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Ibolya Stiller

The Healing Light

The use of polarized light therapy in medicine

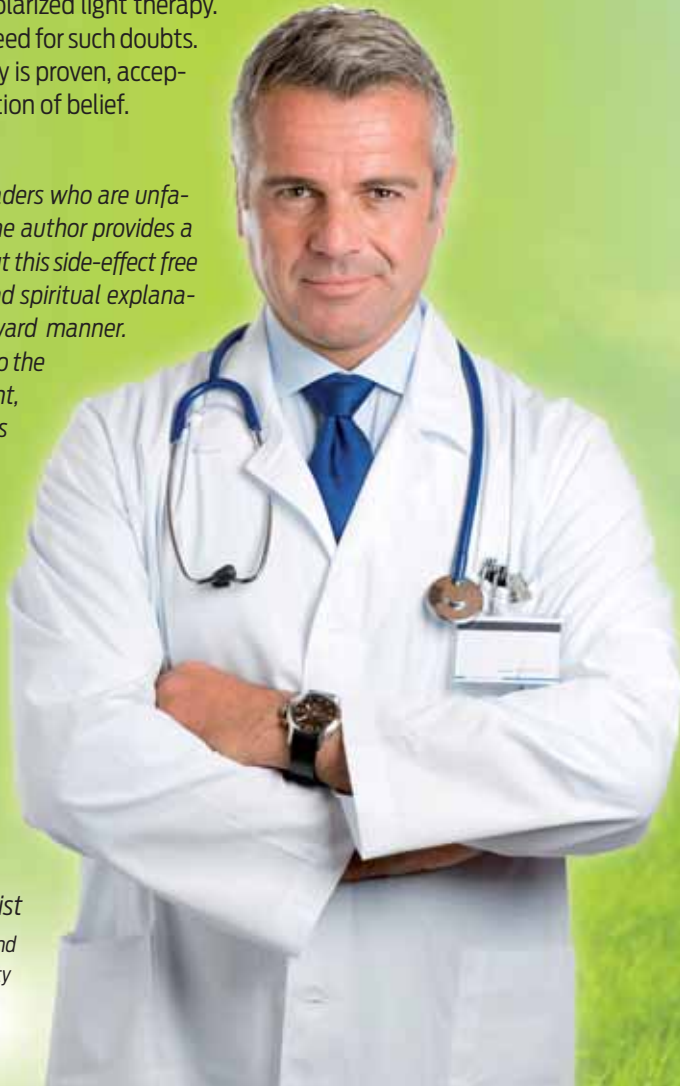
Dear Reader,

You have opened a uniquely valuable book that addresses a particular need. The two worlds that meet on these pages may, at first glance, seem to be opposites: Western and alternative medicine, rigorously science-based research and an ancient, traditional world view. Polarized light therapy is a form of medicine that uses an alternative approach while also meeting the demands of science. People frequently wonder whether it is reasonable to believe in alternative therapies such as polarized light therapy. In the present case there is no need for such doubts. Since the efficacy of this therapy is proven, accepting the facts cannot be a question of belief.

"I recommend this book to all readers who are unfamiliar with light/color therapy. The author provides a treasure trove of information about this side-effect free alternative therapy. Biological and spiritual explanations are given in a straightforward manner. The author introduces the reader to the world of physical and biological light, and reveals its medicinal properties as well as therapeutic options that combine light therapy with Eastern medicine. The book includes a description of the significance of colors and a guide to the treatment of a variety of diseases. Meanwhile, it may prompt readers to consider what their color preferences may tell them about weak points in their own physical health..."

Klára Pentelényi,
Molecular Biologist

Institute of Genomic Medicine and
Rare Disorders, Semmelweis University



Ibolya Stiller • The Healing Light

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The use
of polarized
light therapy
in medicine



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**THE
HEALING LIGHT**

THE USE OF POLARIZED LIGHT THERAPY
IN MEDICINE

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THE HEALING LIGHT

THE USE OF POLARIZED LIGHT THERAPY
IN MEDICINE

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2013

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Content

FOREWORD	11
ORIENTAL VERSUS WESTERN MEDICINE	13
LIGHT	19
LIGHT THERAPY AND TANNING SALONS	22
THE RENAISSANCE OF LIGHT THERAPY, SUNBATHING ON SAND AND IN SANITARIUMS	23
THE FIRST NOBEL PRIZE RELATED TO LIGHT THERAPY	25
THE MANY COLORS OF SUNLIGHT – OPTICS IN BRIEF	25
SUNLIGHT AND SOLAR RADIATION	26
ARTIFICIAL LIGHT SOURCES	30
HUNGARIAN SCIENTISTS AND THE FIRST POLARIZED LIGHT THERAPY LAMP	31
POLARIZED LIGHT	33
WHAT IS POLARIZED LIGHT?	33
INTERESTING FACTS FROM THE ANIMAL KINGDOM	34
CHARACTERISTICS OF POLARIZED LIGHT THERAPY DEVICES	37
THE HEALING POWER OF COLOR THERAPY	39
ABOUT CHAKRAS	40
THE HISTORY OF COLOR THERAPY	42
THE SIGNIFICANCE AND EFFECTS OF COLORS	43
Red	43
Orange	44
Yellow	45
Green	46
Blue	47
Violet	48

APPLICATIONS OF POLARIZED LIGHT THERAPY	51
GENERAL EFFECTS OF POLARIZED LIGHT THERAPY, BIOSTIMULATION	52
TREATMENT OF WOUNDS, ULCERS, AND SKIN PROBLEMS	57
THE EFFECTS OF POLARIZED LIGHT ON THE TREATMENT OF SURGICAL SCARS AND IN PLASTIC SURGERY	59
POLARIZED LIGHT IN THE BEAUTY SALON	60
BURNS AND THEIR TREATMENT WITH POLARIZED LIGHT	61
PAIN CONTROL WITH POLARIZED LIGHT	65
TREATING SPORTS INJURIES AND OTHER KINDS OF MUSCULOSKELETAL PAIN WITH POLARIZED LIGHT.....	68
EFFECTS ON THE IMMUNE SYSTEM	71
ORGANIZATION AND FUNCTION OF THE IMMUNE SYSTEM	71
REDUCTION OF INFLAMMATION WITH POLARIZED LIGHT	77
USING POLARIZED LIGHT IN PSYCHIATRY	79
POLARIZED LIGHT THERAPY IN VETERINARY MEDICINE	81
EXPERT OPINIONS	83
AREAS OF APPLICATION OF POLARIZED LIGHT THERAPY	85
NEONATAL DISEASES.....	86
Allergy	86
Hives (urticaria)	88
Teething.....	88
Ear pain	88
Middle ear infection	88
Otitis externa.....	89
Abdominal pain	89
Bronchitis	90
CHILDHOOD DISEASES	90
Allergic asthma	90
Sinusitis	91

Bronchitis	91
Ear pain	93
Middle ear infections	93
Otitis externa	93
Cystitis	93
Frontal sinusitis	94
Colds	94
Coughing	94
Conjunctivitis	95
Common cold	95
Sore throat, pharyngitis, tonsillitis	95
Pneumonia	96
Nephritis, pyelonephritis	96
PROBLEMS IN ADOLESCENCE	97
Acne and blackheads	97
DISEASES OF ADULTS AND THE ELDERLY	98
Skin diseases and cosmetic problems	98
Pimples, acne and acne scars	99
Abscesses	99
Allergy	99
<i>Eczema</i>	100
<i>Insect bites</i>	101
<i>Hives (urticaria)</i>	101
Warts	102
Gum diseases	102
<i>Gingivitis</i>	102
<i>Periodontitis</i>	102
Psoriasis	103
Hair problems	105
Cellulite	105
Pockmarks	106
Scars	107
Wrinkles	107
Fungal infections of the nails and skin	107

Wound healing, injuries	108
Leg ulcers.....	108
Pressure sores	108
First and second degree burns, scars	109
Sunburns	109
Bruises	109
Fractures	110
Circulatory problems	110
High blood pressure	110
Arrhythmia	110
Angina pectoris	111
Heart attack	111
Narrowing of blood vessels	111
<i>Carotid stenosis</i>	111
<i>Stroke, cerebrovascular trauma</i>	112
<i>Narrowing of lower extremity blood vessels</i>	112
Hemorrhoids.....	112
Problems of the digestive tract	113
Gastritis, inflammation of the stomach.....	113
Gastric ulcers	113
Hepatitis, cholecystitis, pancreatitis.....	115
Crohn's disease.....	115
Ulcerative colitis	115
Respiratory problems	116
Sinusitis	116
Colds	116
Pharyngitis, tonsillitis.....	117
Bronchitis.....	117
Pleurisy.....	117
Pneumonia	118
Asthma	118
Diseases of the excretory and genital organs	119
Pyelitis.....	119
Cystitis	119
Prostatic hyperplasia	119

Impotence, frigidity.....	120
Menopause	121
Musculoskeletal diseases	122
Joint diseases	122
Back pain, herniated/slipped disc	123
Gout	124
Rheumatoid arthritis.....	124
Osteoporosis	125
Neurological diseases	128
Depression	128
Multiple sclerosis.....	129
Abscesses	129
Facial paralysis, facial nerve paralysis	129
Trigeminal neuralgia	130
Parkinson's disease	130
Problems after childbirth	130
Episiotomy	130
Mastitis, inflamed nipples	131
Sports injuries	131
Muscle cramps	131
Bruises and sprains	132
Ligament strains	132
Other aches and pains	132
Headache.....	132
Migraine	132
Toothache	133
Thyroid diseases	133
Hyperthyroidism	133
Hypothyroidism	134
Diabetes	135
Sleep disorders	136
Detoxification	137
AFTERWORD	139
REFERENCES	141





Foreword

For a biologist it is only natural to approach problems and new ideas with skepticism, and from a primarily scientific standpoint. However, there comes a time for many of us when science and rationality fail to provide the answers, or the right answers, to a given problem. These kinds of situations caused me, like others, to turn my attention first to Eastern philosophy, and then Oriental medicine. Someone in his or her twenties is not likely yet to be thinking about illness, and hopefully does not have anything serious to think about. As time goes by, this situation will change, even if it is hard to fathom. When we bring children into this world, we also bear responsibility for their health, and have to guard our own much more closely. Ultimately this same life change led me to the different fields of alternative medicine. This is not to say that I have lost my skepticism; however, after doing in-depth reading about a given subject and hearing other people's experiences, I am now able to accept even the *"unexplainable"*. I have also come to realize that we need ways to treat minor health problems, or even just relieve the heavy fatigue felt at certain periods in our lives. We need techniques or tools that can recharge us and *"restore balance"* both mentally and, consequently, physically. This is also how I discovered the method of light the-

rapy. I first heard about it from a friend of mine who had successfully used it to treat her own dermatological problems, then her grandmother's ulcers. We started to use light therapy to treat our children's colds during the winter months, and it turned out that another friend of ours had been taking her daughter to complementary light therapy for a similar problem. This method worked for us, the rest of the family has also been using the device, and we even get occasional visits from our neighbors. One must not assume that a given method will be a universal panacea (and light therapy certainly is not) – but one should also not refuse to consider it. Do your own research. This book has been designed to assist you in this endeavor by providing you with the appropriate information and background references in an easy to understand text.

Oriental versus Western medicine

In Europe (including Hungary) the past 200 years have seen the development of the most widely used orthodox, conventional, or in other words, Western medicine. Unsurprisingly, its alternative name is technomedicine, since its methods are increasingly based on scientific evidence (or facts). It is characterized by an extremely high technical level, and the associated high (and steadily rising) costs.

Its critics maintain that Western medicine is not sufficiently humane, and that, as a direct consequence of its evidence-based nature, it has blank spots or deficiencies.

On the other hand, traditional, or to use the medical term, complementary (alternative) medicine has been steadily spreading from the Eastern into the Western cultural domain. According to WHO data, traditional medicine is considered to be the primary health care modality by approximately 80% of the Earth's population. Its methods and procedures originate in ancient Oriental culture. It is called complementary because it complements Western medicine.

Depending on its cultural origins Oriental medicine has multiple branches. In general and as opposed to Western medicine, it is characterized by a holistic approach, meaning it considers (treats) the whole person, instead of focusing on a particular disease. Its primary concern is the maintenance of health and the prevention of disease. Oriental medicine probes for and, as a first step, tries to remedy the life style and cognitive problems that lie behind a disease. It relies rather more on methods for the self-healing of a patient. Therefore the Oriental

physician or healer must really emphasize communication during the diagnostic process, and must not restrict the examination to the organs associated with the presenting complaint.

For example, Chinese medicine is built primarily on empirical observation, and consists of four basic elements. The first task of the healer is to observe the patient, his face, the body as a whole, his skin color, hair, and eyes, his gait, etc. Unlike Western medicine, Chinese medicine relies greatly on tongue diagnosis.



If the tongue is partially or entirely purple or white, coated, moist, or dry, it may indicate an illness or a lack of energy. The senses serve as a basis for the rest of the diagnostic process as well: the healer listens to the patient's breathing and speech, observes the smell of his breath and skin.

Posing questions to the patient, taking his medical history is as important as in Western medicine: the healer asks the origin, course, events preceding, family history and circumstances of the problem or symptoms. However, Chinese

healers ask questions rarely heard in the offices of European doctors, such as: does the patient feel cold in his hands or feet, whether he feels like eating/drinking cold or hot food/drinks – all these signs can reveal information about the patient's homeostasis or a temporary imbalance of yin-yang balance. The physician must be friendly, kind, reassuring, very patient and attentive in order to uncover the state of mind of the patient and the psychological background of his illness. The next element of diagnosis is based on the sense of touch. The physician searches for painful points or nodes on the entire body of the patient. There is a difference between pain that subsides and pain that intensifies upon pressure, and may indicate a syndrome of excess or deficiency along the given meridian. Pulse diagnosis is another Chinese "specialty". Traditional Chinese diagnosis differentiates between hundreds of states or



qualities of the pulse, out of which twenty-eight are used in practice to uncover information about the internal organs. These traditional diagnostic procedures are supplemented by examinations using modern Western diagnostic methods.

Ayurveda goes back over 5,000 years and is part of the traditional medical system of India, built by seers and holy men, and developed over the millennia with the help of natural scientists through observation, experiment and meditation. Being an Oriental medical approach, Ayurveda also places primary emphasis on disease prevention, rejuvenation and extension of the lifetime of the body. Its followers hold that regularly performed Ayurvedic exercises provide not only disease prevention, but promote understanding of the self and the surrounding world, and that their practice brings harmony and balance to the practitioner's environment.

As mentioned in relation to Chinese medicine, Ayurveda also associates disease, or rather the prevention of disease with lifestyle characteristics and the development of natural therapies. Its philosophy is based on the idea that mind (consciousness) and body (physical mass) not only influence each other but constitute an organic unit.

According to the teaching of Ayurveda, the human body contains three biological forces called doshas. These are the vata (wind), pitta (fire) and kapha (lymph) doshas. These forces control all functions of the body, and every individual is characterized by a unique ratio of doshas. This ratio determines body type. All therapies of Ayurveda must be tailored to the individual, and performed according to the unique body type. Our inborn ratio can be skewed as a result of environmental effects, diet, infections and so on, and an imbalance results in disease. According to the teaching of Ayurveda, another major cause of illness are toxins originating from imperfectly digested food particles. These particles are called *amas* according to Ayurveda, and are known to Western science as harmful free radicals.

Imbalance is indicated for example by abnormalities of the body's three excretions. Therefore, the examination of stool, urine and perspiration is an important diagnostic tool. The quality of the coating of the tongue is also indicative of the imbalance of the three doshas. Further diagnoses are gained from the examination of the pulse, the face, the eyes, the lips and the nails.

The primary goal of ayurvedic therapy is the elimination of toxins, followed by restoring the equilibrium of the doshas, and treatment of the disease with therapeutic substances. These steps are usually followed by rasayanas, a rejuvenating regimen. An individually tailored correct diet and lifestyle, and regular exercise and yoga practice are part of both regenerative and preventive therapies. The medications used in this system can be divided into three classes based on their origin: plant (plants, fruits, and flowers), animal (honey, wax, and oils) and mineral substances (metals, limestone, and precious stones).

It must be emphasized that both Western and traditional Oriental medicines are necessary. Luckily, an amalgamation of these approaches is increasingly widespread among Western physicians and the curricula of medical schools alike.

This book is an introduction to polarized light therapy, an alternative method used primarily as a complementary treatment. Its aim is to present the biological and physical bases of light therapy, and to make the scientific data related to this increasingly used tool both accessible and easier to understand.



"There is nothing new under the sun"



Light

Perhaps the most significant difference between our home the Earth, the third planet in the Solar system, and the other planets is that it supports life. The exact requirements of life have not yet been elucidated. However, it is quite likely that we are rather lucky, since our neighbors Venus and Mars do not appear to support life even though the radiation reaching these planets is more or less the same as that bathing Earth. This is true now and was equally true many hundreds of millions of years ago when the conditions for life began to emerge.

Therefore, life is something unique whether it originated here or was seeded from somewhere else. Enormous amounts of energy were needed to generate and sustain life and its characteristic order. The light of the Sun accounted for a significant part of this energy. The visible spectrum constituting a part of sunlight is electromagnetic radiation with a wavelength of approximately 400–700 nanometers (nm), and visible light forms the most intensive part of sunlight, accounting for over half of its total intensity. Therefore, it is not surprising that the basis of life on Earth is visible light.

It is worth considering that the intensity of the sunlight that reaches Earth is very high: 1.4 kW per square meter.

The entire Earth receives 1.6×10^{18} kilowatt hours per year. This is a huge amount, about twenty thousand times larger than the total energy usage of human beings. Our energy supply is therefore very generous. This radiated energy also created the right conditions for the development of life.

The current estimate of the age of the known universe is around 12–14 billion years. Our Sun, one of many billions of stars in the Milky Way is at most 5 billion years old. According to our current knowledge, the age of the Earth is 4.5–4.6 billion years. This number is based on several independent, so-called radiometric measurements.

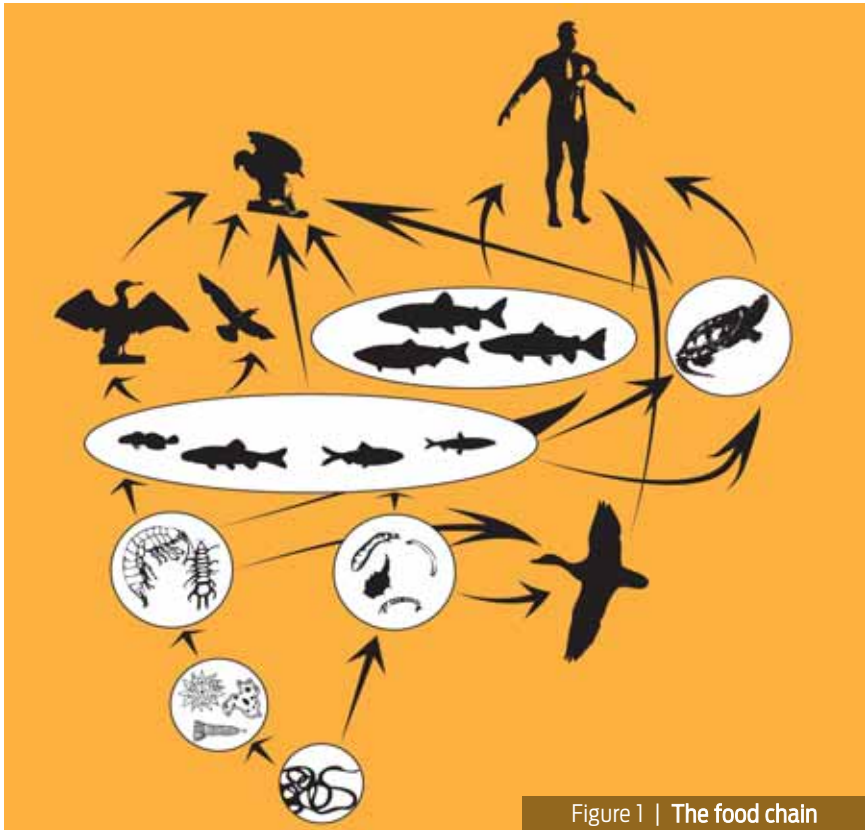


Figure 1 | The food chain

The most wonderful phenomenon of our planet, life, began in the surf surrounding the shorelines of ancient continents. Chemical processes in the waters of the ancient ocean became increasingly complex, leading to the development of primitive unicellular organisms. All of this happened in the absence of oxygen. According to currently accepted hypotheses, life on Earth emerged around 3.5 billion years ago.

