mechanism so that the body’s own ability to maintain an appropriate body weight is activated 40.

- For overweight women, there is a direct connection between long term weight loss (over 18 months) and the energy expended in exercise 41.
- Ordinary exercise, like everyday walking or cycling, gives a long-term result which is just as good as that attained from a regular fitness program 42, 43, 44.

CALCULATE YOUR BMI (BODY MASS INDEX)
BMI = Weight in kg / (height in meters × height in meters)

**Examples:**
A. A man weighs 90 kg and is 1.80 m tall. His BMI is 27.78. If he loses 10 kg, so that he weighs 80 kg, his BMI becomes 24.69, which is OK.
   \[
   90 / (1.80 \times 1.80) = 27.78 \quad 80 / (1.80 \times 1.80) = 24.69
   \]

B. A woman weighs 77 kg and is 1.72 m tall. Her BMI works out as 26.03. A weight loss of just 4 kg, to 73 kg, will make her BMI 24.68, which is OK.
   \[
   77 / (1.72 \times 1.72) = 26.03 \quad 73 / (1.72 \times 1.72) = 24.68
   \]

The connection between your BMI and the risk of getting atherosclerotic heart or vascular disease is shown below:

BMI < 25: No increased risk
BMI > 26: 10-20% greater risk
BMI > 30: 30-60% greater risk
BMI > 32: 80-100% greater risk
RELAXATION REDUCES A HIGH BLOOD CHOLESTEROL LEVEL
A group of people with high cholesterol who learned to meditate, achieved a 10% fall in cholesterol compared to an equivalent group that didn’t learn to meditate 45.

RELAXATION LOWERS BLOOD PRESSURE
130 people with high blood pressure were taught stress management techniques. One group learned to do muscle relaxation and a second group learned meditation. Both techniques led to a fall in blood pressure, compared to a control group which received no instruction. Of the two techniques, transcendental meditation was shown to have the biggest impact 46, 47.

MUSIC AND RELAXATION GOOD FOR HOSPITALIZED HEART PATIENTS
80 people admitted to hospital, with suspected heart attack, were given 20 minutes of either music or relaxation, three times over two days. A control group received neither. Both treatment groups experienced a fall in blood pressure, a rise in skin temperature and a fall in the number of complications, compared to the control group. (A rise in skin temperature indicates reduced activity in the sympathetic nervous system and hence a lower level of physiological stress – see chapter III) 48.

In another study 45 heart attack patients were given either: relaxing music in peaceful surroundings, peaceful surroundings without music, or normal surroundings without music. Compared to the other two groups, the group which were given music experienced less anxiety and had a slower pulse and slower breathing. There was no difference between the other two groups 49.

40 patients in an intensive care heart ward following a heart operation, were randomly assigned to receive either 15 minutes of music, twice a day for
two days, or nothing. The music group experienced a lower pulse rate, lower blood pressure and had a greater tolerance of noise in the ward. Music during the actual operation has been shown to improve the recovery period after an abdominal operation.

In a study of 32 patients who were going to have a bypass operation, training in relaxation led to a more relaxed post-operative state compared to having no training.

**MUSIC AND RELAXATION INCREASES PHYSICAL STRESS TOLERANCE**

A study involving young athletes compared physical stress on a treadmill, with and without music. The music lead to a lower pulse and blood pressure and less strain on the heart and metabolism. The value of relaxation was compared with laughter and normal diversion, employing a 20 minute video in each case, while a control group saw no video. The effect was measured by seeing how much a blood pressure arm band could be pumped up, before it became uncomfortable. The control group experienced discomfort at a pressure of 90 mm Hg, which was the same for the group which watched a diversional video. The group which watched the relaxation video could tolerate a higher pressure (130 mm Hg) and the laughter group, an even higher pressure (170 mm Hg).

**THE TYPE OF MUSIC IS NOT CRITICAL**

A study of 50 youths found no major differences in the relaxing effects of listening to Mozart, hard rock, their own choice of relaxing music or just sitting and relaxing (measured as changes in skin temperature, muscle tension and heart rate). Though Mozart and self-chosen music scored the best, all situations led to marked relaxation.

**AGED PEOPLE WHO MEDITATE HAVE A LOWER RISK OF DEATH FROM HEART DISEASE**

70 healthy people with an average age of 80 years were divided into four groups. One group learned to meditate, two groups learned other ways to relax, and the last group functioned as a control group. After 3 months’ observation, the meditation group had attained a lower blood pressure than the three other groups. After 3, 8 and 15 years, the meditation group had attained a lower risk of death from heart disease and from other causes.
RELAXATION MODERATES THE STRESS REACTION
29 healthy men were subjected to experimental stress after being taught relaxation techniques. The trial used a control group which hadn’t been taught ways of handling stress for comparison. After 4 months, the level of stress hormone in the blood (cortisol) had generally fallen in the relaxation group. The hormone level also rose more quickly and normalized more quickly after experimentally induced stress.56.

RELAXATION HELPS PATIENTS WITH HEART DISEASE
21 people with stable angina pectoris were divided into two groups. One group was taught relaxation, while the other functioned as a control group. After 8 months, the relaxation group had had fewer heart attacks and had a higher exercise tolerance on a bicycle. The heart also showed fewer signs of oxygen shortage.57. 156 patients who had recently had a heart attack were randomly allocated to receive either exercise training alone, or together with relaxation training. In the 5 years which followed, the relaxation group had fewer deaths, fewer new heart attacks, fewer heart operations and fewer hospital admissions.58.

RELAXATION MODERATES ANXIETY AND UNREST
An analysis of 146 scientific studies has shown that relaxation is effective in moderating anxiety.59.

Comments
Relaxation, muscle relaxation, music and laughter have a positive influence on health. The precise form is not that significant, but just that you do it.

TOUCHING HELPS
Unconscious patients with a high pulse rate exhibited a slower and steadier pulse when an experienced nurse touched the patient while taking their pulse.60.

Although it doesn’t directly relate to heart patients, the following example is interesting. Premature babies, lying in incubators, were divided into two groups. One group were caressed for 15 minutes, 3 times a day. The other group was not touched. Over 10 days, the babies that received affection had nearly a 50% increase in weight, compared to the group that were not touched.61.
MASSAGE CAN MODERATE STRESS

29 homosexual men were given a 1-hour massage every day for one month, while an equivalent group which did not receive massage functioned as a control group. Compared to this control group, the massage group had a lower level of stress hormone in the blood, an increased sense of being relaxed, less anxiety and heightened activity from their immune cells.\(^{62}\)

Healing massage is a special type of massage, where the therapist heals the patient by massaging the person’s “energy field”, which can supposedly be detected above the person’s skin. The skill of detecting this energy field was investigated among 21 experienced therapists. They had to identify which of their hands was close to the test person’s hand (while blindfolded). The test person’s hand was randomly placed, close to one of the therapist’s hands. The correct hand was only identified in 44% of cases – which is a bit low given they had a 50% chance of getting it right, and well below the 100% which one would expect if the therapists actually could detect the person’s energy field above their skin.\(^{63}\)

Comments

Massage is good, but physical contact is required.
Practical exercises
– relaxation, music and health

Relaxation exercise

The exercise below is a mix of several classical Asian techniques (qi gong, yoga, transcendental meditation) combined with Western science and more than 20 years’ personal experience.

1. Find a comfortable place where you can spend 20 minutes undisturbed.
2. Find a position in which you can sit or lie comfortably for 20 minutes.
3. Close your eyes and turn your attention to your body parts/muscles, from your toes to your head, and let them relax in order, e.g.: big toe, other four toes, foot, heel, calf, knee, thigh, hip, lower back, muscles

Figure V.1 – Level of adrenaline in the blood

(This figure is shown at the back of the book. It needs to be recreated in something like Adobe Illustrator).
along your spine, muscles between your shoulder blades, shoulder, stomach, chest, front of your shoulders, upper arm, elbow, lower arm, hand, fingers, neck, forehead, muscles around your mouth, eyes and cheeks.

4. Note that in the places where the body touches what you are sitting/lying on (heel, hollow of the knee, buttocks, back, shoulders, elbows, fingers and neck), a feeling of heaviness indicates that the relaxation has worked. If it is hard to get your muscles to relax, it might help to tense each individual muscle group first, and then let it relax.

5. Breathe deeply in through your nose, filling first your stomach area and then your chest, so that your ribs rise, without letting the air out of your stomach area. Hold your breath a moment – count to 4, and let the air out again, unforced. Repeat this 3-5 times, with a couple of normal breaths in between.

6. Now breathe normally, through your nose. Say silently to yourself, 1-2-3, but without focussing on your breathing. Repeat this for 10-20 minutes. If thoughts come to mind, note this casually, and then go back to where you left off. Assume a passive attitude and let the relaxation proceed at its own pace. (Be like a reed swaying in the breeze).

GUIDELINES & TIPS

- It’s important to understand that the exercise is all about not concentrating. So you shouldn’t try to constrict your thoughts.
- Thoughts about day to day things will unavoidably come to mind, and that’s fine.
- The only point at which you have to consciously do something is when you suddenly remember: “I was actually in the middle of a relaxation exercise.” At that moment, you return to the step you were up to in the exercise, and continue, as if nothing had happened.
- The next distracting thought might quickly follow – and you handle it in precisely the same way.
- Avoid doing the exercise in the first two hours after a meal.
- Repeat the exercise 1-2 times each day.
- It is important that the exercise becomes a natural part of your daily routine, e.g. before lunch, before you go home after work or before you make dinner. If you don’t have 20 minutes available, do the exercise for as long as you can. This is especially important in the beginning, since it
will help you to get into the routine of doing it.

- You might initially fall asleep during the exercise. That’s OK. Keep an egg-timer or something similar nearby, to ensure that the exercise does not extend beyond the 20 minutes. Make sure it will go off discretely. Begin to open your eyes slowly. Allow yourself 1 minute to wake up.
- If you use the exercise to help you fall asleep, use only steps 1 to 5, since step 6 can make you more awake.
- If you have a lot of things to remember or a lot of milling thoughts, it might help to make a reminder list on a pad – to empty your head of thoughts before you begin. If that is not enough, you can improve your capacity to relax by taking a brisk walk for 20-30 minutes before you write things down.
- Some people find it helps to be guided by a cassette or music, and there are a great many such products on the market. When you choose a product, the only things that matters is whether it helps you. When you start to master the technique, it’s a good idea to try and do it unassisted, so that you can do the exercise anywhere, without being dependent on a cassette and player. You can then make use of the exercise even when you only have limited time at your disposal, for example, while waiting for an important meeting or a plane or train, or for your turn to take the podium.

THE EVERYDAY EFFECTS OF RELAXATION
When the adrenaline level in the blood rises, it gives us energy to get things done, but if it is too high for too long, it takes a toll on the body’s resources. If we do some relaxation before lunch and before dinner, we benefit from the adrenaline rise, without it reaching such a level that it is destructive.

OTHER POSSIBLE ADVANTAGES FROM RELAXATION
If you have problems you are wrestling with, you might be lucky and find that a creative solution spontaneously springs to mind during the relaxation exercise. You might also find you remember things you had forgotten – e.g. shopping, appointments or phone calls you have to return.

These things occur because of the mental calmness achieved during relaxation. Just as it’s much easier to see air bubbles coming to the ocean surface on a calm day than it is on a rough and windy day, your mind can more easily catch the signals from deeper levels of consciousness when it is calm.
Yoga exercises

- Do the exercises slowly and stretch as far as you can without pain. Breathe out, stretch the little bit extra that expiring makes possible, and count to 3.
- Each of exercises 1-8 should be done 3 times.
- At exercise 9, count 10 breaths.

Exercise 1
Exercise 2

Exercise 3

Exercise 4
Exercise 5

Exercise 6

Exercise 7
Exercise 8

Exercise 9
VII
Food, drink and
atherosclerotic heart disease

The food and drink we consume are the basic building blocks used to renew old
tissue, construct new tissue, repair damage and defend against disease - pro-
cesses which are continually taking place in the body. It is claimed that more
than half of our biological tissue is renewed each year. The newly formed tissue
can only be built from the materials at hand, that is, what we eat, drink and
breathe. It is therefore easy to see why these factors have a real significance for
our health.

In this chapter I will show you how different types of food and drink can
influence your health, and in particular, the development of atherosclerotic
heart disease. Fats play such a central role in the development of atherosclerosis
that I have given them their own section, and will discuss them first. Then I will
turn to other elements of diet like fruit, vegetables, vitamins and minerals. The
chapter ends with a selection of recipes for heart-friendly food.

Schedule VII.1 summarizes the scientific findings which will be presented
in this chapter as a set of positive statements representing an ideal situation. It
works in the same way as schedule V.1.

Fats

Fats are essential in sustaining life. They are an important component of body
tissue and they are the body’s reserve fuel supply when sugar is not available.
Two types of fats, cholesterol and triglycerides have been linked to the develop-
ment of atherosclerosis. Triglycerides are found in vegetable oils (liquid), veg-
etable fats (solid) and animal fats (solid). Cholesterol is only found in animal
fats, e.g. in eggs, butter and meat.

In this section I will describe the influence that various types of fats can have
on your health so that you can take this information into account in your health
plan.
Cholesterol: total cholesterol, LDL cholesterol, VLDL cholesterol, HDL cholesterol, lipoprotein(a).
Triglycerides: saturated fatty acids, mono- and polyunsaturated fatty acids, trans fatty acids.

**Schedule VII.1: Action schedule - diet**

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<th>See page</th>
<th>Prio. I,II,III</th>
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<td>50</td>
<td>168</td>
</tr>
<tr>
<td>Vegetarian diet forms part of my diet</td>
<td>30</td>
<td>161, 169</td>
</tr>
<tr>
<td>I eat fish (1-2 times a week)</td>
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<td>160</td>
</tr>
<tr>
<td>I take fish oil as a dietary supplement</td>
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<td>160</td>
</tr>
<tr>
<td>I eat a variety of fruit each day</td>
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<td>170</td>
</tr>
<tr>
<td>I eat a variety of vegetables each day</td>
<td>30</td>
<td>170ff</td>
</tr>
<tr>
<td>Whole-wheat products form part of my diet</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>I eat 100g of nuts each week</td>
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<td>161</td>
</tr>
<tr>
<td>I have a high fibre diet (fruit, vegetables and cereals)</td>
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<td>170-171</td>
</tr>
<tr>
<td>I avoid trans fats</td>
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<td>165</td>
</tr>
<tr>
<td>I drink 1-3 glasses of red wine (or other alcohol) each day (men) / each week (women)</td>
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</tr>
<tr>
<td>I drink 1-2 cups of good cocoa each day (min. 55% cocoa)</td>
<td>30</td>
<td>185</td>
</tr>
<tr>
<td>I drink normal or green tea each day</td>
<td>30-50</td>
<td>184</td>
</tr>
<tr>
<td>I take a selenium supplement (if levels low)</td>
<td>30</td>
<td>179</td>
</tr>
<tr>
<td>I take supplements of folic acid, vitamin B6 and B12 (if homocysteine levels in the blood too high)</td>
<td>30</td>
<td>177</td>
</tr>
<tr>
<td>I am stopping smoking</td>
<td>50</td>
<td>190ff</td>
</tr>
<tr>
<td>I will try herbal medicines</td>
<td>?</td>
<td>180ff</td>
</tr>
<tr>
<td>I will be a blood donor (if male)</td>
<td>?</td>
<td>191</td>
</tr>
</tbody>
</table>
Scientific studies
- cholesterol and fats

Cholesterol is only found in animal tissue, of which it is a natural element. We get it in our diet mainly from dairy products, meat and eggs. It is formed in the liver and is transported around the body attached to so-called transport molecules. One group of these - LDL cholesterol in various forms (VLDL and lipoprotein(a)) - are called “bad cholesterols”. They carry cholesterol from the liver out into the body, while another group - HDL cholesterol, called the “good cholesterols” - carry cholesterol back to the liver where it then passes out of the body in the faeces and urine. If there is too much LDL cholesterol in the blood compared to the level of HDL cholesterol, the cholesterol cannot be adequately transported back to the liver and accumulates in the bloodstream. This increases the risk that it will deposit in the blood vessel walls, and atherosclerotic heart disease can develop.

CHOLESTEROL AND THE RISK OF HEART DISEASE
There is a direct correlation between blood cholesterol level and the risk of death from heart disease or any other cause – for both the sick and the healthy, the young and the middle-aged. This is seen in the results of large population studies 1, 2.

In an American study, 360,000 men aged from 35 to 57 were followed for an average of 16 years. The men who had a cholesterol level of less than 5.2 mmol/l, a blood pressure lower than 120/80 and who didn’t smoke, had 80-90% less risk of getting heart disease - with those under 40 having the greatest reduction. The picture was the same for risk of death from any cause 3. The connection between blood cholesterol level and mortality rate was analyzed in 12,000 men in seven countries (USA, Holland, Finland, Greece, Italy and Serbia), followed for 25 years. Although the difference in the observed number of deaths for each cholesterol level in that time frame varied by a factor of 3, there was a linear relationship between total cholesterol levels and risk of death in all countries, such that a rise of 0.5 mmol/l lead to a 12% higher risk of death 4.

There was a time when people feared that a blood cholesterol level which
was too low, increased the risk of death from causes other than heart disease. But it has not been possible to reproduce these results. A single study suggests that having a blood cholesterol level less than 4.8 mmol/l increases the risk of suicide.

WHO SHOULD BE INTERESTED IN CHOLESTEROL?
According to the latest international guidelines, all adults less than 75 years old should be screened for Total Cholesterol, HDL-Cholesterol, LDL-Cholesterol and Triglycerides, every 5 years for healthy individuals. For older people the situation appears to be different: 700 people over 85 years old were followed for 10 years and a reverse relationship was observed between serum cholesterol and the risk of death from heart disease. The group who had a low cholesterol (less than 5.0 mmol/l) had a greater risk of death compared to the people who had a high cholesterol (greater then 5.0 mmol/l). The risk reduced by 15% for every 0.1% mmol/l increase in blood cholesterol.

Comments
You should be interested in cholesterol if you are less than 75 years old, whether or not you have heart disease or a particular risk of developing it. This is already true at age 20, and especially if you have other risk factors.

BENEFITS OF LOWERING CHOLESTEROL
The value of lowering cholesterol, especially in people with normal blood levels is still a fairly controversial subject.

Studies have shown that if blood cholesterol levels are brought below 5.5 mmol/l for men and 6.0 mmol/l for women, for 6 months, through diet and cholesterol lowering medication where necessary, atherosclerosis of the coronary arteries reduces so much (about 50%) that it can be observed using angiography.

An analysis of 28 scientific studies, involving more than 45,000 people, has shown that a 10% reduction in a high cholesterol level reduces the risk of heart attack or heart-related death by 18%, regardless of whether the reduction results from diet changes or medication.

A comparison of recent studies into the effect of lowering cholesterol levels shows a positive result, even for patients without heart disease and with a cholesterol level between 5.2 mmol/l and 6.2 mmol/l.
Comments
The benefits of having a favorable risk profile in terms of a low blood cholesterol level, possibly combined with low blood pressure and not smoking, seem so great that virtually everyone should be working at it.

How your lifestyle affects your blood cholesterol level

CHOLESTEROL AND STRESS
The feeling of stress increases the blood cholesterol level by 10-20% in less than an hour.\(^{17}\)

Comments
Make sure you are fully relaxed when you have your blood cholesterol level tested, so that you don’t have to face an unnecessarily high result. It also seems wise - also in terms of blood cholesterol - to avoid being stressed for long periods.

CHOLESTEROL AND TENDER LOVE AND CARE
Tender love and care lowers blood cholesterol levels. In one trial, rabbits were given a diet containing 2% cholesterol. They were divided into 2 groups. One group received extensive, individual attention (visits, petting, were played with). The other group (the control group) received only essential care. The group which received a lot of attention had 60% lower atherosclerosis compared to the control group after 5 weeks.\(^{18}\)

Comments
If your blood cholesterol level is too high or if you are very attached to fatty foods, you can probably alleviate some of the risk by having fun, dancing and having a loving relationship with your spouse.

MORE REGULAR MEALS AND CHOLESTEROL
In a study of 14,000 British people, it was found that if you increased the number of meals per day from 2 to 5, a high level of LDL-Cholesterol was reduced, while HDL-Cholesterol remained unchanged. The decrease was about 4% of cholesterol.
FISH IS GOOD FOR YOUR HEART
Eating fish reduces blood cholesterol level. There is a much lower incidence of atherosclerotic heart disease in societies which eat a lot of fish (e.g. the Japanese and Eskimos). This is not because of an ethnical disposition, since Japanese people living in America have the same risk of developing atherosclerotic heart disease as other Americans 20.

45,000 healthy men were followed for 6 years, and those who ate fish once or twice a week had a 25% lower risk of heart disease than those who didn’t eat fish. However, nothing was gained from eating more fish and/or fish oil supplement than this 21.

An Italian study compared two groups of villagers in Africa. One group lived by a lake and primarily lived off freshwater fish (300-600 grams daily). The other group lived in the mountains behind, and therefore had a primarily vegetarian diet. Compared with the vegetarian group, the fish-eating group had lower blood pressure and lower levels of total cholesterol, triglycerides and lipoprotein(a) 22, 23.

