
Table of contents

Table of contents.....	1
Chapter 1: Foundations and basic knowledge of medical low-level- laser therapy.....	4
1.2 Molecular, biological, and biochemical foundations of LLLT.....	5
1.2.1 Action- and absorption spectra.....	5
1.2.2 The role of mitochondria.....	10
1.2.3 The intracellular oxygen transfer.....	19
1.2.4 The interaction of low-level-laser light and biological tissue.....	22
1.2.5 Biological effects of LLLT on the organism.....	32
Chapter 2: External laser therapy and laserneedle acupuncture....	40
2.1 The technology.....	40
2.2 Laserneedle Acupuncture.....	44
2.3 Local laser therapy for pain management and rehabilitation.....	56
2.4 Intra-oral laser therapy in dentistry and ENT (by laser mouth shower).....	64
2.5 Summary of scientific publications and studies.....	67
Chapter 3: Transcranial laser therapy.....	94
3.1 Post-treatment of cerebral stroke.....	96
3.2 Parkinson's.....	99
3.3 Alzheimer's.....	100
Chapter 4: Interstitial and intra-articular laser therapy.....	113
4.1 Interstitial Laser Therapy.....	113
4.2 Intra-articular Laser Therapy.....	115
4.3 Interstitial and Intra-articular Laser Therapy with body's own serum (Sanakin®):.....	118
4.4 Clinical application of interstitial and intra- articular laser therapy.....	123
4.5 Clinical results.....	128
Chapter 10: Treatment protocols.....	137
10.1 General rules.....	137
10.1.1 External laser therapy and laserneedle acupuncture...137	
10.1.2 Laserneedle treatment of the skull (transcranial) and the ear.....	143

10.1.3 Local external laser therapy with a body shower.....	150
10.1.4 Intraoral laser therapy with laser mouth shower.....	155
10.1.5 Interstitial and intra-articular laser therapies.....	157
10.1.6 Intravenous laser therapy.....	164
10.1.7 Topical PDT.....	171
10.1.8 Local (interstitial) and systemic PDT.....	173
10.1.9 Dermatology and skin rejuvenation.....	180
10.1.10 Weight Loss.....	186
10.1.11: Laser therapy in paediatrics.....	188
10.2 Treatment protocols by indications.....	190
1) Achillodynia.....	190
2) Acne.....	192
3) Actinic keratosis.....	193
4) Addiction diseases.....	195
5) Adipositas.....	199
6) ADS.....	201
7) Allergies.....	203
8) Alopecia / loss of hair.....	206
9) Alzheimer's and dementia.....	208
10) Amblyacousia.....	210
11) Ankle joint arthritis.....	213
12) Autism.....	214
13) Bacterial (interior) infections.....	218
14) Basalioma.....	219
15) Bladder inflammation/ bladder defect.....	221
16) Blood circulation disorder/ Arteriosclerosis.....	223
17) Burn-Out/ Chronic Fatigue Syndrom (CFS).....	226
18) Calcaneal spur.....	229
19) Carpal canal syndrome.....	231
20) Depression.....	232
21) Detoxication.....	235
22) Diabetes.....	237
23) Eczema.....	239
24) Erectile Dysfunction.....	242
25) Fat metabolism disorder.....	244
26) Finger arthrosis.....	246
27) Fractures.....	248

28) Gastro-intestinal diseases.....	250
29) Gingivitis.....	252
30) Gonarthrosis.....	255
31) Hay fever.....	257
32) Headache and migraine.....	259
33) Hearing loss.....	262
34) Heart diseases / heart failure.....	265
35) Herpes.....	268
36) Herniated disc.....	270
37) High blood pressure.....	272
38) Hip joint arthrosis (Coxarthrose).....	275
39) Hormonial adjustment.....	276
40) Infertility.....	277
41) Influenza.....	280
42) Insomnia.....	283
43) Ligament rupture.....	287
44) Liver diseases.....	289
45) Low immunity.....	292
46) Lyme disease.....	293
47) Macular degeneration.....	295
48) Mental and psychological diseases (anxiety disorder, psychosis).....	297
49) Multiple sclerosis.....	301
50) Muscular injuries (rupture of a muscle fiber, strains).....	303
51) Nerve lesions.....	306
52).....	307
Neurodermatitis.....	307
53) Osteoporosis.....	310
54) Pain therapy.....	313
55) Parkinson.....	315
56) Performance improvement sport.....	317
57) Periodontitis.....	320
58) Pneumonia and Bronchitis.....	322
59) Polyneuropathy.....	325
60) Psoriasis.....	328
61) Renal insufficiency / Chronical kidney diseases.....	331
62) Rheumatism & Fibromyalgia.....	333

63) Rhinitis and Sinusitis.....	336
64) Scar treatment.....	339
65) Shoulder syndrome.....	340
66) Side saddle joint arthritis (Rhizarthrosis).....	342
67) Sore throat / Amygdalitis.....	343
68) Spinal stenosis.....	346
69) Spine syndromes.....	347
70) Stroke.....	349
71) Susceptibility of infections and asthma.....	352
72) Tendinopathies.....	354
73) Tennis elbow.....	356
74) Thyroid diseases.....	357
75) Tinnitus.....	360
76) Trigeminus neuralgia.....	363
77) Vertigo.....	366
78) Viral infections (e.g. HIV, Hepatitis).....	367
79) Warts.....	369
80) Wound healing.....	370
81) Wrist joint arthritis.....	371

Chapter 1: Foundations and basic knowledge of medical low- level- laser therapy

第 1 章：医学低强度光疗的基础与知识

1.2 Molecular, biological, and biochemical foundations of LLLT

1.2 低强度光疗的分子学、生物学和生物化学基础

There are two ways of bringing laser light to the body. It can be applied from the outside (external laser application) or directly brought to the body through special techniques that facilitate intravenous, interstitial and intra-articular applications. Besides general effects on the irradiated tissue (e.g. anti-inflammatory effects, improvement of blood circulation), light is absorbed at the molecular level. Nowadays, the absorption spectra of many molecules are well known and laser light can be used to stimulate or inhibit specific biochemical processes. From this knowledge, many unexpected therapeutic options arise.

两种方法把光应用到人体上。从外部施加（体外光应用）或通过专门技术直接带到人体中促进其在静脉、间质和关节内的应用。除了对照射组织的一般疗效（例如消炎作用、改善血液循环）之外，光还直接达到分子水平的吸收。如今，许多分子的吸收光谱已众所周知，光可用于刺激或抑制特定的生化过程。从这些知识出发，产生了许多意想不到的疗法。

1.2.1 Action- and absorption spectra

1.2.1 作用和吸收光谱

The action spectrum

作用光谱

- shows the effects of photons dependent on the wavelength and applied energy
- 显示光子效应取决于波长和施加的能量
- is similar to the absorption spectrum of the special photon receptors of the cells
- 类似于细胞的特定光子受体-吸收光谱

Fig. 9 and 10 show the absorption spectrum of chlorophyll a of green plants. Chlorophyll absorbs light of the blue and infrared wave spectrum

图9和10显示绿色植物的叶绿素a的吸收光谱。叶绿素吸收蓝光和红外光波谱

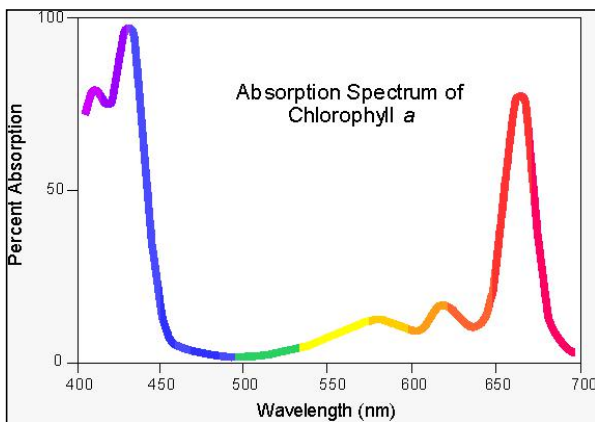
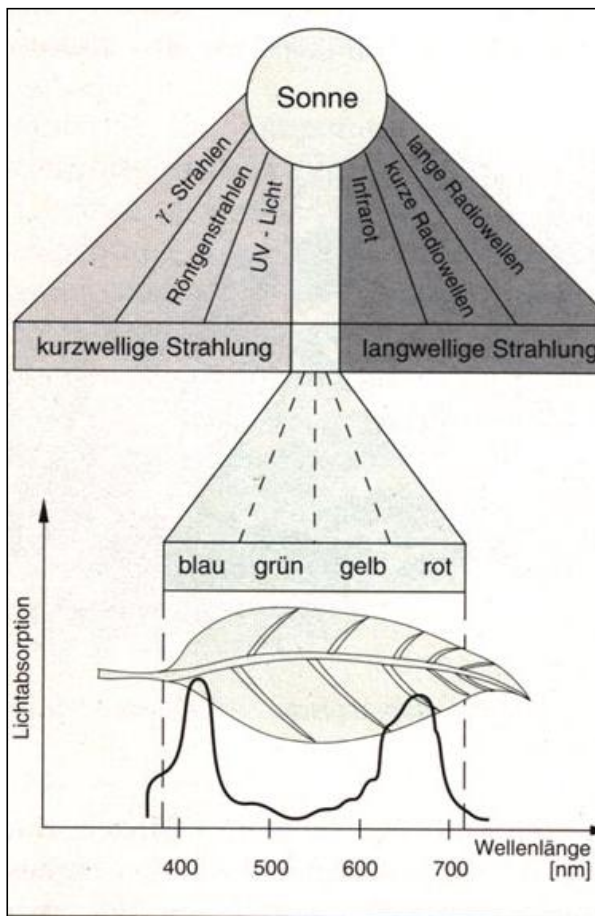
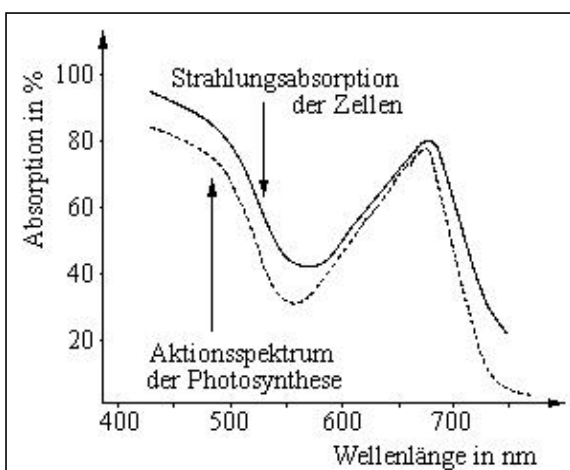


Fig. 9 and 10: Absorption spectrum of chlorophyll
图 9 和 10: 叶绿素的吸收光谱

In fig. 11 we can see that the action spectrum follows the absorption spectrum of chlorophyll (production of oxygen in dependence from the applied wavelength of laser light).