It was preceded by a lengthy chemical evolution that saw the development of all the macromolecules necessary for life, such as proteins and nucleic acids. There is experimental proof for these findings. We still do not know how these molecules organized themselves into living material. Bacteria began to use the energy of sunlight for photosynthesis 3 billion years ago. The oxygen content of the atmosphere began to rise. Traces of the oldest blue-green algae (cyanobacteria) were identified in 3.1 billion year old African shale. Ancient bacteria have been found in ever older rocks: 3.3 billion year old bacteria were recovered from Greenstone belts in Africa. These are the oldest fossils on Earth. Cyanobacteria and bacteria are unicellular organisms that do not have a nucleus (prokaryotes). At the end of a very long process today's characteristic atmosphere developed about 2 billion years ago, establishing the conditions for the evolution of animals.

All living organisms directly or indirectly use the energy of sunlight. During photosynthesis plants use sunlight to produce oxygen and organic materials (proteins, carbohydrates and lipids). These are essential substances for animals, because they need to consume plants or other animals to ingest the basic building blocks of organic materials necessary for their own bodies. Thus, a system based on a unified energy cycle has developed over the course of evolution (Figure 1). Looking toward the future, it is imperative to keep this cycle intact, because its breakdown may lead to complete collapse. This is something we humans must guard with the greatest care.

The role of sunlight in the food chain and evolution is obvious. However, sunlight also has healing powers, as our ancestors discovered very early on. Throughout history, countless techniques have harnessed the healing power of light and colors in the service of medical therapy.

LIGHT THERAPY AND TANNING SALONS

The first source of light therapy was natural sunlight, used in ancient Egypt and Greece as part of medical treatments. This is the origin of the classical (now much less common) name of light therapy, heliotherapy. Colored prisms were inserted into the walls of the healing temples of Heliopolis, and patients were treated with the light refracted by the crystals.

Although at the time there was no scientific explanation for heliotherapy, its obvious healing power led Roman and Arabic physicians to introduce it into general medical practice. **Hippocrates**, known as the father of medical science, wrote an independent treatise on the medical aspects of environmental effects. In this book, written in the 5th century BC, he described the positive effects of sunlight on bone strength and wound healing. Similarly, the 1st century Roman medical writer, **Celsus**, recommended sunbathing for a number of diseases.

Heliotherapy or sun therapy was widely used in the Roman Empire. In large Roman houses a separate room, called solarium was reserved for light therapy.

Interestingly, an edict issued in 1377 in the city of Ragusa (in Southern Sicily) prescribed 40 day-long sun and wind therapy for ships and sailors reaching its harbor. Later this method of disinfection came to be known as quarantine, a word of Italian origin.

THE RENAISSANCE OF LIGHT THERAPY, SUNBATHING ON SAND AND IN SANITARIUMS

During the age of early Christianity these therapies were considered godless, heathen charlatanry, and their use was banned until they became forgotten. It took several centuries and Arabic medical science to get them accepted once again in Europe.

Heliotherapy was reborn during the century of light, at the end of the 18th century, when – perhaps due to the influence of Rousseau – “*naturalism*” became fashionable. A treatise by the French physician, **Faure**, dating to 1774 described the heat treatment of ulcers and wounds. Later sunlight was used to try to cure TB, nervous ailments, wounds, cancerous tumors, colds, and rickets.

Around the middle of the 19th century, **Jakob Lorber’s** 1851 book entitled “*The Healing Power of Sunlight*” revived the method of using sunlight as a therapy. The book described numerous sunlight treatments, and awoke a lively interest to heliotherapy.

Ingenious physicians used many methods to utilize the energy of the sun. One German physician made his patients bathe in water warmed by sunlight while wearing colorful or black clothing. Others took patients to the seashore and covered them in sand up to the neck until the patients declared themselves cured.

The first Hungarian medical dissertation on heliotherapy was published by a medical student named András Fuker in Budapest in 1837. Sanitariums, where sea wind, saltwater, exercise, and sun were combined to treat guests, were built in increasing numbers on French, German, Belgian and British seashores. One of the first of this type of sanitarium was founded in 1855 by Arnold Rikli, a Swiss naturopath, in an area that today forms part of Slovenia. It was built with

deep and wide open rooms facing toward the South. In these secluded spaces the undressed patients would lie on mattresses, with black shades or glasses protecting their head and eyes from direct sunlight.



THE FIRST NOBEL PRIZE RELATED TO LIGHT THERAPY

The next and also one of the most important steps in the history of heliotherapy was the achievement of a Danish physician. **Niels Ryberg Finsen** (1860–1904) was the first to apply heliotherapy in a scientific manner, using artificial light to treat TB. According to his observations, this illness significantly worsens during the winter, and he surmised that sunlight plays an important role in its cure. As a result of his years of work and the miraculous recoveries of numerous patients, Dr. Finsen received the Nobel prize in 1903, and became widely known as “*the father of photobiology*”.

THE MANY COLORS OF SUNLIGHT – OPTICS IN BRIEF

Sunlight – part of the radiation emitted by the Sun – is electromagnetic radiation that can be sensed by the human eye. In a broader sense, what we call light also includes infrared and ultraviolet waves; however, we always add the modifiers ultra or infra. Light can be characterized by:

- its intensity (amplitude), which (to all intents and purposes) means its brightness;
- its frequency (or even its wavelength), which is seen as a characteristic color; and
- its polarization, which is invisible to the human eye.

A part of the electromagnetic waves covering the invisible spectrum is absorbed by the atmosphere, and never reaches the surface of the Earth. Those reaching the Earth are reflected by various objects in a manner that is characteristic of the given object, and this reflected light forms the images we see.

RANGES OF VISIBLE LIGHT

400–420 nm ■ Violet

420–490 nm ■ Blue

490–540 nm ■ Green

540–600 nm ■ Yellow

600–760 nm ■ Red

There are no sharp borders between these categories, but rather a continuous transition.

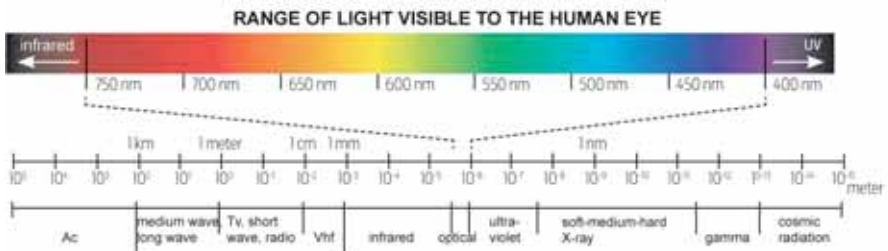


Figure 2 | The electromagnetic spectrum

SUNLIGHT AND SOLAR RADIATION

Sunlight is the visible portion of solar radiation; the invisible portion can be sensed and measured by instruments. After long periods, certain harmful effects of solar radiation can be sensed by people, too.

In general, the constituent molecules of cells can absorb energy in response to (visible and invisible) light, and then become excited or ionized (ionizing radiation). These effects are not always beneficial, and can result in DNA damage. Radiation of different wavelengths penetrates to different depths in tissues.



The two most important tissues or organs penetrated by radiation, and thus sustaining primary damage, are the skin and the eyes. The outer tissue layers of the eye absorb most of the infrared and far-UV radiation. The absorbed radiation can cause inflammation of the cornea, and infrared radiation can cause



burns. Such burns – as primary dermal symptoms – were also observed after atomic bomb attacks. Deep penetrating UV-A and UV-B rays can cause conjunctivitis.

The second largest surface penetrated by sunlight is the skin. Part of the UV-A and UV-B radiation is absorbed by the outermost layer of the skin. This keratinized layer consists of dead cells, and it has evolved to provide protection to the underlying live tissue layers. The UV-B radiation that penetrates into deeper layers is capable of causing molecular damage. Also capable of causing molecular damage is the UV-A radiation that penetrates even deeper.

In response to UV radiation, epidermal melanocytes begin pigment production, which is another protective system against harmful rays. This is tanned skin. Cells in damaged tissues may release toxic substances resulting in skin redness, in other words: sunburn. Sunburn contributes to premature aging and wrinkling of the skin. Unfortunately, severe sunburn may lead to the development of skin cancer.

X-rays are another form of ionizing radiation with wavelengths between 10 nanometers and 100 picometers. They are mostly used in medicine, most of us encounter them during diagnostic examinations after an accident or as part of a check-up. With modern X-ray devices and correctly designed examinations the body is exposed to insignificant levels of X-ray radiation. The genitals are protected with a lead shield.

X-ray radiation was discovered by Röntgen at the end of the 1800s. He found that X-rays penetrated wood, paper, cloth and most metals, with the exception of lead. The first Nobel prize in physics was awarded to Röntgen for his discovery.

ARTIFICIAL LIGHT SOURCES

Artificial light sources are part of everyday life. They include the headlights of cars, high power illumination sources providing street lighting, and the fluorescent tubes of neon signs, filled with different gases and thus generating different colors. Our homes contain many artificial light sources too: incandescent bulbs, LED lights, and compact fluorescent lights. Household fluorescent lights (erroneously called neon lights) are filled with mercury vapor, and emit UV light, though this is absorbed by the glass tube of the fluorescent light. Tanning beds, devices suitable for providing supplementary artificial light, emit primarily UV-A and a limited quantity of UV-B light, and thus promote fast tanning.

With regard to invisible “*harmful*” radiations, such as UV radiation, it must be said that at low doses UV is not harmful, but truly beneficial, because it contributes to the body’s production of vitamin D, a substance essential for the prevention of many diseases. Therefore, **the goal is not to eliminate sunlight and its beneficial effects from our lives, but to use it in moderation.**

In addition to general light sources, there are more and more devices being designed to utilize and apply the healing power of sunlight. These include polarized light lamps, lasers, and the lamps used in UV light therapy. The manufacturers’ goal is to facilitate the specific medical application of the biostimulating effect of sunlight while eliminating its harmful components. **Please, always read and adhere to the manufacturers’ recommended treatment guidelines.**

HUNGARIAN SCIENTISTS AND THE FIRST POLARIZED LIGHT THERAPY LAMP

Hungarian scientist were the first to discover that polarized light can restore human cell function, and facilitate or significantly accelerate healing from many illnesses.

Light therapy was pioneered in Hungary by **Dr. Endre Mester**.

Dr. Mester was a Professor at Semmelweis University (SOTE) in Budapest, Hungary, and he was the first to use soft laser light to alleviate the pain of burns and to accelerate wound healing. Soft laser light has been proven to shorten healing time and decrease scarring.

Polarized light therapy itself was devised in Budapest by **Dr. Márta Fenyő**, a biophysicist, laser specialist and inventor. From 1978 to 1981, Dr. Márta Fenyő worked in the Department of Biophysics and Radiobiology of the university and participated in radiobiological research. In the course



Dr. Márta Fenyő

of a collaborative project, Dr. Fenyő became interested in laser therapy. Following the discovery of the Department Head, Professor Mester, the 2nd Department of Surgery of SOTE was using low intensity laser radiation (the professional term is soft laser) to accelerate wound healing. Dr. Fenyő sought to identify the characteristic of laser light responsible for accelerated wound healing, and concluded that it was polarization. Subsequently Dr. Fenyő used a variety of laser sources to test her hypothesis. She concluded that polarized, full spectrum light provides the most beneficial effect.

Based on these results, in the 1980s Dr. Márta Fenyő developed the first therapeutic lamp that used polarized light. Her invention, named Evolite, a high intensity light source equipped with a polarizing filter, was granted a patent in 1987. By then, Dr. Fenyő no longer worked at the university, and was involved in the promotion of her invention.

“I believed that I had a wonderful device. I witnessed the cure of people who had given up all hope of ever being healthy again. This, and a fanatical faith, gave me the strength to fight through those incredibly hard years until the invention has been turned into a healing device.” – says Márta.

In spite of her efforts she could not find a manufacturer for her lamp in Hungary, and the license was purchased by Swiss investors.

Polarized light

WHAT IS POLARIZED LIGHT?

Natural light waves that do not originate from a point light source vibrate in all directions. In polarized light the vibration of the light wave is unidirectional.

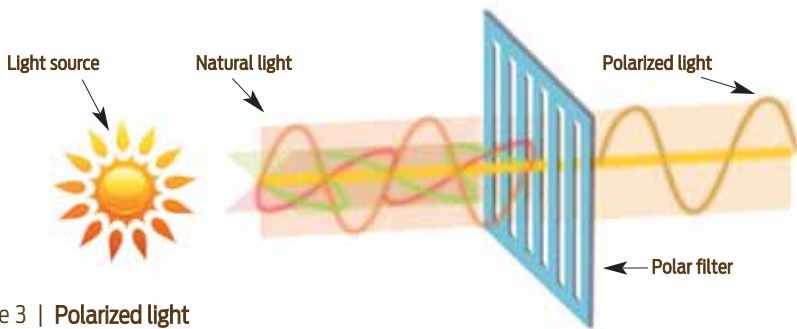


Figure 3 | Polarized light

Polarized light can be generated in several ways, for example by using a calcite crystal polished at a proper angle, which is first cut into half, then glued at the cut surface with Canada balsam (Nicol prism). Natural light passing through the prism goes through double refraction at the refractory interface. The ordinary light ray is entirely reflected from the Canada balsam, and then diverted sideways, while the already polarized ray exits the crystal.

In everyday life polar filters are used in Polaroid sunglasses and the objectives of cameras in order to increase contrast and filter out interference by light reflected from water or glass surfaces. These are manufactured by applying a thin layer containing double refractive crystals over a glass plate or celluloid

sheet. These crystals largely absorb one of the double refracted light rays, while the other light ray, polarized in a defined plain, passes through. The human eye is unable to judge whether a light is polarized, and a second polarizer is needed. If the two devices are arranged in a parallel fashion, light can pass through them; however, if they are perpendicular, then light cannot pass through the second polarizer.

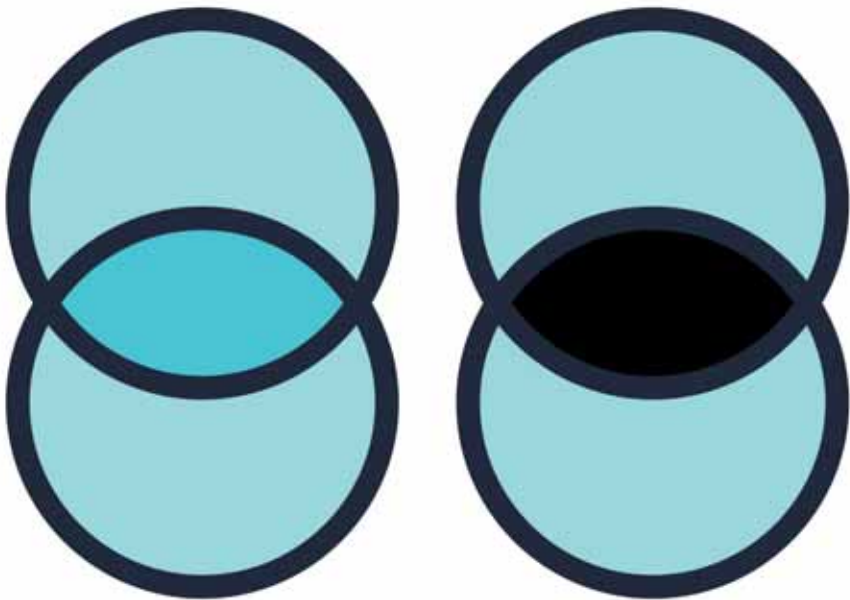


Figure 4 | Polar filters in parallel and perpendicular position

INTERESTING FACTS FROM THE ANIMAL KINGDOM

In the natural world, insects can use their compound eyes to sense polarized light and use it for orientation. Sunlight is partially polarized due to scattering, and the plane of polarization depends on the position of the Sun. When honey-



When bees do their waggle dance they are actually using the direction of the Sun and the plane of polarization to define the position of nectar-rich flowers. The structure of the figure-eight pattern indicates to the other workers the distance and

position of food. When searching for water, insects look for large horizontal surfaces reflecting horizontally polarized light. This is why mineral oil derivatives (such as mazut, a heavy fuel oil) stored outdoors or released as a contaminant into the water can mean a fatal trap for insects. Butterflies, dragonflies and beetles looking to slake their thirst or performing their mating dance mistake the oily surface for water, and become trapped after landing on the sticky surface.

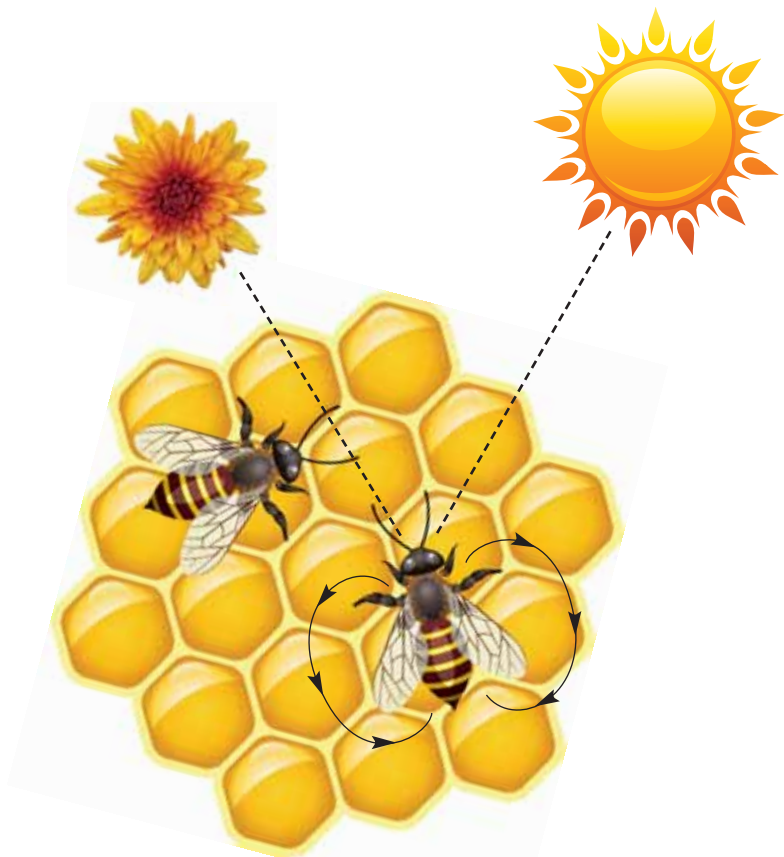
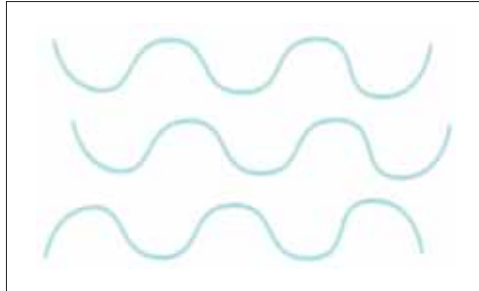


Figure 5 | The waggle dance of bees

CHARACTERISTICS OF POLARIZED LIGHT THERAPY DEVICES

- **Polarized:** Light waves moving in parallel plains. The polarization rate of the first commercially available lamps was higher than 95%, while that of the most up-to-date models exceeds 99%.
- **Polychromatic:** As opposed to laser light composed of light rays of uniform wavelength, polarized light covers a wide spectrum between 480 nm and 3,400 nm, including visible light and the lower wavelengths of the infrared range. However, polarized light does not contain UV rays.
- **Incoherent:** Another name is out-of-phase. This refers to synchronicity between wavelengths of light, and it means that the wavelengths are not synchronized.
- **Low-energy:** Polarized light is a low-energy light that treats the skin surface at a constant intensity.