An analysis of 11 scientific studies suggests that the large gains associated with eating fish only apply to people who have an increased risk of developing heart disease. But among this group, those who eat fish halve their risk as compared to those who don’t. People who already have a low risk don’t benefit further from eating fish 24.

There are several benefits from eating fish. The levels of oxidized LDL cholesterol and triglycerides in the blood are reduced, which reduces the blood’s tendency to clot, promotes healing and inhibits infection 25, 22, 26.

Their is no consensus as to whether taking fish oil (n-3 polyunsaturated fatty acids) is as effective as eating fish. Some studies have shown that fish oil taken as a dietary supplement protects against atherosclerosis 27, lowers blood pressure if it is too high 28, 29 and protects against heart attacks 30. A comparison of 11 scientific studies by Marckmann and Grønbæk suggests that the beneficial effects from fish for people at risk, are not attained if fish oil is substituted 31.

Comments
It is good to eat fish once or twice a week. For people with an increased risk, there appears to be a significant benefit associated with eating fish daily, but this diminishes if fish oil is substituted as a dietary supplement.
CHOLESTEROL AND VEGETARIAN DIET
The Italian study above showed that the fish-eating group had lower blood pressure and lower levels of total cholesterol, triglycerides and lipoprotein(a) than the vegetarian group\textsuperscript{22}. However, vegetarians have lower blood cholesterol than meat eaters\textsuperscript{32}. Vegetarian food can also help lower blood pressure if it is too high\textsuperscript{33}.

CHOLESTEROL AND VEGETABLE OILS
Polyunsaturated fatty acids, as found in vegetable oils, reduce LDL cholesterol without affecting HDL\textsuperscript{34}. A literature review has shown that oils from sunflowers, olives, canola, maize, grape seed and peanuts are all equally beneficial\textsuperscript{35}. Trials on cats have shown that olive oil lowers an artificially raised blood pressure, increases the hearts blood flow and normalizes an irregular heartbeat caused by artificial disturbance\textsuperscript{36}.

CHOLESTEROL AND NUTS
It has been shown that people who eat more than 4 grams of nuts a week have fewer lethal cases of heart disease than people who don’t eat nuts - measured over a 6 year period\textsuperscript{37}. This result is linked to the fact that nuts can reduce blood cholesterol levels, and shift the balance between LDL and HDL positively\textsuperscript{38}. Almonds, walnuts, pistachio nuts, and pecan nuts in particular (but not peanuts or cashew nuts) reduce the number of fatty foam cells which are taken up in the artery walls, and in this way reduce the harmful effects of LDL cholesterol. This is because they contain polyunsaturated fatty acids, which also reduce the blood’s tendency to clot\textsuperscript{39} by reducing the oxidation of LDL cholesterol.

In a study of 80,000 women, followed for 14 years, a direct correlation was found between eating nuts and having a lower risk of later developing cardiovascular disease. Eating just 30 grams a week was beneficial compared to the group who rarely or never ate nuts. Eating about 100 grams a week halved the risk of developing heart disease. Although earlier studies have suggested that peanuts don’t have the same effect as other nuts, this study showed that peanuts also have a positive effect\textsuperscript{40}. Another randomized trial has backed up these results. The addition of walnuts to a Mediterranean diet lead to lower total cholesterol, LDL cholesterol and lipoprotein (a) levels\textsuperscript{41}.
CHOLESTEROL AND SOY PROTEIN
A review of 38 scientific studies has shown that taking 47 grams of soy protein daily (equivalent to 150 grams of dry soy beans) reduces the levels of total cholesterol, LDL cholesterol and triglycerides in the blood by 10% each\textsuperscript{42}. On this basis it has been recommended that people with high levels of fat in their blood should increase their soy protein intake\textsuperscript{45}. The effect is believed to result from the high levels of plant estrogens\textsuperscript{44} (also found in rye grain). As an extra benefit, the risk of breast, prostrate and colon cancer is also reduced.

Soy protein is found in soy beans, soy milk and tofu (which goes well in salads). Rye bread may be able to replace soy intake to a certain extent.

CHOLESTEROL AND GARLIC
On the basis of a meta-analysis of trials comparing garlic with a placebo, eating garlic (2 grams daily = 1 clove) or garlic tablets (600-900 mg dry powder) regularly for 2 months was estimated to reduce blood cholesterol by about 5-10%\textsuperscript{45,46,47}. Garlic’s capacity to suppress oxidation of LDL-Cholesterol is especially important in relation to meals which are rich in fat, because it prevents the increase in concentration of these substances in the blood resulting from such a meal\textsuperscript{48}. Longer term (after 8 months), a significant fall in triglycerides and LDL cholesterol was found, while HDL cholesterol rose. For the effect to continue, one has to keep taking garlic. When people stopped, their various parameters returned to the level they were at before treatment\textsuperscript{49}. Another study showed that garlic lowered systolic blood pressure by about 12-30 mm Hg and diastolic by 6-20 mm Hg, impede thrombosis and stabilize atherosclerotic plaques\textsuperscript{50,51,52}. Trials on rabbits given a high cholesterol diet have shown that garlic resulted in less atherosclerosis, seen under a microscope\textsuperscript{56}.

Comments
Since the effect is only slight and only occurs if garlic is taken naturally, it is recommended that you take garlic in its natural form, as part of your diet.

CHOLESTEROL AND ROLLED OATS
When compared with wheat, rolled oats were able to significantly lower high levels of total cholesterol and LDL cholesterol\textsuperscript{53,54}. The same effect cannot be shown for high levels of lipoprotein(a) or triglycerides\textsuperscript{55}.

A review of 77 clinical trials shows that patients with atherosclerotic heart
disease and high levels of total cholesterol and LDL cholesterol benefit from taking water soluble fibre, either in their food or directly as a supplement. The effect is in the order of a 15% reduction. Triglycerides, lipoprotein(a) and HDL cholesterol are not affected. A similar result is achieved by taking 6-40 grams of pectin, 8-36 grams of guar gum, 100-150 grams of dried beans, 25-100 grams of rolled oats or 10-30 grams of psyllium husk.

**CHOLESTEROL AND WEIGHT LOSS**

A study of 55 overweight men with high blood pressure showed that weight loss had a positive influence on the good HDL cholesterol.

**Comments**

If you are overweight, losing weight is one of many options available for lowering high LDL cholesterol levels.

**EXERCISE, DIET AND HIGH CHOLESTEROL**

350 men and women with low HDL and high LDL cholesterol levels received either diet alone, exercise alone or a combination of both. All 3 treatments led to weight loss, but only diet and exercise in combination led to lower levels of LDL cholesterol. HDL cholesterol was not noticeably affected.

**Comments**

If you want to lower your cholesterol level, its not enough to go on a diet. You need to exercise as well if you want to achieve a positive result.

**HIGH CHOLESTEROL AND MEDICATION**

Treatment of high blood cholesterol levels using medication is described in chapter 9.

**CONCLUSION: CHOLESTEROL AND LIFESTYLE**

High cholesterol levels can be lowered by tender loving care, exercise, weight loss, frequent meals, fish, olive oil, vegetarian diet, nuts, soya protein, garlic, antioxidants, oats and other fibre and, of course, medication. It is important to combine diet changes with exercise when trying to lower a high cholesterol level. A similar strategy can be recommended for people without heart disease and with normal cholesterol levels. A good goal is to strive towards a cholesterol level of less than 5.2 mmol/l.
HDL cholesterol

HDL cholesterol protects against atherosclerosis. If the level of HDL cholesterol is too low, the risk of atherosclerosis increases\(^59\). This situation is not influenced by cholesterol lowering medication, but is affected by vitamin B\(_3\) (niacin), either as a supplement or in the diet\(^60,61\). In a random trial, 160 patients with heart disease and insufficient HDL-Cholesterol, but normal levels of LDL-Cholesterol were treated using a combination of cholesterol-lowering medication and niacin and the effects were compared against a placebo and a combined vitamin treatment. Only the combination of medication and niacin was effective, and its effect was quiet pronounced. The progression of the illness was halted, blood levels improved markedly, and the frequency of death, heat attack and reoperation was markedly reduced\(^62\).

Note: You must NOT take niacin during pregnancy or if you have diabetes, irregular heartbeat, a stomach ulcer, gout, earlier liver disease, a high alcohol consumption or if a rash occurs during treatment\(^63\).

Side effects: rash, upset stomach\(^64\). If in doubt, talk to your doctor before you begin taking this vitamin supplement.

Comments
Because of the possible side effects associated with a high intake of niacin, it is advisable to start with a normal vitamin B\(_3\) supplement (60 mg) accompanied by a diet rich in vitamin B, weight loss, garlic, tea and alcohol. Wait 3-6 months to see what effect this has before starting on a larger dose of vitamin B\(_3\).

Lipoprotein(a)

Lipoprotein(a), Lp(a), looks like LDL cholesterol and is a genetic variation of it. Lp(a) has an independent prognostic significance for the development of atherosclerotic heart disease\(^64\), but not for the development of apoplexy\(^65\). Like HDL cholesterol, Lp(a) is not affected by normal cholesterol lowering medication, but only by vitamin B\(_3\) (niacin), which can also be taken as a supplement\(^60,61\).

Regarding dosage, side effects, etc.: see HDL cholesterol, above.
VLDL cholesterol

The presence of LDL cholesterol with extremely small LDL particles (VLDL cholesterol) is an independent risk factor for the development of atherosclerosis. Again the situation is not affected by cholesterol lowering medicine, but only by vitamin $B_3$ (niacin), taken as a supplement or in the diet.$^{60,61}$

Regarding dosage, side effects, etc.: see HDL cholesterol, above.

Triglycerides

Triglycerides are fatty acids which can be divided in several types:

1. Saturated fatty acids, which have the highest melting point and which don’t react with oxygen (are stable). They are found in animal fat and milk products.
2. Monounsaturated fatty acids (often abbreviated MUFA) are less stable. They have a lower melting point and can react with oxygen. They are found in oils.
3. Polyunsaturated fatty acids (PUFA) are unstable, have a low melting point and react easily with oxygen. Even light heating destroys their structure and their healthy properties are lost. They are also found in oils.

TRANS FATTY ACIDS
In the production of pastry, snacks, biscuits and the like it has made sense, from a purely industrial perspective, to add hydrogen to vegetable oils. This makes them last longer and raises their melting point, allowing margarine and biscuit cream to have a solid consistency at room temperature. Fats modified in this way are called “trans fatty acids”. Trans fatty acids have an unfortunate effect on blood fat levels, causing LDL cholesterol and lipoprotein(a) levels to rise, while the HDL cholesterol level falls.

ESSENTIAL FATTY ACIDS
There are three families of fatty acids which are essential to human life and
which we have to receive through our diet in the same way as vitamins:

- **Omega-3 fatty acids**: are found in linseed oil, pumpkin seeds, canola and soybean oil (alpha-linolenic acid), in fatty fish like salmon, trout, mackerel and herring, and in cod-liver oil (contains two types of omega-3 fatty acids, often abbreviated as EPA and DHA)

- **Omega-6 fatty acids** are found in three forms:
  - Linoleic acid is found in plant oils (sunflower, grapeseed, corn, soybean and sesame oil). It is also found in sunflower seeds, sesame seeds, pumpkin seeds and wheat germ.
  - Gamma linolenic acid (GLA) is found in evening primrose oil, borage oil, sunflower oil and sesame oil.
  - Arachidonic acid is found chiefly in meat.

- **Omega-9 fatty acids** are found especially in canola oil, olive oil, peanut oil and cocoa.

They all alike are “fragile” in liquid form. They are sensitive to light and oxygen (air), and can’t take being heated, since it destroys their chemical structure and their healthy properties are lost. The label “extra virgin” oil is best and means that the oil is from the first cold pressing. “Virgin” oil is from the second cold pressing. Other types of oil should be avoided.

It is recommended that a maximum of 30% of our energy intake come from fats, and preferably from an even mix of saturated, monounsaturated and polyunsaturated fatty acids.

These essential oils are not suitable for frying, as was already touched on. They have to be taken naturally on a salad, in a marinade, on porridge or in “seed form” in muesli and the like. You can also take them straight, by the spoonful. They should be stored in a cool, dark place.

Butter or half butter / half olive oil is best for frying. On bread it is best to use a vegetable oil based margarine, since that leads to a lower LDL cholesterol than butter.

**TRIGLYCERIDES AND THE RISK OF HEART DISEASE**

The relationship between triglycerides in the blood and the occurrence of heart disease has been a controversial issue and is not fully resolved. However, several studies strongly point to an independent significance. In a review of 17 studies involving more than 50,000 people, the level of triglycerides in the blood was seen to have a more independent significance. A Danish study
which followed almost 3,000 men for 8 years, found a clear independent correlation between high triglyceride levels and the risk of developing heart disease. A level of more than 1.8 mmol/l doubled the risk compared to a level below 1.23 mmol/l. The group in the middle had a 50% higher risk compared to those with a level below 1.23 mmol/l. This is supported by a trial in which patients with heart disease were given medication which lowered their triglyceride level, without affecting their LDL cholesterol level. This treatment led to a marked fall in the number of heart attacks. One reason might be that the unstable plaques which are most likely to break away, take up triglyceride and swell up even more, becoming more fragile. A high triglyceride level can also be lowered using vitamin B₉, either in your diet or as a vitamin supplement.

TRANS FATTY ACIDS AND THE RISK OF HEART DISEASE
In an American study, 80,000 female nurses were followed for 14 years and their eating habits and mortality from heart disease were monitored. Intake of trans fats was shown to have an unfortunate influence on the blood’s fat profile. The 20% of the women with the highest intake had a 50% higher risk of heart disease compared to the 20% with the lowest intake. These findings are supported by a number of other studies.

18 men and women tried out 6 different diets with varying trans fat content, over 6 one-month periods. A direct connection was found between the trans fat and unsaturated fat content, and the level of LDL and HDL cholesterol in their blood, such that the diet with the lowest trans fat content led to the best combination of cholesterol in the blood.

Comments
It is sensible to limit your intake of trans fats. Although butter has been criticized for many years, it is clearly to be preferred over trans fats.
Scientific studies
- other elements in food and drink

As a supplement to the section on fats, I will now discuss the other elements in food and drink which can affect your health, so that you can consider these in your health plan.

- Basic diet types: Mediterranean diet, vegetarian diet, raw food diet, ecological diet
- Individual elements of diet: fruit and vegetables, eggs, fibre, soya, nuts, fish, meat and offal and milk products
- Vitamins, vitaminoids, vitamin supplements
- Salts and minerals
- Herbal medicine
- Drinks: coffee, tea, cocoa and alcohol
- Tobacco
- Healthy food recipes

The conclusions drawn from the review of the scientific studies which follows were also summarized in the action plan above (schedule VII.1).

Basic diet types

MEDITERRANEAN DIET
In a study involving 600 patients who had survived a heart attack, those who were given a Mediterranean diet had an 81% lower risk of heart-related death and a 90% lower risk of another heart attack over a 27 month period, compared to patients with an unchanged diet. A Mediterranean diet consists of bread, fruit, vegetables and fish, plus meat in modest quantities. This positive result was observed, despite the fact that fat levels in the blood were the same for both groups. In other words, diet can reduce the risk of heart disease in
ways which don’t affect the blood’s fat composition. After the same patients had been followed for four years, the positive effect of the Mediterranean diet still held. The risk of heart-related death or of a new heart attack was still 69% lower for this group - and the difference still couldn’t be explained based on known risk factors. In a study of 500 people with high blood pressure, a similar diet had a positive impact on blood pressure when compared to a control diet over an 8 week observation period. An average reduction in blood pressure of 10 mm Hg was achieved. An analysis of the causes of death in the poorest country in Europe, Albania, revealed that the mortality rate there from heart disease is half what it is in a wealthy country like England, and the same as in the other countries bordering the Mediterranean sea. Within Albania itself, heart-related mortality was twice as high in the northern regions where animal fat dominates the diet, compared to the southern regions where olive oil, fresh fruit and vegetables are the main elements. In a random trial involving men with high cholesterol, a Mediterranean diet improved the function of the blood vessel linings, compared to a general low-fat diet.

**VEGETARIAN DIET**
11,000 English vegetarians, equally divided into men and women, were followed for 17 years. Their daily diet consisted of whole wheat bread, rolled oats or muesli, nuts, dried fruits, fresh fruit and raw salad. Their death rate from both heart disease and cancer was half that of the normal population. Within this group, those who ate fruit daily had a 25% lower incidence of heart disease, a 30% lower incidence of stroke and a 20% lower risk of death from any cause, compared to those who only ate fruit once a week. A very low intake of fat and protein from land animals was shown to increase the risk of cerebrovascular accident in a group of 85,000 women followed for 14 years. So even though this illness is rare, it seems wise for vegetarians to occasionally, for example, eat eggs.

**RAW FOOD DIET**
32 overweight men and women with high blood pressure were followed for 6 months after being instructed in a diet high in unprocessed foods (vegetables, fruit, nuts, seeds, berries and pasteurized milk). They lost, on average, 4 kilograms in weight and their blood pressure fell by 20%. There are two advantages with unprocessed foods which might play a role:
1. unprocessed foods have a high fibre content, and
2. the vitamins don’t get lost during preparation. Up to 90% of the water soluble vitamins, B and C, and 40% of the fat soluble vitamins, A, D, E and K, are lost during boiling or frying.

ECOLOGICAL FRUIT AND VEGETABLES HAVE THE HIGHEST NUTRITIONAL VALUE
An American study compared the nutritional content of ecological and commercially produced apples, pears, potatoes, wheat and corn. The level of nutrients was, on average, 50% higher in the ecological products, while lead and mercury levels were 25% higher in the commercial products.

Ways in which individual diet ingredients can protect against atherosclerosis

FRUIT AND VEGETABLES PROTECT AGAINST STROKE
An American study has shown that eating fruit and vegetables reduces the risk of having a stroke (blood clot in the brain or brain hemorrhage). 800 men were followed for 20 years, and their daily fruit and vegetable intake was correlated with their risk of stroke. Those who ate more than 8 pieces a day had twice as much chance of living 20 years without a stroke, compared to those who only ate 1 piece a day. The study showed that for every 3 pieces of fruit or vegetable you added to your daily intake, the risk reduced by 20%.

This positive finding was later confirmed in a study which followed 75,000 American women and 39,000 men for 8 years. The study compared the incidence of stroke with fruit and vegetable intake. For every piece of fruit or vegetable added to the daily intake, the risk of stroke fell by 6%, and at 5 pieces, the full advantage of 30% was reached. The most important vegetables were cabbage, spinach and other green leafy vegetables. Among the fruits, citrus fruits were the most beneficial. The same researchers have been able to show from the same database that eating these types of fruit and vegetables reduces the risk of heart disease by 4% per piece daily, up to a maximum reduction of 20%. As an added bonus, the risk of cancer is reduced by 20% as well.
WHOLE-WHEAT PRODUCTS PROTECT AGAINST HEART DISEASE AND STROKE
In a study of 75,000 American nurses, followed for 12 years, it was observed that the 20% of women who ate the most whole-wheat products had a 25% lower risk of heart disease or stroke compared to the group which ate the least.\textsuperscript{89, 90, 91}

Comments
Whole-wheat products include whole-wheat bread, rye bread, bran and other whole-wheat cereals, popcorn, oats, brown rice, bulgur and couscous. It is worth letting these these form a natural part of your daily nutrition.

EGGS, FRUIT AND VEGETABLES PROTECT AGAINST ATHEROSCLEROSIS OF THE RETINA - MACULA DEGENERATION
350 people with macula degeneration were followed for 1 year. It was found that a high intake of green leafy vegetables, like spinach and kale could reduce the risk by 40%\textsuperscript{92}.

It has been found that the carotenoids which are especially significant in relation to the development of macular degeneration (lutein and zeaxanthin) are not only found in green-leafed vegetables. Egg yolk and maize contain up to 85% of these substances, but peppers, kiwi fruit, grapes, orange juice and squash are also good sources of these substances which are so important for the eyes.\textsuperscript{93}

EGGS CONTAIN MANY IMPORTANT NUTRIENTS AND ARE NOT BAD FOR YOUR HEART
For many years, people in Western countries have been advised not to eat eggs, based on the assumption that since eggs contain cholesterol and cholesterol can lead to atherosclerosis, eating eggs must be harmful. To check the validity of this recommendation, 38,000 healthy men and 80,000 healthy women were followed for 8 years, and their egg consumption was compared with their incidence of heart disease and stroke. Eating one egg a day did not influence their risk.\textsuperscript{94} The good nutrients in eggs include B vitamins, folic acid, polyunsaturated fatty acids and important proteins.

DIETARY FIBRE
70,000 female nurses between 37 and 64 years old were followed for 10 years,
during which their daily fibre intake and their incidence of heart disease were recorded. The 20% of the women with the highest fibre intake reduced their risk of cardiovascular disease by about 30%, compared to the 20% with the lowest fibre intake. Among the various sources of fibre (cereals, vegetables and fruit), only cereals showed an independent reduction. As an extra benefit, eating fibre, whatever the source, reduces the risk of some forms of cancer by 50%.