图11表明，作用光谱遵循叶绿素的吸收光谱（氧的生成由所应用光的波长决定）。



11: Absorption- and action spectra of photosynthesis of Elodea

图 11: 伊乐藻光合作用的吸收和作用光谱

Fig. 12 shows the action spectrum of DNA-synthesis of human HELA-cells in dependence from the applied wavelength.

图12显示所施加的波长对人体宫颈癌细胞DNA合成的作用光谱。

Fig. 13 demonstrates that the spectral sensitivity can be distinguished in 2 groups:

图13显示光谱灵敏度可以分为两部分：

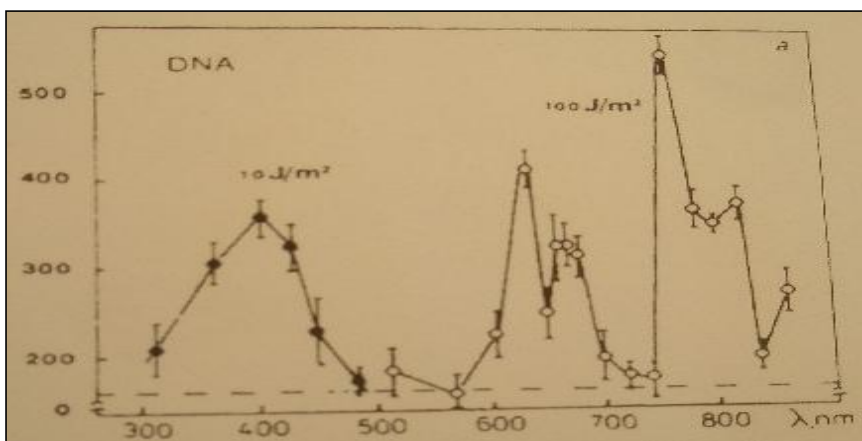


Fig. 12: Action spectrum of DNA-synthesis of human HELA-cells in dependence from the applied wavelength (T. Karu: The Science of Low Power Laser Therapy)
图12: 所施加的波长对人体宫颈癌细胞DNA合成的作用光谱 (T. Karu: 《低强度光疗法》)

350 – 450 nm blue (flavoproteins, dehydrogenases)

350-450 nm蓝光 (黄素蛋白、脱氢酶)

600 – 820 nm red/infrared (cytochrome-c-oxidase)

600-820 nm红光/红外光 (细胞色素-c-氧化酶)

In the blue range (about 400 nm), the light is mainly absorbed by the NADH-dehydrogenase- complex, the starter complex of the respiratory chain in the mitochondria.

在蓝光范围 (约400nm) 内, 光主要被NADH-脱氢酶络合物吸收。NADH-脱氢酶络合物是线粒体中呼吸链的起始络合物。

In the red and infrared range between 630 and 900 nm, the photons are activating mainly the complex of cytochrome-c-oxidase, the final carrier of the respiratory chain.

在红光和红外光范围 (630-900nm) 内, 光子主要激活细胞色素-c-氧化酶的络合物。细胞色素-c-氧化酶是呼吸链的最终载体。

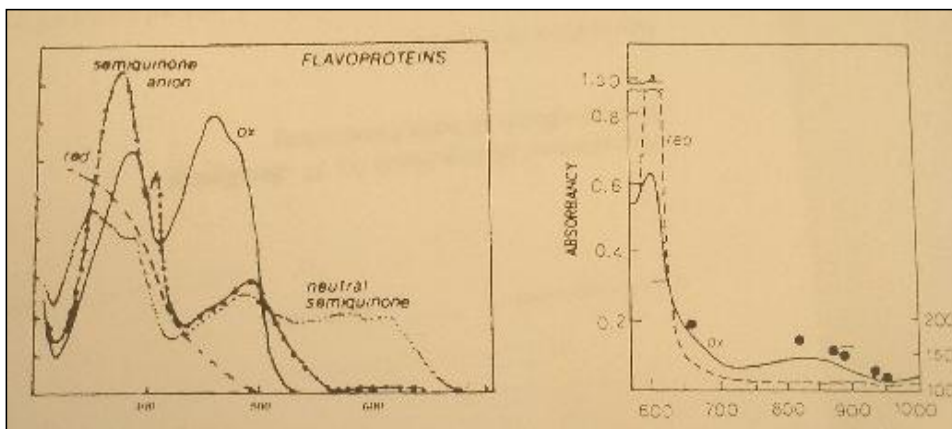


Fig. 13: Absorption spectra of flavoproteins (NADH-Dehydrogenase) and of Cytochrome a/a (T. Karu: The Science of Low Power Laser Therapy)
图13: 黄素蛋白 (NADH-脱氢酶) 和细胞色素a/a的吸收光谱 (T. Karu: 《低强度光疗法》)

In fig. 14 it is demonstrated that that there is a concordance of light absorption to the cytochrome-c-oxidase in the red and infrared

range with the activity of the electron-carrier and the following synthesis of ATP.

图14表明，在红光和红外光范围内，细胞色素-c-氧化酶的光吸收与电子载体的活性和随后的三磷酸腺苷合成具有一致性。

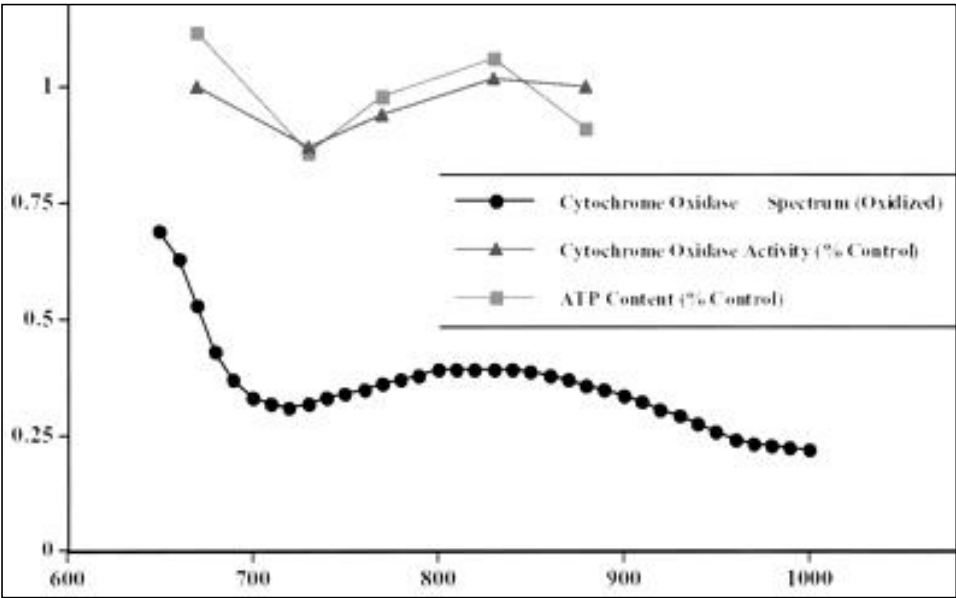


Fig. 14: Absorption spectrum of Cytochrom-C-Oxidase in comparison to action spectrum of Cytochrom-C-Oxidase-Activity and of cellular ATP-production (Margaret T. T.

Wong-Riley et al.: Role of Cytochrome c oxidase).

图14：细胞色素-c-氧化酶的吸收光谱与细胞色素-c-氧化酶活性和细胞三磷酸腺苷生成的作用光谱的对比（Margaret T.T.Wong-Riley等人：细胞色素-c-氧化酶的作用）

1.2.2 The role of mitochondria

1.2.2 线粒体作用

The structure of the mitochondria can be different in the special types of tissue cells.

线粒体的结构在特定类型的组织细胞中是不同的。

In living cells mitochondria have a dynamic structure; this means that they can vary their structure and size. They are able to merge or to divide themselves.

在活细胞中，线粒体具有动态结构;这意味着线粒体可以改变自身的结构和大小。线粒体自身能够合并或分裂。

The mitochondria comprise about 10 - 15 % of the volume of a living cell.

线粒体占活细胞体积的约10-15%。

Their main task is the production of ATP.

线粒体的主要任务是生成三磷酸腺苷。

The mitochondria have an inner and outer membrane.

线粒体具有内膜和外膜。

In the inner room of the mitochondria we can find the christae, formed by double layer membranes, where the respiratory chain is located and the production of ATP takes place.

在线粒体的内室中，我们可以看到由双层膜形成的嵴，是呼吸链所在位置，生成三磷酸腺苷之所。

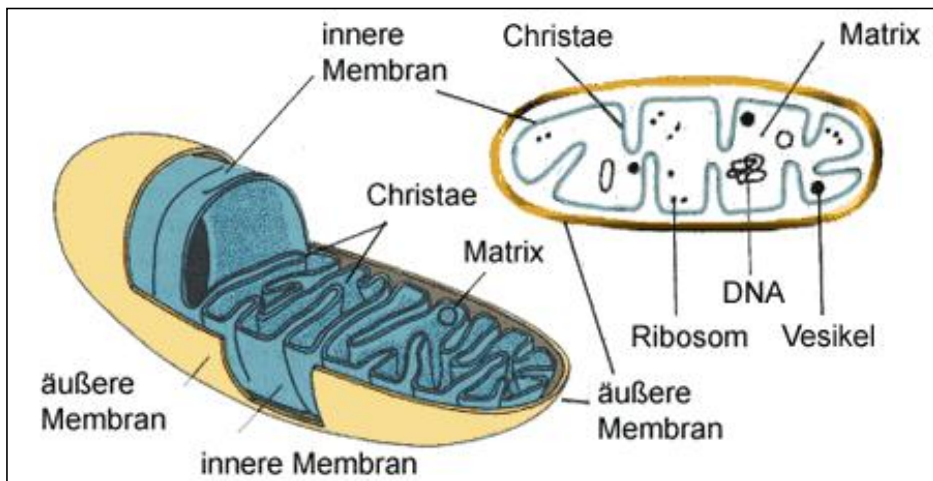


Fig. 15: Structure of Mitochondria

图15: 线粒体的结构

The carbohydrate metabolism of eucaryotic cells

真核细胞的碳水化合物代谢

In fig. 16 we see an overview of the carbohydrate metabolism of eucaryotic cells. In the glycolysis, we find the production of pyruvate and NADH in the cytosole. Without oxygen, the pyruvate is transformed in lactate. With oxygen, pyruvate is infiltrated into the inner of the mitochondria and metabolised in Acetyl-Coenzyme-A. This is running through the citrate circle, where NADH and FADH₂ are produced.