Manufacturers provide lens accessories of various colors with commercially available polarized light lamps. These can be used to complement light therapy, and thus treatment can be specifically tailored to illnesses or disorders. The effects of color therapy are described in the next chapter.



The healing power of color therapy

Many of us have had the experience of choosing different colored clothes to wear when in different moods, or having a change in mood when entering a blue or orange colored room. None of us are indifferent to color, we all have our preferences. However, colors and colored light can do a lot more: they affect our state of mind and the physiological processes of our bodies, and thus our state of health.

As mentioned above, the light filtering through our windows contains all the colors of the spectrum, and a prism can separate them. This is beautifully illustrated by the phenomenon of the rainbow. All the colors possess unique frequencies and electromagnetic energies, and therefore different colors have different physiological effects. Therefore, the basis of color therapy includes – in addition to the reaction of the body to colors and their psychological effects – the physiological responses to the frequency and energy of colored light.

Colors of the spectrum	Wavelength	Frequency	Energy
red	800–650 nm	462–400 THz	1,91–1,65 eV
orange	640–590 nm	513–462 THz	2,12–1,91 eV
yellow	580–550 nm	522–513 THz	2,16–2,12 eV
green	530–490 nm	612–522 THz	2,53–2,16 eV
blue	480–440 nm	714–612 THz	2,95–2,53 eV
violet	430–390 nm	789–714 THz	3,26–2,95 eV

Naturally, the effects mentioned above are not solely due to color light therapy, and objects or even foods can also be and indeed are part of color therapy.

ABOUT CHAKRAS

As described in the 1st chapter of this book, even ancient disciplines saw humans in terms of a physical body complemented by a complex energy system without which the physical body cannot exist. Within this system four energetic bodies (etherial, astral, mental and spiritual) can be distinguished, and they are connected through the so-called chakras. The word chakra comes from the Sanskrit, and it means round or wheel. It is depicted as a lotus flower. Chakras gain vital energy from the environment and the universe directly, and also indirectly through energy channels that cover the whole body.

They transform these energies into the exact vibrations required for the existence and perfect function of the physical and energetic bodies. Well-functioning chakras free of blockages are necessary for our internal unity, health, love, and creativity.

The chakras themselves do not contain any energy, but transform raw Kundalini energy into a different, finer form according to the emotional state of the body, which determines the uptake and release of necessary energy.

Hindu tradition distinguishes seven chakras situated along the center line of the body. Each chakra resonates at a different frequency, according to the colors of the rainbow.

The chakra system has become a valuable and rich concept of the holistic nature of the human race. It gives us the tools to understand that our emotional, intellectual and spiritual needs are just as important as the potential functional

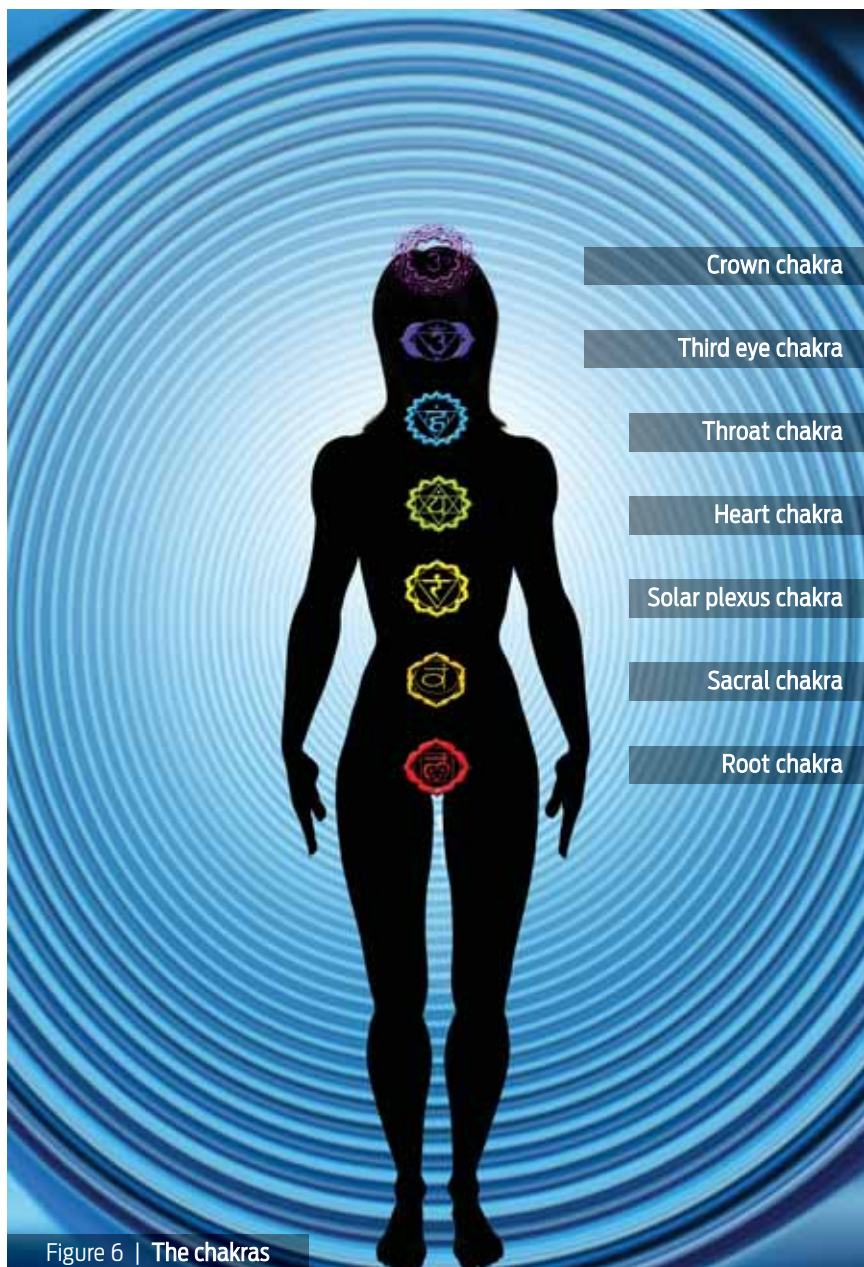


Figure 6 | The chakras

disorders of our body. Each chakra governs a different part of the body, and they indicate which area of the body has become unbalanced.

Chakras work rather like an irrigation system: once the tap is opened, the water flows through the entire system; however, if there is a break or a blockage or there is too much flow, it will perturb the function of the entire system.

Chakras connect to the spine and the nervous system through various glands and ganglia. Oriental medicine has been using the detailed map of the chakra system and its network for thousands of years.

Chakras are assigned different colors. The more petals the lotus flowers symbolizing each chakra have, the larger the number of their associated energy channels, and the finer their vibrations and function. If their function is perturbed, we feel tired, fatigued, unbalanced, and tense. There are numerous practices (such as physical exercise, meditation, crystals, color therapy and so on) that harmonize chakras using the symbol, color and mantra associated with the given chakra.

THE HISTORY OF COLOR THERAPY

The physiological effects of different colors were already known and utilized by the Egyptians. Archaeologists excavated chambers where diagnosis and the identification of the proper color for healing were performed by leading the patients through dispersed colors of light.

Afterward, the patient was treated in a room illuminated by light produced by an appropriately colored window.

As described earlier, the ancient Indians and Chinese also used colors for therapy. Different colors were assigned to precious stones or even plants, for example, the color yellow was assigned to coral.

The earliest record of the therapeutic application of colors dates to the middle of the 1800s, and describes a complementary therapy used by English physicians.

In recent years color therapy and color therapy combined with light therapy have been increasingly used in the saunas of hotels and wellness centers, and even retirement homes. Moreover, as mentioned above, even the polarized light therapy devices currently on the market can be supplemented with color therapy in order to achieve better or more specific results.

THE SIGNIFICANCE AND EFFECTS OF COLORS



RED

Warm, the first color of the visible spectrum. The color red is close on the spectrum to the infrared waves, that is, heat waves, and therefore they have similar effect. Considered a stimulating color, red is the color of the root chakra, found at the level of the tail-bone, between the anus and the genitalia. It governs the adrenal glands, the spine, the bones, nails, and all body parts that are solid. It affects the hormonal function of the adrenal glands directly, and its assigned hormones are adrenaline and noradrenaline.

The color red increases circulation, has stimulating and invigorating effects, accelerates wound healing (however, for suppurating and inflamed wounds the color blue should be used), is beneficial in anemia, and increases adrenaline production. Due to its stimulating effects, it is very effective for underactive conditions such as poor bowel function, weak muscles, erectile dysfunction, or poor peripheral circulation, and it increases the production of red blood cells. How-

ever, it is not recommended for patients with hypertension, heart disease, or epilepsy. It is also contraindicated following surgery due to its anticoagulant effect. It might signify life and death alike. At the same time, it is a symbol of sexuality, the color of libido. It is also considered the symbol of strength, fire, and power.



ORANGE

A warm and active color, orange forms a transition between red and yellow. It is farther away from the infrared rays, therefore does not convey heat. However, it has maintained its energizing and stimulating power. The color of dynamism and success. It is the color of the sacral chakra found above the genital organs at the border of the pubic hair. It governs the genital glands, sex hormones (estrogen, progesterone, and testosterone), the pelvis, the kidneys, the bladder, and the lymph. It is connected with the emotional body layer in the aura. It activates eroticism, primitive emotions, and enthusiasm. The sacral chakra stands for more than basic existence: it is associated with things that make living worthwhile. Illnesses: intestinal cramps, fungal infections, diseases of the testes, the uterus and the breasts, menstrual disorders, eating disorders.

The color orange has a general biological refreshing effect, stimulates the metabolism, and reduces cramps and anxiety. It is used with success on patients with rheumatism, spastic muscle disorders, hormonal disorders such as thyroid dysfunction, digestive disorders, and skin disorders. It has a beneficial effect on the spleen, and therefore clearly affects lymph circulation and the immune system. It has beneficial effects both pre- and post-operatively. Excellent for the treatment of depression.

It symbolizes the balance of the mind and the libido. It is the color of love and happiness in China and Japan. The color of the robes of Buddhist monks is orange,

symbolizing enlightenment and the manifestation of divine love. Orange is also part of Jewish tradition, being the color of radiance and opulence.



YELLOW

A warm color. It provides drive and inspiration. It shifts our mood toward optimism. The color of the navel chakra (solar plexus), found about two inches above the navel. It governs the pancreas, the spleen, the liver, the gallbladder, and the abdomen. It activates the development of personality and wisdom that originates from experience.

It is connected to the mental layer of our aura, depository of our thoughts and mental processes. This chakra is associated with the concept of movement and change, the transformation of the self into a being with power and will. This is a power that has nothing to do with violence or willfulness, but one that recognizes, elevates and balances the challenges of the chakra. Engaging with this chakra on the personality level aids in bridging differences and reaching completeness. Its assigned hormone is insulin. Illnesses: peptic ulcer, problems with the gallbladder, diabetes, digestive problems. Its stimulating herbs are lemon and rosemary.

The color yellow stimulates the nervous system, increases brain and mental functions, and can thus be used in the treatment of phobias and other nervous system disorders, while also promoting concentration and logical thinking. It has beneficial effects on dermatological problems and joint inflammation. It is a preferred treatment for patients with osteoporosis since it promotes calcium utilization. It is effective in the case of digestive disorders, bloating, gastritis, lack of appetite, menopause, rheumatism, and glucose metabolism disorders, but its overuse can cause malaise, or even nausea. Yellow signifies eternal light, majesty and power, a symbol of communication between humans and

gods. Light or golden yellow is the color of belief, goodness, intuition, and intellect. Orange-yellow is the symbol of the Sun, of warmth; the color of divine love, and wisdom; however, greenish yellow is associated with death, envy, and treachery.



GREEN

The most abundant color in nature. Chlorophyll, the pigment that gives plants their color, has a refreshing effect on human skin and rejuvenates the body, therefore the color green possesses a general invigorating effect. It is the color of the heart chakra found in the middle of the chest at the level of the heart. It governs the thymus, the heart, and the lower regions of the lungs, the hands, the skin, and the blood. It is connected to the astral layer of our aura, i.e. it is a connection between the physical and spiritual realms. This chakra is associated with empathic, unconditional love that does not depend on others. Self-acceptance begins in this chakra. Its associated animal is the antelope, symbolizing a loving person who is wide eyed, boisterous, leaping for joy. Forgiveness and sympathy are also associated with this chakra. Its stimulating colors are green and pink. Illnesses: immunosuppression, autoimmune diseases, cancer, heart problems, circulatory problems. Its medicinal plants are sage and ginger.

The color green soothes and harmonizes. It is a tool for restoring balance to the nerves and emotions. It also has beneficial effects in certain heart and lung problems. It is effective against exhaustion due to its general invigorating effect. It also stimulates lymph nodes and anti-inflammatory processes. Green is a symbol of spring, of the renewal of nature, and of growing life.



BLUE

Blue is found on the cold half of the spectrum, and therefore has a cooling, calming effect. The color of tranquility and peace. Ideally used for relaxation and meditation. It is recommended against burns, bites, and fever. It is excellent in cases of inflammation due to its cooling effect. Blue decreases the heart rate, soothes excitation, and alleviates stress states. It has a beneficial effect on asthma, pharyngitis and laryngitis, insomnia, headache, bruising, and hypertension. Our endocrine, hormone producing glands also respond well to blue. This color is specifically recommended for children.

It is a symbol of the sky and the sea; of intangibility, infinity and transcendence. Blue is an expression of intellect, contemplation, acceptance, and can also be associated with the world of imagination and surreality.

Light blue is the color of the throat chakra, the first of the higher energy centers. It is situated between the larynx and the pit of the throat. Areas governed: arms, thyroid gland, lungs, bronchi, esophagus, vocal chords, neck, jaw, and tongue. Its assigned hormone is thyroxine. This chakra is associated with communication, self-expression (but combined with responsibility) and creativity expressed in vocal form. It activates communication, creativity and independence. Vissudha (purification) also means that the throat chakra only opens truly once it has attained the necessary degree of purity through working with the lower chakras. In addition to speech, this chakra is also associated with hearing, which is especially important in our time, because it is very hard to pay attention to each other, to truly listen to what the other person wants to say. Illnesses: diseases of the mouth and the lungs, breathing problems, thyroid problems, multiple sclerosis, and problems with self-expression. Its medicinal plants are eucalyptus and orange.

The color associated with the third eye is indigo blue. This chakra is found about 1 inch above the top of the nose. It governs the pituitary gland, the eyes, the nervous system, the forehead, and the face. It is connected to the heavenly body which can enable us to connect to other beings of the universe, angels, the souls of other people, and our higher consciousness. It activates intuition, willpower and cognition. Its hormone is vasopressin. Illnesses: headache, migraine, all visual disturbances, glaucoma, cataracts. Its stimulating medicinal plants are mint, jasmine, and lavender.



VIOLET

The color of moderation. This is the shortest wavelength of the visible spectrum, followed by ultraviolet (even shorter wavelengths than violet), and has been used for the treatment of psoriasis for many years. Even so, violet is a high-energy color. It calms, assists in internal purification, is a well-known anti-inflammatory, and due to these effects it is very effective against hypertension, insomnia, the symptoms of concentration and memory impairments, and it alleviates various inflammatory processes. It promotes the state of meditation, and visualization. It is recommended for people with epilepsy and mental exhaustion due to its calming, hypnotizing effects. It also helps insomnia.

It can stand for intelligence, knowledge, religious devotion, sanctity, humility, remorse, pain, and nostalgia.

It is connected to the crown and the crown chakra. This chakra is found in the middle of the crown. It governs the pineal gland and the cerebrum. Its symbol is a white-petaled halo which is a representation of infinity. By development of the other chakras we climb higher and higher toward the final goal of enlightenment, fulfillment, self-realization, and the divine self. The crown chakra has

an elemental connection to thought and cosmic energy, and is therefore limitless and immaterial. Its assigned hormone is melatonin. Its stimulating color is white. Illnesses: The disorders of the crown chakra rarely cause classic illnesses. However, they include psychoses and personality disorders: depression, schizophrenia, and suicide attempts. Its medicinal plants are cinnamon and peppermint.



Applications of polarized light therapy

Over recent decades, increasing numbers of research groups have become interested in soft lasers and polarized light therapy, and many results supporting the medical efficacy of these therapies have been published, but there is little information about their mechanism of action.

However, polarized light has been proven effective in certain areas of clinical and laboratory research. They include:

- Boosting the immune system, for example decreasing inflammation, treatment of infections,
- wound healing, ulcers, burns, postoperative scars, sports injuries, etc.
- analgesia: sports injuries, joint problems, muscle aches,
- depression, insomnia, improvement of mood,
- veterinary medicine.

Naturally, the mechanisms of action can overlap in these areas, because for example immune system activity plays an important role in wound healing. See section *General effects of polarized light therapy, biostimulation*. In any case, even if much additional information is still required for complete understanding of these mechanisms, the results are promising, and the therapy itself has multiple benefits:

- Treatment without side effects or age limits.
- Can complement any other therapy prescribed by a physician.
- Treatment sessions are short.

- Simple operation, anybody can learn it.
- Can be used for many illnesses and disorders.
- Can be used by multiple generations, it is helpful at any age.
- Can be used with magnetic implants.

Its social effects must be especially emphasized, since (as described in the following chapters) polarized light therapy is an important complementary treatment for many illnesses, for example the chronic respiratory illnesses of children. These are a source of major headaches for families with young children during the winter months, because of lack of other options parents have to stay home from work. Polarized light therapy, even in the form of complementary treatment, offers a great solution to this problem.

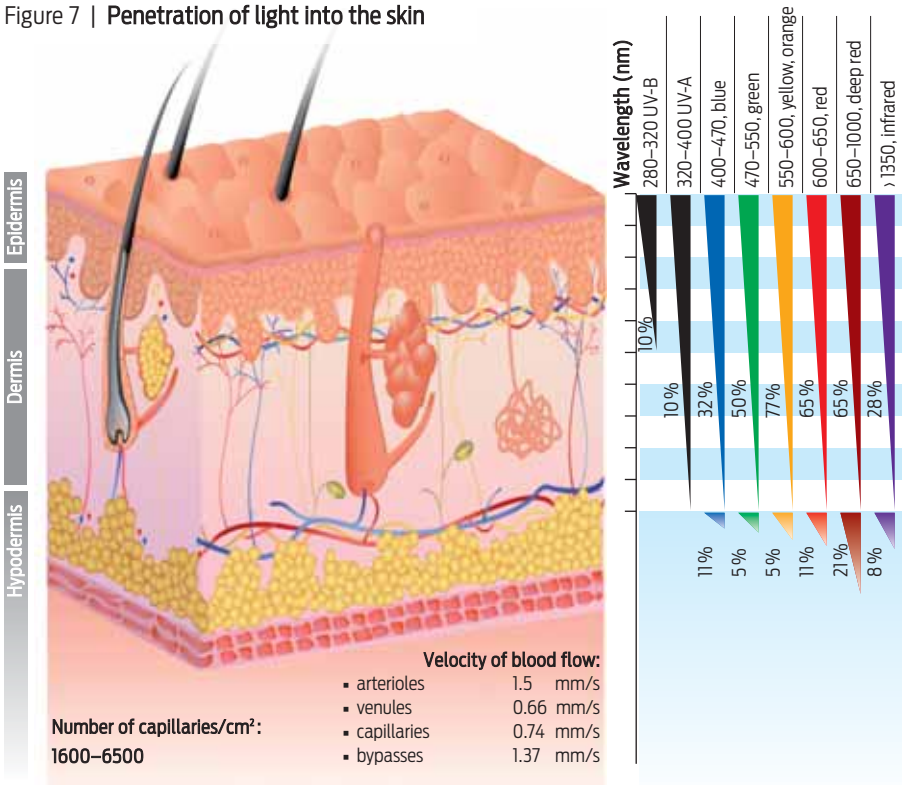
However, always keep in mind **that you must consult your doctor, and should not stop or begin pharmacological treatments on your own**. In many cases, polarized light therapy is suitable as a **complementary treatment**.