Vitamins, vitaminoids and antioxidants

Vitamins are substances which are essential - often only in minimal amounts - for the normal functioning of the body. They generally have to be supplied in our food. The classic vitamins are A, B, C, D, E and K. The essential fatty acids (see this topic), linoleic and linolenic acid, are sometimes called vitamin F. Some substances have vitamin-like properties without actually being vitamins. They are called vitaminoids and include flavonoids and carnitine. Antioxidants is the collective name for substances which subdue the tissue-damaging molecules called free radicals. A “free radical” is a molecule containing oxygen which has lost one of its free electrons. The reason free radicals have a harmful effect is that as they circulate in the bloodstream, they steal the electron they are missing from the wall of the blood vessel, causing damage to these cells. Antioxidants can give away an electron to a free radical without becoming dangerous themselves and in this way can protect the blood vessel walls.

Cholesterol can itself be changed by oxidation (giving off an electron), so that its tendency to deposit on the artery walls increases further. Antioxidants can prevent the oxidation of LDL cholesterol and thus help prevent atherosclerosis. It is possible in laboratory trials to measure how well the various antioxidants impede the oxidation of LDL cholesterol and give them a strength rating. There are many different ways to measure these factors, and the results depend on the method chosen. The various antioxidants vary greatly in their ability to inhibit the oxidation of LDL cholesterol.

Among the vitamins, the vitamin C antioxidant is 3 times as strong as vitamin A, and nearly twice as strong as vitamin E. Some flavonoids and phenols (in tea, red berries, red wine and hawthorn) have an antioxidant capacity 10 times as strong as vitamin C, while others (e.g. in coffee) are about 5 times as strong.
The levels of vitamin C, vitamin E and beta-carotene in the blood (the plasma concentration) were measured for 100 patients with angina pectoris and compared with 400 healthy people. For all three antioxidants, a low plasma concentration correlated with an increased likelihood of having angina pectoris

Antioxidant properties of various foods

The antioxidant properties of 22 vegetables and of black tea and green tea were tested. With some types of “free radicals”, both kinds of tea were superior to the vegetables. With other types, vegetables worked best. The vegetables that had the greatest activity were garlic, kale, spinach, bean sprouts, broccoli, beet, onion, corn and eggplant. Wild rice, sesame seed and seaweed also have pronounced antioxidant properties.

Antioxidants are also found in herbs and spices

Ginger reduces blood platelet adhesiveness and hence also plaque and blood clot formation, just like aspirin, but without aspirin’s side-effect of an increased risk of hemorrhage. Ginger also has antioxidant properties and inhibits infection. Japanese horseradish (Wasabi) also impedes blood platelets from sticking together and protects against cancer and fungal infection. Ginger comes in tablet form, in tea, candied and in jam. Freshly grated ginger is used in oriental stir fries. Nutmeg and rosemary have similar antioxidant properties which reduce blood clotting in the same way.

Vitamin supplements

Throughout the last 10 years, research into vitamin supplements has received a lot of attention after large population studies suggested that people who took vitamin supplements had a lower incidence of heart disease and cancer. For the sake of completeness, I will first describe the results of the large population studies, and then the results from trials in which participants were randomly allocated to either a supplement or a placebo group.
VITAMIN E SUPPLEMENT

Population studies
In a study of 80,000 female nurses followed for 8 years, the 20% who took the most vitamin E were found to have one third fewer cases of serious heart disease, compared to the 20% who took the least vitamin E\textsuperscript{109}. Similarly, 40,000 men were followed for 4 years, and the group which took 60 IU (international units) of vitamin E supplement had 30% fewer cases of serious heart disease than the group who took 7.5 IU or less\textsuperscript{110}.

A study of 45,000 healthy men followed for 8 years was unable to show that vitamin E supplement had any impact on the risk of stroke\textsuperscript{111}.

Randomized trials
Four Finnish studies have shed light on the effects of vitamin E. 1,800 male smokers who had had a heart attack were followed for 5 years. One half were given a vitamin E supplement while the other half were given a placebo. The vitamin supplement had no positive effect\textsuperscript{112}. A similar design was used in another study which followed 22,000 healthy men for almost 5 years to investigate whether a vitamin E supplement could prevent the development of angina pectoris. Compared to a placebo, the vitamin E supplement led to a modest reduction (9%) in the incidence of angina\textsuperscript{113}. 29,000 male cigarette smokers were given either a placebo or a vitamin E supplement over an 8 year period and the incidence of cancer and death was monitored. The vitamin E supplement was found to have no effect on the risk of getting cancer or heart disease, or of dying\textsuperscript{114}. In the fourth Finnish study, 1,800 men with existing angina pectoris were given either a placebo or a vitamin E supplement and followed for 5 years. The vitamin supplement could not be shown to impact the risk of the disease worsening or of having a heart attack\textsuperscript{115}.

2,000 Englishmen with heart disease confirmed by angiography were given either a placebo or a vitamin E supplement (400 or 800 mg daily) and followed for 1 year. The group who received the vitamin supplement had a 40% lower incidence of heart attack or death compared to the placebo group\textsuperscript{116}.

In a study of 11,000 Italians who had just had a heart attack, half were given placebo and half a vitamin E supplement (300 mg daily). After monitoring them for three and a half years, there was no observable effect from the vitamin supplement, in terms of the risk of a new heart attack or of death\textsuperscript{117}.

In similar studies, 9,000 Canadians and 9000 Americans with heart disease
were either given a 400 mg vitamin E supplement daily or a placebo. It could not be shown that the vitamin supplement had any influence on the incidence of heart attack, death or stroke\textsuperscript{118, 119}.

**BETA-CAROTENE SUPPLEMENT**

*Population studies*

In a study of 40,000 men followed for 4 years, taking beta-carotene had no effect on the development of heart disease for the group as a whole, but led to a 30% reduction among the smokers\textsuperscript{110}.

A study of 45,000 healthy men, followed for 8 years, was unable to show that a beta-carotene supplement had any effect on the risk of stroke\textsuperscript{111}.

*Randomized trials*

Taking 50 mg of beta-carotene every second day has been shown to nearly halve the number of heart attacks among men with known heart disease\textsuperscript{120}. Beta-carotene (but not vitamin E) taken with food has been shown to protect against heart attack\textsuperscript{121}.

In a Finnish study, 1,800 male smokers who had had a heart attack were followed for 5 years. One half were given a beta-carotene supplement, while the other half were given a placebo. The supplement had no positive effect, rather the opposite. The group who were given beta-carotene had an increased number of heart-related deaths\textsuperscript{112}.

In another Finnish study, 29,000 male cigarette smokers were either given a placebo or a beta-carotene supplement, and the incidence of cancer or death was monitored for 8 years. The beta-carotene supplement was shown to have no effect on the risk of getting cancer or heart disease, or of dying\textsuperscript{114}. A similar design was used to investigate whether a beta-carotene supplement could prevent the development of angina pectoris in a study of 22,000 healthy Finnish men, followed for almost 5 years. The supplement had no influence on the development of angina pectoris, compared to a placebo\textsuperscript{113}.

22,000 American doctors were given either a placebo, beta-carotene or aspirin and followed for 12 years. While aspirin reduced the risk of a heart attack by 44%, the beta-carotene supplement had no impact on the frequency of heart attack, stroke or death\textsuperscript{122}.

1,800 men with existing angina pectoris were given either a placebo or beta-carotene and followed for 5 years. The vitamin supplement had no observable impact on the risk of the disease worsening or of a heart attack\textsuperscript{115}.
VITAMIN C SUPPLEMENT

Population studies
In a study of 40,000 men followed for 4 years, taking vitamin C had no influence on the likelihood of developing heart disease. In another study, men who took 300 mg of vitamin C a day had 40% fewer fatal cases of heart disease, compared to those who took less than 50 mg a day. A study of 1,600 Finnish men, followed for 4 years, showed that men with a low level of vitamin C in the blood (less than 11 micromoles/l) had twice the risk of having a heart attack compared to men with a plasma concentration higher than 11 micromoles/l. A study of the incidence of stroke in 2,000 Japanese men and women, followed for 20 years, showed similar findings. However, a study of 45,000 healthy men, followed for 8 years was unable to show that a vitamin C supplement had an effect on the risk of stroke.

Comments on vitamin C and E and beta-carotene supplements
Results concerning the value of vitamin E and beta-carotene supplements are now so unambiguous that there are no longer any health reasons for taking them. As far as vitamin C supplements are concerned, however, we still need properly randomized trials. But on the basis of this analysis it seems sensible to take vitamins in their natural form - also vitamin C. A multivitamin pill can be a good idea, especially if your daily diet is inadequate.

VITAMIN Q10
Q10 is a naturally occurring substance which is chemically related to vitamin K. It works like an antioxidant and is also able to protect heart muscle cells during oxygen shortage. Three small, slightly dated, clinical studies have compared the effects of Q10 and a placebo on patients with angina pectoris. A daily intake of more than 150 mg improved patients’ exercise tolerance, measured on an exercise bike. However, there have been no later studies to confirm these findings, nor have there been studies into the long-term effects. The effects of a Q10 supplement in patients with a reduced heart pumping capacity have been investigated in a double-blind randomized trial. Q10 was not more effective than the placebo.

Note: You must not take Q10 if you are taking blood-thinning medication.
Comments
Research into the effects of a vitamin Q10 supplement on patients with angina pectoris is still sparse. It therefore seems reasonable for the moment to ensure that you get this vitamin through your diet. Even if your heart’s pumping capacity is reduced, there is still no reason to take a supplement.

LACK OF VITAMINS B<sub>6</sub>, B<sub>12</sub> AND FOLIC ACID CAN PLAY A ROLE IN THE DEVELOPMENT OF ATHEROSCLEROTIC HEART DISEASE
If there is a lack of folic acid and vitamins B<sub>6</sub> and B<sub>12</sub>, a protein called homocysteine can accumulate in the bloodstream and cause damage to the lining of the small blood vessels, promoting atherosclerosis. For this reason, a high level of homocysteine in the blood has been shown to increase the risk of infarction in the brain or heart<sup>127</sup>, dementia and Alzheimer’s disease<sup>128</sup>.

In a study of 1,000 Americans, 67 to 96 years old, the incidence of atherosclerosis in the neck arteries, measured by ultrasound, was twice as great in those with a high homocysteine level in their blood and a low intake of folic acid<sup>129</sup>. Consistent with this, a correlation has been found between low folic acid levels in the blood and increased incidence of heart disease<sup>130</sup>.

A Norwegian study of 7,000 men and 8,000 women showed a direct connection between the homocysteine level in the blood and the risk of developing heart disease<sup>131</sup>. It is not completely clear whether increased homocysteine levels cause atherosclerosis or arise as a consequence of it<sup>132</sup>.

Among patients who had had a balloon angioplasty, a vitamin supplement containing 1 mg folic acid, 400 micrograms of vitamin B12 and 10 mg of vitamin B6, was shown to reduce levels of homocysteine in the blood, and to halve the incidence of restenosis and new invasive surgery<sup>133</sup>. In a similarly organized study, the effect was shown to result from improved functioning of the blood vessel linings<sup>134</sup>.

Comments
A daily supplement is recommended if you have an increased risk of (or existing) atherosclerotic heart disease, especially since it is both harmless and cheap<sup>135</sup>: Folic acid: 1 mg; Vitamin B<sub>6</sub>: 10 mg; Vitamin B<sub>12</sub>: 400 micrograms. Consider having a blood test before you start, and then again after 3 months of vitamin supplement. For best results, take a tablet which contains all the B vitamins and folic acid together. There is no risk of overdose, any excess is eliminated in the urine, which becomes extra yellow.
FLAVONOIDS
Flavonoids are natural antioxidants found only in plants, where they are synthesized to protect the plant from the sun’s UVB radiation. Humans ingest them in the form of vegetables, fruit, tea and wine. They have a positive effect on the development of atherosclerotic disease by impeding the oxidation of LDL-Cholesterol, thrombosis and the inflammation reaction.

There seems to be a bit of confusion about names in the various sources. Flavonoids and phenols are often grouped together under the name “polyphe-nols”. Sometimes the family of flavonoids is divided into subgroups with very similar names (flavones, flavanones, flavonols, flavanols). Some of the most important flavonoids are: Catechins and Epicatechins, the strongest antioxidants, found especially in tea and wine; Anthocyanins, which give red berries their red color and are also found in tea and hawthorn; Quercetin and Myricetin, found in red berries, and Ginkgolide, found in the leaves of the maidenhair tree (Ginkgo Biloba). The most common phenols include Tannin, Caffeine and Resveratrol, which are all found in fruit and wine, while coffee contains primarily caffeine.

SCIENTIFIC STUDIES
805 men were followed for 5 years and their daily flavonoid intake was recorded. Men who had a high daily intake reduced their risk of heart disease by 40% compared to men with a low intake. The most common sources of flavonoids were tea, onions and apples.

Researchers investigated the extent to which daily intake of flavonoids could explain the different incidences of heart disease in different countries (USA, Japan, Holland, Finland, Greece, Italy and Serbia). The different flavonoid intake could explain about 25% of the difference in the incidence of heart disease between the various countries. If intake of animal fats and tobacco usage were taken into consideration, 90% of the difference could be explained.

CARNITINE
Carnitine functions as a fuel transporter in the individual heart muscle cells and is therefore of central significance to the heart’s pumping capacity.

Several studies suggest that a carnitine supplement can improve metabolism in the heart when it lacks oxygen due to atherosclerosis. In patients with reduced heart pumping capacity, this has been improved by giving them a carnitine supplement.
Comments
Although carnitine can be manufactured in the body, it seems sensible to ensure you also receive it in your diet (it is found in meat, liver, heart, kidney and milk).

ARGININE ALLEVIATES HEART DISEASE
Taking a supplement containing the amino acid, arginine, (8 grams a day, for 4 weeks) can increase the dilation capacity of the small blood vessels and hence reduce the “contrary” reaction caused by atherosclerosis (see chapter II) 143.

Comments
It can be beneficial to include food products containing arginine (lentils, nuts, peas, rice and eggs) in your diet. In the case of advanced disease, a direct supplement could be tried.

SALTS AND MINERALS IN MILK PRODUCTS, FRUIT AND VEGETABLES ARE JUST AS GOOD FOR BLOOD PRESSURE AS MEDICATION
For decades it has been seen as good policy to reduce your salt intake to prevent or treat high blood pressure. There are no longer scientific grounds for this attitude. A series of studies have instead concluded that low levels of salt and other minerals (calcium, potassium and magnesium) in foods have contributed to the fact that so many people have high blood pressure in Western society. There is good evidence to suggest that a diet containing these substances (low-fat milk products, fruit and vegetables) is able to lower high blood pressure just as effectively as medication 144, 145.

A MAGNESIUM SUPPLEMENT CAN BE GOOD FOR YOUR HEART
In a study of 50 patients who had had a heart operation, a magnesium supplement (compared with a placebo) resulted in better heart pumping capacity, and less episodes of irregular heart beat in the following 6 months 146.

34 patients with high blood pressure were given either a placebo or a magnesium supplement. The supplement led to a significant fall in blood pressure and the greater the magnesium supplement, the greater the fall in blood pressure, so that a supplement of 40 mmol of magnesium per day led to an 8% fall in blood pressure 147.

An analysis of many clinical trials, in which a total of more than 4,000 people who had had a heart attack received either a placebo or a magnesium
supplement, showed a 39% lower risk of death and a lower risk of irregular heartbeat or reduced pumping capacity among those who received the supplement.148

Comments
It seems wise to take magnesium if you have atherosclerotic heart disease. Otherwise, you should ensure you have a generous intake in your food, since it is completely harmless.

BLOOD SELENIUM LEVELS AND CARDIOVASCULAR DISEASE
3,000 men in Copenhagen were followed for 3 years, and the correlation between selenium levels in the blood and the risk of developing cardiovascular disease were analyzed. They were divided into two groups, based on whether their selenium level was under or over 1 micromole/l.

Result: Over the three years, 107 men developed heart disease, leading to 25 deaths. The men whose selenium level was less than 1 micromole/l had a 50% greater risk, compared to the men who had a higher selenium level. This was after taking known risk factors into account, like physical inactivity, smoking, alcohol consumption, weight, high blood pressure, blood cholesterol levels, age and social class.149

Comments
Have your blood selenium level tested and take a supplement or adjust your diet if it is too low.

Herbal medicine

The only principal way herbal medicines differ from normal medicines is that they come from herbs. Several products which we buy today as pharmaceutical medicines were originally herbal medicines. The classic example is digitalis, to strengthen the heart. That means we should take herbal medicine with the same caution with which we take normal medicine. Herbal medicine can also be fatal, as in the case of Ma Huang, which contains Ephadra alkaloids and is used to help lose weight.150 If you are having an operation, it is important to declare any herbal medicines you are using, whatever their type, as they can have an impact on medication during the operation.151 Herbal medicine can
also change the effect of conventional heart medication, e.g. digitalis and blood-thinning medication\textsuperscript{152}.

According to the classical Chinese directives, herbal medicine should be taken for one month for every year you have been sick. So if you have been sick for 3 years, you should take medicine for 3 months.

It has been suggested that many herbal medicines work as adaptogens, i.e. substances which provoke the body’s homeostatic mechanism in a mild, non-specific way, and enhance its capacity to resist stress effects of a more general character – without making any serious intervention in the body’s normal physiological functions\textsuperscript{153}.

Seen in this way, herbal medicines work in the same way as conditioning the heart through exercise and conditioning the body’s antioxidant responsiveness by winter bathing (both described in chapter VI) and acupuncture (see chapter IV).

**LEAVES FROM THE MAIDENHAIR TREE CAN HELP WHEN THE BRAIN’S OXYGEN SUPPLY IS REDUCED AND CAN PROTECT THE HEART DURING OXYGEN SHORTAGE**

This herbal medicine comes from China and Japan where it has been used for centuries and is drunk as tea brewed from the leaves. In the West it can be found as an extract in tablet form and is called Ginkgo Biloba or something similar. The biologically active ingredients belong to the flavonoids group (see the sections “Coffee, Tea and Cocoa” and “Vitamins, vitaminoids and antioxidants”). Its effects derive from its ability to reduce blood clotting, increase blood flow in the smallest blood vessels and protect the brain against damage resulting from oxygen shortage.

An analysis of 40 clinical trials has shown it to be effective in cases of reduced blood supply to the brain or legs. It has been able to relieve symptoms like faintness, headache, poor memory, reduced concentration and tinnitus. Compared to a placebo, which helped 5-50\% of patients, Ginkgo helped between 10 and 70\% of patients, and always more than a placebo\textsuperscript{154}. However, it has not been possible to reproduce these positive results for brain function in a randomized, double-blind trial\textsuperscript{155}.

In animal trials, Ginkgo Biloba and ginseng extracts have induced the muscles in the blood vessels in the brain to relax\textsuperscript{156}. Ginseng has also been shown to increase quality of life\textsuperscript{157} and the capacity for abstract thought in healthy people\textsuperscript{158}.
In another animal trial, rats were initially given either a placebo or Gingko for 14 days. Then their hearts were artificially deprived of oxygen by partially squeezing the coronary arteries together for 20 minutes, then fully closing them for half an hour, and then releasing them. In the Ginkgo group, the heart had returned to 70% of its normal working capacity 1 hour later, versus only 20% in the placebo group\textsuperscript{159}.

**Comments**
On the basis of these studies it seems likely that Ginkgo will also help the heart’s circulation, even though this is not finally scientifically proven. In this case, 120 mg is taken daily, split up into 2 or 3 doses. It is only available in tablet form. Ginseng is something you could consider for your general well-being, even if you are healthy.

**HAWTHORN CAN RELIEVE ATHEROSCLEROSIS AND IRREGULAR HEARTBEAT**
Hawthorn contains large quantities of flavonoids\textsuperscript{160} (see “Vitamins, vitamins and antioxidants”). These flavonoids enable it to stabilize the lining in the heart’s blood vessels and inhibit atherosclerosis. Hawthorn can directly cause the coronary arteries to dilate and can improve the heart’s metabolism so that the available oxygen is better utilized. Finally, it can have a stabilizing effect on the heartbeat\textsuperscript{152}.

Recommended dose: As dried berries or flowers: 10 grams daily, split into two doses; as a flower extract: about 400 mg daily, split into two doses.

**INDIAN AYURVEDA HERBAL MEDICINE CAN RELIEVE ANGINA PECTORIS**
50 patients with angina were given either a placebo or the Indian herb medicine, Abana, and followed for 8 weeks. The patients given Abana had more than 50% fewer angina episodes, while the placebo group had 20% fewer. The same reduction was seen in the use of nitroglycerine\textsuperscript{161}.

**CHINESE HERB PROTECTS AGAINST OXIDATION OF LDL ChOLESTEROL**
In trials in which rabbits were fed a diet rich in cholesterol, the herb, sage, reduced oxidation of LDL cholesterol to a greater extent than a placebo. After 6
weeks’ observation, the degree of atherosclerosis and build up of cholesterol on the artery walls was reduced by 50% in the group which were given sage. Sage contains phenols, which are antioxidants (see “Vitamins, vitaminoids and anti-
oxidants”) 162.