图16显示真核细胞碳水化合物代谢的概述。糖酵解中，可见细胞质中丙酮酸盐和烟酰胺腺嘌呤二核苷酸的生成。丙酮酸盐在乳酸中无氧转化。有氧条件下，丙酮酸盐渗透到线粒体内部并在乙酰辅酶A中代谢。这一过程贯穿柠檬酸盐循环，同时产生烟酰胺腺嘌呤二核苷酸和黄素腺苷二磷酸盐。

The electrons of these products are transferred to the electron-carriers of the respiratory chain, and in the last step to oxygen with the production of water. The released energy in these steps is needed for the production of ATP.

这些产物的电子被转移到呼吸链的电子载体上，在最后阶段中转化为氧并伴随水的产生。这些阶段释放的能量是产生三磷酸腺苷所必需的。

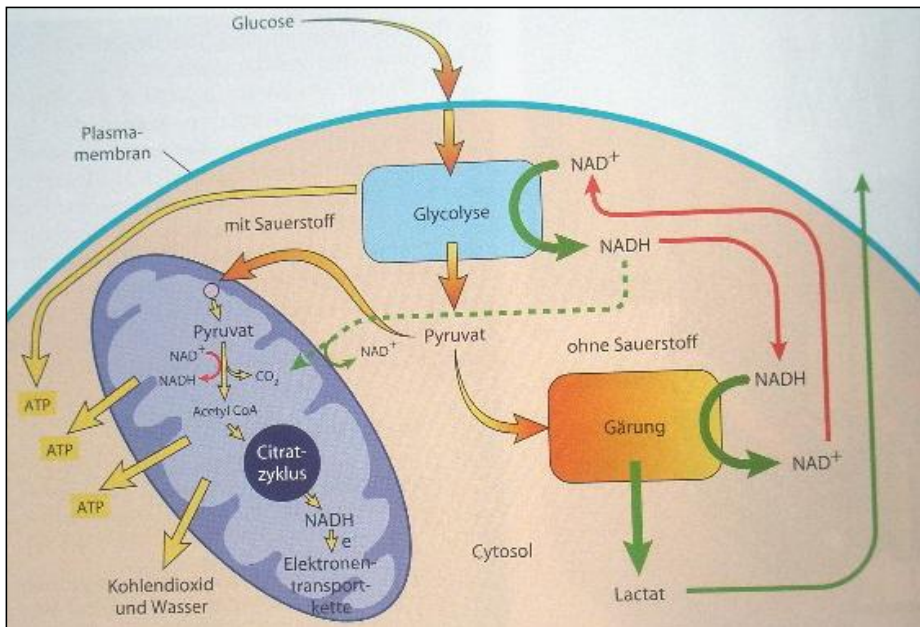


Fig. 16: The carbohydrate metabolism of eukaryotic cells

图16: 真核细胞的碳水化合物代谢

The respiratory chain in the mitochondria

线粒体中的呼吸链

In fig. 17 we can see the electron transport chain at the inner mitochondria-membrane.

图17显示线粒体内膜的电子传递链。

In the first step NADH is oxidized and the electrons are transmitted to the starter complex NADH-dehydrogenase and given to the following complexes of the respiratory chain.

在第一阶段中，烟酰胺腺嘌呤二核苷酸被氧化，电子被传递给起始络合物NADH-脱氢酶，再传递给呼吸链后面的络合物。

The electrons are running through a potential gradient and are losing their energy in the different steps. The electrons with poor energy are transmitted in the last step to oxygen with the production of water.

电子靠电位梯度运移，在不同的阶段中持续失去能量。能量较低电子在最后阶段中被传递给氧，同时伴有水的产生。

Simultaneously, we find a pumping of protons to the outer side of the membrane with development of a proton gradient.

同时，可以看到，随着质子梯度的变化，质子被泵送到膜的外侧。

When radiating the cells with laser photons, it is important that the different carrier molecules have different absorption spectra and are stimulated by light of different wavelengths.

当用光动力光子照射细胞时，重要的是不同的载体分子具有不同的吸收光谱且受到不同波长光的刺激。

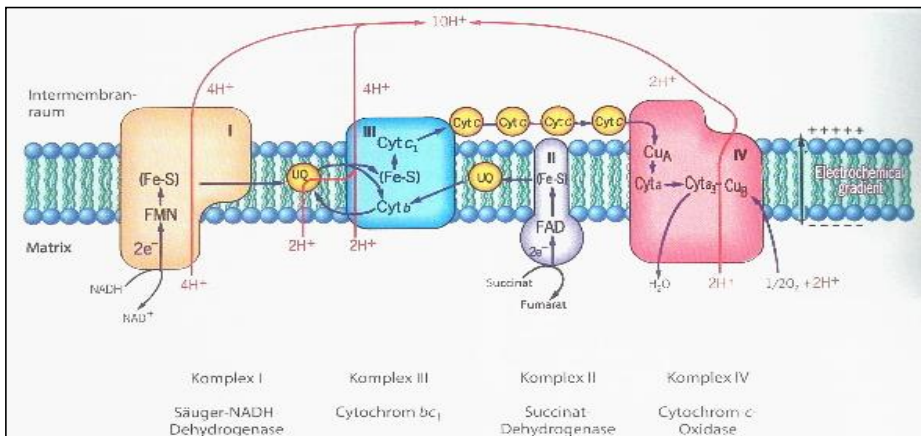


Fig. 17: The respiratory chain in the mitochondria membrane

(Karp: Molekulare Zellbiologie)

图 17: 线粒体膜的呼吸链 (Karp: 《分子细胞生物学》)

Fig. 18 shows the descent of the electrons in the different electron carriers: these steps are similar to a waterfall. The obtained energy is now used to pump protons to the other side of the membrane with construction of a proton gradient. The potential difference at the outer side of the membrane is increasing from $-0,32V$ up to $+0,82V$.

图18显示不同电子载体电荷数的下降：这些阶段像瀑布一样。所获得的能量立即用于将质子泵送到膜的另一侧，同时形成质子梯度。膜外侧的电位差从 $-0.32V$ 增加到 $+0.82V$ 。

In the second step, the protons are streaming back to the inner side of the membrane with breakdown of the electric gradient. The obtained energy is used for the production of ATP.

在第二阶段，质子随着电梯度的下降而流回到膜的内侧。获得的能量用于生成三磷酸腺苷。

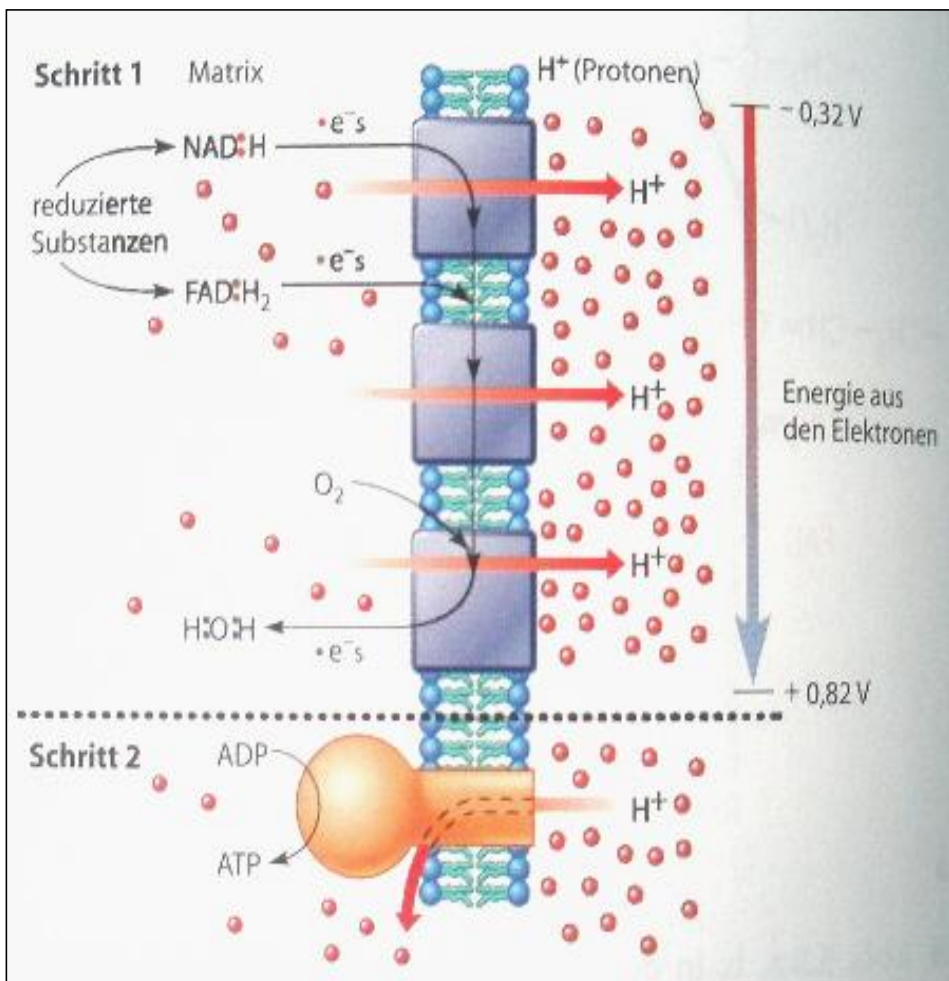


Fig. 18: Descent of the electrons in the different electron carriers
(Karp: Molekulare Zellbiologie)

图 18: 不同电子载体电荷数的下降 (Karp: 《分子细胞生物学》)

Structure of the protein components of the respiratory chain 呼吸链的蛋白质组分结构

In fig. 19 we can see the steric structure of the different electron carrier complexes. The catalytic centre of the cytochrome-c-oxidase contains porphyrine groups with iron and copper atoms, which are reduced and oxidized.