GENERAL EFFECTS OF POLARIZED LIGHT THERAPY, BIOSTIMULATION

During the last several decades experimental data have shown that the healing effect of laser light therapy is based on the stimulation and regulation of important biological processes. Based on addition experiments, some scientists assumed that the healing effect is primarily due to polarization. The effect of polarization was first noted in connection with wound healing and the treatment of ulcerated lesions.

Later research in other areas demonstrated positive effects in the treatment of many other diseases.

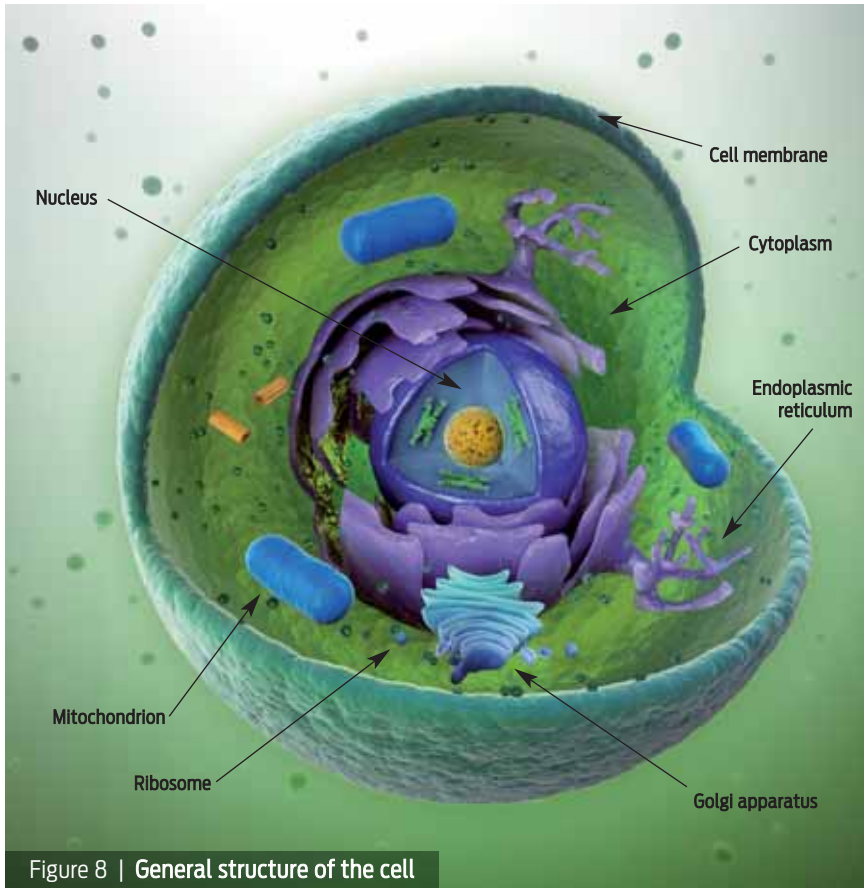
Figure 7 | Penetration of light into the skin



Generally speaking, the regulatory effects of polarized light are due to the normalization of processes, and, importantly, polarized light stimulates or switches on the body's own defense system.

Thus scientists began the examination of the biological and clinical effects of linearly polarized, incoherent light, and have formed a hypothesis that is supported by an increasing number of results.

According to this hypothesis, linearly polarized light acts primarily at the cellular level. It affects the cell membrane and intracellular membranes, and can modify the arrangement of molecules (primarily affecting lipids, or fats) in the



membrane closely associated with the proteins inserted into the lipid bilayer, which in turn affects both inter- and intracellular biological processes and communication. This is basically the same phenomenon as illuminating a liquid crystal with polarized light. Another group of scientists thinks that polarized light works primarily at the level of mitochondria, the energy producing units of the cell, thus stimulating energy (ATP) production and decreasing the level of reactive oxygen radicals, and that these processes induce or inhibit further

mechanisms at the cellular level. Since external impulses affecting the cell are taken up by the cell membrane, it is easy to understand how many different processes could be affected by changes to the membrane. These include:

- **detection:**
for example, of the presence and quantity of hormones and antibodies,
- **membrane transport:**
such as of ions and metabolic products,
- **energy transport and transformation**
- **membrane fusion:**
important, for example, during the removal of foreign materials,
- **flow of information:**
as between nerve cells.

Naturally, external stimuli (including stimuli from other cells) and agents can vary, and may include medications, hormones, or light.

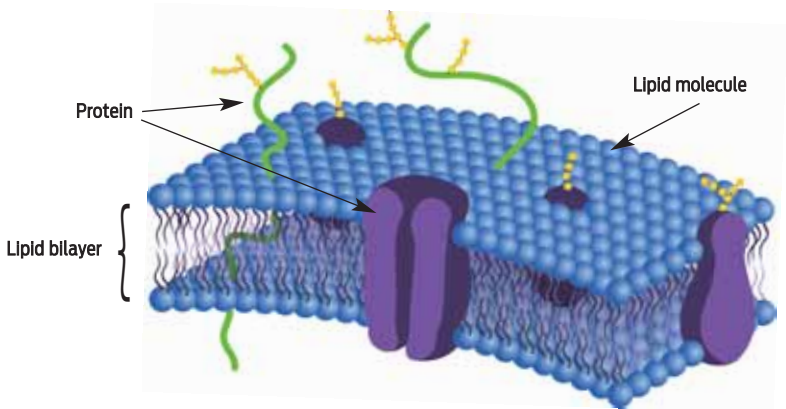


Figure 9 | Structure of the cell membrane

Treatment of wounds, ulcers, and skin problems

Wound healing is a dynamically changing biological, biochemical process separated into consecutive phases, and these phases are synchronized with the induction of different biological processes: different cell types (e.g. the cells of the immune system, epithelial and connective tissue cells) are produced, and regulatory molecules (such as so-called growth factors that stimulate cell division or molecules involved in the body's defense mechanism) are released to control the processes. They result in the production of the so-called granulation tissue, the wound begins to contract, and new blood vessels and skin tissue start to form.

The efficacy of polarized light therapy was first proven in the field of wound healing. Treatment with light involves the illumination of the skin, which leads to the induction of the immune system and epithelialization. There are many types of wounds and they are more significant than we ordinarily think. Take the fact that with advancing age wound healing slows, therefore the individual might be away from work for a longer time, and furthermore, the greater number of ulcers caused by poor circulation is a serious problem for older people. The latter can be a symptom of diabetes, and cause problems to society.

Changes in response to polarized light therapy were examined in a study published by a foreign research group. These changes were tracked with the help of samples taken from sores. In several cases, the sores or ulcers had been present for a long time, and greatly compromised quality of life for the patients. The experiments demonstrated that in response to the treatment, the sore first

became cleaner, then after a few treatments it was weeping less and became increasingly clear. During this process the patients reported a significant decrease in pain. Newly formed blood vessels and fresh skin tissue appeared at the edges of the wound, and epithelial cells, connective tissue cells, and later collagen fibers were produced. This process can be tracked with a microscope.

Correlations were shown between the rate of wound healing and the age, general health and circulatory health of the patient. Basically, healing could be seen after only five treatments.

At the beginning of the treatment the wound is full of bacteria, but there are very few if any immune system cells present (granulocytes, lymphocytes, monocytes, plasma cells) capable of removing these bacteria and thus facilitating the healing process. After commencing treatment, the number of granulocytes and other immune system cells increased significantly, and bacterial counts noticeably decreased as treatment progressed. In addition to these cells, the proteins produced by them are also part of the immune system (for more information see chapter *“Organization and function of the immune system”*). Treatment also increased the quantity of these proteins, and the difference was measurable after only one single treatment. The role of these proteins is to participate in the fight against bacteria, and also in the activation, migration (to the site of the wound) and adhesion of epithelial and blood vessel cells. The higher the demonstrated increase in the quantities of the proteins, the more significant the extent of the healing. Thus even the rate of healing can be predicted. Ultimately, polarized light accelerates wound healing and increases the flexibility and hydration of both the sore and the new tissues. Treatment also results in a qualitative improvement. Polarized light induced stimulation of micro-circulation in the feet of diabetic patients has been described by other scientists. This is a very important result, since the secondary effects of diabetes are mostly caused by poor circulation or blood supply.

THE EFFECTS OF POLARIZED LIGHT ON THE TREATMENT OF SURGICAL SCARS AND IN PLASTIC SURGERY

There is a great variety of scars types, based on formation and origin. The above example described the process of wound healing and the efficacy and application of complementary polarized light therapy through a significant problem that affects a large section of society. Polarized light therapy can be used for many types of wounds with different etiologies, such as:

- postoperative wounds and scars: e.g. plastic surgery or episiotomy, etc.
- minor trauma or scars following cosmetic treatments,
- “household” injuries.

Plastic surgeons are already routinely using polarized light therapy for the faster and more esthetic healing of postoperative scars. Colic M. M. et al. used polarized light to treat cosmetic surgery patients (one side of their face received treatment, and the other side served as control). Compared to the untreated side, the treated side showed significantly better improvement. Additionally, the patients reported alleviation of pain and a pleasant sensation during treatment.

Another study examined more than two thousand women who underwent **episiotomy** during childbirth. The conclusion of the study is that in addition to laser therapy, polarized light therapy was also effective in the promotion of wound healing.

Improvement of mood can be an important consideration during post-surgical and other rehabilitation. Numerous clinical studies have aimed to treat

various injuries and lesions, etc. with polarized light, and in addition to an improvement of the given illness they also reported significantly improved mood.

POLARIZED LIGHT IN THE BEAUTY SALON

In Hungary, as in other countries, there are many cosmetic, dermatological and light therapy centers where polarized light is used in the treatment of skin problems either as an independent treatment or as part of a cosmetic regimen. These interventions include:

- skin rejuvenation, wrinkles, skin moisturizing/refreshment,
- acne,
- hair loss, dandruff,
- treatment of scars after cosmetic surgery,
- eczema.

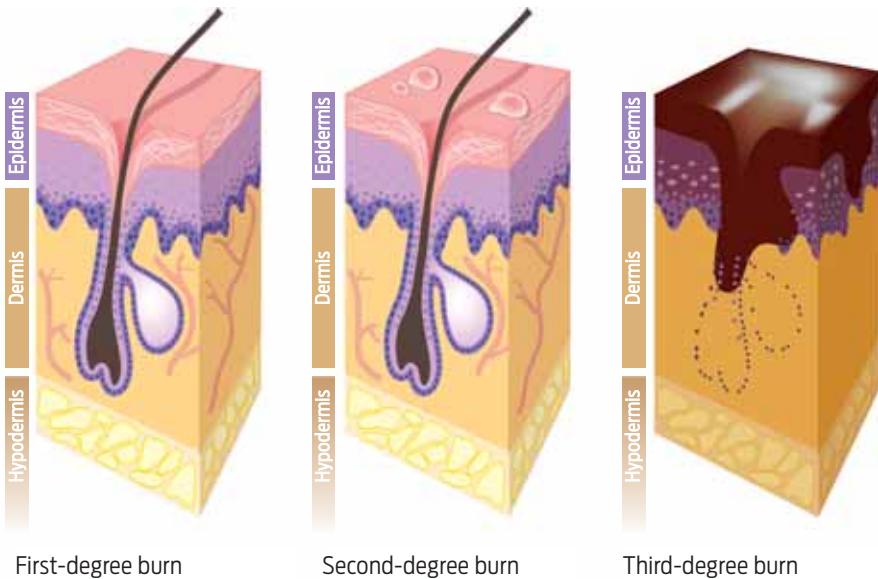


These conditions were also studied in Hungary in experiments after the development of the first polarized light lamp. In the course of treating dermatological problems, specialists also use various creams that contribute to the efficacy of the treatment. These include anti-cellulite and moisturizing creams.

BURNS AND THEIR TREATMENT WITH POLARIZED LIGHT

The treatment of burns can be classed as a special category. Burns are among the most painful types of injury. Even in a modern household there are numerous dangers, and those most at risk include children and the elderly. However, injuries can happen outdoors as well as indoors. One example is sunburn.

Figure 10 | Severity of burn injuries



BURN INJURIES ARE CLASSIFIED ACCORDING TO SEVERITY

First-degree burn ■ The upper layer of the skin is injured, accompanied by redness and pain. Heals in a few days.

Second-degree burn ■ Depending on the depth of the injury and the blood supply to the affected area, these burns are divided into superficial and deep second-degree burns. Superficial type: the epidermis and the upper part of the dermis are injured, and the blood supply to the wound site is good. A blister forms. In case of a deeper injury also affecting the deeper regions of the dermis, the blood supply to the wound site is compromised. Pain perception might be dulled due to the damage sustained by pain sensing molecules (receptors). When these wounds heal, typically a scar remains.

Third-degree burn ■ The burn damages all layers of the skin. The skin may become completely blackened. There is no pain due to the damage sustained by the receptors.

Fourth-degree burn ■ There is complete charring not only of the skin but in many cases those of the underlying muscle and bone tissues too.

This is an illustration of how quickly these injuries can develop: In the case of an adult, water at 122 degrees Fahrenheit takes 2 minutes while at 140 degrees water can take only 5 seconds to cause a third-degree injury. In a healthy adult, a burn affecting 15% of the skin surface is considered a life threatening injury. (As a reference, the surface of one hand accounts for 1% of the total skin surface.)

TREATMENT OF BURN INJURIES

When treating burn injuries it is very important to cool the site immediately, because it decreases both pain and further damage to underlying tissue layers. Cooling should be done with cold running water for 8 to 10 minutes. Afterward, the site of injury should be covered with a clean (lint-free) cloth or gauze to protect it from infection. In case of larger burns fluid loss is another danger, and should be addressed without delay. Due to pain and fluid loss the patient can go into shock, therefore should be made to lie down. Call an ambulance!

Physicians usually choose conservative treatment for superficial burns, while deeper injuries necessitate surgical intervention. If the injury is neither purely superficial, nor really deep, it is harder to find the right solution, and polarized light therapy can become an even more significant option. These are second-degree burns. Third- and fourth-degree burns always require surgical treatment. Treatment of burn injuries with polarized light induces the same processes mentioned in the description of wound and ulcer healing: acceleration of wound healing and promotion of epithelialization. The immunostimulant effect of polarized light is very important, because (as mentioned above in the section on classification) burn wounds frequently affect the deeper layers of the skin, raising the risk of infection.

Treatment accelerates tissue regeneration, which is important because another characteristic of deep wounds is that regeneration may be delayed due to severe tissue damage. Slow regeneration is also favorable for the growth of bacteria.

Additionally, an essential element of tissue generation is the stimulation of cell growth and division, which require the production of various proteins. The blood supply of newly formed tissues is provided by newly formed blood

vessels, which participate in the transport of oxygen and nutrients as well as the molecules necessary for regeneration.

Monstrey S. et al. examined the effect of polarized light in treating burn patients. Their results demonstrate that – using a microscope – new tissue growth (fibroblasts, new and thin collagen fibers) can be detected only a few days after commencing treatment. This process also begins in untreated patients, but progress is faster with treatment. As treatment progresses, this difference becomes increasingly large in favor of the treated wounds. The result is faster and esthetically better wound closure and more flexible scars.

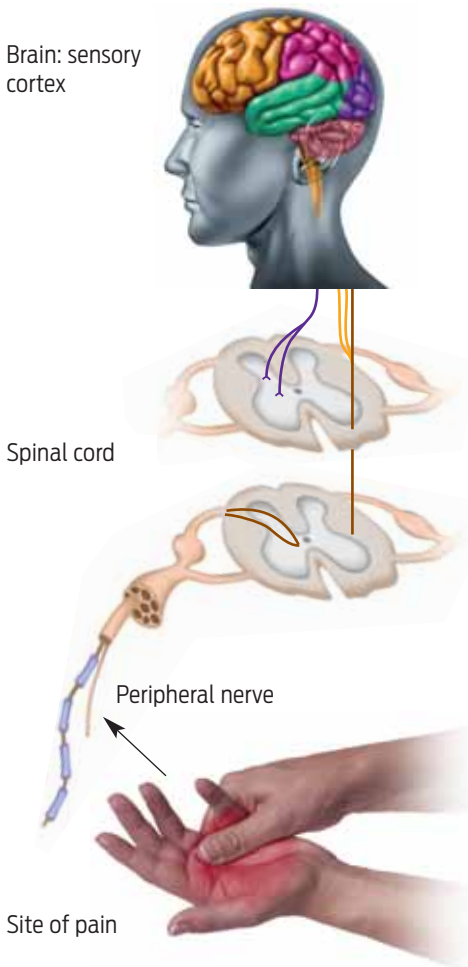
All of this suggests that the complementary treatment of burn injuries with polarized light accelerates healing, may help avoid surgery in the case of second-degree burns, and that esthetically more successful results can be expected.

Pain control with polarized light

Pain is as old as the human race. Pain perception is a very complex process, which is strongly influenced by the earlier experiences and current emotional state of the individual. Pain alerts us to the dangers of injuries potentially resulting in tissue damage, and compels us to avoid them or find appropriate treatment. Pain can be classified according to various criteria as slow or fast pain; or as internal, external, or neuropathic pain (accompanied by damage to nerve fibers and nerve endings) pain. All types of pains are sensed by free nerve endings. Receptors on nerve endings are stimulated by chemical mediators released at the site of injury. Next, the pain stimulus travels through the spinal cord to the appropriate brain region (depending on whether it is slow or fast pain), the ultimate site of pain perception. At the same time, the stimulus reaching the brain activates a number of mechanisms, manifesting in varied and complex reactions. We sense, recognize and localize pain, but pain also modifies our behavior, we feel fear and anxiety, and frequently recall earlier memories. Pain has immediate effects on the autonomic nervous system, it evokes vegetative and protective reflexes, and activates certain parts of our hormonal system.

Visceral pain is evoked by the spasm and tension of smooth muscles, or by inadequate blood supply or inflammation, injury, etc. to the internal organs. One of its characteristics is that it is not localized, and it radiates from each organ to typical areas. Abdominal muscles become tense (guarding) in response to strong pain in abdominal organs.

Figure 11 | The propagation of pain



Pain can be alleviated by various methods. Reports on this subject have survived from very early historical eras. They describe submerging a painful body part in ice cold water, or hitting the patient on the head. Frequently people suffering from pain were anesthetized with alcohol. Archaeological excavations of ancient kitchens suggest that poppy seedpods were brewed into tea and used for analgesia.

Modern analgesics can be divided into two groups: very strong (opioid type) medicines, and non-steroidal anti-inflammatory drugs used to treat mild or moderate pain. Opioid type analgesics include morphine and its derivatives. Morphine is the most universal among analgesics: It enters the spinal cord, and inhibits the propagation of the

pain impulse to the brain, and it has additional effects in the brain and the cerebral cortex. Non-steroidal anti-inflammatory medications – such as aspirin – act peripherally, and are most effective against pain associated with inflammation. They switch off pain perception by immediately inhibiting the propagation of the

stimulus, and according to current knowledge they do not affect the central nervous system.

Unfortunately, the use of currently known analgesics is associated with the emergence of different side effects. For example, non-steroidal anti-inflammatory medications can cause stomach and intestinal ulcers, and interfere with blood clotting.

The human brain is capable of producing its own narcotics (opioids, cannabinoids). For example, in chronic pain the quantity of these endogenous painkillers increases, which in turn raises the pain threshold and the patient's pain tolerance. Numerous clinical studies show that polarized light therapy decreases pain associated with different illnesses and injuries, while causing no side effects. This has also been mentioned in the section on wound treatment. It is assumed that the analgesic effect of polarized light is due

- to a direct effect on nerve endings and their cell membranes, and ultimately to a general effect on the entire nervous system. It also stimulates the release of neurotransmitters such as endorphin, an endogenous opioid analgesic substance. It increases the conduction velocity of neural pathways.
- At the same time it also suppresses the effects directly responsible for the development of pain, for example it decreases inflammation and muscle spasms, and this is partially due (as mentioned above) to the growth of new blood vessels, and the stimulation of circulation and metabolism.