ST. JOHN’S WORT IS JUST AS EFFECTIVE AGAINST DEPRESSION AS EXPENSIVE PRESCRIPTION DRUGS
The herb, St. John’s Wort, appears to be more effective in treating mild to moderate depression than a placebo and just as effective as conventional medi-
cine 163, 164.

Note: St. John’s Wort can weaken the effectiveness of other heart medications, and the Danish Board of Health recommends that it not be taken at the same time as other medication.

PADMA 28 CAN HELP WITH ATHEROSCLEROSIS IN THE LEGS
This preparation combines a large number of oriental herbs and is only available in tablet form. It has been shown to double the distance patients with inter-
mittent claudication were able to walk 165, but could not do the same for pa-
tients with angina pectoris 166.

HOMEOPATHY
Homeopathy, in theory, also works like an adaptogen, but is peculiar in that the remedies don’t contain any molecules of the original biologically active sub-
stance which they have been created from by dilution. In a series of trials, En-
glish researchers have tried to clarify whether homeopathy has any effect be-
yond a placebo. As a model, they used hay fever. This study is mentioned, be-
cause nothing similar has been done for heart disease, and because it is poten-
tially of interest to people who might seek homeopathic treatment for athero-
sclerotic disease. Although the trial showed that homeopathy lead to an objec-
tive, measurable improvement on nasal air flow, this difference was not large enough that the patients themselves noticed any improvement which stood out from a placebo 167.
Comments
Since homeopathic preparations are diluted to such an extreme that they no longer contain biologically active substances, it seems reasonable to want a high level of certainty in any documentation. It is therefore thought-provoking that the patients were unable to register any improvement that differed from a placebo. For the time being at least, there are many other strategic options which have a better documented effect.

Coffee, tea and cocoa

COFFEE DOESN’T AFFECT THE RISK OF HEART DISEASE
Coffee contains caffeine, which if taken in large quantities leads to a higher pulse and blood pressure because of the adrenaline released. There has been much debate about whether drinking coffee (and other drinks containing caffeine, like tea and coca cola) long term increases the risk of atherosclerotic heart disease and a high heart rate. A thorough review of the existing literature was unable to confirm such a connection. Instead it is possible that it leads to protection against cancer.

A study of 3,000 men in Copenhagen, followed for 10 years, analyzed the relationship between coffee intake and known cardiovascular disease risk factors. Among those who didn’t smoke or who smoked very little, there was a correlation between drinking coffee and having lower blood pressure and a lower risk of getting cardiovascular disease (after weight, blood pressure, smoking, alcohol consumption, and blood cholesterol, triglyceride and selenium levels were taken into account).

Comments
There are no grounds to believe that coffee increases the risk of cardiovascular disease. It may have a positive effect for people who don’t smoke or smoke very little.

TEA PROTECTS AGAINST ATHEROSCLEROSIS
Green tea comes from fresh, unprocessed tea leaves. Black tea is formed when the leaves are ground, which causes the polyphenols in them to be oxidized by the air, often supplemented by an enzyme oxidation. Black tea loses about half
of its polyphenol content during processing (compared to green tea), leading to a corresponding reduction in antioxidant capacity\textsuperscript{172,173}. In a study of 1,400 men, a high intake of Japanese green tea was linked to a low total cholesterol, low triglycerides, low LDL cholesterol and a high HDL cholesterol level\textsuperscript{174}. In another trial, rabbits were given a diet rich in cholesterol together with either tea or water. After 3 months, the rabbits which were given tea had visibly less atherosclerosis. A third group of rabbits were initially given the cholesterol rich diet with water for three months, and were then given tea in addition. After a further two months it was found that the tea could not undo the atherosclerosis which had arisen in the first three months, but could impede its further development during the last two months\textsuperscript{175}.

3,500 healthy Dutch people were followed for 3 years and their tea intake was compared with the level of atherosclerosis in their aorta, measured using an x-ray. The results were adjusted for the effects of factors known to influence the risk of cardiovascular disease (age, gender, weight, smoking, education, alcohol, caffeine intake and vitamin supplements). The people who drank the least tea, had the most atherosclerosis. Drinking 1-2 cups a day reduced the extent of atherosclerosis by 50%, and with 3-4 cups a day the reduction was 70\%\textsuperscript{176}.

Comments
If you are at risk of developing heart disease or atherosclerosis in general, it might be a good idea to drink some tea with your meals, but choose one which tastes good and take your time to enjoy it.

Cocoa also protects against atherosclerosis
Cocoa has also been shown to contain substances which counteract oxidation of LDL cholesterol. They are the same substances (phenols) as are found in grapes and wine. A good cup of cocoa or 40 grams of good dark chocolate (min. 55\% cocoa content) is equivalent to a glass of wine\textsuperscript{177}, 4 cups of normal tea or two cups of green tea\textsuperscript{178}. Cocoa can also influence the relative levels of LDL and HDL cholesterol in a positive direction\textsuperscript{179}, and inhibit the adhesiveness of the blood platelets in the same way as aspirin. Thus it protects against the formation of plaques and blood clots\textsuperscript{180}.
Alcohol

ALCOHOL REDUCES THE RISK OF HEART DISEASE

88,000 nurses were asked about their diet, alcohol consumption and smoking. It was found that people with a low to moderate alcohol intake – i.e. from 5 to 25 grams of alcohol per day (25 grams = 250 ml or 1/3 of a bottle of wine) – had half the risk of a heart or brain infarction, compared to those who didn’t drink at all\textsuperscript{181}.

Another study investigated patients with atherosclerotic heart disease who also had a light to moderate alcohol consumption and compared them with a non-drinking control group. It was found that the first group of patients had at least a 40\% reduction in the incidence of fatal/nonfatal heart attacks resulting from atherosclerosis, compared to the group which never drank\textsuperscript{182}. In a study of 900 people with type 2 diabetes, having one standard drink a day led to an 80\% reduction in the risk of developing heart disease over a 12 year observation period\textsuperscript{183}.

A study of 12,000 English doctors, followed for 13 years, showed that a moderate alcohol consumption reduced the death rate from both cardiovascular disease and other diseases. The death rate was higher among non-drinkers and those with a pronounced alcohol consumption\textsuperscript{18}. An American study followed 490,000 men and women for 9 years. Having at least one standard drink a day led to a 30\% reduction in the risk of dying from heart disease, compared to men who never drank. The gain was even greater for people with existing cardiovascular disease. The risk of death from any cause was reduced by 20\%. However, for women, this level of alcohol intake led to a 30\% higher risk of breast cancer. As alcohol consumption increases, the general risk of death increases\textsuperscript{185}. In a study of 154 French women who had had breast cancer before menopause, a connection was found between alcohol consumption – and especially red wine – and the incidence of breast cancer. Women who drank more than 4 liters of red wine a month (equivalent to 130 ml or 1 glass a day) had a risk four times that of a non-drinking control group\textsuperscript{186}.

ALCOHOL REDUCES THE RISK OF STROKE

In a New York study, 700 patients who had had a stroke were compared to an equivalent, healthy, control group. The study showed that a moderate alcohol intake of up to two standard drinks a day, halved the risk of stroke. The benefit disappeared at 5 drinks a day, while 7 drinks a day tripled the risk of having a
stroke \textsuperscript{187}. In another study, 22,000 male American doctors were followed for 12 years. It was found that having as little as one standard drink a week reduced the risk of stroke by 20\%, and the benefit did not increase significantly with a consumption of up to two drinks a day \textsuperscript{188}.

**ALCOHOL AND ATHEROSCLEROTIC VASCULAR DISEASE**
Wine has also shown itself to have a positive effect on other types of atherosclerotic disease. In a group of 3,000 men and women with atherosclerosis of the retina (macula degeneration) it was found that one glass of wine each day could reduce the risk of later developing illness by 20\% \textsuperscript{189}. A study of 20,000 American doctors, followed for 11 years, showed that a moderate daily alcohol intake could reduce the risk of developing atherosclerotic vascular disease of the legs (intermittent claudication) by 40\%, compared to drinking less than one standard drink a week \textsuperscript{190}.

**THE TYPE OF ALCOHOL**
The significance of the type of alcohol taken was investigated in the “Copenhagen City Heart Study”, in which 13,000 men and women were followed for 11 years. Drinking 3–5 glasses of wine a day halved the risk of dying from any cause during the observation period, compared to not drinking at all. If the same quantity of alcohol was taken in the form of spirits, like whisky, the mortality rate increased by 33\%, while it was unchanged for moderate beer drinkers \textsuperscript{191}. However, an analysis of 12 scientific studies (including the above) suggests that taking other types of alcohol leads to the same benefits as taking wine \textsuperscript{192}. The Danish research group has since widened its population base to 25,000 people, and has found that drinking wine leads to an extra positive effect on the risk of dying from any cause, compared to other types of alcohol \textsuperscript{193}.

A Finnish study investigated the relationship between episodic beer drinking and illness in 1,600 men followed for 8 years. The risk of heart attack and death from other causes, including accidents, was greatly increased. Regularly drinking 3–5 glasses of beer doubled the risk of death from heart attack, and the risk was seven times as high if more than 6 glasses were taken at a time \textsuperscript{194}.

**THE FRENCH PARADOX**
The “French paradox” is a phenomenon that medical science has had difficulty explaining until recently. The paradox is this: in most countries a correlation is observed between a high intake of animal fats and a high incidence of heart
disease, but in France there is a low incidence of heart disease, despite a high fat intake. It turns out that alcohol consumption among the French (and in particular, red wine) may provide part of the explanation\textsuperscript{195,196} (see also “Mediterranean diet”). While all alcohol impedes blood platelets from sticking together and increases the concentration of HDL Cholesterol, red wine contains special substances (phenols) which also inhibit the oxidation of cholesterol (LDL cholesterol), impeding its build up on the blood vessel walls\textsuperscript{197}. This is especially important after a high-fat meal when there are increased levels of these substances in the blood\textsuperscript{48}. The blood vessel linings are also strengthened, thereby protecting against the actual process of atherosclerosis. This effect is not found in white or rosé wine, and is significantly less in grape juice from the same grapes that are used for the wine. So it appears that it is the processing of the elements contained in the red grapes during the actual wine making which creates the active substance\textsuperscript{198}. This explanation is supported by a study of 3,000 men in Copenhagen, followed for 6 years. It was found that the increased risk associated with a high LDL cholesterol level in the blood was eliminated if alcohol was taken (but any type of alcohol). The men in this group who didn’t drink had four times the risk of developing heart disease compared to the men who drank 3 or more standard drinks each day\textsuperscript{199}. Another study analyzed 20 different Californian wines (14 red and 6 white), to try to find a connection between their polyphenol content and their capacity to inhibit oxidation of LDL cholesterol. It was found that the higher the polyphenol content was, the greater the antioxidant strength. Statistically, the correlation coefficient was 0.94, which is a very high degree of correlation. The red wines had an average of 10-20 times the antioxidant capacity of the white wines\textsuperscript{200}.

**POLYPHENOL CONTENT VARIES GREATLY AMONG RED WINES**

The polyphenol content in red wine is positively influenced by a number of factors – a soil rich in nutrients, a lot of sunshine, grape varieties with a thick skin, grapes being picked when fully ripe, fewer grapes per vine, careful production techniques and storage in oak barrels\textsuperscript{201,202}.

A study of 65 different red wines from all over the world found that the polyphenol content varied by a factor of 10, depending on the above conditions. The Cabernet Sauvignon variety generally had a higher content than other grape varieties. The same was true of wine from the sunnier regions of the world\textsuperscript{202}.

A study of healthy Japanese men found that red wine (but not white wine or
vodka) could increase blood flow in the capillaries in the heart\textsuperscript{203}, suggesting that the phenols in red wine are able to cause the muscles in the smallest blood vessels to relax further, leading to increased blood flow.

**SOME TYPES OF ALCOHOL MORE READILY CAUSE HEADACHES THAN OTHERS**

It is a well known fact that particularly red wine, champagne and dessert wines can cause headaches – and not just from having too much! One of the possible causes is histamine, which is found in large quantities in these types of wines. The histamine content in red wines varies by a factor of 200 (from 60 to 13,000 micrograms/litre) and there is no way of knowing the content in a particular wine. The histamine content in white wine is markedly lower (from 3 to 120 micrograms/litre). Histamine ingested with our food is broken down in the intestine by a special enzyme, diamine oxidase. However, this breakdown is hampered by alcohol and by a number of drugs taken by heart patients, especially calcium antagonists\textsuperscript{204}.

**Comments**

Ideally, the histamine level in a wine should be declared on the label. It is important to be aware of it if you take calcium antagonists. A vitamin $B_6$ supplement may be able to help.

**CONCLUSION: ALCOHOL AND ATHEROSCLEROTIC DISEASE**

Moderate alcohol consumption, up to about 3 standard drinks a day for men, reduces the risk of death from any cause and the risk of developing atherosclerotic vascular disease of the heart, brain, eyes or legs. For women less than 50 years old, up to 1 standard drink a day is ideal, since a greater intake might possibly increase the risk of cancer, but the risk for women in this age group is already very small. Whether you drink wine, spirits or beer doesn’t appear to make a lot of difference. There is some extra benefit if you drink red wine, especially at meal times. It is important that alcohol intake is not episodic, for example with a massive intake on the weekend, since this pattern of consumption undoes the benefits and instead increases the risk\textsuperscript{205}.

It is also important to point out that just because “a little” is good, doesn’t mean that “a lot” is better. Rather the opposite. Since alcohol is itself addictive, the inscription from the temple in Delphi – “Everything in moderation” – applies also to alcohol\textsuperscript{206}. Because of this danger it is wise to also consider other
options to reduce your risk, e.g. exercise, relaxation, weight loss, quitting smoking and so on\textsuperscript{207}.

**Tobacco**

**QUICK IMPROVEMENT IN HEART DISEASE IF YOU STOP SMOKING**

One study suggests there is a quick health gain if you stop smoking, even with relatively advanced heart disease\textsuperscript{208}. About 4,000 smokers participated in the study, all of whom had disease of the coronary arteries, confirmed by an x-ray. 2,600 of these continued to smoke while 1,400 stopped. In the 5 years which followed, the non-smokers had only half as many blood clots in the heart as the smokers.

Another study of patients who had just been in hospital with a blood clot in the heart showed that actual smokers had 3 times the risk of having a new blood clot as non-smokers. For people who had stopped smoking in the last 12-23 months, the risk was twice as great as for non-smokers.

If people had stopped smoking more than two years before, there was no longer any evidence of an increased risk of infarction compared to non-smokers. This result was independent of the daily number of cigarettes smoked previously or the period they had been smoking\textsuperscript{209}.

In the state of California, there has been an aggressive anti-smoking campaign since 1989, and the fall in the number of smokers, as well as the fall in the number of heart related deaths has been greater in California than in the rest of the USA – in all, 33,000 fewer deaths in the period from 1989-1997\textsuperscript{210}.

**BALLOON ANGIOPLASTY MORE EFFECTIVE IF YOU STOP SMOKING**

5,000 patients who had had a balloon angioplasty because of atherosclerotic heart disease were followed for 5 years to measure the impact of smoking on the long-term results of the operation. The patients who continued to smoke had double the risk of a heart attack compared to those who didn’t smoke. Those who stopped smoking after the operation benefitted in that they reduced their risk of death from heart disease by a third, compared to patients that continued to smoke\textsuperscript{211}. 
QUITTING SMOKING BEFORE AN OPERATION REDUCES THE RISK OF COMPLICATIONS
120 patients who were smokers and who were about to undergo a knee or hip operation were randomly allocated to two groups. One group received instruction on quitting smoking for 6 weeks before the operation. The other group functioned as a control group and received no instruction. The incidence of complications was 52% in the control group, compared to 18% for those who stopped smoking. One of the reasons for the quick and positive effect from quitting smoking is that 6 weeks of not smoking has been shown to reduce activity in the sympathetic nervous system.

CIGARS BEST ENJOYED IN MODERATION
1,500 men who smoked only cigars (not cigarettes or a pipe), were followed for 24 months and compared with 16,000 men who didn’t smoke. Those who smoked 5 or more cigars a day had a 50% higher risk of getting heart disease, a 30% higher risk of stroke, a 50% higher risk of getting chronic obstructive lung disease and 5 times the risk of developing cancer in the other airways. The risk was significantly reduced for those who smoked less than 5 cigars a day, but was still high compared to the non-smokers for heart disease (20%) and lung cancer (50%). This study is backed up by several other studies.

MARIJUANA AND COCAINE CAN PROVOKE HEART ATTACKS
In the hours following use of marijuana and cocaine, the risk of having a heart attack is increased by 5 and 20 times, respectively. The latter is due to a strong increase in activity in the sympathetic nervous system.

PASSIVE SMOKING IS BEST AVOIDED
Passive smoking has also been shown to be significant, in that it increases the risk of developing heart disease by 25%, which is equivalent to smoking 10 cigarettes a day. The significance of the influence of passive smoking is supported by the observation that being exposed to 30 minutes of passive smoking reduces the heart’s oxygen reserves.

WATCH OUT FOR WEIGHT GAIN
In a group of 5,000 Americans who stopped smoking, weight increased by 4 to 5 kg over the following 10 years, for both men and women.
**Comments**

Studies have shown that there is big and fairly immediate benefit if you stop smoking, even with advanced heart disease. BUT WATCH OUT FOR WEIGHT GAIN. Limiting passive smoking is beneficial. Aggressive, public anti-smoking campaigns are effective – at least in the USA.

**Women**

There are different incidence rates for ischemic heart disease (heart disease resulting from reduced blood flow) for men and women. This is mainly due to biological differences and variations in the patterns of known risk factors.

The incidence rate is particularly low for women before menopause, and increases after menopause at the same rate as it does for men of the same age \(^{224}\). The female hormone, estrogen, has a positive effect on fat levels in the blood. It also causes the muscles in the heart’s small blood vessels to relax and protects the lining of the blood vessels against damage, which inhibits the development of atherosclerotic heart disease \(^{225}\).

With this in mind, one would expect that giving women estrogen after menopause would reduce their risk of developing heart disease. But the only clinical trial which has as yet been done in this area has not been able to document such an effect \(^{226,227}\), even though LDL cholesterol levels fell and HDL cholesterol levels rose. No positive effect has been found in relation to the prevention of apoplexy either \(^{228}\).

**COMBINATION OF SMOKING AND P-PILLS IS DETRIMENTAL**

Women who both smoke and take the p-pill have 30 times the risk of heart attack, even though smoking in itself only increases the risk by a factor of 4-8, and p-pills alone by even less \(^{229}\).

**WIDE HIPS REDUCE THE RISK OF DEATH**

In a group of Swedish women followed for 24 years, women with wide hips had up to a 50% lower risk of heart attack, death, and diabetes, compared to women with narrow hips \(^{230}\).
Comments
There are therefore no grounds for women to start hormone replacement therapy with this objective alone in mind\textsuperscript{231} – especially since one study of women who took estrogen showed they had three times the incidence of blood clots forming in the legs compared to the placebo group\textsuperscript{226}. Women who are receiving hormone treatment and who develop heart disease should cease hormone treatment\textsuperscript{232}. The combination of smoking and p-pills is worse than unfortunate, while having wide hips leads to significant health benefits.

Healthy women who are pregnant or planning pregnancy and who wish to improve their child’s chances of avoiding heart disease are referred to chapter IX. Lifestyle studies and the risk of heart disease in women are covered in chapter VIII.

MALE BLOOD DONORS HAVE FEWER HEART ATTACKS
Higher levels of iron in diet, in the blood or in the body as a whole have periodically been linked to the risk of developing heart disease, and this has been used to explain why women more rarely get heart disease during the years they are menstruating\textsuperscript{233}. The reason is meant to be that freed iron is able to accelerate oxidization of cholesterol in the blood. To investigate this, 800 men and women were followed for 5 years and the iron levels in their blood were monitored. The amount of ferrite in the blood was seen to correlate precisely with the development of atherosclerosis, measured by ultrasound\textsuperscript{234}.

More recently, an analysis of 12 scientific studies in which more than 7,000 people were followed for an average of 7 years was unable to show any significant influence\textsuperscript{235}.

However, a Finnish study into the connection between being a blood donor (with the associated loss of iron) and the risk of having a heart attack, stands in contrast. 2,000 men were followed for 5 years, and an 86% reduction in the number of heart attacks was observed for blood donors\textsuperscript{236}.