图19显示不同电子载体络合物的立体结构。细胞色素-c-氧化酶的催化反应中心含有带铁和铜原子的卟啉基团，其被还原和氧化。

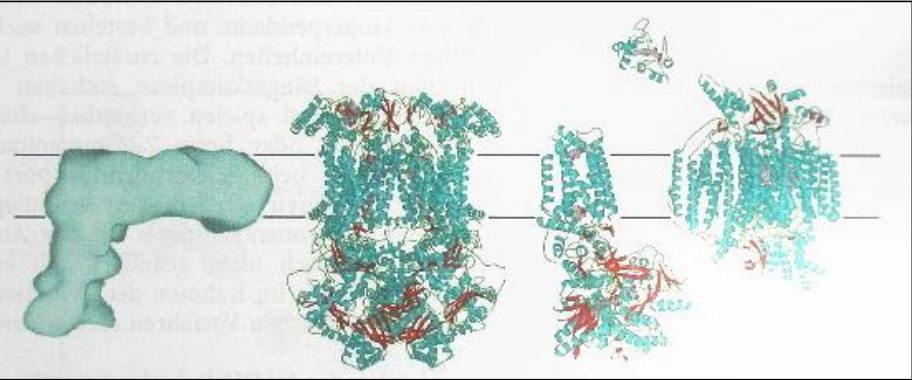


Fig. 19: Structure of the protein components of the respiratory chain
(Karp: Molekulare Zellbiologie)

图 19：呼吸链的蛋白质组分结构（Karp：《分子细胞生物学》）

In fig. 20 we find the processes of energy production in the mitochondria.

图20可见线粒体中能量的产生过程。

We should remember again that with the blue laser we will stimulate the starter complex NADH-dehydrogenase, and with the red and infrared laser the end-complex cytochrome-c-oxidase.

我们应该还记得，用蓝光刺激起始络合物NADH-脱氢酶，用红光和红外光刺激末端络合物细胞色素-c-氧化酶。

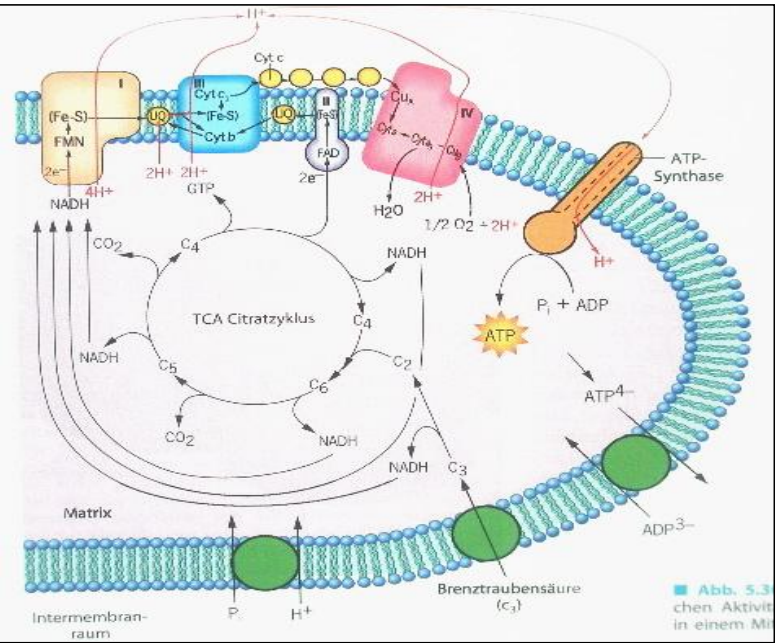


Fig. 20: Overview of the main activities of aerobic respiration in mitochondria.
(Karp: Molekulare Zellbiologie)

图20: 线粒体中有氧呼吸的主要活动概述 (Karp: 《分子细胞生物学》)

The electron-carriers in mitochondria

线粒体中的电子载体

- Flavoproteins
- 黄素蛋白
 - FAD= flavine-adenine-dinucleotide
 - FAD = 黄素-腺嘌呤-二核苷酸
 - FMN= flavine-mono-nucleotide
 - FMN = 黄素-单核苷酸
 - NADH-dehydrogenase
 - NADH-脱氢酶
 - Succinate dehydrogenase
 - 琥珀酸脱氢酶
- Cytochrome a,b,c: contain catalytic centers with porphyrine groups with iron and copper.
- 细胞色素a, b, c: 含有带铁和铜原子的卟啉基团的催化反应中心。
- Ubiquinone
- 泛醌
- Iron - sulfur complexes contain a center with iron and sulfur.
- 铁 - 硫络合物含有带铁和硫的中心。

Conclusion

结论

Cytochrome-c-oxidase is the terminal enzyme of the respiratory chain and the most important photon acceptor in the red and infrared range.

细胞色素-c-氧化酶是呼吸链的末端酶，是红光和红外光范围内最重要的光子受体。

NADH-dehydrogenase is the starter complex of the respiratory chain and absorbs the photons in the blue range.

NADH-脱氢酶是呼吸链的起始络合物，吸收蓝光范围内的光子。

Laser irradiation in the red/infrared range leads to oxidation of the cytochrome-c-oxidase.

红光/红外光范围内的光照射引起细胞色素-c-氧化酶的氧化。

The cellular response is more intensive when the redox potential is disturbed and the intracellular is shifted to a more reduced state with a lowered pH.

当氧化还原电位受到干扰时细胞反应更加强烈，细胞内部随着 pH 的降低向还原态转化。

1.2.3 The intracellular oxygen transfer

1.2.3 细胞内氧转移

Cellular reactions after absorption of light

吸收光后的细胞反应

1. In the first step we find a change of the redox potential and an acceleration of the electron transport.

1. 第一阶段，可见氧化还原电位的变化和电子传递的加速。

2. NO is released from the catalytic centre of the cytochrome-c-oxidase (NO-Hypothesis)

2. 一氧化氮从细胞色素-c-氧化酶的催化中心释放（一氧化氮假说）

3. There is a production of superoxideanions (superoxide-anion-hypothesis)

3. 产生超氧阴离子（超氧阴离子假说）

4. In a photodynamic reaction singlet oxygen is generated

4. 光动力学反应中产生单线态氧

5. There is an increased biochemical activity by local heating of the photo acceptors
(transient heating hypothesis)
5.光受体局部升温，生化活性增加（瞬态升温假说）

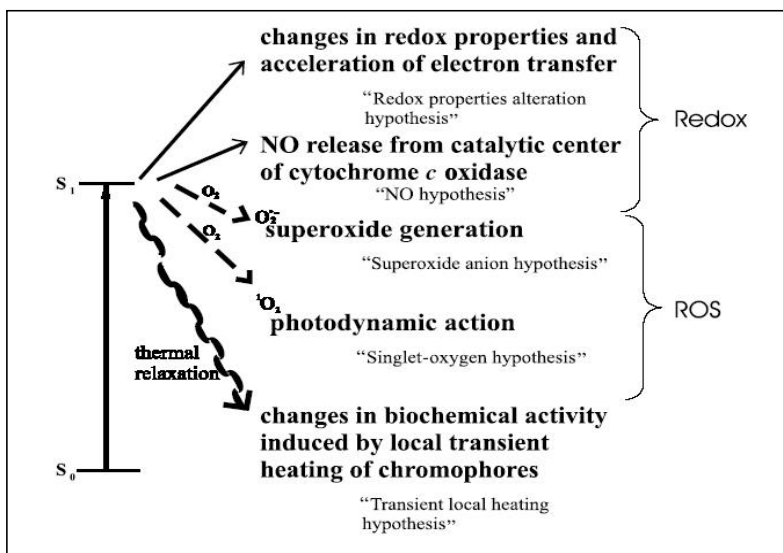


Fig. 21: Cellular reactions after absorption of light (Karu: The Science of Low Power Laser Therapy)

图21: 吸收光后的细胞反应（Karu: 《低强度光疗学》）

The cellular signalling cascade

细胞信号级联

The next figure demonstrates that after photon radiation more ATP is produced.

下图显示在光子照射后产生更多的三磷酸腺苷。

With different transport systems, the energy is transported directly into the nucleus of the cell with increased production of DNA.

随着DNA生成的增加，不同的传递系统把能量直接输送到细胞核内。

Different mediators are important:

重要的不同介质：

- Na^+/H^+ -antiporter-system
- Na^+/H^+ - 逆向传递系统
- Na^+/K^+ -ATPase

- Na^+/K^+ -腺苷三磷酸酶
- Nuclear-factor kappa -b
- 核因子k-b
- The intracellular calcium-concentration
- 细胞内钙浓度
- Cyclo-AMP
- 环腺苷酸

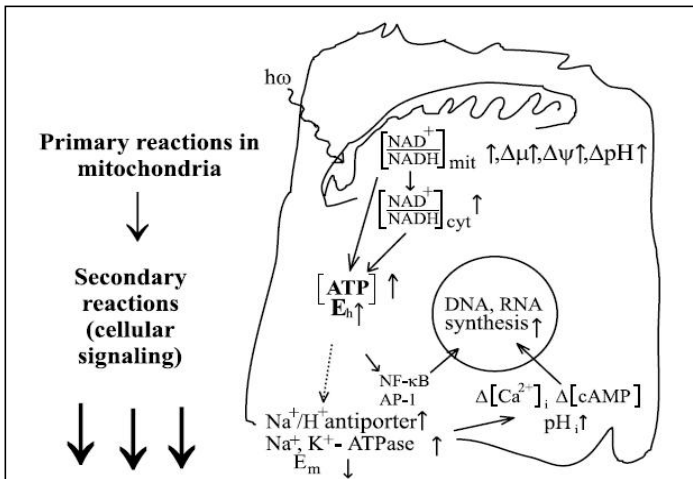


Fig. 22: The cellular signalling cascade after photo activation (Karu: The Science of Low Power Laser Therapy)

图22：光激活后的细胞信号级联（Karu：《低强度光疗法》）

The photon stimulation of one cell leads to the activation of other cells by

通过以下方式，光子刺激一个细胞引起其他细胞的活化，

- Secondary messengers
- 第二信使
- ROS (reactive oxygen species) of macrophages and lymphocytes
- 巨噬细胞和淋巴细胞的活性氧
- Cytokines from subpopulations of lymphocytes
- 来自淋巴细胞亚群的细胞因子
- NO-release from erythrocytes

-
- 一氧化氮-红细胞释放

1.2.4 The interaction of low-level-laser light and biological tissue

1.2.4 低强度光与生物组织的相互作用

Why does the effect of laser light go through the skin?