It has positive effects on all three types of pain: neuropathic, visceral, and musculoskeletal.

Dr. Ballyzek and his group studied 120 patients with musculoskeletal pain of the neck or shoulder region lasting for at least 30 days. Half of the patients were treated with polarized light, while the other half received a placebo treatment and served as control group. Treatments of 10 minutes each were carried out over three consecutive days. After three days a much higher percentage of patients treated with polarized light reported significant pain relief. Their physical activity also improved, and the improvement was maintained for at least 48 hours after the last treatment. Ballyzek et al. recommend polarized light treatment as an effective complementary therapy for pain relief.

Similar significant pain relief was reported in the case of carpal tunnel syndrome. Following polarized light treatment, a 90% improvement could be demonstrated in pain and sensory disturbances.

TREATING SPORTS INJURIES AND OTHER KINDS OF MUSCULOSKELETAL PAIN WITH POLARIZED LIGHT

Polarized light therapy devices have been used for decades in the treatment of sports injuries, sports-related overuse injuries, and problems caused by muscle spasm (fibromyalgia), in many cases also relieving the pain associated with the injury. The studies mostly report that polarized light therapy is suitable for the treatment of muscle, tendon and ligament disorders. Observations have shown that light therapy combined with massage resulted in pain relief after only a few sessions, and thus promoted the resolution of mobility impairment.

In addition to the treatment of injuries, polarized light can also be used to increase performance, improve endurance, and decrease muscle stiffness through its effect of increasing oxygen absorption, cellular metabolism and blood circulation, as well as preventing illnesses by boosting the immune

system. Today several top sports teams (water polo, handball, and basketball) in Hungary use polarized light therapy.

Research on pain control also includes other types of pain such as age-related rheumatoid arthritis and other rheumatic pains; these patients also experienced pain relief but not the complete resolution of symptoms. Naturally, there are also contradictory results; some authors reported pain relief in patients with tennis elbow or carpal tunnel syndrome after polarized light therapy, while others found no such effect.

Overall, based on the mechanism of action of polarized light therapy (see chapter “*General effects of polarized light therapy, biostimulation*”), the use of polarized light lamps can be an effective complementary therapy for pain conditions of different etiologies. It is worth mentioning that in the case of these types of pain, complementary laser or soft laser therapies significantly contribute to healing (there was no statistically significant difference between the two light therapies), but a great advantage of polarized light therapy is that it can be used at home, without medical supervision.

One more thing about pain relief: polarized light is assessed not only as a complementary therapy to conventional treatments, but also in combination with other alternative treatments such as the **illumination of acupuncture points**. As mentioned at the beginning of this book, the discipline of acupuncture, or acupuncture and biologically active points forms a very important part of Oriental medicine. Experiments performed on mice showed that the illumination of these points with polarized light provides effective pain relief.

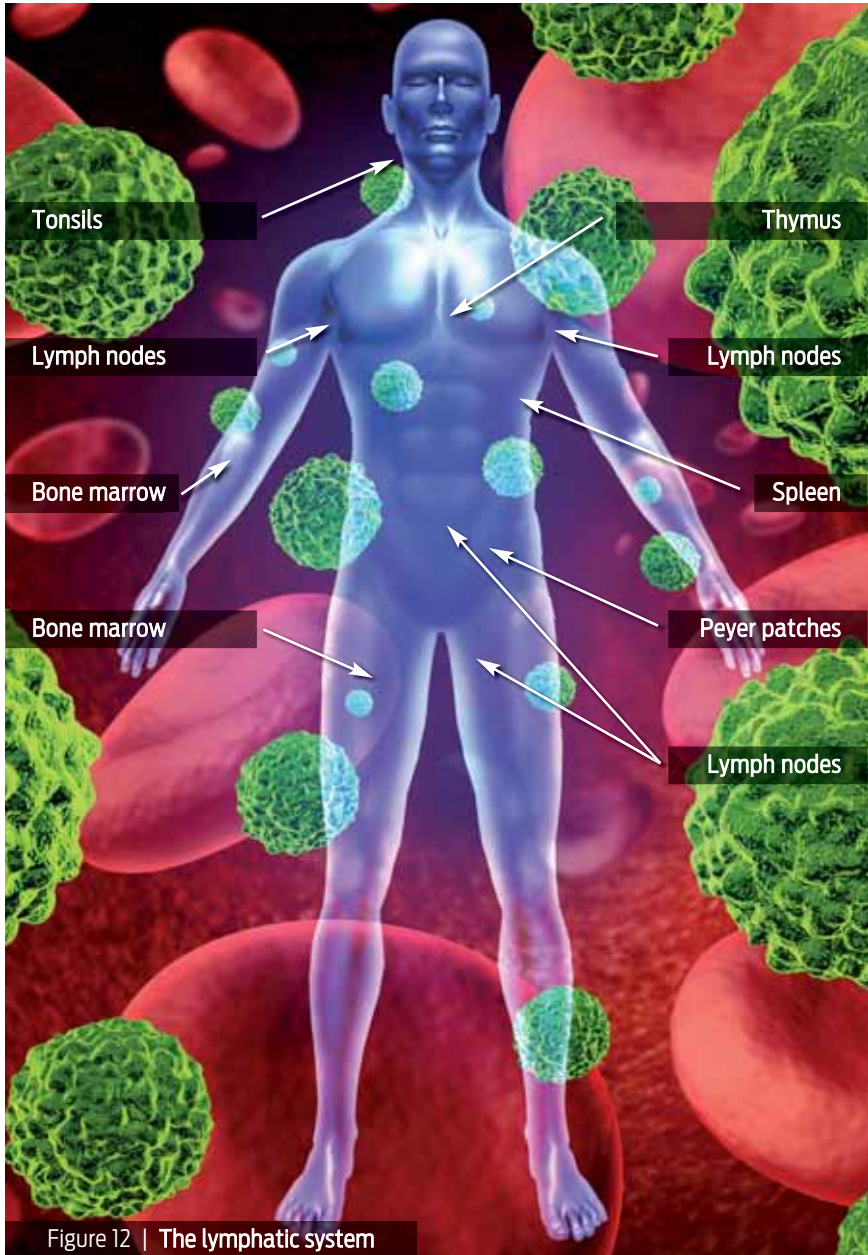
Effects on the immune system

ORGANIZATION AND FUNCTION OF THE IMMUNE SYSTEM

The immune system is a combination of cells, tissues and organs jointly participating in the defense of the body against potential infections. An important characteristic of the immune system is that it can distinguish the self from the foreign; if it encounters a foreign particle/substance, it will destroy and remove it.

The function of the immune system, coordinated by lymphoid organs, tissues and lymphatic circulation, is highly complex. Lymph circulates in the lymphatic system. Lymphoid organs also connect to the lymphatic system. Our **primary lymphoid organs** are the thymus and the red bone marrow; these are important organs where lymphoid cells (lymphocytes) are produced and go through maturation. Mature cells then migrate to the secondary or peripheral lymphoid organs. The **secondary lymphoid organs** and tissues are situated at the points of the body where the risk from the intrusion of various pathogens is greatest, such as:

- the spleen and the abdominal lymph nodes,
- the mucous membranes of the gastrointestinal tract, and the respiratory and urogenital organs,
- and the lymphoid tissues associated with the skin.



The lymphoid cells encounter foreign materials and pathogens carried by the blood and lymphatic circulation in the peripheral lymphoid organs.

This is where the immune response takes place, where foreign materials are eliminated from the body. There are two types of immunity: innate or natural immunity, and acquired or adaptive immunity.

A characteristic of **innate immunity** is that it is nonspecific. Innate immunity also includes the following elements.

- **Gastric acid**, which has bactericidal effects due to its hydrochloric acid content.
- **The mucous membranes (mucosa) of the skin, and the gastrointestinal, urinary and respiratory tracts** serves as primary defense, inhibiting the entry of pathogens.
- **Additional bactericidal substances in the body**, such as the enzyme called lysozyme found in saliva.

The immune response itself is provided by cells and protein molecules, as described above in the section on wound healing. The cellular elements of the innate immune response are the so-called phagocytes that consume and destroy foreign material found in the blood or lymphatic circulation, while natural killer cells can destroy virus-infected or tumor cells anywhere in the body. The protein molecules (enzymes) are part of the so-called complement system, which attacks and destroys pathogens.

Illness does not necessarily follow from an encounter with pathogens, because the innate system acts as a kind of primary defense for the body. However, on other occasions the infection, or in other words the intrusion of pathogens is followed a few days later by fever and the development of symptoms charac-

teristic of the given pathogen. The most common cause is that the cells of the innate immune system are unable to handle the large number of pathogens entering the body. In such a case the acquired or **adaptive immune system** has to be activated: this normally invisible defensive system now becomes perceptible, demonstrating its response in the form of painful swollen lymph nodes, lethargy, fever, and inflammation.

Acquired immunity is built naturally or artificially after we are born. Artificial immunity means vaccination. The acquired (adaptive) natural immune system goes through a life-long process of learning to recognize new, previously unknown pathogens. This type of immune response is specific to the pathogen. This system includes lymphocytes, with the two main types called T and B lymphocytes.

In addition to the cellular elements, proteins called immunoglobulins are also important components; they are specific to pathogens, and are synthesized



Figure 13 | Antibodies in the blood

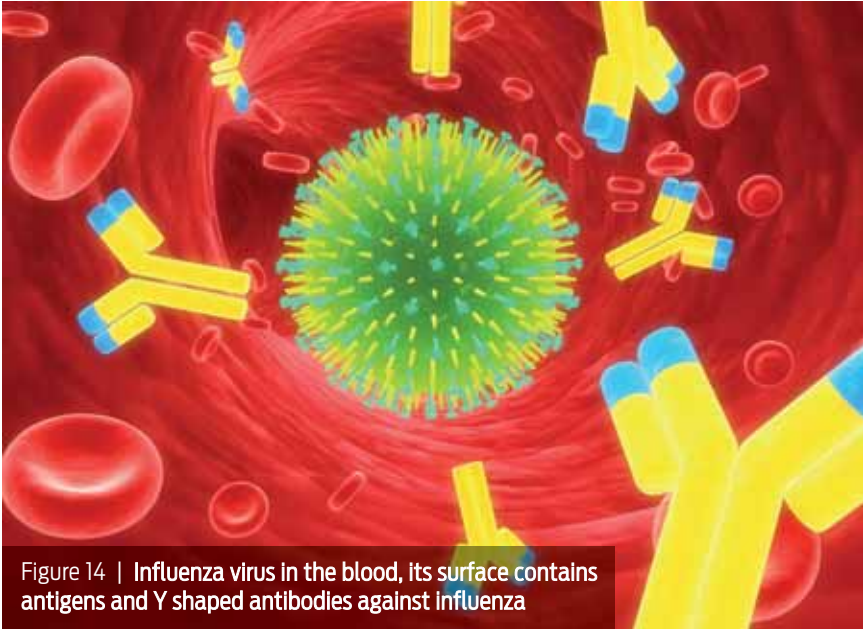


Figure 14 | Influenza virus in the blood, its surface contains antigens and Y shaped antibodies against influenza

by plasma cells produced by B lymphocytes. On the other hand, T lymphocytes attack directly, and produce enzymes that destroy pathogens. All pathogens the body has encountered previously have a specific T lymphocyte. In the event of a repeat infection, these specific T lymphocytes are activated and attack the pathogen. Cytokines (mentioned earlier in conjunction with wound healing) play an important role in the activation of T lymphocytes. They are proteins that activate and regulate the immune response.

The encounter between the cell of the immune system and the pathogens occurs in the secondary lymphoid organs, mainly the lymph nodes and the tonsils.

As mentioned above, one of the “*points of intervention*” of polarized light is the immune system, or more specifically the cellular and humoral (proteins produced by immune system cells) components of the immune system, through

which it can cure numerous illnesses. An exquisite example is a study published in 2011 by Prof. András Falus and his co-workers, examining the clinical and immunological effects of polarized light on recurrent respiratory tract infections in children. Children participating in the study received two 15 minute treatments twice a week over 5 weeks. In response to treatment, symptoms suggestive of respiratory infection lessened or entirely disappeared in a majority (80%) of children. There was a noticeable difference between clinically responsive and non-responsive groups when they compared the function of immune cells, and the proteins (cytokines, transcription factors, etc.) produced by these cells. The immune cells of children who responded well to the treatment showed anti-inflammatory changes at the molecular level. Additionally, the results also suggest that the natural immune response of these children was more intense, which might explain the faster healing process.

An experiment conducted in Ukraine (although, unfortunately, on a small number of patients) examined the effects of polarized light in bronchial asthma. The resulting effect of the treatment on the immune system were in agreement with those described above.

Other scientists have reported similar effects. Zhevago and co-workers examined the levels of anti-inflammatory and pro-inflammatory cytokines after transdermal illumination (5 minute sessions, over 5 days) of the sacral region in healthy individuals. Compared to the placebo control, this group also displayed quantitative changes when numerous cytokines (IL-6, TNF-alpha, IL-10) were measured: the amount of pro-inflammatory cytokines decreased, while the amount of anti-inflammatory cytokines increased in response to illumination.

Reduction of inflammation with polarized light

Earlier chapters of this book described how wound healing and the treatment of ulcers with polarized light is based on immunostimulant and anti-inflammatory processes. In-vitro cell culture and animal experiments have shown similar results.

Inflammation is a physiological process induced by infection (among other things), and its purpose is the localization of the infection and elimination of the infectious agent (for example, via fever), and ultimately the inhibition of the propagation of the infection. In this sense, inflammation is a positive and necessary process. It usually develops quickly, and lasts for a relatively short time. Its symptoms include redness, edema, and an increase in the temperature of tissues.

The inflammatory process produces factors involved in the elimination of infectious agents, and induces both local and systemic effects, such as fever. However, long-lasting inflammation can provide fertile ground for pathological processes, since certain substances produced during inflammation (such as growth factors) can induce cell proliferation.

The significance of the anti-inflammatory effects of polarized light is that it can provide protection against potential harmful effects, without side effects.

In addition to the application described above, the anti-inflammatory and preventive effects of polarized light therapy can be used in many other areas, including:

- cosmetic treatments, treatment of inflamed skin,
- joint inflammation,
- atopic dermatitis – atopic skin inflammation,
- allergic rhinitis – inflammation of the nasal mucosa.

As mentioned before, the cells of the immune system constitute part of the circulatory system. Therefore treatment with polarized light affects the **circulatory system**, and not just the immune cells, or other cells that participate in immune processes, but also blood cells such as red blood cells. One significant effect is the stabilization of the membrane of red blood cells, and thus the promotion of their oxygen binding and retaining function.

Using polarized light in psychiatry

Compared to pharmacological treatment polarized light therapy was found to produce dramatically better results primarily in studies of patients with anxiety or depression. Its effects include:

- improvement of mood and well-being,
- alleviation of chronic anxiety,
- improvement of the physical symptoms of psychiatric disorders, such as a decrease in headaches and stomach complaints,
- in the long term, the medication can be reduced or eliminated altogether.

“Side effects” found in these patients:

- a decrease in the desire to smoke,
- better skin texture,
- improved sexual potency.

Polarized light therapy in veterinary medicine

It is a remarkable fact that various types of alternative medicine are being used increasingly not only in human, but also in veterinary medicine. No wonder, since the importance and number of domestic pets has been increasing. Thus it will come as no surprise that polarized light therapy has become part of veterinary practice.

It is used primarily in Asian countries, but in 2009 there was a report about Zitta, an elephant living in Hungary, whose leg ulcers were treated with polarized light therapy. Earlier it had been used to treat mastitis in milk cows, and for the treatment of the leg of Overdose, a racehorse.

Some manufacturers have been specializing in the production of polarized light lamps suitable for veterinary treatment. These lamps, just like those designed for the treatment of “*human*” ailments, are used in the complementary treatment of pain, wounds, scars, joint diseases, and inflammation of various origin and location, and not only the treatment of domestic pets, but those of zoo-dwelling and farm animals. Thus faster healing can be achieved, frequently also decreasing veterinary medical expenses.

Even the Section of Alternative Veterinary Medicine of the Hungarian Veterinary Chamber emphasizes the significance of polarized light therapy as a complementary and independent treatment method.

As in the case of human patients, the lamp is more effective in the treatment of acute problems, and chronic diseases require longer treatment times. Treatment sessions usually last 6 to 10 minutes, just as in the case of human

patients, and frequently it takes just a few sessions before an improvement is seen. In order to prevent relapses, it is very important to continue treatment until the animal is completely healed.

Expert opinions

A web search suggests that more and more medical centers, beauty salons, hospitals and even private medical practices are using polarized therapy. Some of these facilities use the lamp, others administer whole-body treatments. Thus it is obvious that the availability of the therapy is increasing despite skeptical reviews. The facilities' web pages also report the experiences and recommendations of specialists, scientists and pharmacists.

Prof. Dr. Pál Kárpáti, an internal medicine and cardiology specialist described the immunity boosting and circulatory benefits and significance of polarized light therapy in musculoskeletal disorders.

Dr. Zsolt Knoll, an orthopedic surgeon and sports medicine specialist recommended polarized light therapy to patients with various diseases, and according to his experience the lamp was useful in the treatment of fractures, the alleviation of the clinical symptoms and pain of rheumatoid arthritis, reducing the duration of viral infections, the alleviation of psoriasis, in rapid scar formation in persistent leg ulcers, and the reduction of the healing time of tendinitis.

Anna Madarasi, MD, PhD, a pediatric, allergy and pulmonary specialist emphasizes the benefit of the lamp's lack of side effects, so it can be used even on newborns. Dr. Madarasi's experience has shown that polarized light therapy is helpful in several areas, such as dermatology (atopic dermatitis, eczema, acne, scarring and wound healing, and hair loss), endocrinology (menstrual disorders, pathological obesity, and hypothyroidism), pediatrics (bronchitis,

recurrent respiratory infections, and sinusitis), and neurology (muscle dystonia due to oxygen deprivation).

There are additional reports by an allergy specialist, a plastic surgeon, and an orthopedic, traumatology and sports medicine specialist.

Areas of application of polarized light therapy

The following list of diseases and treatment indications were chosen from the recommendations published by various manufacturers and consumer companies, physicians, and therapeutic centers. Even though polarized light therapy has no side effects, there are certain illnesses and disorders where treatment must be applied **under regular medical monitoring**:

- during the manic phase of bipolar disorder,
- implanted pacemaker,
- thrombocytosis (predisposition to thrombosis due to the increased number of thrombocytes),
- epilepsy,
- during chemotherapy,
- treatment of surgical scars after cancer surgery,
- uncompensated hypertension.

It must be kept in mind (as emphasized in the description of specific diseases) that polarized light therapy **is not a substitute for medical care and pharmacological treatment**.

In general, acute problems will improve faster than chronic diseases.

In order to ensure the deepest possible penetration of the light, distributors recommend an approximately 1 inch distance from the skin during treatment. If the minimal amount of heat transferred by the lamp to the skin surface

is uncomfortable (for example in treating burns, or during the treatment of infants or children), the distance should be increased.

NEONATAL DISEASES

The significance of treatment with the lamp is that since it has no side effects, it can be used for the treatment of infants. It accelerates healing, it is painless, and in many cases can be used while the infant is asleep.

ALLERGY

Allergy is an overreaction of the body to substances that generate no response under normal conditions. These substances are called allergens. The binding of allergen to an antibody triggers tissue inflammation.

Generally speaking, allergies are an illness of the young, and unless chronic organic disorders are present (such as the narrowing of bronchi in asthma), symptoms usually become more moderate with advancing age. The symptoms of infantile or childhood allergic disease may shift as the child ages. For example, the symptoms of pediatric eczema and food allergies may clear up, or be replaced by other allergies such as hay fever and/or asthma. Diagnosis and proper treatment are very important, because any childhood allergy can increase the risk of developing asthma.