Comments
Until recently it was believed that the benefit observed in men who give blood was related to the associated loss of iron, but it is likely that the cause must be sought elsewhere. It should be noted that people with existing heart disease cannot become blood donors.
Practical exercises
— food and drink

Important nutrients as they occur naturally

The most important ones are listed below, in alphabetical order:\(^\text{237, 238}\):

**Amino acids (proteins):**
- **Arginine:** lentils, nuts (all kinds), peas, rice and eggs
- **Lysine:** green beans, broccoli, lentils, soybeans, milk, fish and meat (offal)
- **Proline:** soybeans, peanuts/walnuts, milk and rolled oats

**Vitamins:**
- **Beta-carotene:** carrots, kale, spinach, and cantaloupes
- **Vitamin A:** oranges, sweet potatoes, pumpkin, carrots, honey, watermelon, mango, papaya, peas, winter squash, apricots, broccoli, spinach, kale, parsley and other leafy greens
- **Vitamin B\(_5\):** (Niacin/nicotinic acid): dried apricots, figs, dates, peaches, asparagus, kidney beans, mushrooms (very high content), peas, soybeans, yeast, peanuts/peanut butter (very high content), legumes, bread, corn flakes, brown rice, lean meat, liver (very high content), herring, mackerel, salmon and tuna
- **Vitamin B\(_6\):** yeast, all vegetables, liver, corn flakes, cereals and brewers’ yeast
- **Vitamin B\(_{12}\):** meat, offal, black pudding
- **Vitamin C (ascorbic acid):** kale, brussels sprouts, broccoli, potatoes, citrus fruits, cantaloupes, bean sprouts, papaya, pineapple, bananas, strawberries, tomatoes, carrots, asparagus, red peppers, onions, and garlic
- **Vitamin E:** kale, oils (especially sunflower oil, safflower and grapeseed oil), nuts (especially almonds and hazelnuts), avocado, peas, wheat sprouts, spinach, broccoli, asparagus, dried prunes, peanut butter, soybeans, tofu,
soy milk and cod roe.

**Vitaminoids:**

**Carnitine:** animal tissue, heart, kidney, liver, blood, milk

**Flavonoids:** apples, onions, garlic, kale, tea, red wine, white wine matured in wooden vats, broccoli, celery, bean sprouts, beet, eggplant, tomatoes, cranberries, strawberries, blueberries and black currants

**Folic acid:** liver, kidney, dark green leafy vegetables (e.g. spinach), yeast, cows milk (folic acid gets quickly destroyed when heated, 40-50% is destroyed during preparation)

**Q10:** vegetable oils, fatty fish (e.g. sardines and mackerel), meat and nuts

**Salts and minerals:**

**Calcium:** cheese, eggs, milk, salmon, sardines, beans, broccoli, beet, spinach, almonds, hazelnuts

**Magnesium:** soybeans, nuts, cocoa, sea snails, rolled oats, lentils, beans, spinach

**Selenium:** shellfish (especially prawns), pig liver, fresh water cod, mackerel, salmon, herring and chicken

**Healthy recipes**

The following recipes are all healthy for your heart, taste good, and use ingredients which are readily available in modern supermarkets.

They have been created by our consultant chef, Anette Buch Petersen, based on the knowledge gleaned from the scientific articles presented in this book. Think of them as something appetizing which you can add to your present diet, regardless of whether this is Chinese, American, European or something entirely different.

Any questions of a professional nature regarding these dishes can be put directly to Anette Buch Petersen at www.go-apPetite.dk. See also www.drballegaard.com. For those who are not used to working with metric units, there is a simple conversion table in the back of the book.
Appetizers:

Asparagus salad with oranges

(4 people)

1 bunch green asparagus
1 bunch arugula
3 blood oranges
50 ml balsamic vinegar
salt, pepper and olive oil

Break the asparagus at the base, so that any tough stem is removed. Cut them into 3-4 cm long pieces and blanch them. Peel the oranges and cut the filets out of each segment. Squeeze the juice out of the remaining “skeleton” and mix it with the asparagus. Slice the arugula and add it to the asparagus. Pour the balsamic vinegar into a saucepan and reduce it until it thickens slightly. Be careful it doesn’t burn, since it caramelizes if you reduce it too much.
Mix it all together and add salt, pepper and olive oil to taste.

Fish surprise

4 salmon fillets with no skin, each about 180-200 g
1 handful snow peas
4 spring onions
1 carrot
½ fennel bulb (optional)
1 handful chopped herbs, e.g. dill, parsley, chives or just basil alone
50 ml white wine
2 teaspoons olive oil
1 egg white
salt and pepper
aluminum foil

Rinse all the vegetables and slice them thinly, especially the carrot, into fine strips. Mix the vegetables in a bowl with a little salt and pepper and some of of
the herbs. Tear off a piece of aluminum foil (about 60 cm) and lie it flat on the kitchen table. Place half the vegetable mix on the middle of one half, put two salmon fillets on top, pour on some olive oil and dress with the herbs and salt and pepper. Brush the edge of the foil all the way around with egg white, pour on a dash of white wine, and fold the empty half of the foil over, so that the edges stick together. Fold the edges in towards the middle, ½ cm at a time, twice. Repeat this procedure with the remaining ingredients. Be careful not to tear holes in the foil, as the foil “pillow” has to act as a steam oven. Place the pillows carefully on an oven tray and bake them at 200°C for about 18 minutes in a fan-forced oven. If your oven is not fan-forced, add a couple of minutes. The pillows should now have risen, and should be served on a dish. Cut the top at the table, and a lovely aroma will rise out. Serve with bread, which can be dipped in the juice from the fish and vegetables.

**Suggested dressings:**
Take a small tub of low-fat sour cream. Cut up a small punnet of cress and add it in, and add salt and pepper to taste. OR

Finely chop a shallot and cook it with a crushed clove of garlic in 100 ml of white wine with a hint of saffron. When there is only a little liquid left, cool it and add it to a small tub of low-fat sour cream. Add salt and pepper to taste.

Note: You can vary the vegetables used. Just remember, the harder they are, the finer they have to be sliced if you want them to be crisp rather than raw after cooking. You can also easily use cod or flounder instead of salmon. Baking paper can be used instead of aluminum foil.

Note: This dish can also be served as a main course, with rice or something similar.
Grilled tuna on eggplant caviar with herbs and basil

(6 people)

About 600 g fresh tuna
2 eggplants
1 carrot
1 small fennel bulb
½ cucumber peeled and seeded
½ squash
1 small, red pepper
1 stalk celery
1 bunch basil
2 tablespoons olive oil
juice of ½ a lemon
salt and pepper
dress with: arugula and grated parmesan cheese

Grill the tuna lightly on all sides, season with salt and pepper and then refrigerate. Put the eggplants on baking paper on a tray and bake in the oven for about 45-60 min. at 200° C, until they are completely soft. Cut out their stalks, cut them in half, scrape out the insides, chop these finely and pour into a bowl. Rinse the other vegetables, cut them into small cubes, and mix them with the eggplant. Add lemon juice, salt, pepper and basil to taste. Cut the rest of the basil leaves into squares and mix with the oil. Arrange the eggplant caviar on the middle of a plate, in a neat circle. Cut the tuna into 6 identical slices and lay them on the eggplant caviar. Pour the basil and oil mixture over the tuna and some on the plate. Season with salt and pepper and dress with arugula and parmesan cheese.

Note: The tuna should be raw, and only grilled on the outer edges.
Chicken salad with wild rice

(4 people)

1 chicken (about 1200 g)
leaves from 3 sprigs of tarragon
1 bunch broadleaf parsley
1 small bunch of chives
½ cup sunflower seeds
50 ml grapeseed oil or canola oil
30 ml tarragon vinegar
salt and pepper

Cover the chicken with water, add 1 teaspoon of salt and boil for about 40 minutes, until it is tender. Let it cool down a little in the water if you want. Take the meat off the bone and cut it into 1 cm cubes.

Roast the sunflower seeds in oil until golden brown. Chop the herbs finely and mix with the vinegar, oil, sunflower seeds, salt and freshly ground pepper. Turn the chicken pieces in this dressing and add salt and pepper to taste. If possible, let it sit for an hour in the refrigerator before serving.

_Serving suggestion:_
Tear the leaves of 1 iceberg lettuce into small pieces and turn them in a dressing containing 4 teaspoons of vinegar, 4 tablespoons of olive oil (or similar), salt and pepper. Sprinkle on 125 g of alfalfa sprouts and arrange the chicken salad in the middle. Optionally dress with a little broadleaf parsley here and there. Serve with whole-wheat bread rolls.

Wild rice

150 g wild rice

Boil the rice in plenty of water for about 40 mins. Strain off the water and mix the rice with the chicken.
Turkey breast with ginger and chili marinade

(4 people)

400-600 g turkey breast cut in strips (about 1 x 3 cm)
2 shallots, finely chopped
2 carrots
4 spring onions
100 g snow peas
1 red pepper
a little oil

MARINADE

2 teaspoons grated ginger
2 teaspoons canola oil
2 teaspoons sesame oil
1½ tablespoons sweet chili sauce
1½ tablespoons soy sauce
2 teaspoons sherry or sherry vinegar
2 tablespoons sunflower seeds roasted in a little oil
juice of ½ lemon
1 bunch of coriander, chopped (optional)

Grill the turkey meat lightly in a little oil, or steam it in a little water in a pot. Add the shallots just before taking the turkey off the heat. Rinse and peel the vegetables and slice them finely into small, similar sized pieces. Boil the carrots briefly. Beat the marinade ingredients together and mix with the meat and vegetables. Add salt and pepper to taste.

Can be served as an appetizer or as part of a buffet.

Salmon tartar

(4 people)

400-500 g fresh salmon
2 tablespoons mild olive oil (e.g. Ligurian)
1 bunch chives
maldon salt (sea salt flakes)
freshly ground pepper
Cut the salmon meat into small cubes. Use only the red meat, and avoid meat from the tail, since it is a bit tough. Turn the salmon meat several times in the salt. Taste occasionally, until it is just right, as the salt will dissolve and marinate the salmon after a while. Add oil and pepper.

Arrange as a flat cake or form into neat balls using a spoon. Slice the chives and sprinkle them on top.

*Suggested accompaniments:*
A mixed salad of, for example, lamb’s lettuce (corn salad), heart lettuce and arugula turned in balsamic vinegar dressing
Small squares of crisp herbs in herb vinegar
Baby spinach in sherry vinegar
Crisp potato cakes

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**Fat-free vegetable soup with tomato salsa**

(4 people)

1½ liters good chicken stock
1 whole garlic bulb
3-4 pieces Hamburg parsley (turnip-rooted parsley)
2 small carrots
1 bunch spring onions
1 handful snow peas
salt and pepper

Peel the garlic cloves and boil them for about 5 minutes. Change the water and boil them until tender. Peel the Hamburg parsley and boil until tender. Blend them in a blender with the garlic cloves and some of the stock, and then mix with the rest of the stock. Chop and finely slice the carrots. Bring it all to the boil. Slice the spring onions and snow peas, mix in and boil again, just before serving. Add salt and pepper to taste.

**TOMATO SALSA**

about 500 g sun ripened tomatoes
1 bunch or punnet of basil
1 large clove of garlic
salt and pepper
Carve a cross in the skin of each tomato, and dip them briefly in boiling water. Let them cool, and peel of the skin. Chop them coarsely. Chop the basil or blend it in a blender with a little tomato and mix in with the rest. Crush and add the garlic and add salt or pepper to taste. Add the salsa to the hot soup just before serving.

Fried mullet on orange compote with anise

(4 people)

- about 600-800 g mullet filet, with skin (scaled)
- oil for frying
- salt and pepper

COMPOTE

- a dash of oil
- 4 large sweet oranges
- 8 sun ripened tomatoes
- 1 star anise
- salt and pepper

Cut the mullet fillet into 4 or 8 equally sized pieces. Fry them in a non-stick frying pan with the skin down so that it becomes crisp. Fry them on this side until they are nearly done, then turn them. Keep frying them only just long enough to finish them off, so that they stay juicy. Season with salt and pepper.

The compote:

Make cuts in the tomatoes’ skins, remove any stem, and dip them for 15 seconds in boiling water. Then put them in ice water, remove the skin, cut them in half, remove the seeds and chop them up coarsely. Peel the oranges and cut the fillets out of each segment. Turn the tomatoes in oil in a pot, add the orange fillets (but no extra juice yet), the star anise, and salt and pepper.

Let the compote simmer for about half an hour. Add orange juice along the way, to taste.

Arrange on a plate and place the fish on top. Serve with white bread.
Main courses

Oven baked cod with almond-garlic-coriander sugo

(4 people)

about 700-800 g filleted cod, divided into 4 pieces
50 g almonds
1 whole garlic bulb (about 15 cloves)
75 ml oil (olive or canola)
1 bunch coriander
a dash of lemon juice
salt

Scald and skin the almonds. Boil the peeled garlic cloves until tender. Mix them in a blender and add the oil and coriander. Add salt and lemon juice to taste.

Evenly space the pieces of cod on baking paper on an oven tray and “butter” them with the almond mixture. Put them in a pre-heated oven at 180-200°C for 20-25 minutes.

Suggested accompaniments:
New potatoes boiled with lovage or dill.

Ostrich fillet with juniper berries and thyme

(4 people)

4 pieces of ostrich fillet, each about 175g
2 teaspoons finely chopped juniper berries
2 teaspoons fresh thyme leaves
salt
ground pepper
a dash of olive oil for frying

Season the ostrich fillets with the herbs and fry them on moderate heat for
about 2-3 minutes on each side. Ostrich meat should be handled like game: it gets dry and tough if it is cooked too much.

*Serving suggestion:*
Slice the fillets into neat slices to serve. Serve them with mixed salad, oven baked vegetables and/or olive oil potatoes. Reduced balsamic vinegar (boil 100 ml until about 2/3 of it evaporates and then cool) can be used as a dressing.

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**Grilled calf liver with lemon**

(4 people)

- about 700 g of calf liver, sliced into thin slices and membranes removed
- 4 teaspoons provence herbs
- 4 sun ripened tomatoes
- 2 lemons
- salt, pepper and a dash of oil

Season the liver with the spices, salt and pepper and grill it on a hot grill (or in a frying pan) for about 1 minute on each side. Slice the tomatoes and season and grill them also. Serve the liver with the tomatoes and ½ a lemon to squeeze over it.

Can be served with mixed salad, turned in balsamic dressing (4 teaspoons balsamic vinegar mixed with 4 teaspoons olive oil, salt and pepper).
Desserts

Split almonds in dark chocolate

200 g dark chocolate (with a cocoa content of at least 60%)
200 g split almonds
2 tablespoons sugar
½ an egg white

Pour the almonds onto an oven tray covered with baking paper. Mix in half an egg-white thoroughly with the almonds. Mix in the sugar and bake the almonds in an oven for about 30 minutes at 175° C until light brown, stirring them occasionally.

Chop the chocolate into small pieces and melt it in a bowl placed in a water bath. Turn the almonds in the chocolate, and place small quantities of the mixture on top of trays or plates covered in plastic film. Refrigerate these, and they can easily be pulled off later.

Variation:
Substitute candied ginger for the split almonds.

Dates with walnuts in chocolate

(4 people)

8 fresh dates
8 walnuts (shelled)
about 200 g dark chocolate (with a cocoa content of at least 60%)

Make a slit in the side of each date, remove the stone and insert a walnut.

Melt the chocolate in a bowl placed in a water bath. Dip the dates in the chocolate, so that they are completely covered. It’s easiest to fish them out using two forks. Place them on baking paper to set.
Dried apricots in chocolate

(4 people)

12 dried apricots (ecological)
about 100-150 g melted dark chocolate (with a cocoa content of at least 60%)

Dip the apricots in the melted chocolate and place them on baking paper to dry.
You can also use candied ginger instead of apricots.

Waffles with berry jam

(2 people)

100 g wheat flour
2½ tablespoons baking powder
1 teaspoon cinnamon
1 teaspoon vanilla
2 eggs
80 g honey
100 ml soy milk
1½ tablespoons soybean oil
a pinch of salt

Mix the dry ingredients together. Whip the remaining ingredients together and then mix with the dry ingredients to make a thin dough. Heat the waffle iron, add a bit of oil, pour on the dough and bake the waffles until light brown.
Serve with berry jam, e.g. ecological or home made black currant jam.

Marzipan balls with ginger and chocolate

(4 people - 16 sweets)

100 g marzipan
2 pieces (about 20 g) candied ginger, plus 5-10 g for dressing
100 g dark chocolate (with a cocoa content of at least 60%)
Blend the ginger in a blender or chop it finely, soften up the marzipan and mix the two together. Divide the mixture into 16 portions and roll them into balls. Melt the chocolate in a bowl placed in hot water (or in a microwave oven). Dip the balls in chocolate and put them on baking paper. Let them cool and dress with finely chopped (or strips of) ginger.

Side Dishes

Puy Lentils

(side dish for 8-10 people)

- 400 ml lentils from Puy
- 1 large chopped onion (red are good)
- 2 teaspoons oil
- 5 cloves of garlic (2 of them crushed)
- about 200 ml red wine
- about 500 ml water
- 1 can of chopped tomatoes with oregano and basil
  (or fresh tomatoes with skin removed)
- 1 bunch parsley, coarsely chopped
- 1 teaspoon raw cane sugar

Sauté the onion in oil, add the two crushed garlic cloves and the chopped tomatoes and boil for a moment.

Pour in the rest of the liquids and the lentils, whole garlic cloves, parsley and sugar. Let it all simmer with the lid on for about 30 minutes. Add more liquid if too much evaporates. When the lentils are tender, the mixture should be of the consistency of sauce. Add salt and pepper to taste.

Serving suggestion:
Serve with turkey (sautéed or steamed), lamb, chicken, quail or salmon.
Spinach salad

(2 people)

400 g fine spinach (rinsed and dried)
1 bunch of parsley
4 cloves of garlic
1 tablespoon oil (try walnut oil)
10 chopped walnuts
salt and pepper
2 teaspoons balsamic vinegar
raisins (optional)

Blanch and dry the spinach. Pull the worst stalks out of the parsley and then blanch it also. Peel the garlic cloves and boil them until tender. Dry them, cut them in half and fry them in a little oil with the walnuts. Mix the spinach and parsley and chop it coarsely. Place this on a plate, season it, and pour on the balsamic vinegar and the garlic and walnuts.

Dress with raisins if you like things a bit sweet.

Serving suggestion:
200 g turkey cut in strips, steamed and mixed with 1 tablespoon fish or oyster sauce, ½ bunch of chopped parsley, 1-2 crushed garlic cloves, salt and pepper.

Note: You can substitute hazelnuts or other nuts for the walnuts.

Fried tofu with mixed salad

300 g tofu (consider using ecological)
a little oil for frying
1½ tablespoons poppy seeds
salt and pepper

MIXED SALAD

1 bunch arugula
1 heart lettuce
1 punnet lamb’s lettuce (corn salad)
1 clove of garlic
1½ tablespoons balsamic vinegar
2½ tablespoons olive oil
50 g grated fresh parmesan cheese
salt and pepper

Cut the tofu into thin slices and lay it on some paper towel. Dress these slices with poppy seeds, salt and pepper and fry them in a little oil. Rinse the lettuces and arrange them on a plate. Beat the crushed garlic, balsamic vinegar, oil, cheese and salt and pepper together and pour the dressing over the lettuce. Finally, place the tofu pieces on top.

Beet salad with apple and celery

(4 people)

2 large beets (ecological)
1 apple (not too sweet is good)
1½ tablespoons raspberry vinegar or red wine vinegar
2 sticks of celery (sliced)
100 g salted almonds
50 ml olive oil or canola oil
salt and pepper

Boil the beets until tender (about 30-45 mins). Pour cold water over them, take off their skins, cut them in half and slice them. Remove the apple’s core and slice it in the same way. Beat the oil and vinegar together, add salt and pepper and pour the mix over the beets. Mix in the apple, celery and chopped, salted almonds.

Curried herring marinade

(Enough for about 500 g herring)

2 cups vinegar
1 cup water
5 cups sugar
2 tablespoons curry
1 large onion
1 carrot
Boil up all the ingredients and let the mixture reduce until it has the desired taste. Let the marinade cool and pour it over old-style matured herring, cut into lengths of about 3 cm.

**Salad dressing**

50 ml tarragon vinegar  
1½ tablespoons chopped tarragon  
1 bunch of chopped chives  
50 ml olive oil  
50 ml chopped pistachio nuts  
100 ml roasted sunflower seeds  
salt and pepper

**Mint sugo**

1 large bunch of mint (Swiss is good)  
50 g almonds  
3 cloves of garlic, crushed  
juice of ½ - 1 lemon  
200 ml olive oil  
salt and pepper

Pull off the mint leaves and mix with the other ingredients in a blender.

*Mint sugo can be used with:*  
Grilled lamb especially  
Lightly roasted meat  
Turkey salad  
King prawns with chili and garlic
VIII

Documentation

Report on 171 patients with serious heart disease who received Integrated Rehabilitation and were followed for 3 years \(^1\)

(You can find the full report at www.drballegaard.com)

INTRODUCTION

This chapter presents the results of our latest quality control review in which 106 patients with angina pectoris who were operation candidates and 65 patients rejected for operation, received Integrated Rehabilitation and were followed for 3 years. Following this some methodological issues will be presented which need to be considered when evaluating the general applicability of this study. The chapter closes with an attempt to sketch out some of the implications for society.

The Danish Government and the Association of County Councils in Denmark have recommended that the nation’s heart centers gather data for their quality assurance review of the treatment of patients with atherosclerotic heart disease \(^2,3\). This data is intended to enable individual residents to compare the quality of the various treatment centers, and to make a decision about where they will seek treatment on this basis. The rationale for such a recommendation is the perception that differences in the results achieved in two different centers can reflect a difference in quality. It is clear that if different treatment methods are compared, different success rates may become evident.