光如何通过皮肤产生疗效？

- White light mainly causes skin heating through surface absorption.
- 白光主要通过体表吸收引起皮肤发热。
- In addition to body hair, haemoglobin and melanin are the main absorbing skin pigments.
- 除体毛外，血红蛋白和黑色素主要吸收皮肤色素。
- The penetration depth depends on the tan condition and perfusion size of the body.
- 穿刺深度取决于人体肤色的暗黑程度和灌注量。
- Laser light (especially infrared) can also cause effects in deeper layers. It leads to a chain of biochemical reactions through specific absorption (cytochromes, porphyrines).
- 光（尤其是红外光）还能在深层产生疗效。光通过特定的吸收（细胞色素、卟啉）引起一系列生化反应。
- The pigments of the respiratory chain are particularly suited for absorption of radiation with subsequent triggering of photo- chemical processes.
- 呼吸链的色素特别适合吸收照射光，随后引发光化学过程。
- The light electrons thereby stimulate the respiratory redox chain.
- 因此光电子刺激呼吸氧化还原链。
- The electrons are transported against the redox slope in the respiratory chain which finally leads to phosphorylation from ADP to ATP and to an increase of the membrane potential.

-
- 电子在呼吸链中被逆着氧化还原的方向传递，最终引起磷酸化，从二磷酸腺苷转化成三磷酸腺苷，并引起膜电位的升高。
 - A 150 % increase of ATP production through infrared exposure was observed on yeast suspensions.
 - 在酵母悬浮液上观察到通过红外光照射增加了150%的三磷酸腺苷生成量。
 - The skin hardly absorbs irradiation in the near infrared range, in particular between 800 and 900 nm. Infrared radiation can thus penetrate deeper located layers of tissue.
 - 尤其在800-900nm范围内，皮肤几乎不吸收近红外光范围内的照射。因此，红外光照射可以穿刺组织更深的定位层。
 - The longer the laser light waves are, the less it is absorbed and the deeper it penetrates the tissue.
 - 光波越长，被吸收的越少，穿刺细胞组织越深。
 - E.g., green light is significantly absorbed by haemoglobin.
 - 例如，绿光明显被血红蛋白吸收。
 - Red light in a visible range (630 – 680 nm), and infrared light in a range between 800 and 900 nm, is used almost exclusively for external medical treatments (for internal or surface treatments, green, blue and yellow light can be used as well).
 - 可见光谱区（630-680 nm）内的红光和800-900 nm范围内的红外光几乎专门用于体外照射医疗（绿光、蓝光和黄光用于体内或体表治疗）。
 - Light with longer waves (e.g. 1300 nm) is not appropriate as it is absorbed by water to a great extent, which leads to a very low penetration depth.
 - 长波（例如1300nm）光不合适，因为在很大程度上被水吸收，导致非常低的穿刺深度。
 - It mostly depends on the dosage within the cell to be treated.
 - 主要取决于待治疗细胞内的剂量。
 - If this cell is not located at the surface, the question of which part of the light reaches it is of vital importance.
 - 如果此待治疗细胞不位于体表，那么光能到达哪一部分是至关重要的。

1.3.3 Power and absorption of low- level- lasers

1.3.3 低强度光的功率和吸收

Regarding maximal power, low- level lasers range between 0,1 mW and 500 mW. The irradiation of specific points (appr. 0,1mm² to 10mm²) leads to power densities between 0,003 W/cm² (laser pointer) and 80 W/cm² (laserneedle).

低强度光范围的最大功率（0.1-500mW）。特定穴位照射（约 0.1-10mm²）产生功率密度在 0.003 W/cm²（光笔）和 80 W/cm²（光针）之间。

The key question is: how much of the energy actually reaches the target cells? If they are not located at the surface of the skin, a lot of energy is lost during the lights' way through the tissue. Five factors are decisive for the amount of energy that reaches the cells:

关键是：多少能量实际到达靶向细胞？如果靶向细胞不在体表，则在光穿刺细胞组织的过程中会损失很多能量。五个因素决定到达靶向细胞的能量值：

- 1) The power of the laser
1) 光的功率
- 2) The calibre of the beam on the skin
2) 皮肤上的光束口径
- 3) The opening angle of the beam
3) 光束的开度角
- 4) The spreading of the light in the tissue
4) 光在组织中的扩散
- 5) The absorption in the tissue
5) 组织吸收

Absorption in the tissue depends on the kind of tissue that is irradiated and the wavelength of the light. Blue, green and yellow light are almost completely absorbed at the surface of the skin. Red is transmitted better, infrared best.

组织吸收取决于被照射组织的性质和光的波长。蓝光、绿光和黄光几乎完全被皮肤表面吸收。红光传播较好、红外光传播最好。

A concrete example: If we assume a half value depth of 0,1 mm for green light, for red light of 0,3 mm, and for infrared light 1 mm (these numbers vary a lot) of 500 mW at the beginning, only 0,5 mW (green), 50 mW (red) or 250 mW (infrared) will be left in a depth of 1 mm. For a depth of 6 mm, the numbers are 0,000000000000000004 mW (green), 0,0005 mW (red) and 8 mW (infrared).

具体实施例：如果假设绿光的半值深度为 0.1 毫米，红光为 0.3 毫米，红外光为 1 毫米（这些数字差距很大），以 500 毫瓦的功率开始，1 毫米深处只剩下 0.5 毫瓦（绿光），50 毫瓦（红光）或 250 毫瓦（红外光）。6 毫米深处只剩下 0.000000000000000004 毫瓦（绿光），0.0005 毫瓦（红光）和 8 毫瓦（红外光）。

With regard to the opening angle of the beam, it is important to apply it in a 90°- angle to the skin.

关于光束的开度角，以 90° 角施用于皮肤是至关重要的。

For the external therapy, red and infrared lasers are suitable for the stimulation of tissue that is located deep in the body and for acupuncture. The absorption of blue and green lasers by haemoglobin can be used to irradiate the blood (see fig. 23).

对于体外治疗，红光和红外光适用于体内深处组织的刺激和针灸。血红蛋白对蓝光和绿光的吸收可用于照射血液（见图 23）。

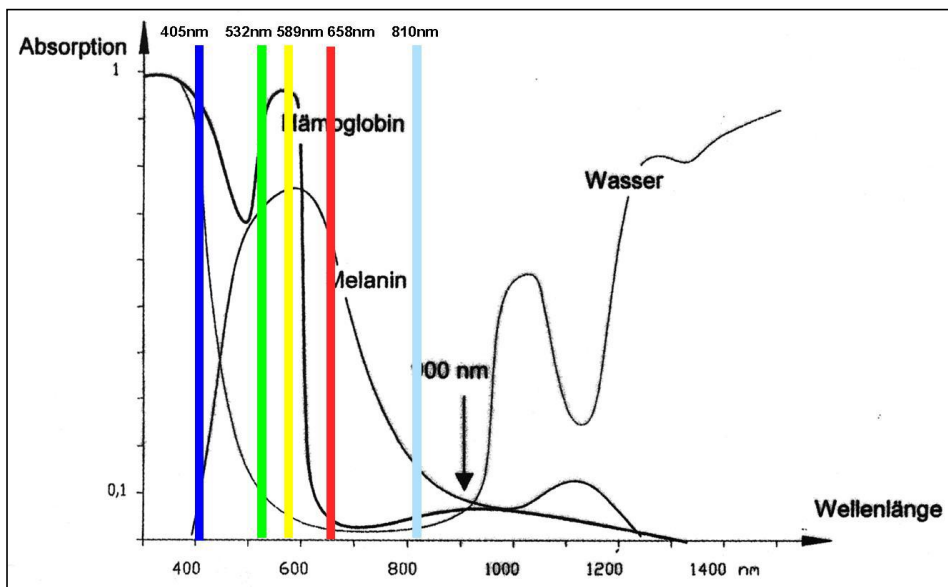


Fig. 23: Absorption of light of different wavelengths by biological tissue.
图 23: 生物组织对不同波长光的吸收

Figures 24 and 25 illustrate the specific penetration depths of laser light in biological tissue depending on the wavelength. Red and infrared laser light have the highest penetration depth, green and blue light develop its' effects only on the surface areas.

图 24 和 25 显示光在生物组织中特定的穿刺深度取决于波长。红光和红外光的穿刺最深，绿光和蓝光仅对体表部位疗效好。

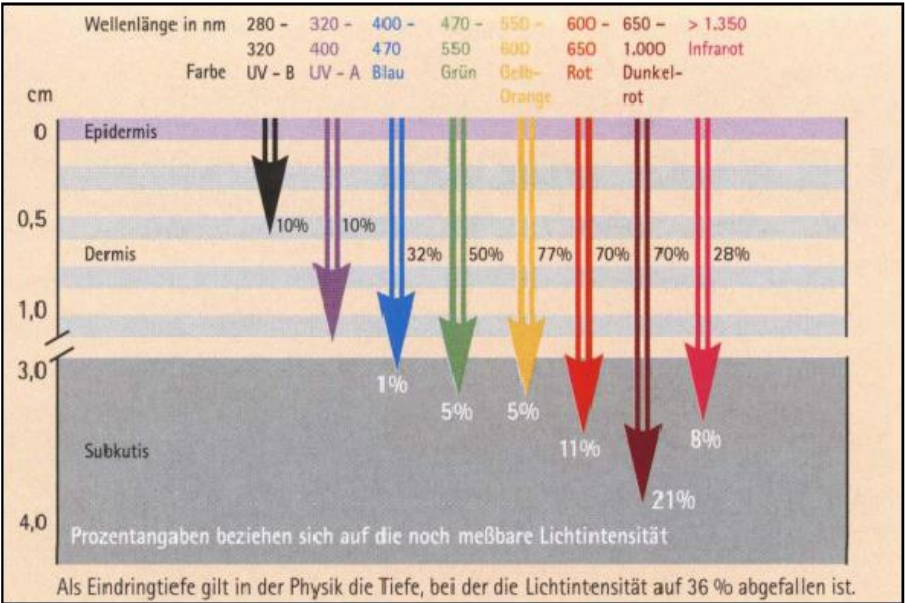
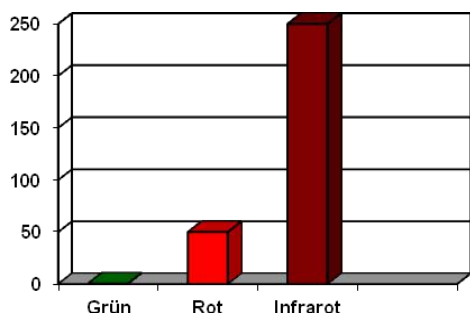
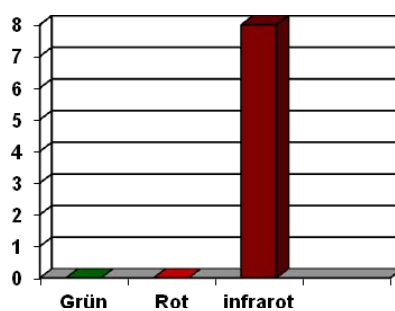


Fig. 24: Specific penetration depths of laser light
图 24: 光特定的穿刺深度



In 1 cm depth:

1 厘米深:



In 6 cm depth:

6 厘米深:

Fig. 25: Laser power of different wavelengths in different tissue depths.