Symptoms can vary greatly depending on which organ is the site of the allergic reaction. In all cases, the cause of the allergy should be clarified before commencing treatment. Since a predisposition to allergies can be inherited, and other factors also play a role in the development of allergic symptoms and allergic diseases, it is very important to take certain preventive steps in the case

of high risk infants (a family history of allergies) in order to decrease the risk of the development of symptoms or disease. These precautions include:

1. Breastfeed your child as long as possible. (Studies have shown that 6 months of breastfeeding decreases risk.)
2. If you are unable to breastfeed, choose a so-called hypoallergenic formula.
3. Unless it is medically indicated, do not take any medication during breastfeeding.
4. Under the age of 1 year, your infant should not receive any foreign proteins such as cow's milk.
5. Any new foods should be introduced gradually into your infant's diet.
6. Do not smoke around your child.
7. The environment of your infant should be free of allergenic materials (e.g. dust and mold, etc.) and domestic pets (e.g. cats and dogs, etc.).

Treatment ■ According to the standard practice of the treatment of skin problems, the area to be treated should be cleaned first. Light therapy should be applied 2 to 3 times a day, illuminating the affected area for 4 minutes during each session. If your doctor prescribed a cream, it should be applied to the affected area before light therapy, and if the area is large the light should be moved back and forth over it.

Color therapy ■ illuminate the area of the spleen and liver with yellow light for 6 minutes each, and the thymus with green light (in children).

HIVES (URTICARIA)

This is a local allergic reaction. A small, itchy rash that does not rise above the skin surface, it is mostly caused by food or drug allergy or contact allergens (such as chemicals), but can also be triggered by inhaled allergens (such as pollen). It is a very common allergic symptom. In rare cases, a chronic (long-lasting, frequently recurring) form occurs, and a thorough medical check-up and long-term monitoring might be required to identify the triggers. It is worth identifying and then eliminating the trigger.

Treatment ■ 2 to 3 times 10 minutes daily.

Color therapy ■ the color green, then orange is recommended.

TEETHING

Teething typically starts at the age of four months, and lasts until about age 2.5 to 3 years. Polarized light therapy helps reduce pain, promotes restful sleep, and alleviates the potential cold-like symptoms that accompany teething.

Treatment ■ 10 minutes, on the affected area. Twice daily.

Color therapy ■ light therapy can be complemented with the color blue.

EAR PAIN

Middle ear infection

Frequent in children and infants, but also occurs in adults. In response to ear pain, small children frequently touch their ears, or the ears may be extremely sensitive to pressure. Hearing can deteriorate, moreover, **neglected illness can**

lead to permanent hearing loss in children. See your doctor as soon as possible – do not wait until your child's eardrum has to be lanced!

Otitis externa

A skin disease, inflammation of the external ear canal that is accompanied by severe pain, caused in most cases by water entering the ear canal. The child should be examined by a doctor in all cases, because antibiotic treatment is often unavoidable. In such cases the lamp should be used as a complementary treatment.

Treatment ■ as a complementary treatment, 6 to 8 minutes, 2 to 3 times a day. The healthy ear should be treated too!

Color therapy ■ the color green alleviates inflammation of the ears, then orange strengthens the immune system.

ABDOMINAL PAIN

Abdominal pain arises due to a variety of conditions. Always make sure that your child's abdominal pain is not caused by serious illness! Newborns frequently experience abdominal discomfort due to swallowed air, and they have not yet learned how to get rid of wind produced during digestion. In addition to burping, these pains can be alleviated with polarized light, and the treatment also has a calming effect on the baby.

Treatment ■ twice daily for 6 to 8 minutes on the abdominal area.

Color therapy ■ the color blue has a calming effect on children.

BRONCHITIS

Polarized light therapy (used as a complementary treatment) can accelerate this illness running its course.

Treatment ■ the mucosa of the throat and the pharynx, the maxillary lymph nodes on the front side of the neck, the hili of the lungs on both sides of the sternum and the area under the shoulder blades, and the thymus in children, twice daily for 6 to 8 minutes.

Color therapy ■ the color green as an anti-inflammatory treatment, blue for lymph nodes.

CHILDHOOD ILLNESSES

ALLERGIC ASTHMA

Accompanied by a temporary narrowing of the bronchi, which is experienced by the patient as attacks of breathlessness, dyspnea, a suffocating sensation, and wheezing. The patient feels like air is trapped in his/her chest, and it takes an effort to blow it out. These symptoms can trigger palpitations and agitation. In milder cases the symptoms of asthma include coughing and tightness in the chest. Symptoms can occur in response to exertion or during the night. Just as with hay fever, depending on the triggering allergen, symptoms can be present seasonally or all year around. They are also frequently accompanied by hay fever and food allergies. Strengthening of the immune system is very important in the complementary therapy of pediatric asthma.

Treatment ■ in children treatment of the thymus, in adults the treatment

of the solar plexus and the hili of the lungs (fourth intercostal space along the sternum) are recommended.

Color therapy ■ the color green is recommended for the thymus and the hili of the lungs.

SINUSITIS

This is an inflammation of the sinus cavities. It can be recognized by headache and facial pain, symptoms that are triggered by bending down or coughing, and an additional symptom is a sensation of pressure on the top of the head. A doctor should be consulted in all cases, because antibiotic treatment is likely unavoidable.

Treatment ■ the upper jaw and the frontal bone (forehead) should be treated twice daily for 8 to 10 minutes as a complementary therapy; additionally, treat the thymus and lymph glands situated under the jawbone (in children, treat the sternum).

Color therapy ■ the anti-inflammatory effect of the color green is beneficial for healing.

BRONCHITIS

Polarized light therapy (used as a complementary treatment) can accelerate this illness running its course.

Treatment ■ the mucosa of the throat and the pharynx, the maxillary lymph nodes on the front side of the neck, the hili of the lung on both sides of the sternum and the area under the shoulder blades, and the thymus in children, twice daily for 6 to 8 minutes.

Color therapy ■ the color green as an anti-inflammatory treatment, blue for lymph nodes.



EAR PAIN

Middle ear infections

In response to ear pain children frequently touch their ears, or the ears may be extremely sensitive to pressure. Hearing can deteriorate, moreover, **neglected illness can lead to permanent hearing loss. See your doctor as soon as possible – do not wait until your child's eardrum has to be lanced!**

Otitis externa

A skin disease, inflammation of the external ear canal that is accompanied by severe pain, caused in most cases by water entering the ear canal. The child should be examined by a doctor in all cases, because frequently antibiotic treatment is unavoidable. In such cases the lamp should be used as a complementary treatment.

Treatment ■ as a complementary treatment, 6 to 8 minutes, 2 to 3 times a day, treating both ears.

Color therapy ■ the color green alleviates inflammation of the ears, then orange strengthens the immune system.

CYSTITIS

Cystitis develops frequently during childhood, but can also occur in adults, mainly women. It is accompanied by frequent urination and abdominal pain. Its treatment is important, because recurrent cystitis may lead to infertility in adulthood. Drink a lot of fluids! Polarized light therapy is recommended as a complementary treatment.

Treatment ■ treat the ovaries and the abdomen for 10 minutes each, repeat after 20 minutes.

Color therapy ■ the use of the color orange is recommended.

FRONTAL SINUSITIS

Follow the same recommendations as in the case of sinusitis.

COLDS

Characterized by nasal discharge and stuffiness. Treatment is best started when the first symptoms appear. To prevent complications such as sinusitis, nasal spray or nasal drops are recommended for the alleviation of stuffiness.

Treatment ■ in addition to the nasal mucosa, the maxillary and frontal sinuses should also be treated. Recommendation: 2 to 3 sessions daily, 8 to 10 minutes per session.

Color therapy ■ the calming effect of the color blue and the anti-inflammatory effect of green are beneficial.

COUGHING

Coughing can be triggered by many things. It is worth identifying the underlying cause then basing the treatment on this information, or, if possible, eliminate the cause (for example mold in or around the bed).

Treatment ■ the mucosa of the throat and the pharynx, the maxillary lymph nodes on the front side of the neck, the hili of the lung on both sides of the sternum and the area under the shoulder blades, and the thymus in children, twice daily for 6 to 8 minutes.

Color therapy ■ the color green as an anti-inflammatory treatment, blue for lymph nodes.

CONJUNCTIVITIS

Inflammation of the conjunctiva due to various causes, accompanied by a burning, itching, prickling sensation. Usually local treatment is used, with the help of a cream. A chamomile compress and rinsing the eye can be very helpful in the alleviation of the inflammation and its symptoms.

Treatment ■ 4 to 6 minutes of treatment daily, treat both eyes while closed, two weeks of treatment is recommended.

Color therapy ■ the calming effect of the color blue and the anti-inflammatory effect of green may contribute to healing.

COMMON COLD

The common cold can be accompanied by a variety of symptoms such as rhinitis, coughing or a sore throat. If present, these symptoms should be treated individually based on the appropriate protocols. In order to avoid complications, treatment is best started when the first symptoms appear.

SORE THROAT, PHARYNGITIS, TONSILLITIS

Starting therapy when symptoms first appear helps prevent full-blown disease. However, you should contact your doctor if your symptoms worsen. Polarized light therapy used as complementary treatment of these conditions may contribute to faster recovery. In addition to polarized light therapy, other alternative treatments such as gargling with salt water may also be helpful when symptoms appear.

Treatment ■ illuminate the right and left sides of the neck, and the sternum two or three times a day until symptoms disappear.

Color therapy ■ for the throat the color blue, and for the sternum the color green is recommended.

PNEUMONIA

An illness usually accompanied by fever and a strong cough, sometimes also by chest pain. Medical attention and pharmacological treatment are an absolute necessity. Illumination with polarized light promotes uncomplicated recovery and shortens the recovery period.

Treatment ■ treat the cervical lymph nodes, the sternum, the hili of the lungs, and the area of the lungs (both on the chest and the back) twice daily with 10 minute sessions.

Color therapy ■ use the color blue for the lymph nodes, and green for the inflamed areas.

NEPHRITIS, PYELITIS

Polarized light therapy is used here as a complementary treatment. This illness – accompanied by pain in the kidney area, frequent need for urination, and fever – always requires medical attention. It is important to drink a lot of fluids.

Treatment ■ treat both kidneys, the sternum (in children), and the bladder for 20 minutes each during the evening hours.

Color therapy ■ the use of the color orange is recommended.

PROBLEMS IN ADOLESCENCE

ACNE AND BLACKHEADS

A large proportion, almost 90% of teenagers suffer from this “*illness*”, which may cause severe esthetic and psychological problems. Additionally, improper treatment may leave behind permanent scars. Acne or blackheads – commonly called pimples – form when the opening of the sebaceous glands in the skin becomes blocked for some reason, which leads to the proliferation of bacteria, and eventually to inflammation. Pimples usually emerge during adolescence in response to a combination of factors, such as hormonal changes, inherited predisposition, and environmental effects.

In order to prevent more significant blemishes and unsightly scars, acne treatment should start early.

Cleansing is very important: facial skin should be thoroughly cleaned in the morning and in the evening with lukewarm water and soap or a cleansing lotion.

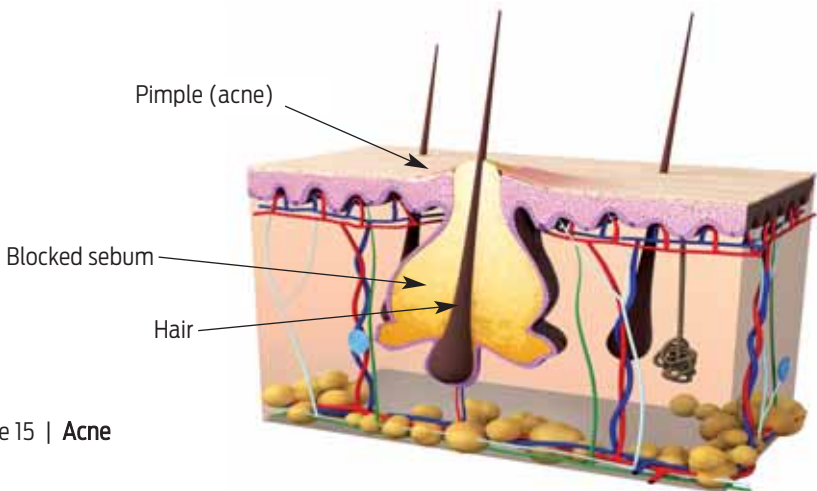


Figure 15 | Acne

Remove all powder or makeup before going to bed. Only non-irritating and non-drying facial care products should be used. Do not use strongly drying and irritating liquid soaps because they increase sebum production. In order to avoid oiliness of the forehead, frequent hair washing is recommended. Topical treatments used in home care may be sufficient for the mildest cases: in order to counteract a too thick stratum corneum, pimples should be treated with exfoliants, drying paste, or suspensions, usually applied in the evening. Pharmacological therapy may be used in addition to localized treatments.

Treatment ■ treat the affected area for 10 to 15 minutes two or three times a day.

Color therapy ■ the color green is recommended for the affected area, yellow for the liver and the spleen, and orange for the kidneys.

DISEASES OF ADULTS AND THE ELDERLY

SKIN DISEASES AND COSMETIC PROBLEMS

We are frequently faced with inflammatory disorders or allergies in conjunction with dermatological problems. An important property of polarized light is the ability to eliminate inflammation. This also plays an important role in cosmetic therapy, in the treatment of inflammatory processes such as acne, the elimination of postoperative (plastic surgery) scars, and also in the rejuvenation and hydration of the skin.

In the case of extensive lesions, it is recommended to treat the acupuncture points of the skin found along the 9th to the 11th vertebrae of the spine.

Pimples, acne and acne scars

The blockage and inflammation of the sebaceous glands, a frequent problem during adolescence, may also develop in adults in response to hormonal changes, stress, and certain medications. It should not be neglected, because it can cause permanent scarring.

Treatment ■ treat the affected area for 10 to 15 minutes two or three times a day.

Color therapy ■ the color green is recommended for the affected area, yellow for the liver and the spleen, and orange for the kidneys.

Abscess

Polarized light therapy is recommended for the treatment of skin abscesses, pus-filled cavities in the dermal tissue that may also occur in the internal organs (kidneys, liver). Frequently accompanied by fever, it is important to begin treatment as soon as symptoms appear. A doctor should be consulted in all cases.

Treatment ■ treat the affected area for 10 minutes two or three times a day.

Color therapy ■ the color green is recommended due to its anti-inflammatory effects, while yellow should be used in the treatment of the liver and the spleen, and orange in the treatment of the kidney area, which is very helpful in boosting the immune system.

Allergy

The number of allergic diseases is steadily increasing, and not only because the symptoms are becoming more widely recognized. The causes of allergy are very complex, and the factors that play a role in its development include the increa-

sing amount of artificial substances in the environment, as well as genetic, psychological, and immunological factors. It would be a mistake to simply blame environmental hazards, since modernization radically changed both our environment and our lifestyle. It has been known for a long time that left-handedness is often associated with allergies, that maternal smoking can cause allergies in the offspring, and that there is a much higher incidence of allergies among patients with anxiety and depression. All these observations suggest that the nervous system and psychological function are closely associated with the immune system, thus the indirect effects of modernization on the fetus and infant play a role in the development of allergic diseases - not to mention symptoms that emerge in adulthood, often due to acute stress.

The most frequent diseases caused by allergy are those of the airways and the mucous membranes (e.g. hay fever), the skin (e.g. urticaria, eczema), and the gastrointestinal system (e.g. diarrhea, bloating). The most frequent allergic diseases accompanied by skin lesions are listed below.

Eczema

Eczema is a recurrent skin disease occurring primarily at the extremities, though it may affect larger areas. In most cases the identification of its cause is very difficult, and it may be associated with external (such as textiles or laundry detergents) or internal (food) allergies. Its symptom is dry and itchy skin. You should contact a doctor, especially to explore the underlying cause.

Treatment ■ first, especially in the case of a large area, treat the acupressure points of the skin for 6 minutes each, or in the case of a smaller area use localized treatment for 10 minutes each.

Color therapy ■ general treatment that strengthens the immune system is always recommended, and the use of blue or yellow colored light for local treatments.

Insect bites

Insect bites can cause strong swelling even in milder cases, while in more serious cases the swelling might last for days and affect the entire extremity and the face as well. In some cases the insect bite may be followed by malaise, nausea, vomiting, generalized itching, shortness of breath, and in severe cases by loss of consciousness, laryngeal edema, arrhythmia, or even death (anaphylactic shock). Contact a doctor as soon as the symptoms arise. If there is local redness around a tick bite, followed by a concentric area devoid of the redness, surrounded by another concentric area of redness, contact a doctor, because these are the local symptoms of the infection that causes Lyme disease. However, this symptom may not appear in all individual infected by Lyme disease (approx. 40% do not show them), or



Skin reddening indicating Lyme disease

it can be hard to recognize because it covers a large area. Lyme disease can be detected with a blood test (in the tick too), and in its early stage it is very amenable to antibiotic treatment. However, later it can cause serious problems.

Treatment of simple insect bites ■ 10 minutes two or three times a day.

Color therapy ■ the color green, then orange is recommended.

Hives (urticaria)

This is a local allergic reaction. A small, itchy rash that does not rise above the skin surface, it is mostly caused by food or drug allergies or contact allergens (such as chemicals), but can also be triggered by inhaled allergens (such as pol-

len). It is a very frequently seen allergic symptom. In rare cases, a chronic (long-lasting, frequently recurring) form occurs, in which case a thorough medical check-up and long-term monitoring might be required to identify the triggers. It is worth identifying and then eliminating the cause.

Treatment ■ 10 minutes 2 to 3 times a day.

Color therapy ■ the color green, then orange is recommended.

Warts

Warts are caused by the human papilloma virus, which as a viral infection is easy to catch. There are several types of warts.

Treatment ■ illuminate the surface of the wart for 10 minutes two or three times a day.

Color therapy ■ in order to strengthen the immune system, illuminate the liver and the spleen with yellow light.

Gum diseases

Gingivitis: a bacterial infection of the gums. Symptoms may include: swollen, red, sensitive, bleeding gums, and bad breath.

Periodontitis: One of the stages of periodontitis is detectable in seventy percent of people at present. After the initial superficial gingivitis (primary symptoms are swollen and reddened gums), periodontitis proceeds to deeper layers, and causes the progressive loss of the periodontium (the fibers of the ligament system between the root and the alveolar bone) as well as that of the alveolar bone. This is a hidden, insidious process that occurs under the gums, and results in the sudden loosening of the tooth. Frequently the retraction of the gum is

minimal, so the associated pain is not due to the atrophy of the gum, but of the bone. Due to the frequent bleeding of the gums, incipient periodontitis can be recognized at an early stage – healthy gums do not bleed even during dental cleaning. Bad breath is an unambiguous sign of incipient periodontitis, therefore if you experience these symptoms, it is best to schedule a dental check-up as soon as possible. The check-up will uncover the degree of periodontitis, and appropriate treatment can be started. A panoramic X-ray shows an unequivocal picture of the status of the alveolar bone, facilitating an immediate diagnosis of periodontitis and its level of progression.

Nobody should be deceived by the lack of pain, because much of the course of periodontitis is painless. Chronic localized inflammation can cause joint pain, dermatological problems, hair loss, and other diseases elsewhere in the body.

Treatment ■ treatment of the affected area is recommended for 6 to 10 minutes twice a day, with the mouth open or closed.

Color therapy ■ the use of the color green is recommended.

Psoriasis

Smaller or larger scaly skin lesions; their cause is unknown in most cases. Possible causes include stress, pharmacological therapy, candidiasis or a weak immune system. If the affected surface is large, a protein-free or anti-Candida diet is recommended. A bath with sea salt is the recommended complementary treatment for joint problems associated with this disease.

Treatment ■ treat the affected area for 6 minutes twice a day.

Color therapy ■ yellow for the spleen and the liver, orange for the kidneys, and blue for the area of the skin lesions.