Despite decades of international research, a significant preventative effort and the development of refined medical and surgical treatment techniques, ischemic heart disease is still the most common cause of death both in Denmark \(^4,2\) and the USA \(^19\).

A big effort has been made to systemize and evaluate the broad spectrum of conventional treatment options available \(^5,6\). Choosing a treatment option has
been made more difficult by the developments within surgical treatment and medication. These have led to such rapid improvements, that the randomized trials which provide the basis for the current recommendations have taken place under conditions which markedly differ from conditions today. We can say with confidence that invasive treatments provide pain relief. However, their effects on the risk of death and heart attack are difficult to determine, when compared to aspirin and cholesterol lowering medication. Both have a significant positive effect on the risk of death or repeated heart attack.

In the last few decades, a significant amount of research has also come forward which indicates that lifestyle factors have an impact on the risks associated with heart disease. Things like smoking, weight, diet, alcohol, exercise and a person’s degree of depression or social isolation can each affect risk by more than 30%, just as much as aspirin or cholesterol lowering medication \(^7, 8, 9, 10, 11, 12, 13, 14\).

At the Nordic Heart Center we have followed all of our heart patients who had been recommended for operation, since 1991, and the results of our annual quality control review have been published since 1995 \(^15, 16, 17\). What follows is a presentation of the results from the review which was completed in August 1999.

**Incidence of ischemic heart disease**

In 1996, 27,000 people died from heart disease in Denmark. About half of these had atherosclerotic disease in the heart itself. In 1998, almost 460,000 Americans died from atherosclerotic heart disease, making it the number one cause of death in the USA.

12.4 million Americans have ischemic heart disease – about half of these have angina pectoris.

In the USA in 1999, 1.4 million people had a coronary arteriography examination, 600,000 patients had balloon angioplasties, and 355,000 patients had a bypass operation.

If we look at the number of Americans who have an increased risk of developing heart disease, there are 50 million who have high blood pressure, almost 49 million smokers, almost 41 million who have a blood cholesterol level above 6.2 mmol/l and 107 million who are overweight (BMI > 30) \(^18\).

**METHOD**
The report is based on answers to a questionnaire, which is sent out to all our
patients, once a year. If the patient doesn’t answer the questionnaire, the relevant information is obtained from their doctor (with the patient’s permission). The evaluation of risk is based on the 171, who started treatment. The evaluation of economics is based on the 161 patients who completed the program, and their data is presented in table VIII.1.

**The patients**
In the period under observation we have treated a total of 340 patients with clinical angina pectoris. Patients in the following categories were excluded from the report:

- patients without myocardial ischemia confirmed by a bicycle test or myocardial scintigraphy (102)
- patients with confirmed myocardial ischemia, but who were well enough that invasive treatment had not been recommended (65)
- patients who chose Integrated Rehabilitation as a supplement to an invasive treatment which was already planned. The invasive treatment was performed immediately after treatment with IR (2)

The remaining 171 patients all had a heart oxygen shortage confirmed either by a bicycle test or myocardial scintigraphy: 106 were candidates for invasive treatment, while this had been rejected for the remaining 65 patients, either because of high risk (17) or because the operation – or more often, re-operation – was not possible on technical grounds (48). In addition, they were receiving maximal pharmaceutical treatment, so conventional treatment possibilities had been exhausted for these 65 patients.

**The treatment: Integrated Rehabilitation**
Each patient has 12 consultations over 3-4 weeks in which they receive acupuncture and training in the self-care program presented in this book.
### TABLE VIII.1: Profile of the 161 patients (who completed the program) at the commencement of treatment

<table>
<thead>
<tr>
<th></th>
<th>99 operation candidates</th>
<th>62 patients denied an operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender (% male)</strong></td>
<td>58 %</td>
<td>74 %</td>
</tr>
<tr>
<td><strong>Average age (years)</strong></td>
<td>62</td>
<td>63</td>
</tr>
<tr>
<td><strong>Over 70 years old</strong></td>
<td>27 %</td>
<td>21 %</td>
</tr>
<tr>
<td><strong>Previous myocardial infarction (heart attack)</strong></td>
<td>49 %</td>
<td>64 %</td>
</tr>
<tr>
<td><strong>Previous PTCA (angioplasty)</strong></td>
<td>22 %</td>
<td>31 %</td>
</tr>
<tr>
<td><strong>Previous CABG (bypass)</strong></td>
<td>13 %</td>
<td>60 %</td>
</tr>
<tr>
<td><strong>3-vessel or proximal left anterior descending artery disease</strong></td>
<td>17 %</td>
<td>16 %</td>
</tr>
<tr>
<td><strong>Current smoker</strong></td>
<td>37 %</td>
<td>15 %</td>
</tr>
<tr>
<td><strong>(NYHA classification, see Glossary)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>0 – I</strong></td>
<td>20 %</td>
<td>5 %</td>
</tr>
<tr>
<td><strong>II</strong></td>
<td>49 %</td>
<td>20 %</td>
</tr>
<tr>
<td><strong>III – IV</strong></td>
<td>31 %</td>
<td>65 %</td>
</tr>
<tr>
<td><strong>Actual medication</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Beta blockers</strong></td>
<td>44 %</td>
<td>43 %</td>
</tr>
<tr>
<td><strong>Calcium antagonists</strong></td>
<td>64 %</td>
<td>69 %</td>
</tr>
<tr>
<td><strong>Nitrate with prolonged effect</strong></td>
<td>45 %</td>
<td>66 %</td>
</tr>
<tr>
<td><strong>Cholesterol lowering medication</strong></td>
<td>23 %</td>
<td>39 %</td>
</tr>
<tr>
<td><strong>Consumption of nitroglycerine tablets per week</strong></td>
<td>2 (0-41)</td>
<td>4 (0-55)</td>
</tr>
<tr>
<td><strong>Medically treated hypertension</strong></td>
<td>24 %</td>
<td>30 %</td>
</tr>
<tr>
<td><strong>Medically treated diabetes</strong></td>
<td>8 %</td>
<td>14 %</td>
</tr>
<tr>
<td><strong>Medically treated congestive heart failure</strong></td>
<td>9 %</td>
<td>19 %</td>
</tr>
<tr>
<td><strong>Aspirin</strong></td>
<td>68 %</td>
<td>71 %</td>
</tr>
<tr>
<td><strong>Ace-inhibitor</strong></td>
<td>11 %</td>
<td>24 %</td>
</tr>
<tr>
<td><strong>Social status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Married</strong></td>
<td>75 %</td>
<td>76 %</td>
</tr>
<tr>
<td><strong>Social class 4 or 5</strong></td>
<td>35 %</td>
<td>21 %</td>
</tr>
<tr>
<td><strong>BMI</strong></td>
<td>25.9 (19.9 - 32.5)</td>
<td>26.9 (20.6 - 36.1)</td>
</tr>
<tr>
<td><strong>Total cholesterol (mmol/l)</strong></td>
<td>6.0 (4.3 - 8.0)</td>
<td>4.9 (3.2 - 8)</td>
</tr>
<tr>
<td><strong>HDL cholesterol (mmol/l)</strong></td>
<td>1.2 (0.9 - 2.2)</td>
<td>1.2 (0.8 - 4.7)</td>
</tr>
<tr>
<td><strong>LDL cholesterol (mmol/l)</strong></td>
<td>3.4 (1.8 - 5.0)</td>
<td>2.8 (1.9 - 6.1)</td>
</tr>
<tr>
<td><strong>Triglycerides (mmol/l)</strong></td>
<td>1.4 (0.4 - 3.5)</td>
<td>1.6 (0.8 - 4.9)</td>
</tr>
<tr>
<td><strong>Blood pressure</strong></td>
<td>140 (110-170) / 80 (65-110)</td>
<td>130 (110-180) / 80 (60-106)</td>
</tr>
</tbody>
</table>

* median (5th-95th percentiles)
**Risk calculation**

We have used the three year survival rate for 60,000 people in New York who had a balloon angioplasty or a bypass operation\(^9\) for comparison. In order to match our study with the one from New York we have also used the three year risk of dying from any cause among our patients. Patients are excluded from the American database if they have had an earlier heart operation, while 22% of our patients have had an earlier angioplasty and 13% have had a bypass operation. The risk among the American patients has been adjusted (to match our patients) for the increased operative risk for patients who have had an earlier bypass operation \((+0.3\%)^5\), as well as for the post-operative risk in the following three years \(^{20}\) \((+1.6\%). No adjustment is made for an earlier angioplasty. This is in accordance with the recommendations of the American Heart Association and the American College of Cardiology \(^5\). Based on death statistics for the general Danish population, we have also formed a control group, which matches our 106 candidates for invasive treatment in terms of gender and age (www.danmarksstatistik.dk). We have done this in order to use the toughest possible yardstick to test our results against, as a randomized trial has not been possible in Denmark and because similar data is not available for Danish patients receiving bypass surgery or angioplasty.

With regard to the patients rejected for invasive treatment, we compared our results with an American study which compared medication with transmyocardial laser revascularization\(^{21}\), and accordingly, we used the accumulated 3-year risk of dying from heart disease for this comparison.

For the patients who had had an earlier heart attack, we compared our results with a Danish study\(^{22}\). In this study, the accumulated 3-year risk of having another heart attack is used as an evaluation criteria, and we did the same.

In a scientific context, risk of death is regarded as a reliable measure of effect as it is independent of patient or researcher bias\(^{23}\), so if the treatment reduces this risk, the benefit can be attributed to an independent effect of the given treatment and not just to good general medical care. The accumulated 3-year risks are calculated using Kaplan-Meier analysis.

**Economics**

The economic consequences of the treatment were calculated based on the patient’s usage of health services in the year prior to treatment and in the 3 years following. Expenses related to angioplasty and bypass operations have been calculated based on an American study\(^{24}\).
RESULTS

Need for an operation
80% of the 99 patients who completed the treatment and who were operation candidates, did not need an operation during the observation period. Out of the half of the patients who started treatment in the last 3.5 years, 44 people (90%) have avoided having an operation.

Risk evaluation
Among the 106 patients who started the treatment and who were candidates for invasive treatment, 2 deaths were recorded during the three-year observation period. The accumulated three-year risk of death was 4.5% (95% confidence interval: 1.5% - 7.5% – see Glossary). The corresponding risk for the general Danish population (matched for gender and age) was 6.7% (6.4% - 7.0%). The risk was 7.3% (6.6% - 8.0%) for angioplasty and 10.3% (9.6% - 11%) for bypass operations carried out in New York (see figure VIII.2), when adjusted for previous invasive treatments among our patients.

If we divide our 106 patients, who completed the treatment, into three equal sized groups based on when they commenced treatment, the 2-year accumulated risk of operation, myocardial infarction or death declined in each successive group. For the first one third of patients, the accumulated risk was 33% (95% confidence limits: 25% – 41%), compared to 21% (14% - 28%) for the middle one third of patients, and 10% (5% - 15%) for the last one third (figure VIII. 3). Furthermore, there were no deaths among the last 50 patients who commenced treatment within the last 3.5 years. For these patients, the accumulated three-year risk of death was 0% (0% - 5.8%) (figure VIII.1). In practice, that means that the results obtained were better with time, indicating that both we and the patients got better at doing treatment / training and self-care, respectively.

Among the 65 patients that could not be operated on, 4 deaths from heart disease were recorded over the 3-year observation period. The three-year, accumulated risk of death from heart disease was 7.7% (3.9% - 11.5%), compared to 25% (18% - 36%) and 16% (10% - 34%) among equivalent patients who received medication or laser treatment of the heart muscle, respectively.

Of our 161 patients, 88 had had an earlier heart attack. The accumulated 3-year risk of having a new heart attack was 2.8% (2.1% - 3.5%), compared to 5.6% and 10.5% for similar Danish patients who received invasive treatment or
These figures are shown at the back of the book. They need to be recreated in something like Adobe Illustrator.

Figure VIII.1. The 2-year accumulated risk of death, myocardial infarction or operation related to start of IR.

Figure VIII.2. The accumulated three year risk of death.

medication, respectively, in the Danami study. The patients in Danami’s study were an average of 5 years younger than our patients, and all patients over 69 years old were excluded, whereas 21% of our patients are in this category. Forty-six percent of our patients were so sick that they could not be offered invasive treatment, while all of Danami’s patients could be offered an operation. Thirty-eight percent of our patients had had an earlier bypass operation and 26% had had an angioplasty. None of the patients in the Danami study had had an earlier invasive treatment. We would therefore expect a significantly higher risk of a new heart attack in our patients, yet the reverse is the case.
Economics
In the year before they began treatment, the 99 operation candidates who completed the treatment, had an average of 6.1 days in hospital, 1.9 visits to an outpatients clinic, 2.7 visits to their general practitioner, 1.7 visits to a cardiologist and medication expenses of US$ 800. In the following three years, the number of days in hospital fell by 96%, the number of visits to outpatients by 88%, the number of visits to their doctor by 76%, the number of visits to a heart specialist by 84% and heart medication consumption fell by 78%. In order to estimate the economic consequences, we have compared the cost of operating on all of the 99 patients with that of treating them with IR and operating on only 20%. The result is savings of US$ 12,000 per annum, per patient.

In the year prior to treatment, the 62 patients rejected for invasive treatment and who completed the treatment had an average of 11.3 days in hospital, 2.7 visits to an outpatients clinic, 5.0 visits to their general practitioner and 1.1 visits to a cardiologist. In the following three years, the number of days in hospital was reduced by 95%, the number of visits to outpatients by 82% and medication expenses fell by 73%. The number of visits to a cardiologist and their general practitioner were reduced by 67% and 68% respectively. The total savings for this patient category come to US$ 7,500 per patient, per annum.

DISCUSSION ON THE GENERAL APPLICABILITY OF THE RESULTS
The results above show that it is possible to design a rehabilitation program which patients with advanced heart disease can follow for several years – leading to a significant personal benefit and cost-savings to society. However, it is necessary to discuss whether these findings should be seen as something special for these particular patients or as generally applicable, i.e. whether any person in the same situation could expect to achieve the same result if they make the same effort.

Methods of evaluating the effects of a treatment
It is normal to use randomized double-blind clinical trials to determine the effectiveness of a new treatment. In such trials, the new (presumably active) treatment is compared with an inactive placebo and/or another known, active treatment. “Randomized” indicates that the patients are randomly allocated to the various treatments being compared. “Double-blind” indicates that neither the patients nor the people administering the treatment know who is receiving the new treatment, an old treatment or a placebo. The idea behind this method
is to eliminate all the factors that can affect the outcome from a given treatment which are not directly related to the treatment being investigated. These factors are possible sources of error which can create bias in the results, e.g. can make the treatment seem effective when it is not, or vice-versa. They are often called placebo (or nocebo) effects. The placebo effect can be defined as the combined, non-specific, positive effects of the whole patient-doctor relationship, while the nocebo effect is the opposite.

The randomized double-blind trial was designed with pills in mind – to allow investigation of whether one pill works better than another pill. In such a trial, the pills can be manufactured in such a way that the placebo pill and the active pill look identical, so that neither the doctor nor the patient can distinguish them. The pill bottles are marked so that it is possible to determine later which treatment the individual patient received.

For many treatments and factors which can influence the course of an illness, it is not possible to carry out such a trial. This might be due to the nature of the treatment, or other (e.g. practical) factors. This is true, for example, of the choice of hospital for treatment, lifestyle factors, exercise, social and psychological factors, psychological treatment, massage, acupuncture and acupressure, and hence also Integrated Rehabilitation. It should be pointed out that a prospective, randomized trial is possible in relation to Integrated Rehabilitation, acknowledging the limitation that neither patients nor treating physician can be blinded. However, it has not yet been possible to conduct such a trial.

What can you do if, as often happens, you have what looks like a promising new treatment, but a randomized trial, for one reason or another, is not possible? Medical common sense dictates that you carry out a very careful treatment review instead. Such a review might involve the establishment of a register of all the patients treated which records information about their illness and treatment. It might also involve periodic checks to investigate whether the treatment has had the desired effect, or if unexpected complications have arisen. The results of the treatment could also regularly be collated so that you can satisfy yourself that the effects are what you expected. Last, but not least, the results could be published, so that the patients, your peers and the various authorities have the opportunity to judge the effectiveness of the treatment.

This is exactly the kind of treatment review which we have carried out at the Nordic Heart Center and which is described in this chapter. We have established a register of all the patients treated (a so-called clinical database), collected information with an annual questionnaire, asked an impartial reviewer
to audit our journals, and published the results.

It must be principally accepted, that such a treatment review has certain natural limitations:

1. That neither patient nor treating personnel can be “blind”. The possible bias that results is called expectation bias.
2. Patients have not been randomly allocated to either a treatment group or a control group. The possible bias that results is called selection bias.
3. There is therefore no proper control group, which is why the results can only be compared with groups found in the literature.
4. The investigation can only evaluate the effects of the total treatment package and not the value of each component.

These questions are dealt with in more detail below, along with an explanation of what we have done to make allowance for these factors.

**Expectation bias**
Expectation bias can arise from the expectations of the patient, the observing doctor or the treating physician. “Blinding” ensures that the outcome is not affected by a conscious or unconscious prior expectation in one or more of these people. If only one or two parties are blinded, the trial is called “single-blind”. If all three parties are blinded, it is called “double-blind”.

In order to be able to “blind” the patients and the treating physicians, the alternative treatments being used must resemble each other so closely that both parties are unable to tell the difference. While this is easily achievable with medication, it is not possible with Integrated Rehabilitation because of the nature of the treatment. The challenges that this leads to, especially for acupuncture, have been described in detail elsewhere 25.

For the observer to be “blind” he cannot at the same time perform the treatment and must not know which treatment the individual patient was allocated to. This can easily be done in all trials.

The fact that neither the patients nor the treating physicians can be “blinded” in Integrated Rehabilitation is significant. Patient and doctor expectations have been shown to have an influence on the outcome in a large number of trials 26.

Our investigation shows that our patients also avoided death and an operation in the years when they rarely saw their treating physician, and where the
main contribution was their own. These results, therefore, lend no support to the possibility that an initial enthusiasm in the treating physician might have been decisive in achieving the good long-term results.

The combined weight of these observations suggests that expectation bias has not had a decisive impact on the result.

**Selection bias**

Selection bias occurs when the patient group used in a trial is not representative of the total patient population.

This can also be an issue in randomized, double-blind clinical trials. The first type of selection that can occur is if the clinician initially excludes too many patients from participation in the trial, so that the remaining group represents the total population so poorly, that the results cannot responsibly be applied to patients in general. In two studies, 97% and 98.5% of patients, respectively, were excluded from the trial. The resulting bias has been noted by others.

The second type of selection bias results from the fact that not all patients want to participate in such trials. One has to therefore accept that only a select part of a given population is represented in the trial, i.e. those who wish to do so. Thus in any population, selection bias occurs. Despite this, conclusions from such studies have traditionally been applied to the patient population as a whole.

In a quality control review, selection is unavoidable, since the patients have chosen the treatment or hospital (for invasive treatments) themselves. Only a small portion of our patients have been referred by other doctors. The vast majority of our patients have to pay for the treatment themselves, whereas conventional medical treatment is free in Denmark. In addition, they have to be willing to make a considerable personal effort.

There is no evidence to suggest that the fact that a heart patient or their kin has chosen a particular treatment themselves has a decisive impact on their prognosis. It should generally be seen as a basic right that a patient is involved in the choice of treatment, so on that score our patients don’t differ from other heart patients who receive conventional treatment. Most of the contact people have with the conventional health system occurs because patients or their kin take the initiative to contact a doctor. This behavior is a natural part of the modern person’s daily life. It is therefore unlikely that this self-referral factor leads to any bias, different from that applying to other heart patients.
There is no evidence, either, to suggest that paying for a given treatment has an impact on the treatment outcome or on the person’s ability to change their lifestyle. However, 6% of our patients chose not to complete the treatment, either due to cost or because they didn’t wish to become engaged in self-care. Can the treatment results be explained by social selection? Did our patients come from a particularly wealthy and well-educated section of the population, so that they would have done just as well if they had received conventional treatment? As is shown in table VIII.1, a third of our patients belonged to the lowest two social groups (4 & 5) and 75% were married or had a partner. In these respects our patients don’t differ from the average statistics for Danish heart patients.

It is not possible in our trial to completely exclude the possibility that some chance bias has arisen in our patient group in terms of unknown factors with prognostic significance – this is true of any quality control review. But in terms of known factors with prognostic significance, no major differences have been found between our patients and the patients we have compared them with.

Our patients made an ongoing personal effort in order to improve their health, and this effort was the primary treatment for more than 95% of the observation period. When it comes to lifestyle changes in areas like smoking, weight loss and exercise, some patients have more success than others. Whether any improvement is due to the actual lifestyle change, or just the decision to change, is a matter of discussion. However, this question cannot be answered scientifically.

The combined weight of these observations points to selection bias not having a decisive impact on the result.

**Choice of control group**

Compared to randomized trials, one weakness in our trial is that our control group was not selected randomly from the same patient pool. It has been drawn from other patients groups, with the same illness, but who were treated elsewhere. Again this is no different from any other quality control review. Another weakness is that the adjustments made for variations in risk profiles (between the various groups of patients) are simply that, adjustments, and it is impossible to ensure that they were adequate.