图 25: 不同组织深度需要不同波长的光功率

Fig. 26 illustrates the connection between the calibre of the laser beam and the power density.

图 26 显示光束口径与功率密度之间的关系。

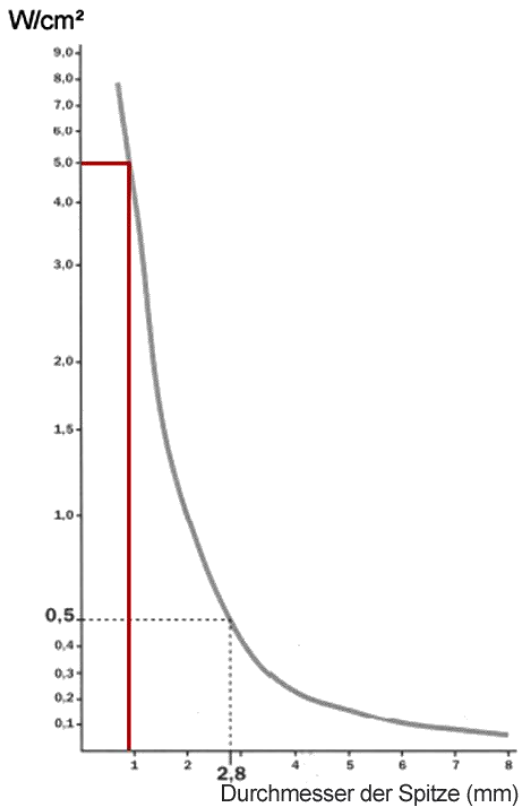


Fig. 26: Connection between the calibre of the laser beam and the power density.

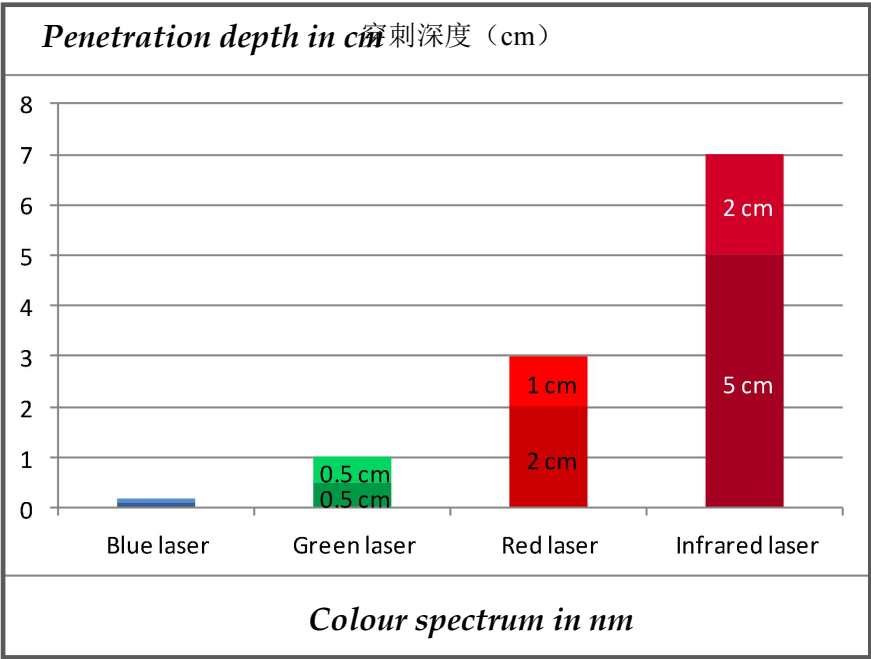
图 26: 光束口径与功率密度之间的关系

Depending on the calibre of the laserneedle and the intensity of the different lasers, the following maximal penetration depths can be achieved:

根据光针的口径和不同光强，达到以下最大穿刺深度：

- Blue laser 405 nm: 1 - 2 mm
- 蓝光405 nm: 1-2 mm
- Green laser 532 nm: 0,5 - 1 cm
- 绿光532 nm: 0.5-1 cm
- Red laser 658 nm: 2 - 3 cm
- 红光658 nm: 2-3 cm
- Infrared laser 810 nm: 5 - 7 cm

- 红外光810 nm: 5-7 cm



Colour spectrum in nm
色谱 (nm)

It has to be considered that these figures are approximate numbers. Factors such as the level of skin pigmentation or the structure and thickness of fat tissue and the muscles influence the light absorption as well.

必须考虑到这些图形均为近似数值描绘而成。皮肤色素沉着程度或脂肪组织和肌肉的结构和厚度等因素也会影响光吸收。

Fig. 27 - 29 illustrate these further factors that influence the absorption and thus the penetration depth of the light.