Hair problems ■ hair loss and dandruff

Hair loss can be a pathological or a natural process. If we lose more than one hundred strands of hair during combing, the loss is classified as pathological by dermatologists. Increased hair loss is a natural phenomenon during the spring. Hair loss can be triggered by many things: vitamin deficiency, low iron levels, hormonal disorders (after childbirth, during pregnancy, due to taking contraceptives, or thyroid dysfunction), localized inflammation somewhere in the body (for example an unhealthy tooth), and stress. Hairdressers recommend the following treatment: cutting the hair shorter so the follicles are under less stress, not wearing the hair in a tight style (bun or pony tail), and a circular massage during hair washing to improve circulation. Dandruff often also contributes to hair loss, and can indicate not only a dry scalp, but also a fungal or bacterial infection, or eczema. During the summer, excessive sweating should be avoided, and the roots should always be dried, which also helps avoid excessive sweat. Rinse your hair thoroughly during hair washing. Use a shampoo containing caffeine.

Treatment ■ illuminate the affected area or the entire hairy scalp for 10 minutes twice a day.

Color therapy ■ the local use of the color orange is recommended, as is the use of a treatment that strengthens the immune system.

Cellulite

Cellulite is an unsightly skin disorder that is not found exclusively in overweight people. It is formed when waste materials deposited in the dermis of the skin bind water, leading to edema. Due to the accumulated water the fibrous structure is disrupted, giving skin an uneven appearance resembling orange peel.

It can appear at a very young age, and it is localized mostly to the buttocks, thighs, abdomen, and arms. It is found mostly in women due to hormones and a difference in the structure of the skin. The main weapons in the fight against cellulite are the stimulation of blood and lymphatic circulation, and supporting the elimination of waste materials through detoxification, massage, and the application of creams. Pay attention to increased fluid intake, a healthy diet, and regular exercise!

Treatment ■ illuminate each point for 6 minutes, then repeat after the application of the cream. Treatment twice a day is recommended.

Color therapy ■ use of the color orange is recommended on the affected area.



Pockmarks

The skin may retain a pitted appearance if scars are not resolved properly after the infection has passed.

Treatment ■ 10 minutes on the affected area, repeated twice a day.

Color therapy ■ the color orange is recommended.

Scars

If damage to the layers underlying the epidermis results in tissue loss, a scar forms during wound healing. Inflammation associated with wound healing can also induce scar formation.

Treatment ■ illumination of the affected area, proceeding from point to point, is recommended, using 6 minutes sessions at each stop, repeated 2 to 3 times a day.

Color therapy ■ for a few days the use of green, then orange light is recommended.

Wrinkles

Regular use of a polarized light lamp is especially recommended for wrinkles.

Treatment ■ illumination lasting 6 to 8 minutes is recommended, then apply the appropriate cream after the treatment.

Color therapy ■ orange light should be used.

Fungal infections of the nails and skin

Requires several months of treatment and in many cases medical care and the use of a cream or anti-fungal ointment is unavoidable. Avoid wearing socks made from synthetic materials, and daily disinfection of shoes is recommended.

Treatment ■ treat the affected area for 10 to 15 minutes twice a day; in the case of children, treatment of the thymus is also recommended.

Color therapy ■ use green light on the area affected by fungal infection, and orange light to treat the liver and the spleen in order to strengthen the immune system.

WOUND HEALING, INJURIES

As mentioned previously, polarized light therapy can be used most effectively in this, the best studied area. Make sure that the wound is clean, and avoid transferring contamination with the dressing you apply. In general, illuminate the surface of the wound for 10 to 15 minutes at least twice a day from a distance of less than 4 inches.

Leg ulcers

Poor venous circulation results in inadequate removal of waste materials from the skin, and the oxygen supply decreases. This results in inflammation, tissue necrosis, and ulceration. This is a process that often occurs as a side effect of varicose veins in diabetic patients. It is also problematic that the wound heals very slowly due to poor blood and nutrient supply.

Treatment ■ treatment of the wound, the surrounding areas and regions affected by narrowing of blood vessels is recommended for 10 to 15 minutes once or twice a day.

Color therapy ■ use of the color yellow is recommended; however, if there is also wound infection, use green first.

Pressure sores

May develop as a result of prolonged bed rest, and they are caused by inadequate blood supply due to the pressure exerted on tissues by the bed.

Treatment ■ 10 to 15 minutes a day, as in the case of ulcers.

Color therapy ■ as in the case of ulcers.

First and second degree burns, scars

The first thing to do in case of any burn injury is to clean the wound (removing clothing and so on), followed by pain control using cold water. If the burn affects a large surface area, call an ambulance!

Treatment ■ light therapy should last 6 to 8 minutes, carried out two or three times a day. If necessary, increase the distance between the lamp and the skin surface.

Color therapy ■ the color blue can be used for 3 to 4 days.

Sunburn

Consult your doctor if large blisters develop on the sunburned skin, accompanied by fever, pain, vomiting, or confusion!

Treatment ■ light therapy should last 6 to 8 minutes two or three times a day. If necessary, increase the distance between the lamp and the skin surface.

Color therapy ■ the color blue can be used for 3 to 4 days.

Bruises

The healing process of bruises accelerates with improved blood circulation to the tissues increasing the number of phagocytes.

Treatment ■ 8 to 10 minutes, 2 to 3 times a day.

Color therapy ■ the use of the color blue is recommended.

Fractures

Since polarized light does not penetrate plaster casts, treat areas that are not covered by the cast. Treatment should be carried out according to the general instructions.

CIRCULATORY PROBLEMS

High blood pressure

Unfortunately, hypertension does not cause any specific symptoms, and thus it is hard to recognize. However, it can cause a variety of diseases, so it is important to use pharmacological treatments and lifestyle modifications as well as light therapy. Never stop taking your prescribed medications without first consulting your doctor!

Treatment and color therapy ■ illumination of the nape of the neck for 10 minutes (can be supplemented with blue light), then illuminate the closed eyes for 6 minutes (can be supplemented with yellow light). Illuminate the heart area for 10 minutes (can be supplemented with green light), and illuminate the kidneys for 6 minutes each (can be supplemented with orange light). This process is recommended once a day, five times a week, during the evening hours if possible.

Arrhythmia

At some point in our lives almost all of us experience extra, separate heartbeats in addition to our normal heart rhythm. Most of these heartbeats go undetected. If the symptoms cause distress, they should be treated. Symptoms may include

palpitations, malaise or loss of consciousness. They can be triggered by narrowing (stenosis) of the coronary arteries, atrophy of the heart muscle (hypertrophic cardiomyopathy), an imbalance of sodium, potassium, calcium, and magnesium ions, hyperthyroidism, or even stress. It is essential to consult a doctor if you experience these symptoms!

Treatment ■ 10 minutes two or three times a day, treating the area between the second intercostal space and the nipple.

Color therapy ■ green.

Angina pectoris

Polarized light therapy can be an effective complementary treatment for coronary vasospasm.

Treatment ■ 10 minutes two or three times a day, treating the area between the second intercostal space and the nipple.

Color therapy ■ green.

Heart attack

Polarized light therapy supports recovery after a heart attack by increasing the blood supply in the damaged area, and thus improving its function.

Treatment ■ identical to the treatment of arrhythmia.

Narrowing of blood vessels (arteriosclerosis)

This is a thickening of the walls of arteries, which may affect several organs and therefore cause a variety of diseases.

Carotid stenosis

Blockage of the carotid arteries can cause paralysis. The lamp is used here as a complementary treatment.

Treatment ■ treat both sides of the nape of the neck, as well as the arteries underneath the jaw for 10 minutes each, repeated after 20 minutes, twice a day.

Color therapy ■ the color red is recommended for the arteries, and blue for the nape area.

Stroke, cerebrovascular trauma

This can be triggered by the narrowing of cerebral arteries, and can lead to paralysis and speech disturbances. Polarized light therapy should be used as a complementary treatment. Keep in mind that prolonged bed rest can cause pressure sores.

Treatment ■ treat the affected brain region and/or the joints of paralyzed extremities for 10 minutes each, repeat after 30 minutes, twice a day.

Color therapy ■ the color blue is recommended for the brain, and orange for the joints.

Narrowing of lower extremity blood vessels

This disease typically occurs in smokers and people with diabetes, and can even lead to amputation. Lifestyle changes, such as quitting smoking and adopting a healthy diet, are important. Polarized light therapy is recommended as a complementary treatment. The affected areas should be kept warm.

Treatment ■ treatment of the groin, the crook of the knee, the center of the top of the foot, the toes of both feet, and both kidneys is recommended for 10 minutes each, repeated after 30 minutes, twice daily.

Color therapy ■ the color red should be used for the leg, and orange for the kidneys.

Hemorrhoids

Always consult a doctor to determine whether there is any underlying pathology such as colitis or a tumor.

Treatment ■ treat the affected area for 20 minutes twice a day.

Color therapy ■ clean the area, then use the color blue followed by the application of cream, and then the color green.

PROBLEMS OF THE DIGESTIVE TRACT

Gastritis, inflammation of the stomach

An inflammation of the gastric mucosa can be triggered by a variety of factors, such as medications, smoking, alcohol, or stress. Polarized light therapy can be used as a complementary treatment to decrease inflammation and pain.

Treatment ■ see paragraph entitled Ulcers.

Ulcers

A stomach ulcer is a gap in the gastric mucosa measuring at least a fifth of an inch across. In terms of depth, the ulcer may affect different layers of the mucosa.

A bacterium called *Helicobacter pylori* plays an important role in the development of 60-70% of stomach ulcers. Thanks to its special structure, this bacterium can survive in the acidic environment of the stomach. Ulcers can be caused by several of factors: it is well known that stomach or duodenal ulcers can be a

side effect of certain medications, such as steroids. Non-steroidal anti-inflammatory medications (such as aspirin and diclofenac, taken for rheumatic complaints and headaches) can cause even more problems, because they are frequently taken without medical advice and monitoring. There is a higher incidence of ulcers among smokers, for whom healing is typically slower even with appropriate treatment and there are more complications. Ulcers can develop in 2 to 3 days in response to events (such as major accidental injuries, head injuries, burns, shock, or serious infections) that place the body under stress. Impairment of the body's defense system and increased acid production both play a role in the development of ulcers.

The pain associated with ulcers typically goes away after a meal, and then slowly returns as the stomach empties, usually within 1 to 3 hours. The pain associated with the emptying of the stomach that goes away after ingestion of food is called hunger pain.

Treatment ■ illumination of the solar plexus, and the areas under the left and right rib cage, repeated after 60 minutes, twice daily.

Color therapy ■ the use of color green on the affected area is recommended.



Helicobacter pylori

Hepatitis, cholecystitis, pancreatitis

Polarized light therapy can be used as a **complementary treatment** to alleviate pain, promote regenerative processes, and decrease inflammation. It is very important to keep to a simple, low-fat diet.

Treatment ■ illuminate the area of the gallbladder under the right side of the rib cage, the lobes of the liver, the spleen (under the left side), the kidneys, the right and left sides of the pancreas (above the navel), and the solar plexus for 10 minutes each, repeat after 30 minutes, twice a day.

Color therapy ■ use yellow light in a back and forth motion over the problematic area, and use orange light to treat the kidneys, and the spleen.

Crohn's disease

An autoimmune disorder, this disease is accompanied by the chronic inflammation of the gastrointestinal system, primarily the small and large intestines, usually with no identifiable cause. It is frequently accompanied by ulcers and abscesses on the affected intestinal wall, so regular gastroenterological examinations are required.

Treatment ■ the immune system can be strengthened by treating the area of the kidneys, liver, and spleen. Inflammation can be decreased by moving the light back and forth over the abdominal area for 8 to 10 minute twice a day.

Color therapy ■ the color yellow for the treatment of the liver and the spleen, orange for the kidneys; green is recommended for the inflamed areas.

Ulcerative colitis

A disease accompanied by abdominal bloating and pain, and difficult bowel move-

ments. It is important to have a medical check-up to rule out serious pathologies such as tumors. The health of the colon plays an important role in the proper function of the adult immune system. Pay attention to adequate fluid intake in the form of water, and consume foods rich in fiber (fruits and vegetables).

Treatment ■ treat the liver, spleen and abdominal areas for 10 minutes each, repeated after 30 minutes, twice a day.

Color therapy ■ the color yellow is recommended for the liver and the spleen, and orange for the kidneys.

RESPIRATORY PROBLEMS

Sinusitis

This is an inflammation of the sinus cavities. It can be recognized by headache and facial pain triggered by bending down, lifting or coughing. It might be associated with a sensation of pressure on the top of the head. A doctor should be consulted in all cases, because antibiotic treatment is likely unavoidable.

Treatment ■ the upper jaw and the frontal bone (forehead) should be treated twice daily for 8 to 10 minutes as a complementary therapy; additionally, treat the thymus and lymph glands situated under the jawbone (in children treat the sternum).

Color therapy ■ the anti-inflammatory effect of the color green is beneficial.

Colds

Characterized by nasal discharge and stuffiness. Treatment is best started when the first symptoms appear. To prevent complications such as sinusitis, nasal sprays or drops are recommended for the alleviation of congestion.

Treatment ■ in addition to the nasal mucosa, the maxillary and frontal sinuses should also be treated. Recommendation: 2 to 3 sessions daily, 8 to 10 minutes per session.

Color therapy ■ the calming effect of the color blue and the anti-inflammatory effect of green are beneficial.

Pharyngitis, tonsillitis

Therapy started when symptoms first appear helps prevent full-blown disease. However, you should contact your doctor if your symptoms worsen. Polarized light therapy used as complementary treatment of these conditions may contribute to faster recovery. In addition to polarized light therapy, other alternative treatments such as gargling with salt water may also be helpful when symptoms appear.

Treatment ■ illuminate the right and left sides of the neck, and the sternum two or three times a day, until symptoms disappear.

Color therapy ■ for the throat, the color blue, and for the sternum, the color green is recommended.

Bronchitis

Polarized light therapy (used as a complementary treatment) may increase the speed at which this illness runs its course.

Treatment ■ the mucosa of the throat and the pharynx, the maxillary lymph nodes on the front side of the neck, the hili of the lung on both sides of the sternum and the area under the shoulder blades, and the thymus in children, twice daily for 6 to 8 minutes.

Color therapy ■ the color green as an anti-inflammatory treatment, blue for lymph nodes.

Pleurisy

This disease, accompanied by chest pain, develops after illnesses of the upper respiratory tract. Polarized light therapy should be used as a complementary treatment to strengthen the immune system.

Treatment ■ treat the thymus, the lymph nodes under the jaw and the painful area for 10 minutes each twice a day.

Color therapy ■ use the color blue for the lymph nodes and green for the painful, inflamed areas. Apply the treatment with a back and forth motion.

Pneumonia

An illness usually accompanied by fever and a strong cough, and sometimes also by chest pain. Medical attention and pharmacological treatment are an absolute necessity. Illumination with polarized light promotes uncomplicated recovery, and shortens the recovery period.

Treatment ■ treat the cervical lymph nodes, the sternum, the hili of the lungs, and the overall area of the lungs (both on the chest and the back) twice daily, from a distance of 4 inches, in 10-minute sessions.

Color therapy ■ use the color blue for the lymph nodes, and green for the inflamed areas.

Asthma

Strengthening of the immune system is the important factor in the complementary therapy of childhood asthma. Wheezing and coughing in adults is often due to gastro-esophageal reflux (the stomach content moving back up the esophagus). Polarized light therapy is recommended as a complementary treatment.

Treatment ■ treatment of the thymus for children, while in adults the treatment of the solar plexus and the hili of the lungs (fourth intercostal space along the sternum) are recommended.

Color therapy ■ the color green is recommended for the thymus and the hili of the lungs.

DISEASES OF THE EXCRETORY AND GENITAL ORGANS

Pyelonephritis

Polarized light therapy is used here as a complementary treatment. This illness – accompanied by pain in the kidney area, frequent need for urination, and fever – always requires medical attention. It is important to drink a lot of fluids.

Treatment ■ treat both kidneys, the sternum (in children), and the bladder for 20 minutes each during the evening hours.

Color therapy ■ the use of the color orange is recommended.

Cystitis

Cystitis develops frequently during childhood, but can also occur in adults, mainly women. It is accompanied by frequent urination and abdominal pain. Its treatment is important, because recurrent cystitis can lead to infertility in adulthood. Drink a lot of fluids! Polarized light therapy is recommended as a complementary treatment.

Treatment ■ treat the ovaries and the abdomen for 10 minutes each, repeat after 20 minutes.

Color therapy ■ the use of the color orange is recommended.

Prostatic hyperplasia (enlarged prostate)

As a consequence of benign prostatic hyperplasia, the prostate can grow to several times its normal size and cause serious problems with urination by compressing and decreasing the diameter of the urethra. Urination during the night becomes more frequent, and the need to urinate becomes more urgent with time. It may be accompanied by pain and a burning or stinging sensation, and difficulty starting and stopping urinations is also characteristic of prostate hyperplasia. It is essential to consult a doctor to rule out serious disorders such as tumors or abscesses.

Diet plays an important role in the prevention of prostate cancer. You should eat whole, unprocessed foods, and make sure to take zinc and unsaturated fatty acids regularly. Use cold-pressed oils such as sesame or olive oils. Eat more oily seeds, pumpkin seeds, walnuts, peanuts, raw vegetables, fruits, beans, peas and brown rice.

Treatment ■ treat the affected area for 20 minutes twice a day.

Color therapy ■ illumination of the prostate with the color orange is recommended.

Impotence, frigidity

Frigidity in women means not only a lack of orgasms, but also a decrease in sexual drive and insensitivity to sexual stimuli. There are several degrees, starting with a long sexual reaction time and rare orgasms, up to an aversion to sexual contact. It can be caused by somatic factors (for example hormonal disorders), or psychological, interpersonal, and cultural factors. It is worth paying attention to this problem, because it is usually treatable. Unfortunately, people (and not only women) have a hard time discussing these issues.

Treatment ■ polarized light treatment should last for 10 minutes, illumina-

te the ovaries, the lumbar spine, as well as the midpoint between the vulva and the navel (abdominal chakra). Repeat after 30 minutes.

Color therapy ■ violet light is recommended for the spine, orange for the ovaries, and red for the area of the abdominal chakra.

Impotence is a common term for the inability of the man to achieve an erection. Medically speaking there are different types, and they can include infertility, erectile dysfunction, lack of ejaculation (due to lack of sperm), lack of sexual desire, and the absence of orgasm. The term is also applied to sterility or multiple loss of pregnancy in women. It may be caused by organic disorders or psychological problems, and the majority of these can be treated by a qualified specialist.

Treatment ■ treat the testicles, lumbar spine and abdominal chakra for 10 minutes each, repeat after 30 minutes.

Color therapy ■ the color red is recommended for the testicles, orange for the abdominal chakra, and purple for the spine.

Menopause (the change)

A physiological phase in women around the age of 50, when a change in the hormonal balance of the body occurs, as the name suggests. All women go through this change, but the symptoms and their intensity can vary. It is caused by a decrease in the amount of the estrogen hormone produced by the ovaries. It can be a natural process, or due to surgical intervention or radiation therapy. Symptoms:

- Hot flushes and perspiration occur due to disordered control of body temperature.
- Neurovascular disturbances can cause hypertension, headache, migraine, and arrhythmia.

- There is an increased tendency to edema or to “retain water” due to an imbalance of the adrenal cortex.
- Metabolism slows down, leading to weight gain.
- Urinary incontinence (difficulty holding back urine). These are caused in part by the decreased levels of female hormones. This leads to the atrophy of vaginal and urethral mucosa, and a decreased tone of the tissues surrounding the urethra, resulting in leakage of urine.
- The decreased levels of female hormones can cause vaginal dryness and itching, and can also increase the vulnerability of the vagina and the cervix. This can make sex uncomfortable, leading to bleeding during sexual intercourse.
- Libido decreases or can completely disappear.

An equivalent of menopause also affects men, though the symptoms of andropause are milder, take place over a longer time, and the changes are much less obvious. Andropause is also caused by a decrease of hormone levels, in this case that of testosterone (instead of estrogen).

Treatment ▪ treat the abdominal chakra for 20 minutes, and the two ovaries and the third eye for 10 minutes each.