However, if we say that evidence for the effectiveness of a treatment is only valid if it is based on a comparison between two groups which are identical in terms of all the factors which can influence the treatment outcome – it is worth
noting that this criterion has not been fulfilled when it comes to the invasive treatments for heart disease. For example, factors like smoking, weight, social conditions, depression, diet, alcohol and exercise have not been taken into account, and each of these factors can affect the prognosis for heart disease by more than 30% (see the introduction to this chapter).

We have sought to compensate for this weakness as follows:

1. We have made comparison with control groups that include many thousands of patients, to reduce the confidence limits for these particular groups.
2. We have compared our results with the very best treatment results for the other types of treatment in the same way that national and international treatment centers perform quality control checks.
3. We have chosen the incidence of death among our patients as the measure of effectiveness, since it is internationally accepted that the death rate is not substantially affected by these methodological limitations.23
4. We have also done a calculation of the economic consequences of the treatment, which is not affected by these methodological limitations.

Given the above considerations, it appears that our choice of control groups gives us a reliable basis for comparison.

**Conclusion (regarding method)**

When evaluating a treatment like Integrated Rehabilitation we have to accept the unavoidable fact that some of the basic requirements for randomized double-blind clinical trials can never be met.

We have chosen a method which is used with success in numerous other situations where the above requirements are not met:

1. The ongoing observation study for the evaluation of other kinds of lifestyle adjustments, e.g. the risk from smoking and the benefits of quitting, the risk from being overweight and the benefits of losing weight, the risk from lack of exercise and the benefits of exercising.
2. Measuring the quality of a given treatment carried out at various hospitals. Although randomization is possible in this situation it is not carried out, yet the results are regarded as reliable.

In addition we have tried to compensate for the natural methodological limita-
tions in the ways mentioned above. It is therefore our opinion that this study has assembled reliable evidence of the positive effects of Integrated Rehabilitation. This view is backed up by several recently published studies which conclude that when it comes to treating heart disease, randomized trials and observation studies reach the same conclusions 31,32,33. In addition, the American Heart Association and the American College of Cardiology affirm that observation studies similar to the one we have used for comparison give a reliable measure of the three year risk associated with angioplasty and bypass operations 5,19. Furthermore, an editorial article by the American Medical Association points out that observational studies suffice to support practical recommendations when the effect size is large and the risk is low, as for example with the advice to stop smoking 34. Obviously the same is true for Integrated Rehabilitation.

WHICH PARTS OF THE PROGRAM OUR PATIENTS HAVE UNDERGONE HAVE THE GREATEST SIGNIFICANCE?
The benefit of conventional rehabilitation has been calculated to be about a 20% reduction in the risk of dying in a three year period, plus a saving in health expenses of US$ 110 per patient per annum 41. Our patients don’t significantly lose weight and their serum cholesterol doesn’t change significantly. Yet our results are so much better than those for conventional rehabilitation and our patients managed to achieve the same risk of death as the general population. There must be other factors in our treatment which are responsible. An analysis of our results showed that the half of the patients who started in the last three and a half years did much better than the patients who started earlier (see page 216). All patients have received acupuncture, but the training in self-care has developed significantly:

1. Patient descriptions have helped us to gain an understanding of the close connection between soreness in the feedback points and the course of the illness. We have therefore given much more attention to training our patients in the daily measuring of the soreness in these points, and how they can themselves reduce the soreness by changing the balance in their body’s health balance (see chapter III).
2. Our patients are constantly able to observe that the soreness is closely linked to this balance, and that increased soreness increases the frequency of heart pain, while less soreness reduces the frequency. This increases their confidence that it is possible to get control over your health.
3. At the same time, we have shifted our focus from changing existing negative lifestyle factors to forming new habits with a positive influence—especially acupressure. Our experience has shown that it is much easier to learn new habits with a positive impact on health, than it is to change existing, negative habits.

4. The individual patient finds that he or she can cause heart pain to go away, anywhere, anytime, by their own efforts. This increases their control and any anxiety they had tends to subside.

5. Twice a day the patient observes that acupressure can make a sore point less sore—a result that is achieved within one minute. This leads them to feel success and that self-care is effective, helping to maintain motivation to continue in this effort.

6. If they have a spouse or partner, this person is also actively engaged in measuring the feedback points and doing acupressure on the back. I believe the mutual interchange between being able to help your spouse, and on the other side, being able to value your spouse’s input, has a positive influence on the process.

If all this has to be explained in relation to the development of the illness, it suggests that the classical Chinese concept of life energy is viable. Also that the activity of the sympathetic nervous system has great significance—perhaps so great that adjusting lifestyle (as in conventional rehabilitation) is not adequate if there is a heightened activity in the nervous system which isn’t reduced. Conversely, it suggests that if you can successfully reduce a heightened activity, any negative lifestyle factors become less significant.

**CONCLUSION TO THE REPORT**
The results speak their own clear language. The report concludes, with the reservations mentioned earlier, that other patients can expect to achieve the same good results and prognosis, if either they themselves or their spouse have a positive attitude to the treatment complex described and are willing to make a personal effort.

- For the patients who were operation candidates, the risk of death was reduced to that of the general population.
• For the patients rejected for invasive treatment, and for the patients who had had a previous heart attack, a reduced risk of death or of a new heart attack was observed, compared to conventional treatment.
• The number of days in hospital was reduced by 95% and medication usage by between 73% and 78%.
• Society benefitted from economic savings of between US$ 7,500 and 12,000.

IMPLICATIONS FOR SOCIETY
This quality control report shows that Integrated rehabilitation as a treatment for advanced ischemic heart disease is achievable, beneficial to the patient and

Table VIII.2. Major differences in health care.

<table>
<thead>
<tr>
<th>Conventional medical technology</th>
<th>Complementary medicine</th>
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<tbody>
<tr>
<td><strong>Society/industry control of health care</strong></td>
<td><strong>Individual control of health care</strong></td>
</tr>
<tr>
<td>Often evidence based</td>
<td>Rarely evidence based</td>
</tr>
<tr>
<td>Most often patentable</td>
<td>Most often not patentable</td>
</tr>
<tr>
<td>High technology, mostly expensive *</td>
<td>Low technology, mostly inexpensive</td>
</tr>
<tr>
<td>Often side effects or complications</td>
<td>Few and harmless side effects</td>
</tr>
<tr>
<td>High cost for product development</td>
<td>Low cost for product development</td>
</tr>
<tr>
<td>Health industry provides information and education for practitioners as well as patient and pays for it</td>
<td>The individual practitioner must take care of his own education/updating of information as well as the patient’s</td>
</tr>
<tr>
<td>High research activity</td>
<td>Low research activity</td>
</tr>
<tr>
<td>Major influence on allocation of research finances</td>
<td>Minor influence on allocation of research finances</td>
</tr>
<tr>
<td>Major influence on the implementation of new remedies</td>
<td>Minor influence on the implementation of new remedies</td>
</tr>
<tr>
<td>High flow of information on better remedies to consumers</td>
<td>Low flow of new information on better remedies to consumers</td>
</tr>
</tbody>
</table>

* Here I am thinking specifically of treatment of severe heart disease
economically attractive for society.

The results present a challenge to existing treatments in terms of effect and cost. The fact that the theoretical focus is also different is a challenge in itself.

In many other respects also the treatment clashes with the other players in the health system in the Western world (see tables VIII.2 and IX.1). The existence of such areas of tension in the health care system have been discussed in detail by others.\textsuperscript{36} From a humanistic perspective, it can be seen as refreshing, that Nature still surpasses human ingenuity.

If the results of this report are compared with conventional treatments in terms of patient benefits and risk, and economic factors, one can conclude that future research in this field seems attractive and that the treatment could - in certain cases - be offered as a supplement to conventional treatments.
IX
How do I choose the best treatment?

This chapter describes the various treatment options which are available today (both conventional and alternative), how they work and their advantages and disadvantages. Following this some questions are listed which you can try to answer, to help you decide which treatment strategy to choose.

The treatment options available represent many different ways of looking at illness and health. This variety indicates that there are many different paths to the goal – and that it is therefore possible to find a solution that suits you personally. It is also important to realize that the different treatment methods are not exclusive, rather you can let them supplement each other according to your personal taste and needs. Chapter VIII compares the outcomes for patients who receive invasive treatment and patients who receive Integrated Rehabilitation to the outcomes for the general population.

Among the various treatment methods, there are basically two different strategies:

a) To treat the illness with medication or surgery by blocking bodily processes. The result is that you no longer feel, or at least reduce the negative consequences of the fact that the body no longer functions as it should – a mechanistic strategy in which the patient is largely passive. My description and evaluation of the chemical and physical treatments is based on American\textsuperscript{1,2} and Swedish\textsuperscript{3} recommendations.

b) To activate the body’s capacity to maintain or regain health by seeking to restore biological balance in its functions, and by guiding you in a lifestyle which supports this. Psychological, social, emotional and behavioral elements are involved. This kind of holistic strategy, in which the patient is often very active, is commonly used in conventional rehabilitation and intensive lifestyle adjustment therapy, along with Integrated Rehabilitation and self-care.
Treating atherosclerotic heart disease using medication and surgery

By way of introduction I should point out that the substantial advances made in surgical treatment and medication for heart disease over the last 20 years have contributed to the improved outlook for patients today.

Seen in historical perspective our experience with these conventional treatment methods is slight. They have developed over about a 50 year period. Compare this with the 2000 year gradual development in life experience, which most of the elements in Integrated Rehabilitation are based on.

MEDICATION

**Nitroglycerine**
Angina pectoris is traditionally treated with nitroglycerine tablets, which are placed under the tongue. The medication relieves the symptom of the moment – chest pains – but doesn’t prevent the further progress of the disease. Tablets are available which have a longer lasting effect, as are patches which are placed on the skin, gradually releasing the nitroglycerine. The most common side effect is headache.

**Beta-blockers**
Beta-blockers represent “a cornerstone” in the treatment of angina pectoris with medication. When you exert yourself, a message is sent to the heart to increase its pumping activity. Beta-blockers inhibit this message so that the heart doesn’t work as hard as it would otherwise. This prevents the heart from beating so fast that the heart muscle begins to lack blood – leading to pain. The most common side effects are mental tiredness and reduced initiative. Less commonly seen are impotence and disturbed sleep.

**Calcium antagonists**
Calcium antagonists inhibit the transportation of calcium to the muscle cells. Calcium is necessary in order for the cells in the heart muscle to contract. When they don’t get enough calcium, the heart doesn’t contract as much (doesn’t work as hard) as it normally would during exertion.

The most common side effects are headache, dizziness, rash, low blood
pressure, ankle swelling and indigestion. About 15-20% of patients experience side effects. There is also some uncertainty about the role of calcium antagonists in connection with ischemic heart disease, since they can have a negative impact on the heart’s pumping capacity and result in an increased risk of death.

**Aspirin**

Aspirin reduces the tendency of the blood platelets to stick together and therefore protects against plaques and blood clots forming (see chapter II). This can, however, increase the risk of hemorrhage. A review of 16 clinical trials in which more than 50,000 people were given either aspirin or a placebo, showed that aspirin lowered the risk of a heart attack by 31%, death from heart disease by 16% and stroke resulting from oxygen shortage by 18%. However, the risk of stroke resulting from hemorrhage was doubled. But since this type of stroke is rare, there was a clear overall gain, such that the risk of heart attack or stroke (any type) was reduced by 34% ⁴. Attention has been drawn to the fact that in a study of 66,000 people who took aspirin daily, 1% had a gastric hemorrhage over a 28-month observation period, regardless of dosage ⁵.

**Comments**

Since its effectiveness is so clear (approximately a 30% reduction in heart attack, death or stroke), and the risk is relatively slight, aspirin can be recommended if you have heart disease or a high risk of developing it – as long as you don’t have a blood coagulation disorder or a particular risk of gastric hemorrhage. However, it should be avoided if you don’t have a high risk of developing heart disease.

**Cholesterol lowering medication**

A summary analysis of a number of clinical trials in which 30,000 people in all were followed for 5 years while being given either cholesterol lowering medication (statins) or a placebo, showed a 30% reduction in the risk of death or heart attack ⁶. These medications can also reduce the risk of restenosis and later heart attack or death after a bypass operation ⁷. For patients with mild angina pectoris, cholesterol-lowering medication has been shown to be at least as effective as a balloon angioplasty ⁸. However, if the effects of cholesterol lowering medication are compared with the effects of aspirin, they only prolong life to a small extent ⁹. Statins have been shown to cause cancer in animals ¹⁰, but in the study of the 30,000 (above) there was no evidence of this in humans. It is worth
pointing out, that a cholesterol level of less than 4.5 mmol/litre can increase the risk of depression and suicide\textsuperscript{11,12}. The effectiveness of statins is enhanced, and their detrimental effects on insulin and levels of antioxidants in the blood are reduced, if they are combined with a Mediterranean diet rich in polyunsaturated fats\textsuperscript{13}.

\textbf{Comments}
Medication is probably not the best first choice for patients with high cholesterol, except for those with a hereditary fat metabolism disorder. If changes to diet and lifestyle are not adequate, medication becomes a relevant option for anyone with confirmed atherosclerotic heart disease and high cholesterol (a 30\% reduction in the risk of death can be expected). If this is the case, it would be beneficial to combine it with a Mediterranean diet, and very low levels of cholesterol should also be avoided.

\textbf{ACE inhibitors}
ACE inhibitors are a group of substances which influence hormonal regulation of the blood circulation throughout the body. They have a reparative effect on damage to the blood vessel walls caused by atherosclerosis. In a clinical trial involving 9,000 patients with advanced atherosclerotic disease, a 20\% reduction was seen in the number of heart attacks, cases of apoplexy and deaths\textsuperscript{14,15}.

\textbf{INVASIVE PROCEDURES}
We can confidently say that invasive treatments relieve pain. Their effects on the risk of death or heart attack are harder to determine – especially in the long term (e.g. over a 10 year period), once developments in medication and the impact of the individual’s lifestyle are taken into account. At the same time, developments in bypass surgery and balloon angioplasty techniques are taking place at such a pace, that the documentation has difficulty keeping up\textsuperscript{1}.

There is a risk associated with invasive procedures. Out of all the bypass operations performed in the USA in 1997, for people aged from 61 to 65 (corresponding to our patients’ age range), 2.1\% of patients died, 1.1\% had a heart attack and 1.7\% had a stroke – a combined risk of almost 5\%. In ensuing bypass operations the risk associated with the actual operation rises to about 9\% \textsuperscript{1}. The risks associated with repeated angioplasty and with examination (coronary angiography, CAG) are not specified\textsuperscript{16,17}. The mortality rate for all of the
30,000 balloon angioplasties performed in the state of New York was 0.9% in 1997\textsuperscript{18}. For all 10,000 patients who received a balloon angioplasty in British Columbia in Canada, the 1-year incidence of heart attack was 5.4%, and death from any cause was 3.9%\textsuperscript{19}.

**Balloon angioplasty**
During balloon angioplasty, a narrow tube is inserted into the coronary artery via the groin. At the site of the blockage a balloon is inflated, to widen the opening. Sometimes a mesh tube (a stent) is also inserted, to keep the artery open longer.

**Bypass operation**
In a bypass operation, a new section of artery or vein is grafted into the affected artery, redirecting blood around the blockage.

**Spinal Cord Stimulation**
Spinal Cord Stimulation involves an electrode being implanted into the patient’s spinal cord which the patient can then activate using a magnet, to achieve pain relief. The effect is analogous to other forms of sensory stimulation of the nerves to the heart, for example, acupuncture. A clinical trial has shown that this method provides the same degree of pain relief as a bypass operation\textsuperscript{20}. The treatment is expensive and requires a specialist, so it is only recommended when all other therapeutic options have been exhausted\textsuperscript{21}.

**REHABILITATION AND SELF-CARE**

**Conventional rehabilitation**
The goal of conventional rehabilitation is to help a person with heart disease to resume as normal a life as possible. This is done by giving advice on\textsuperscript{22,23}:
1. lowering blood pressure
2. lowering blood cholesterol
3. stopping smoking
4. increased exercise
5. weight loss
6. changing to a low-fat diet with plenty of fruit and vegetables
7. management of diabetes
8. psychological assistance in the case of psychosocial problems\textsuperscript{24}. 

238 HEAL YOUR HEART
**Lifestyle and atherosclerotic disease**

Two large American population studies, which followed 85,000 female nurses for 14 years, were able to show a clear statistical correlation between lifestyle, and the risk of developing atherosclerosis. The 3% who didn’t smoke, had a BMI of 25 or less, drank at least half a standard drink each day, exercised for at least half an hour each day and ate a diet high in fibre, fish, unsaturated fats and folic acid and low in trans fatty acids, had 83% fewer cases of heart disease compared to the other 97% \(^{25}\). The incidence of heart disease among the whole group was also shown to fall by 31% over the 14 years, and this could partially be explained by reduced levels of smoking and better diet \(^{26}\).

**Several randomized trials have measured the effects of learned behavior modifications**

20 patients who received conventional medical treatment were compared with 28 patients who went through a lifestyle program, in addition to conventional treatment. The program focused on vegetarian diet (10% fat content), relaxation and stress management techniques, quitting smoking, psychosocial support group therapy and exercise. After one year of treatment, 82% of the patients in the lifestyle group had reduced levels of atherosclerosis, measured by computer angiography (PET scanning), while 53% of the other group had increased levels of atherosclerosis.

Consistent with this, the patients in the lifestyle group had fewer, shorter and milder episodes of angina than before, while the reverse was true for the other group. The patients who followed the program most closely had the best outcome \(^{27}\).

The patients in the lifestyle group were overweight compared to the other group, and they lost an average of 10 kilos (the weight of the patients in the control group was normal both before and after treatment). There was a direct correlation between the weight loss and the degree of change in atherosclerosis \(^{27}\). This study is therefore unable to determine whether it was weight loss alone which had helped or the other lifestyle changes.

Later these patients were followed for up to five years, and the lifestyle group had fewer hospital stays and fewer operations, while there was no difference in terms of risk of death or heart attack \(^{28}\).

These findings have been confirmed in other studies. In a randomized trial, 300 people with heart disease were either given rehabilitation or normal follow-up. Four years later, the rehabilitation group had lower levels of athero-
sclerosis, measured using computer tomography, and 39% less hospital admissions, while the death rate was unchanged. Another study followed 113 men with heart disease who were given intensive instruction in exercise and diet. One group was followed up, while the other was not. After 6 years there was no difference for the two groups in terms of clinical events (deaths, heart attacks, operations), but the group that was followed up showed a slower advance in their level of atherosclerosis, measured using computer tomography. However, a review of a large number of trials suggests there is about a 20% lower risk of dying in a 3 year period, plus a saving in health expenses of US$ 110 per patient, per annum.

**Comments**
These trials suggest that lifestyle has a big influence on the prognosis for heart disease, and that active intervention in the form of rehabilitation and lifestyle adjustments leads to fewer hospital admissions and operations, slows down the advance of the disease and reduces risk of death or heart attack by about a 20%.

**INTEGRATED REHABILITATION AND SELF-CARE**
The health recommendations which are incorporated into rehabilitation and lifestyle modification are also incorporated into Integrated Rehabilitation. However, our treatment differs from other forms of rehabilitation in the following ways:

1. The addition of acupuncture.
2. Patients are educated in classical Chinese health philosophy, linked to a Western understanding of disease, so that they learn to live in balance with nature and build up their body’s resources and its capacity to repair itself.
3. The addition of acupressure (see the benefits listed in chapter IV).
4. In terms of actual lifestyle, the primary focus is initially on learning new habits with a positive influence on your health, rather than changing existing habits with a negative influence. These new habits, of which acupressure is the cornerstone, allow you to compensate for any negative health consequences of your present lifestyle.

**Comments**
As the results in chapter VIII show, such a strategy is both possible and effective.
FOR PREGNANT WOMEN AND THOSE PLANNING PREGNANCY

Research in recent years has shown that many of the factors surrounding heart disease which were believed to be hereditary (and therefore outside our influence), are actually in many cases the result of programming of the fetus$^{32,33}$. The way the fetus reacts to its current conditions leads to physiological changes which can later affect the adult person’s risk of high blood cholesterol levels, diabetes or of being overweight – thus increasing their risk of heart disease.

This means that pregnant women and those planning pregnancy can influence the risk of their child developing heart disease in 40-50 years time. This is an encouraging perspective, in that inheritance apparently plays less of a roll than had earlier been assumed. At the same time, it means that the lifestyle of the mother has a bigger influence on the child’s later risk. This self-care program is therefore a very good idea for anyone who is pregnant or planning to be. In addition:

- Monitor your weight so that it increases, without increasing too much.
- Avoid or reduce short and long term stress, since that increases the concentration of stress hormones in the blood.
- Keep fit, but avoid exhaustion since that causes the release of stress hormones.
- Keep your coffee consumption down.
- Avoid tobacco.
- Avoid alcohol altogether or drink very little, especially in the first trimester while the baby’s brain and nervous system are forming (alcohol has negative effects on these).
- Be careful with medications in general.

QUESTIONS TO ASK YOURSELF WHEN CHOOSING A TREATMENT

Answering the following questions will hopefully help you to work out the treatment combination which suits you best.