图27-29显示影响光吸收和光穿透深度的更多的此类因素。

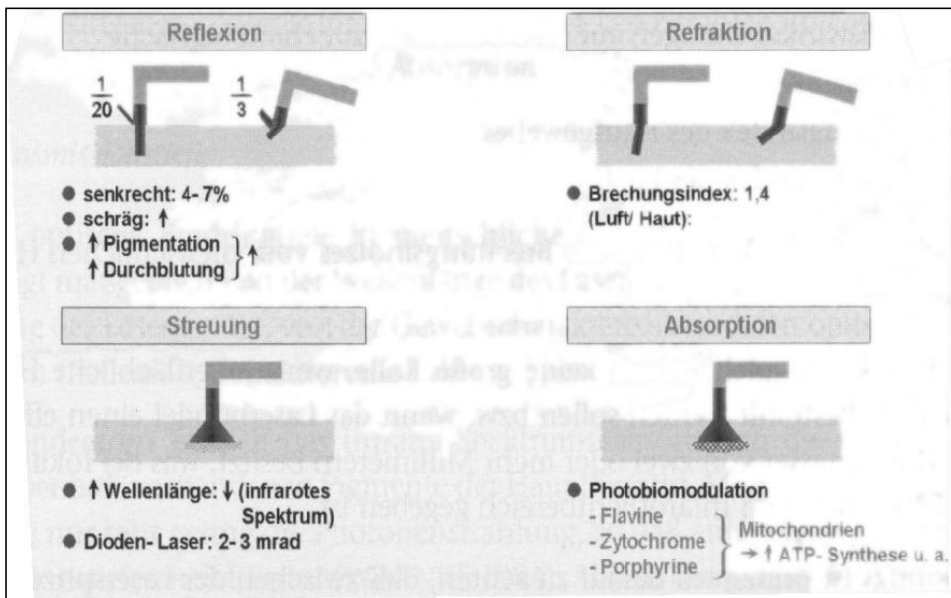


Fig. 27: Interdependency of laser radiation and biological tissue

图 27: 光照射和生物组织的相关性

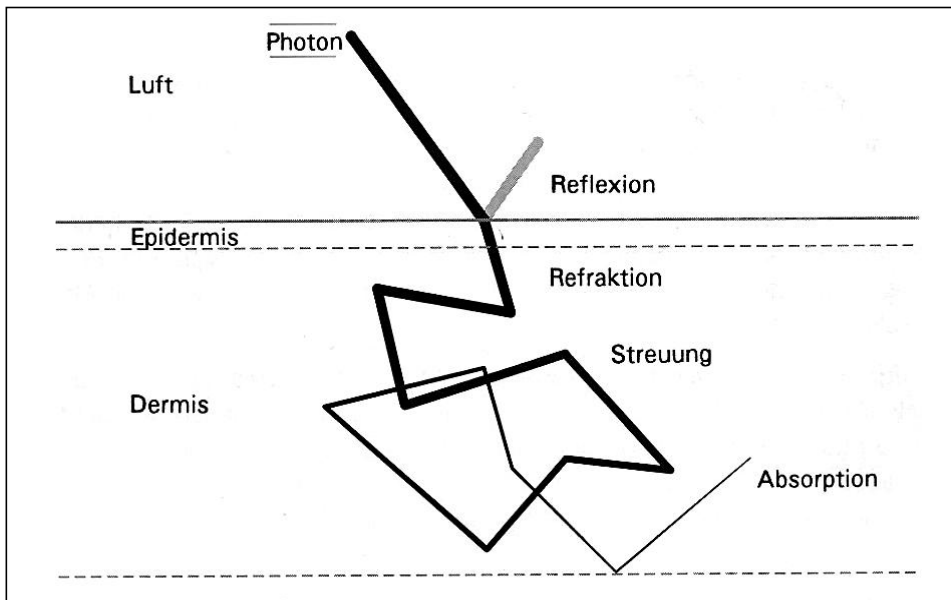


Fig. 28: Interdependency of a photon and biological tissue

图 28: 光子和生物组织的相关性

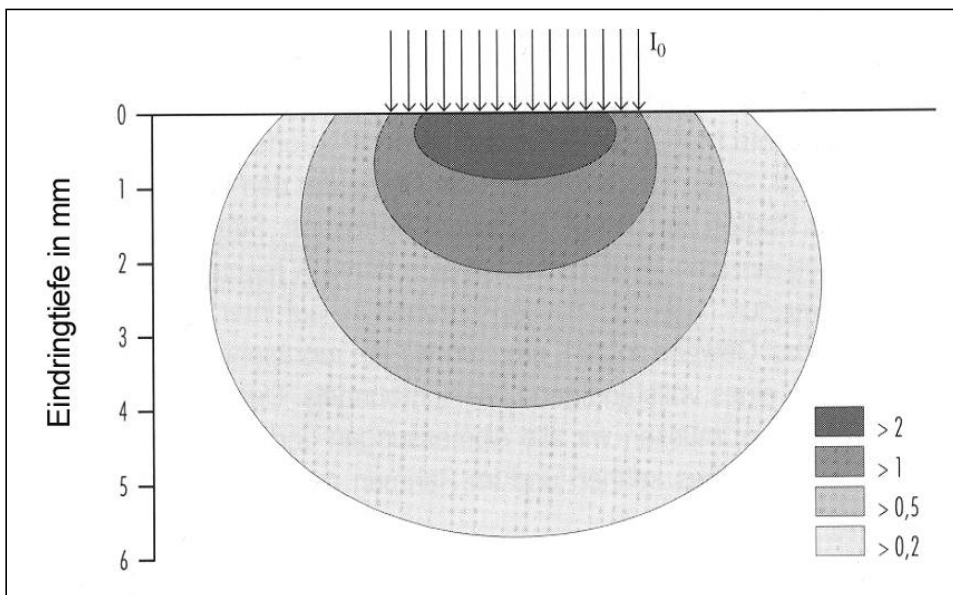


Fig. 29: Photo fog induced by spreading in the tissue

图 29: 在组织中扩散引起的光雾

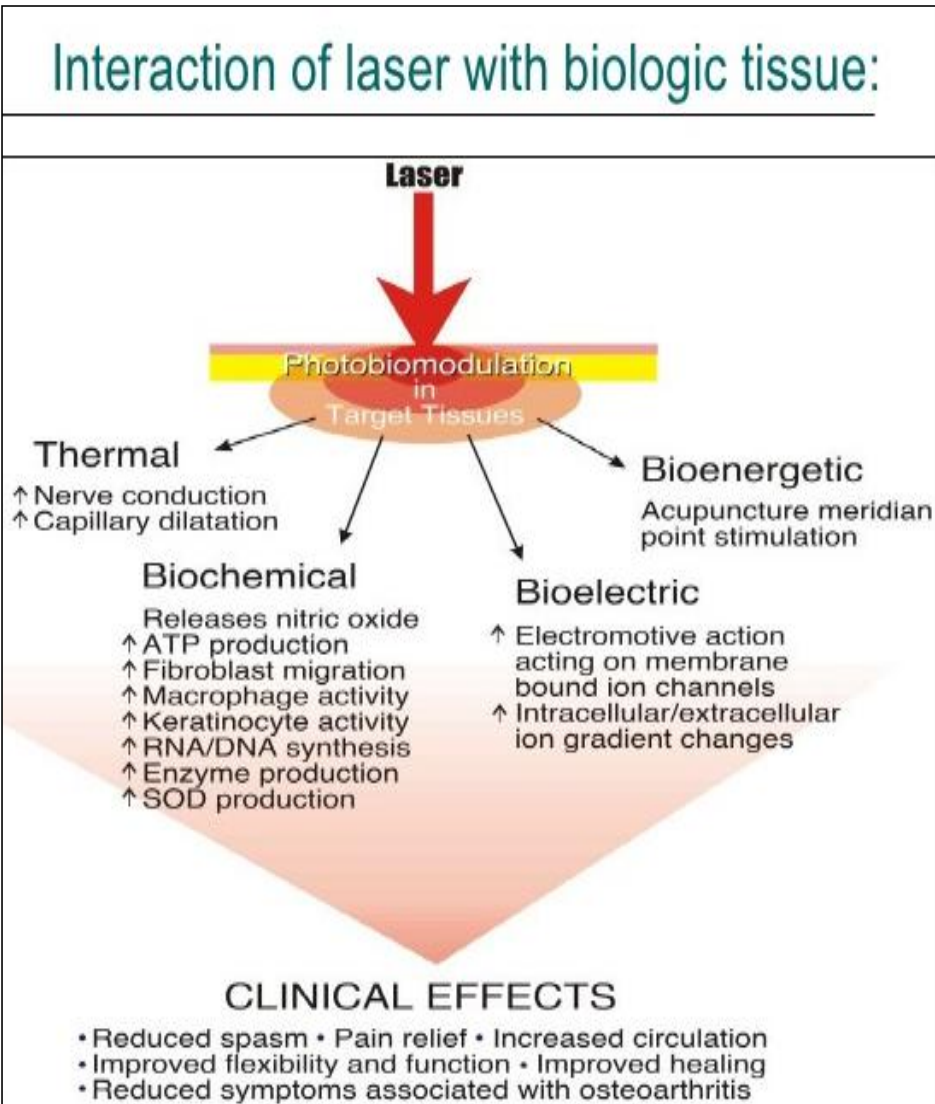
1.2.5 Biological effects of LLLT on the organism

1.2.5 低强度光疗法对生物体的生物学效应

Fig. 30: Schematic illustration of biological and clinical effects of low-level-laser light.
图 30：低强度光的生物学效应和临床疗效的示意图

What are the physiological effects of laser light?
光的生理效应有哪些？

- Proliferation on immune cells leads to the combat of



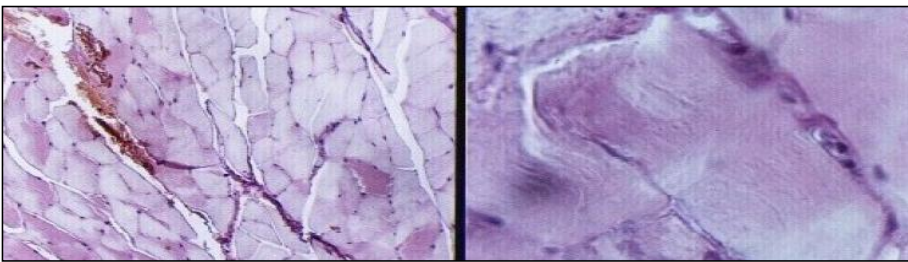
inflammations and an accelerated healing of wounds as well as an increased endorphin disbursement, increase of ATP production and increased nerve cell potential.

- 免疫细胞的增殖产生消炎作用，使伤口加速愈合，脑内啡分泌的增加，三磷酸腺苷生成的量增加和神经细胞电位上升。
- Increased leukocyte phagocytosis, boosted neovascularisation, increased collagen formation and protein biosynthesis. It also leads to an improved cell respiration and stabilization of the membrane potential.
- 增加白细胞吞噬作用，促进新生血管形成，增加胶原蛋白形成和蛋白质的生物合成。还可以改善细胞呼吸并稳定膜电位。
- Enhancement of the proton gradient via the mitochondria membrane, generation of an increased potential difference with increased phosphorylation of ATP (increase of 150%).
- 通过线粒体膜增大质子梯度，随着三磷酸腺苷（ATP）磷化的增加产生高电位差（增高150%）。
- No modification of intact cells.
- 无需修改无损细胞。
- Energetic build-up of sick cells.
- 逐渐增加病态细胞活力。
- Energy is to a large extent (more than 40%) used for ATP synthesis.
- 多数（超过40%）能量用于ATP的合成。
- Membrane stabilization leads to the blockage of impulses and reduces the transmissions of pain sensations.
- 膜稳定缓解血管堵塞并减少疼痛感的传播。
- The cell's calcium content is regulated (diminished ATP synthesis leads to an overflow of the cell with calcium and activation of proteinases, resulting in the death of the cell, necrosis).
- 调节细胞钙含量（减少ATP的合成，诱发细胞内钙流失，蛋白酶活化，细胞死亡、坏死）。
- Reduction of inflammatory cytokins interleukin 1 (IL-1)
- 消除炎症细胞因子白细胞介素1

- Stimulation of cytochrom-c-oxidase and resulting increase of ATP- production and synthesis (strengthens cellular reproduction mechanisms).
 - 刺激细胞色素-c-氧化酶，诱导ATP的生成和合成的增加（加强细胞繁殖机制）。
 - Increased prostaglandin synthesis and production of PGI2 (leads to vasodilatory and anti- inflammatory effects)
 - 增加前列腺素的合成和前列环素的生成（诱导血管扩张和消炎作用）
 - Cells suffer from lack of energy through in- flowing sodium and calcium in the pranecrotic state. Sodium and calcium can be removed from the cells by increased pump activities which can in turn be increased through radiation energy.
 - 在群体反应性抗体坏死状态下细胞因流入钠和钙而缺乏能量。通过增加泵活性从细胞中除去钠和钙，然后通过照射增加能量。
 - Improvement of angiogenesis (regeneration of capillaries), microcirculation and perfusion.
 - 促进血管再生（毛细血管再生）、微循环和灌注。
 - Regulation of temperature variation in inflamed areas.
 - 调节发炎部位的温度变化。
 - Decrease of other inflammation markers such as c- reactive protein and neopterin levels.
 - 降低其他炎症指标，如c反应蛋白和新蝶呤水平。
- Significant acceleration of regeneration processes.
- 显著加速再生。

The effect of laser light on microcirculation 光对微循环的效应

Ihsan et al. show a remarkable increase of the microcirculation as well as a boost of adenosin, STH and FGF (Fibroblasts-Growth-Factor) after infrared



laser irradiation of rabbit tissue.

等人的研究证明了红外光照射兔组织后显著增加了微循环以及腺苷、生长激素和成纤维细胞-生长因子。

Fig. 31: Tissue with blood vessels and muscle fibres.

图 31：有血管和肌纤维的组织。

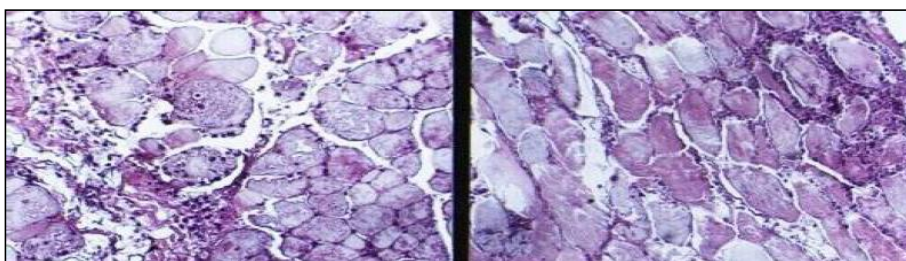


Fig. 32: Highly vascularized areas after laser irradiation

图 32：光照射后血管高速再生部位

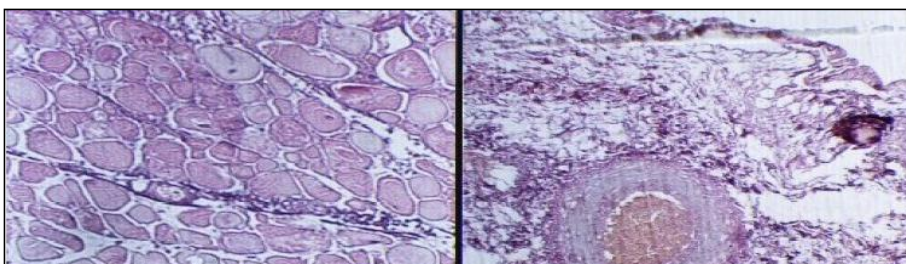


Fig. 33: Beginning normalization of the blood vessels and surrounded muscle fibres

图 33：血管和周边肌纤维开始正常化

The effect of frequencies

频率的效应

Laser light can be emitted continuously (continuous wave) or with frequencies (modulated). Several authors and practitioners consider modulated light more effective in terms of its therapeutic effect.