Color therapy ▪ the use of the color orange is recommended.

MUSCULOSKELETAL DISORDERS

Joint diseases

Joint diseases can be caused by a variety of disorders leading to wear and tear and inflammation. Frequently an accumulation of toxins results in joint diseases. In such a case, a detoxifying cleanse is recommended!

Treatment ■ Always treat the affected area, proceeding from point to point, treat each point for 10 minutes, repeated after 30 minutes twice a day. During the detoxifying cleanse, treat the kidneys, liver, spleen and navel by moving the light back and forth.

Color therapy ■ use the color green for inflammation, yellow for wear and tear of the joint, and orange for the lower extremities.

Back pain, herniated/slipped disc

Inside the inter-vertebral discs there is a gel-like core surrounded by a tougher, fibrous ring. If this fibrous ring is weakened or damaged, the internal, softer core might bulge (just like with any other type of hernia), or in more severe cases might break through and protrude. This protruding part can compress the spinal nerve roots causing intense pain. It can develop gradually or suddenly, almost from one moment to another. This sudden pain can be caused by injury, tumor, infection or rheumatoid disease. If the spine is osteoporotic, simply lifting something can result in herniation, as can bacterial infections.

Generally, surgical intervention is only recommended for serious cases – rest and pharmacological treatment are the usual recommendations. At the initial stage, take care to select appropriate footwear. If you work in an office,

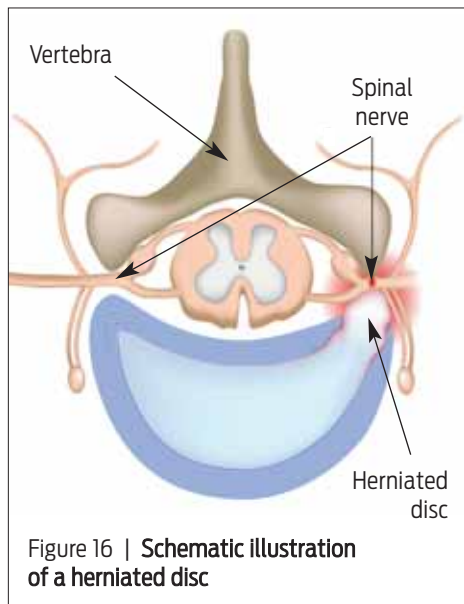


Figure 16 | Schematic illustration of a herniated disc

stand up and walk around for 5 to 10 minutes several times a day. Use a suitable mattress for sleeping, and avoid carrying heavy loads, or make sure they are distributed properly.

It is essential to consult a doctor if you experience these symptoms!

Treatment ■ treat both sides of the lumbar spine for 20 minutes each, repeat after 30 minutes twice a day.

Color therapy ■ the use of the color violet is recommended.

Gout

A disease accompanied by joint problems, caused by a metabolic disturbance leading to the accumulation of uric acid. A suitable diet and high fluid intake are important, in addition to pharmacological treatment. Polarized light therapy is recommended as a complementary treatment.

Treatment ■ treat the affected joints and the kidneys for 10 minutes twice a day.

Color therapy ■ the color green is recommended for the inflamed areas, and orange for the kidneys.

Rheumatoid arthritis

An autoimmune disease resulting in joint inflammation: the body recognizes its own connective tissues as foreign, and mounts an inflammatory reaction in defense. In the course of this disease, the synovial joints thicken, limiting normal function. The joint and the surrounding structures are gradually destroyed. Symptoms: initially fever, malaise, then muscle spasms and, eventually, the joint deformity becomes permanent. During this process, tendinitis, rheumatoid nodules and bony deformations can develop. As the disease progresses, painful

connective tissue or joint stiffness develops, deforming the joint. Compared to men, its incidence is two to three times higher among women. Polarized light therapy is an important complementary treatment for this illness.

Treatment ■ treat each point of the affected areas for 10 minutes twice a day.

Color therapy ■ the color yellow is recommended for the joints, and orange for the kidneys.

Osteoporosis

October 20th has been named Osteoporosis day by the WHO. The disease has been called “*the silent epidemic*” because frequently it is not recognized until complications such as fractures develop. Its incidence is higher among women, affecting a third of post-menopausal women, or an estimated one million women in Hungary. Although any of the bones can break, there are fracture sites that are typical of osteoporosis: these are the wrists, hips, and the vertebrae. Vertebrae may collapse after lifting even small loads, leading to a loss of height. It is not necessarily accompanied by pain.

A large proportion of hip fractures in the elderly lead to death due to complications, or the patient may not recover and will require support for the rest of his or her lifetime, placing a great burden on both family and society.

However, osteoporosis and its manifestations can be prevented, or the risk can be decreased. Prevention is especially important in the case of this health problem, because a little care can mean freedom from a severe problem during later years. Measurement of bone density has shown that regular exercise increases the mineral content of bones. Osteoporosis is less frequent among people who perform regular physical work or exercise. Physical activity is also very important once the disease has developed. Regular back and spine strengthening exercises improve posture and protect the spine. With better muscle

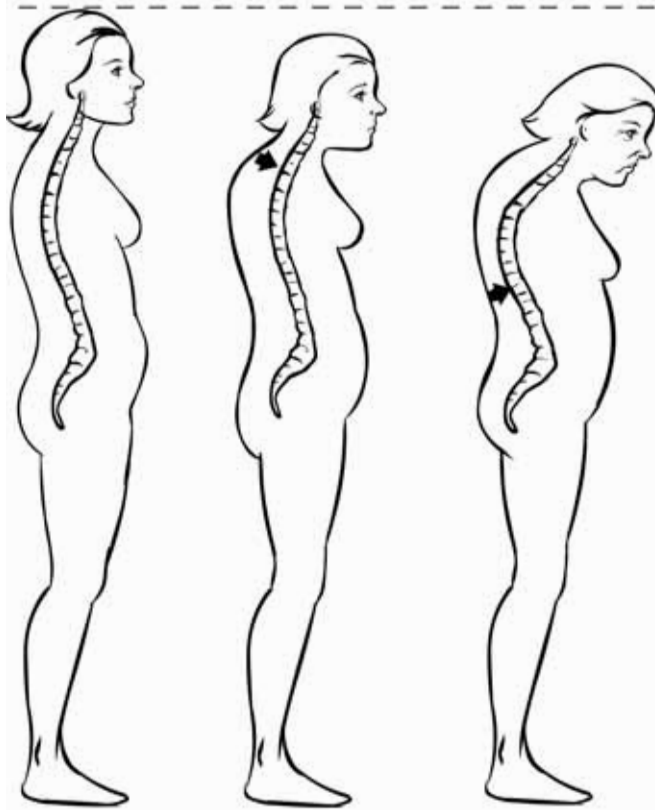


Figure 17 | The process of osteoporosis

coordination and movement, falls and fractures become less likely. It is recommended that patients consult a physical therapist to learn about the best exercises. In Hungary, there are many places that offer group physical therapy within the framework of osteoporosis patient associations or a network of osteoporosis centers.

Recommended sports include swimming, bicycling, gardening – however, extreme sports should be avoided.

Calcium requirements at different ages

Childhood	1,200 mg/day
Adulthood	800 mg/day
Pregnancy	1,200 mg/day
Breastfeeding	1,400 mg/day
Old age	1,500 mg/day

Calcium content of foods

Food	Calcium, mg / 100 g (mg / approx. one quarter pound)
Meat	14
White bread	20
Brown bread	30
Cabbage	54
Lentils	74
Cottage cheese	80
Beans	106
Bananas	110
Milk	120
Spinach	140
Walnuts	202
Almond	230
Oily fish	270
Hazelnuts	290
Trappist cheese	600
Swiss cheese	800
Poppy seeds	968

A proper diet and adequate calcium intake play an important role in the prevention of this disease. Calcium requirement varies with age. The calcium requirements of children and the elderly are higher due to increased bone growth and inadequate calcium absorption, respectively. The best way to obtain the required amount of calcium is through the consumption of milk and dairy products, but oily seeds and legumes are also high in calcium. Calcium supplements can be taken, but take care not to ingest excessive amounts, because they can be harmful. Do not forget that vitamin D is required for the absorption of calcium. Excessive coffee and alcohol intake is detrimental to bone health – both of these substances promote the removal of calcium from the body. Fizzy drinks (soda) have a similar effect.

Treatment ■ treat the affected areas (mostly the spine and the pelvic bone) in a back and forth motion for 10 minutes twice a day.

Color therapy ■ the color blue is recommended for the spine, and orange for the hips.

NEUROLOGICAL DISEASES

Depression

Treatment ■ treat the area of the face in a back and forth motion for 10 to 15 minutes twice a day.

Color therapy ■ the use of the color violet is recommended for the treatment of the top of the head (crown chakra).

Multiple sclerosis

An autoimmune disease affecting the central nervous system that results in the destruction of the myelin sheath of nerve fibers. Its symptoms can vary, and may include visual disturbances, blindness, paralysis, and speech disturbances. Polarized light can form part of the treatment regimen when used as a complementary therapy. Massage is also important in the alleviation of, or maintenance therapy for, musculoskeletal complaints.

Treatment ■ treat the joints of the extremities and the spine for 6 to 8 minutes twice a day.

Color therapy ■ the color orange is recommended for joints, and blue for the spine.

Abscesses

A pus-filled cavity in the dermal tissue, but may also occur in internal organs such as the kidneys or liver. Frequently accompanied by fever. Polarized light therapy is recommended for the treatment of skin abscesses. It is important to begin treatment as soon as symptoms appear, and a doctor should be consulted in all cases.

Treatment ■ treat the affected area for 10 minutes two or three times a day.

Color therapy ■ green is recommended for its anti-inflammatory effects; yellow should be used for the liver and the spleen, and orange in the treatment of the kidney area, which is very helpful in boosting the immune system.

Facial paralysis, facial nerve paralysis

Dysfunction of the facial nerve due to damage of various origin (inflammation, viral infection). Consult a neurologist without delay, and see an ophthalmologist

if the paralysis also affects the eyes, because continually open eyes can quickly dry out, leading to injury or infection.

Treatment ■ illuminate the temples, the jaw, the top of the nose and the areas in front of the ears for 10 minutes each, twice a day.

Color therapy ■ the use of the color violet is recommended.

Trigeminal neuralgia

A disease accompanied by strong, electric shock-like pain. Polarized light therapy can be used as a complementary treatment to alleviate pain and possibly inflammation.

Treatment ■ illuminate the temples, the jaw, the top of the nose and the areas in front of the ears for 10 minutes each, twice a day.

Color therapy ■ the use of the color violet is recommended.

Parkinson's disease

A disease accompanied by tremor, muscle spasticity and unstable gait, caused by the degeneration of nerve cells.

Treatment ■ treat the joints of the extremities and the spine for 6 to 8 minutes, twice a day.

Color therapy ■ the color orange is recommended for joints, and blue for the spine.

PROBLEMS AFTER CHILDBIRTH

Episiotomy

Polarized light therapy accelerates wound healing, relieves pain, and inhibits the

development of inflammation. The area should always be cleaned before treatment!

Treatment ■ illuminate the affected area for 20 minutes, repeated after 30 minutes, twice day.

Color therapy ■ the use of the color yellow is recommended.

Mastitis, inflamed nipples

A disease occurring in new mothers that is accompanied by pain, tightness of the breasts, redness, fever, and nodules. Improper treatment may necessitate surgical intervention for the removal of the nodules. It is caused by improperly performed breastfeeding and/or failing to empty the breast. Consult a breastfeeding expert (for example LLL – La Leche League of Hungary, www.lll.hu) for advice on the proper routine and correct posture for breastfeeding – in addition to plenty of rest, and consuming approximately a gallon of fluids a day. Recommended treatments for mastitis include smearing the nipples with breast milk or saliva.

Treatment ■ illuminate the painful area of the breast for 20 minutes twice a day.

Color therapy ■ the use of green or blue light is recommended.

SPORTS INJURIES

Muscle cramps

Treatment ■ treat each point of the affected area for 15 minutes twice a day.

Color therapy ■ the color yellow is recommended for the arms, and orange for the legs.

Bruises and sprains

Treatment ■ treat the affected area with a back and forth motion for 10 minutes twice a day.

Color therapy ■ the use of the color blue is recommended.

Sprains

Always consult a doctor to determine whether it is a sprain, and to diagnose the extent of the injury. If necessary, wear a splint.

Treatment ■ treat the affected area for 10 minutes twice a day.

Color therapy ■ the use of the color yellow is recommended.

OTHER ACHES AND PAINS

Headache

Treatment ■ treatment of the nape of the neck and the crown is recommended, for 10 minutes each, repeated after 20 minutes.

Color therapy ■ the color blue is recommended for the nape, and violet for the crown.

Migraine

Treatment ■ move the lamp back and forth over the nape of the neck, the top of the nose, and the forehead for 10 minutes each, several times a day.

Color therapy ■ the use of blue or violet light is recommended.

Toothache

In case of a toothache, always consult a doctor, because cavities can be present even if they are invisible to the naked eye. A decayed tooth can be a localized cause of other problems such as headaches, earaches, and hair loss.

Treatment ■ treat the painful, affected area for 10 to 20 minutes, two or three times a day.

Color therapy ■ the color blue - or in the case of inflammation, green – is recommended.

THYROID DISEASES

The thyroid is a lobular gland situated in front of the larynx, and it governs the function of two hormones containing iodine. Its most common disorders are hyper- and hypothyroidism, caused by altered hormone levels. Thyroid hormones affect the activity of all cells in the body, thus changes in their levels affect multiple organs.

Hyperthyroidism

In hyperthyroidism the amount of thyroid hormone produced is too high. The blood levels of two hormones are too high, and the level of TSH (a cerebral hormone regulating hormone production) is consequently lower. Symptoms of the disease:

- rapid weight loss, even though the eating habits of the individual are unchanged,
- rapid heart rate,

- elevated blood pressure,
- bulging eyes (only in Graves-Basedow disease),
- enlarged thyroid gland.

Treatment ▪ illuminate the thyroid gland, the solar plexus and the third eye for 10 minutes each.

Color therapy ▪ the color green is recommended for the thyroid gland and the third eye, and orange for the solar plexus.

Hypothyroidism

In hypothyroidism the amount of thyroid hormone produced is too low (or zero). The blood levels of two hormones are decreased, and the level of tsh is consequently high. Symptoms of the disease:

- sudden weight gain, even though the eating habits of the individual are unchanged,
- hair loss and premature graying of the hair,
- low oxygen supply to the brain, therefore the patient is slowed down,
- depression,
- anemia,
- fatigue,
- dry skin,
- reduced heart rate,
- bone and joint pain.

Treatment ▪ illuminate the Adam's apple, solar plexus (between the navel and the pit of the stomach), the third eye, the liver, and the spleen for 10 minutes each, then repeat after 30 minutes.

Color therapy - orange is recommended for the thyroid gland, the solar plexus and the third eye, while yellow is recommended for the spleen and the liver.

DIABETES (DIABETES MELLITUS)

The most common metabolic disease in the world, diabetes can lead to severe complications and the number of patients is increasing year after year. It is caused by a lack of insulin or the insensitivity of the body to insulin. As a consequence, glucose is not taken up by the cells, but is excreted through the urine while taking a large amount of water with it.

Type 1 diabetes usually develops quickly, and is only recognized when the affected individual falls into a coma. Type 2 diabetes develops slowly, almost imperceptibly, so it usually comes to light in the course of a routine medical check-up, indicated by elevated blood glucose levels or elevated urine glucose levels.

Since the cells are unable to absorb glucose, the concentration of glucose increases in response to absolute or relative insulin deficiency. The amount of excreted urine increases due to high blood glucose levels (hyperglycemia), because above a certain glucose level (usually from 10 mmol/L) the kidneys can no longer retain glucose and it is excreted with the urine together with a large volume of water. This water loss makes the patient thirsty. In some cases, prolonged fatigue, delayed wound healing, recurrent acne, or itching may point to diabetes. Hyperglycemia can induce ophthalmologic complications, such as visual disturbances. Ophthalmologists sometimes call attention to possible diabetes after recognizing characteristic changes to the back of the eye. Since glucose is not taken up by the body, the weight of the individual may decrease even with unchanged or increased appetite. The patient can adjust to the symptoms, so it is common for the complications of diabetes to be first recognized by a doctor.

Polarized light therapy is an important complementary therapy in diabetes, especially because diabetics often suffer a weakened immune system and vascular damage, both of which can cause a plethora of other disorders. These can be mitigated by treating the appropriate areas with polarized light.

Treatment ■ treat the eyes, the kidneys and the pancreas for 10 minutes each, repeated after 30 minutes.

Color therapy ■ the use of the color yellow is recommended, and the kidneys should be treated with orange.

SLEEP DISORDERS

Sleep is part of the life of humans and most vertebrates. It is essential for our bodies from both a qualitative and a quantitative standpoint. During sleep, the body regenerates and prepares for the next physical and mental challenges, and our subconscious sorts out the events of the previous day. The need for sleep is different at different ages: newborn babies only seem to wake up to feed, while old people can get by with only a few short hours of sleep. Two cycles alternate during sleep. During the non-rapid eye movement (NREM) or slow wave sleep (SWS) phase, the energy of the body is restored, and growth hormones are released. This cycle is interrupted by REM (rapid eye movement) periods, primarily characterized by irregular, faster and shallower breathing. The eyes perform rapid movements in all directions, while the muscles of the extremities are temporarily unable to move. Dreaming mostly happens during the REM phase. Studies have shown that brain areas involved in learning, thinking, and organizing are active during this period.

Lack of sleep impairs performance and adaptability, increases the risk of accidents, decreases immune defenses, and prolonged sleep deprivation can lead to death.

Most sleep disorders are associated with some type of physical, psychiatric, or psychological illness or problem, although they can also occur as a separate condition. Sleep disorders most frequently manifest as problems falling or staying asleep, early waking, or a combination of both. However, there are also specific sleep disorders such as narcolepsy (sudden, unexpected sleep attacks at various times of the day) or somnambulism (sleepwalking).

Today there are several sleep centers in Hungary (one center in the Heim Pál Children's Hospital is specializing in the treatment of children). It is recommended that you visit one of these if the sleep disorder has been present for a long time.

Treatment ■ illuminate the back along the spine for 4 minutes, proceeding from point to point.

Color therapy ■ the use of the color blue is recommended.

DETOXIFICATION

As mentioned at the beginning of this book, detoxification of the body is an important part of Oriental medicine. It plays a major role in disease prevention and the regeneration of the immune system. There are various methods of detoxification, such as juicing, juicing combined with medicinal plants, or massages. The polarized light lamp is an excellent tool of disease prevention and/or healing, whether used alone or to complement other treatments.

Treatment ■ 6 to 20 minutes (less for children, more for adults) of treatment of the liver, spleen, kidneys and navel is recommended, preferably during the evening hours. Drinking a detoxifying tea is recommended, both before and after the treatment.

Color therapy ■ the color orange is recommended for the kidneys and the navel, and yellow for the liver and the spleen – it greatly promotes the strengthening of the immune system.



Afterword

This book aimed to provide readers with a deeper insight into the essentials of polarized light therapy, to describe its biological effects, and to illustrate areas where the therapy has been used successfully. We have endeavored to describe the treatment recommendations of both users and equipment manufacturers.

Our hope is that the information about the uses of the polarized light lamp will be helpful not only to you personally, but also to your family and friends.

The fact that the polarized light lamp can provide benefits without producing side effects means you can confidently try out the device for the treatment of all kinds of problems, in people of any age, from infants to the elderly. Naturally we recommend using the device not only when a serious health problem is already present, but also for preventing illness from developing and maintaining your general well-being.

*Wishing you
good health and
a well-balanced life!*

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Publisher: Oxford Medical Instruments Hungary Kft.

2011 Budakalász, Vasútsor 80., Hungary

Editor: István Magyar

Images, illustrations:

Personal photographs, Shutterstock

Layout, typography: Cífra Produkció Kft.

Printing press: Korrekt Nyomdaipari Kft.

Manager: Imre Barkó

ISBN 978-963-89805-5-7