1. How much personal effort am I willing to put in?

Some people are attracted to a solution in which they don’t need to contribute anything. For these people, medication or surgery is the best first choice. Other people prefer a solution in which they do contribute themselves, and which allows them to gain control over their health. For these people, Integrated Reha-
bilitation will be a natural first choice. If they can’t achieve a satisfactory result this way, medication and surgery are still an option. Other people prefer a combination.

2. Are there philosophical questions which might affect my choice?
There are big philosophical differences between conventional medication and surgical treatment, and Integrated Rehabilitation (see table 1 in the introduction to this book). Naturally it’s up to you to decide which philosophy is the most attractive, and to choose a treatment on that basis. As the results show in chapter VIII, you can benefit from taking the best elements from both types of treatment.

3. What are the potential risks and gains?
Most of us are generally willing to accept a higher risk if the benefit is correspondingly great. The greatest level of risk is attached to invasive procedures, medication involves lesser (and often reversible) side effects, while Integrated Rehabilitation has no side effects. Acupuncture, in very rare cases, can lead to complications like hemorrhage and infection. If you are seriously incapacitated by your disease, you might be more ready to accept the risks associated with invasive procedures, when these treatments can be expected to relieve your pain significantly. They also have a quick impact compared to Integrated Rehabilitation or self-care alone, where the effect usually builds up gradually over time. However, if your disease causes you no great inconvenience, consider whether you would be better served by trying the gentler treatments first, like medication or self-care (as described in this book or at www.drballegaard.com).

4. Which treatments are actually available to me?
Medication is generally available to everyone. The same is true of the self-care program outlined in this book, while acupuncture and surgery are not necessarily available to all. Quality can also vary significantly, between different acupuncture practitioners, between surgeons, and also between hospitals and countries.

5. Can I get hold of information about the outcome I can expect if I choose a particular treatment?
The best you can do is to find out what has happened to all the patients who
have received that treatment at the hospital in question, and possibly even by the surgeon in question. Ideally all these patients have been followed for several years afterwards, for example for three years. Then you can work out, based on their initial situation and ensuing progress, a reliable forecast of what will happen to you should you choose the same treatment. This is the reason why we have constructed and published the quality control report outlined in chapter VIII (and available in full at www.drballegraard.com). However, in many countries, and for many hospitals, this kind of information is not available yet. If you live outside the USA, you cannot assume the same results will apply for you, because heart surgery in the USA is well ahead of that in other countries.\textsuperscript{34}

6. What do the various treatments cost?
The economic consequences of a treatment can vary from person to person (insurance, assistance from employer, etc.), from region to region and from country to country. Surgery is generally the most expensive, medicine is less expensive, Integrated Rehabilitation is quite cheap (see figure VIII.3) and the self-care program outlined in this book is virtually free. If you have to leave your job, this can lead to direct or indirect economic consequences. Bypass operations are most demanding in this regard, balloon angioplasties lesser so. Integrated Rehabilitation also requires a time commitment, as does self-care. It takes no appreciable time to take medication.

7. Given my particular background and the reasons why I have heart disease, is one treatment better than another?
The rationale behind the questionnaires in this book is to give you insight into the factors which are most significant for the progress of your health in the future – and therefore to help you to see how much the self-care is likely to benefit you. The next step is to evaluate the extent to which you are able to change these factors.

8. Is it possible to get a feel for whether or not the self-care will be able to help me here and now?
You can answer this question by doing the first acupuncture exercise in chapter IV. If you observe a significant soreness in the feedback point, there is a good chance that the acupressure will be able to help you quite quickly. Beyond this, it would be wise to fill in the questionnaires to get an overview of whether there are other areas where the self-care program is likely to help you.
Follow up

To ensure that your personal health plan always matches your health needs – and your resources! – it is important to regularly check and adjust the plan if necessary. I recommend that you do a follow up check after 1, 3, 6 and 12 months.

A follow up check should include the following:

1. Check the level of soreness in the acupressure points
2. Fill out the 7 point questionnaires on the results your overall effort has on your life
3. Fill out the follow up schedules
4. Compare the follow up schedules with the action schedules (ch. V, VI and VII) and health balance schedule (ch. III)
5. Adjust the priorities in your original action schedules (if necessary)
6. Work out your health plan for the next period

Check the level of soreness

1. Level of soreness in acupressure point CV 17 (p. 76)
   - Not sore
   - Slightly sore
   - Quite sore
   - Painful

2. Level of soreness in acupressure point Per 1 (p. 78)
   - Not sore
   - Slightly sore
   - Quite sore
   - Painful

3. Level of soreness in acupressure point St 18 (p. 78)
   - Not sore
   - Slightly sore
   - Quite sore
   - Painful
Check the effects of your efforts

1. **Health state**
   As at the beginning
   - Completely well
   - [ ] [ ] [ ] [ ] [ ] [ ] [ ]

2. **Quality of life**
   As at the beginning
   - The best
   - [ ] [ ] [ ] [ ] [ ] [ ]

3. **Degree of control over your health**
   As at the beginning
   - Maximum control
   - [ ] [ ] [ ] [ ] [ ] [ ]

4. **How much are you doing for your own health?**
   As at the beginning
   - Maximum effort
   - [ ] [ ] [ ] [ ] [ ] [ ]

5. **Overall effect of the health plan and your self-care on your daily well-being**
   No effect
   - Maximum effect
   - [ ] [ ] [ ] [ ] [ ] [ ]

**Fill out the follow up schedule**

Schedule X.1 is for you to use in your follow up check. It includes all the action plans from the earlier chapters. The idea is that you fill in the questions without looking at your original answers. That will give you a new health status check at the same time.
## Schedule X.1 - Follow up check

<table>
<thead>
<tr>
<th>My relationship with myself (chapter V)</th>
<th>Very much</th>
<th>Not at all</th>
<th>+/- cat.</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>I love myself</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I acknowledge the negative sides of my personality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am at peace with my negative sides</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am able to forgive myself</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humor is a regular part of my life</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>I have an optimistic outlook</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I have a strong will to live</td>
<td></td>
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</tr>
<tr>
<td>I have a big appetite for life</td>
<td></td>
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<td></td>
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<tr>
<td>I am confident of reaching my goals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a religious affiliation</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I am aware of my feelings and needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can motivate myself to reach a goal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often achieve my goals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am content with my achievements in life</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am active in and take responsibility for my health</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe my health can improve</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**My Social life (chapter V)**

<p>| My family is supportive                                                                                  |           |            |          |           |
| I appreciate my family                                                                                  |           |            |          |           |
| I give attention to my family life                                                                       |           |            |          |           |
| My friends are supportive                                                                               |           |            |          |           |
| I appreciate my friends                                                                                  |           |            |          |           |
| I give attention to my friends                                                                          |           |            |          |           |
| Regular tender love and care is part of my life                                                          |           |            |          |           |
| Play, laughter and affection with another person                                                        |           |            |          |           |
| is a regular part of my life                                                                            |           |            |          |           |
| I have someone to confide in and have close contact with                                                |           |            |          |           |</p>
<table>
<thead>
<tr>
<th>Statement</th>
<th>Very much</th>
<th>Not at all</th>
<th>+/- cat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I live together with such a person</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a pet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I give attention to my working life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I give attention to my leisure time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I care for the people around me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I meet people with confidence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can forgive others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I help others without counting the cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I express my thoughts and opinions without hurting others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I take time to listen to others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I empathize with other people’s feelings and needs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am engaged in the life around me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I resolve conflicts without any losers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>My way of looking at my life circumstances (chapter V)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am happy with my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I face life with confidence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am happy with my sex life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am working at avoiding burnout</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(loss of interest in life, initiative, mood and energy)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am humble when things are going well</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am patient when times are tough</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel that I have influence on my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel that I have enough control over my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am working at learning to tackle life’s setbacks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am working at learning to tackle any anger,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hostility or feelings of powerlessness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe the future will bring good things</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am often lucky</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**My lifestyle (chapter V)**
<table>
<thead>
<tr>
<th>Very much</th>
<th>Not at all</th>
<th>+/-</th>
<th>cat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I give attention to my life dreams</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Play is a regular part of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity is a regular part of my life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music and dance are a regular part of my life</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I learn from stress</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I plan my day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I prioritize my time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peace and quiet are a regular part of my day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is a positive balance in my personal finances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I avoid the simultaneous occurrence of extremely stressful circumstances like divorce, serious financial problems, job uncertainty and ongoing legal proceedings</td>
<td></td>
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</tr>
</tbody>
</table>

**Exercise (chapter VI)**

I exercise for at least half an hour without a break each day

(e.g. take a brisk walk, swim, cycling, sex)

I do winter bathing

I will lose weight (if overweight)

**Relaxation (chapter VI)**

I do 10-20 minutes of combined relaxation and breathing exercises twice a day

I do yoga, breathing and stretching exercises for 10 minutes each day

I have a 1 hour massage twice a week

**Diet (chapter VII)**

Mediterranean diet forms part of my diet

Vegetarian diet forms part of my diet

I eat fish (1-2 times a week)

I take fish oil as a dietary supplement

I eat a variety of fruit each day

I eat a variety of vegetables each day
One way to do the follow up check is to go back to your original health plan which you formulated and filled out in chapter III. What has gone well? What has gone less well? If your health plan for the next 3 months needs adjustment, take into account what you have learned. Should your spouse/partner or a good friend be involved in your health plan?

Make a note of any elements which have been particularly positive for your health, or particularly difficult for you.

If you want to be able to see at glance how successful you have been, you can mark a plus or a minus in the second last column to indicate any improvement relative to your starting point.

The last column allows you to adjust your priorities as you work out your health plan for the next period.

I suggest that you copy the schedules and do a follow up check after 1, 3, 6, 9 and 12 months. After that it is probably adequate to do it once a year.

<table>
<thead>
<tr>
<th></th>
<th>Very much</th>
<th>Not at all</th>
<th>+/- cat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole-wheat products form part of my diet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I eat 100g of nuts each week</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I have a high fibre diet (fruit, vegetables and cereals)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I avoid trans fats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I drink 1-3 glasses of red wine (or other alcohol) each day (men) / each week (women)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I drink 1-2 cups of good cocoa (min. 55% cocoa) each day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I drink black or green tea each day</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I take a selenium supplement (if levels low)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I take supplements of folic acid, vitamin B6 and B12 (if homocysteine levels in the blood too high)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am stopping smoking</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I will try herbal medicines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will be a blood donor (if male)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It is my hope that in this book I have shown you that you are the one who has the most significant influence over your own health, and that the effort required to improve your health – and your daily life – is your own.

We have all, haven't we, noticed the link between our lifestyle and our health. Just think about how, for example, happiness, grief, stress and infatuation come to expression as increased energy, headache, insomnia and good mood. It is therefore surprising that we often “forget” this knowledge and view illness as something external – independent of us – which is therefore best cured by something else external – a pill or an operation, the result of which we have no control over.

Until the French philosopher, Descartes (1596 – 1650), introduced some 350 years ago the separation of body and mind which now forms the foundation of the Western scientific tradition, it was natural to understand symptoms of illness as an expression of physical or psychological imbalances. It was just as natural to believe that the body – given the right conditions – could heal itself.

The advice – the training program – which I have presented to you here spans several thousand years and builds on experiences from every stage of human development: how we live with each other and ourselves, what we eat and drink, how we look after our mind and body. Seen in the light of humanity's long history of development, acupuncture, acupressure, breathing exercises and yoga are modern disciplines – they have only been in use for a couple of thousand years! By comparison, the so-called conventional treatments have only been “conventional” for about 50 years!

My goal in this book is not to play down the great and valuable research effort which is taking place within surgical and medication-based treatment of (heart) disease. My goal is that each one of us would become more aware of
the fact that our health is our own – and that it is our responsibility to ensure it is as good as possible. It is my hope, that in our awe of the new and wonderful techniques and medications we won’t forget to be humble before Nature. And at the same time, that we will understand that we can all benefit from the integration of two such different streams as the Western and the classical Chinese cultures. The advice and the techniques I have set forth here are not so expensive as to prevent some people from being able to make use of them. They are also guaranteed to be free of side-effects. So you can confidently begin to put together your own personal health plan.

I hope that through the many scientific studies recounted here I have caused you to think about whether you wouldn’t in many cases be better off to take control of your own health, and to eat an apple, go for a walk or find someone to dance with, instead of taking a pill. It’s your health, your effort – and your gain!
Glossary

ACUPRESSURE: The treatment and prevention of illness by applying finger pressure to certain acupuncture points.

ACUPUNCTURE: From the Latin “acu” (needle) and “punctura” (prick). The treatment of illness by sticking thin needles through the skin in certain places: acupuncture points. Acupuncture and acupressure activate and stimulate the body’s own capacity to heal itself.

ADRENALINE: Hormone released during stress, exertion or fright. Together with cortisol it mediates the body’s “fight-or-flight” response.

ANGINA PECTORIS: Heart cramps. Chest pains which arise because of an insufficient blood supply to the heart. The condition results from atherosclerosis narrowing the arteries which supply the heart.

ANGIOGRAPHY: Arteriography. See CAG.


AUTONOMIC NERVOUS SYSTEM: That part of the nervous system which is seen to be beyond conscious control.

BLINDING: Used in connection with scientific trials to describe the fact that neither doctor nor patient know whether the patient is receiving an active treatment – e.g. a new pill – or an inactive (control) treatment (a placebo).

CABG: Coronary Artery Bypass Grafting. A bypass operation in which new blood vessels are inserted to divert blood around the blocked arteries.

CAG: Coronary arteriography. An examination in which contrast media is injected into the bloodstream at the groin, allowing an x-ray image to be taken of the heart’s epicardial blood supply. The examination can be used to determine which arteries can be operated on.

CAROTENOIDS: From the Latin, “carota” (carrot). A group of yellow or orange substances found, for example, in carrots, corn and spinach, many of which are provitamins from which vitamin A is formed.

CONFIDENCE INTERVAL: Often the 5 to 95% confidence interval is specified when reporting an observed average result. It indicates the likely limits of the range in which we would expect the average (mean) to lie if we looked at the whole population, rather than the smaller segment involved in the study.
DIASTOLIC BLOOD PRESSURE: (Diastole = the rest period between heart contractions). The lowest pressure which the blood applies to the artery wall as it flows freely through the artery. The diastolic blood pressure is decisive in diagnosing hypertension (high blood pressure).

ECHOCARDIOGRAPH: An ultrasound image of the heart’s structure and functioning. ELECTROCARDIOGRAPH (ECG): Measurement of the heart’s electrical activity, for example, to see if it is getting enough oxygen.

EPICARDIAL BLOOD SUPPLY: Refers to the blood supplied to the heart via the three large arteries surrounding the heart. It is in these “supply” arteries that invasive procedures can be performed. There are also small blood vessels within the heart muscle itself which directly supply the individual muscle cells. These are called the capillaries, or the endocardial blood supply. These blood vessels are not accessible to invasive procedures.

EXERCISE ECG: (Electrocardiogram). Measurement of the heart’s electrical activity, for example, to see if it is getting enough oxygen. Takes place while doing physical activity (e.g. riding an exercise bike).

HOMOCYSTEINE: An amino acid containing sulfur. A high level of homocysteine in the blood represents an independent risk factor for atherosclerotic disease.

HYPERTENSION: High blood pressure. A blood pressure higher than 140/90 mm Hg (mercury) is typically viewed as high.

INFARCTION: Tissue death resulting from ischemia (oxygen shortage caused by reduced blood flow).

INTEGRATED REHABILITATION: A treatment method based on a combination of classic Chinese medicine and Western science. The treatment consists of acupuncture and lifestyle changes, using acupressure as a biological feedback mechanism. Can be supplemented with medication.

INVASIVE: Invasive treatment of heart disease refers to operative interventions like balloon angioplasty and bypass operations.

IR: Integrated Rehabilitation.

ISCHEMIC HEART DISEASE: Ischemia means reduced blood flow in tissue or an organ. Ischemic heart disease describes a state where blood flow to the heart is insufficient.

MYOCARDIAL INFARCTION: A heart attack, where parts of the heart musculature die because of a blood shortage.

MYOCARDIAL SCINTIGRAPHY: A scan in which a radioactive substance is injected into the blood stream, allowing an image of the blood circulation in the heart and lungs to be generated.

NYHA: New York Heart Association. A classification system (0 to IV) which classifies heart disease based on how much it limits physical activity. NYHA 0 means no angina pectoris and no physical limitation. NYHA IV means that the heart disease is such that even the most minimal physical activity leads to discomfort.

PARASYMPATHETIC NERVOUS SYSTEM: The part of the autonomic nervous system which mediates the body’s restitution (“rest and digest”) phase.

PERCENTILE: The 5th and 95th percentiles are often specified when reporting a median
or average statistic for a group. They give a good picture of the range of values represented in the group. Only 5% of the group had a score/value less than or equal to the 5th percentile value, and only 5% had a score/value greater than or equal to the 95th percentile value. The other 90% of the group lay between the two. See also “Confidence interval”.

PLACEBO: (Latin, “I shall be pleasing”). The capacity we have to heal ourselves corresponds to the phenomenon in Western medical science called the “placebo effect”. The placebo effect covers any factors which have a positive influence on the healing process but which are not part of a specific surgical or medication-based treatment. The word is used in everyday language to refer to a pill which has no effects.

PLAQUE: A cholesterol rich deposit on the wall of a blood vessel.

PLASMA CONCENTRATION: The amount of a substance – for example, a vitamin – in the blood fluid.

PTCA: Percutaneous Transluminal Coronary Angioplasty. Balloon angioplasty. A catheter or probe carrying an inflatable balloon is inserted into the artery and positioned at the site of the blockage. Then the balloon is inflated with the aim of widening the available opening so that blood can flow through. In some cases a mesh net (a stent) is inserted to keep the artery open.

RANDOMIZATION: Random selection. In a randomized trial, the participants are allocated randomly to, for example, one or more treatment groups and a control group.

REFLEX: An automatic reaction in a muscle or organ, caused by stimulation of the skin or muscle tendon.

SYMPATHETIC NERVOUS SYSTEM: The part of the autonomic nervous system which mediates the body’s “fight-or-flight” response.

SYSTOLIC BLOOD PRESSURE: (Systole = contraction). The maximum pressure which the blood exerts on the artery walls during the heart’s contraction phase, when blood is freely flowing through an artery. Blood pressure is given in mm Hg (mercury).

VITAMINOIDS: Some substances have vitamin-like properties without actually being vitamins. They are called vitaminoids and include flavonoids and carnitine.
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Acupressure diagrams

Figure 1 – CV 17

Figure 2a – Feedback point, Per 1

Figure 2b – Treatment point, Per 6
Figure 3a – Feedback point, St 18

Figure 3b – Treatment point, St 43

Figure 4a – Feedback points, spinous process 3, 4, 5 and 6

Figure 4b – Treatment points (corresponding to spinous process 4)
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Exercise 3
Exercise 4

Exercise 5

Exercise 6
Exercise 7

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Exercise 9

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Conversion tables

Recipes:

<table>
<thead>
<tr>
<th>Metric</th>
<th>Imperial</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 litre (1000 ml)</td>
<td>2.1 US pints (1.8 UK pints)</td>
</tr>
<tr>
<td>230 ml</td>
<td>1 cup</td>
</tr>
<tr>
<td>15 ml</td>
<td>1 tablespoon</td>
</tr>
<tr>
<td>1 kg (1000 grams)</td>
<td>2.2 pounds (65 ounces)</td>
</tr>
</tbody>
</table>

Blood levels - critical values:

<table>
<thead>
<tr>
<th></th>
<th>Europe</th>
<th>conversion factor</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cholesterol</td>
<td>&lt; 7.2 mmol/l</td>
<td>38.67</td>
<td>&lt; 278.42 mg/dl</td>
</tr>
<tr>
<td>HDL cholesterol</td>
<td>&gt; 1.0 mmol/l</td>
<td>38.67</td>
<td>&gt; 38.67 mg/dl</td>
</tr>
<tr>
<td>LDL cholesterol</td>
<td>&lt; 3.5 mmol/l</td>
<td>38.67</td>
<td>&lt; 135.34 mg/dl</td>
</tr>
<tr>
<td>VLDL cholesterol</td>
<td>&lt; 1.1 mmol/l</td>
<td>38.67</td>
<td>&lt; 42.53 mg/dl</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>&lt; 2.0 mmol/l</td>
<td>88.5</td>
<td>&lt; 177.0 mg/dl</td>
</tr>
<tr>
<td>Lipoprotein (a)</td>
<td>&lt; 300 mmol/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homocystein</td>
<td>&lt; 15 µmol/l</td>
<td>72.4</td>
<td>&lt; 1086.0 mg/dl</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.83 – 1.55 µmol/l</td>
<td>0.127</td>
<td>0.10 – 0.19 mg/dl</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.67 – 0.93 µmol/l</td>
<td>0.411</td>
<td>0.27 – 0.38 mg/dl</td>
</tr>
</tbody>
</table>

Different conversion factors are required for the different substances because the European units (mmol/l) are based on the number of molecules present whereas the USA units (mg/dl) are based on the weight in mg. The different types of molecules have different weights.