光可以持续放射连续波或调制频率。一些研究人员和执业医师都认为调制光大大提高疗效。

The desired frequencies can be identified along the following criteria:

根据以下标准确定所需频率：

-
- Along their effect
 - 适应疗效
 - Along the indication
 - 适应症状
 - Along the treated body region
 - 适应治疗的人体部位

A broad range of studies (Nogier, Nogier et al., Bahr, Mastalier, Elias) examines the effect of frequencies in a more detailed way.

广泛的研究（Nogier、Nogier、Bahr、Mastalier、Elias 等人）以更详细的方式验证了频率的效应。

In daily practice some frequency combinations have been established during the last years. They can be used without detailed knowledge and are displayed in the table below (fig. 34). It should be noted that a “creative” frequency application can be reasonable as well.

在过去几年的日常实践中，建立了一些频率组合，列示在下表中。可以在没有详细知识的情况下使用（图 34）。应该注意，“创新”频率的应用要合理。

The chosen frequencies can further be tested with regard to their appropriateness. An example is the pulse palpation after Nogier (RAC-, VAS- or Nogier- Reflex).

进一步实验所选频率的适当性。例如，诺吉尔（拉茨、卡沃斯或诺吉尔条件反射）之后的诊脉。

A	2,28125 Hz 292 Hz	orange Nr. 21	stimuliert die Zellfunktion, Akute Zustände Bekämpfung von Entzündungen Shu-Punkt (Zustimmungspunkt)
B	4,5625 Hz 584 Hz	rot Nr. 25	stimuliert die Ernährungsfunktion, Chronische Zustände Bekämpfung von Ernährungs- oder Stoffwechselstörungen Dispersion, Sedationspunkt
C	9,125 Hz 1168 Hz	gelb Nr. 3 oder 4	Stimuliert die Bewegungsfunktion, Energietransport Bekämpfung von Störungen im Bewegungsapparat Tonisationspunkt
D	18,25 Hz 2336 Hz	rot Nr. 26 früher Nr. 24	Stimuliert die Symmetriefunktion, Psychische Störungen Bekämpfung von Lateralitätsstörungen Mu-Punkt (Punkt Héaut, Alarmpunkte)
E	36,5 Hz 4672 Hz	blau Nr. 47 früher Nr. 44	Stimuliert die medulläre Funktion, Nervenstörungen Bekämpfung von Schmerzen Anfangspunkte
F	73 Hz 9344 Hz	blau Nr. 98	Stimuliert die subkortikale Funktion (instinktiv), Depression Bekämpfung von subkortikalen Störungen Endpunkte
G	146 Hz 18688 Hz	rot Nr. 30	Stimuliert die kortikale Funktion (mental), Intellektuelle/psychosomatische Störung Bekämpfung von kortikalen Störungen Yuan-Punkt (Quellpunkte)
U	1,140625 Hz		Universalfrequenz (Unordnung, Allergie, Narben, Störfelder)
	E+G		Analgetisch
	A+B+F		Regenerierend
	C+D+G		Muskel-relaxierend
	A+E+G		Anti-entzündlich
	A+B+E		Wundheilung
	A+E+F		Zirkulation

Tabelle 1: Die Frequenzen und Farben nach Nogier: Die Wirkung der ursprünglichen, niedrigeren Frequenzen mit den höheren, „potenzierten“ ist nach Dr. Raphael Nogier identisch [10]. Bei pulsierenden Lasern ist jedoch die mittlere Leistung um den Faktor 128 verschieden! Die Zuordnung der Farbfilter hat sich auch weiterentwickelt, weitere Informationen sind z.B. bei der EIPN (Ecole Internationale Paul Nogier) [12] erhältlich.

Fig. 34: Recommended frequencies

图 34: 推荐频率

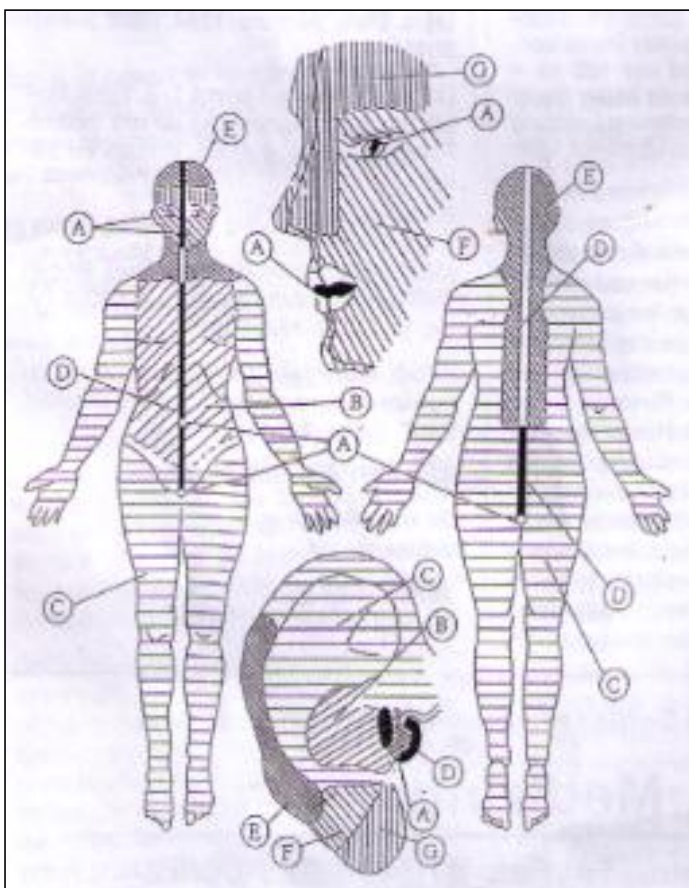


Fig. 35: Assignment of frequencies to body regions

图 35: 人体部位的频率分配

Conclusion:

结论:

- The thermic effects of low-level-lasers can be neglected. Thus, no side-effects occur.
- 低强度光的热效应忽略不计。因此，无副作用。
- All cells have numerous regulating systems that are connected with each other. Laser radiation simultaneously influences many of them (to a degree).
- 所有细胞都有许多相互连接的调节系统。在一定程度上，光照射同时影响其中的许多系统。

-
- Undisturbed systems are not affected by laser radiation, but disturbed systems can be stabilized.
 - 未受干扰的系统不受光照射的影响，而稳定受干扰的系统。
 - As the chemistry of cells is extremely complex and not completely understood up until now, the interdependencies between it and laser radiation is not fully understood as well.
 - 由于细胞化学过程非常复杂，直到现在尚未完全解释，细胞化学与光照射之间的相关性也无法彻底了解。

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Chapter 2: External laser therapy and laserneedle acupuncture

第 2 章：体外光疗和光针灸

2.1 The technology

2.1 技术

What is a so-called “laserneedle”?

什么是“光针灸”？

A laserneedle is the end-piece of an optical fibre that is connected to a laser source, i.e. a laser diode. The light generated by the diode

is transported by the glass fibre (at virtually no loss of energy) to the body. The laserneedle is attached to the skin without penetration (only pain-free penetration of the laser beam).

光针是光纤的末端部件，与光源（光二极管）连接。二极管产生的光由玻璃纤维（几乎没有能量损失）传送到人体。光针贴附在皮肤上无需刺入（只有光束的无痛穿刺）。

This technique allows the laser light to penetrate the body with high energy doses for stimulation of acupuncture points or local treatment of damaged areas with various biological effects within the tissue.

该技术允许光以高能剂量穿刺人体以刺激针灸穴位或受损部位的局部治疗，在组织内产生各种生物疗效。

The special characteristic of a laserneedle is the highly increased power/energy density because of the needle-like configuration end of the optical fibre (with a very high focusing of the laser beam; see chapter 1d).

光针的特点是由于光纤的针状配置端使得光束高度聚焦（见第 1 章 d 小节），所以功率/能量密度大大增加。

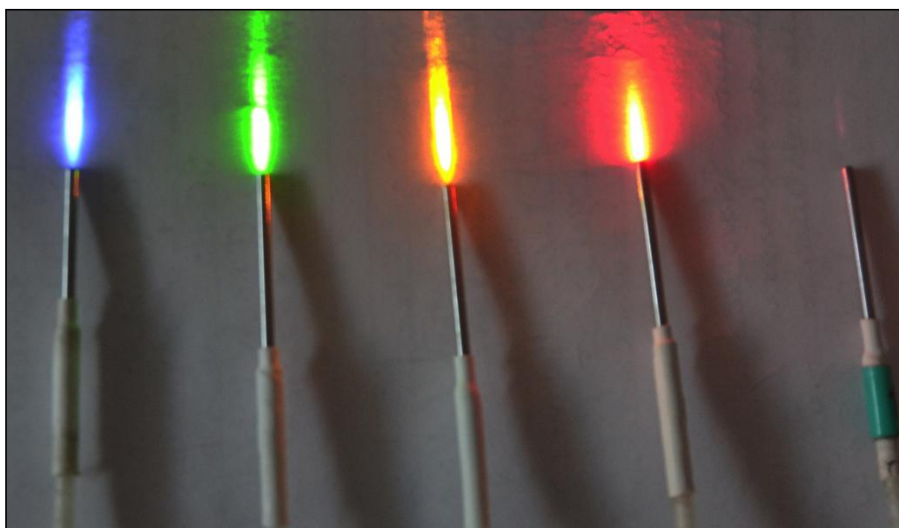


Fig. 1: Laserneedles with different wavelengths
图 1：不同波长的光针

In external laser therapy, red, green, blue and infrared lasers are used for:

体外光疗中，红光、绿光、蓝光和红外光用于：

a) Different penetration depths

a) 不同的穿刺深度

- Blue laser 405 nm 1 - 2 mm
- 蓝光405 nm 1-2 mm
- Green laser 532 nm 0,5 - 1 cm
- 绿光532 nm 0.5-1 cm
- Red laser 658 nm 2 - 3 cm
- 红光658 nm 2-3 cm
- Infrared laser 810 nm 5 - 7 cm
- 红外光810 nm 5-7 cm

b) And various biological effects within the tissue:

b) 组织内的各种生物效应：

- Blue laser: antibacterial and anti-inflammatory effects, increase of blood circulation by increase of NO-release and improved tissue supply, stimulation of mitochondria (NADH-dehydrogenase at complex I)
- 蓝光：抗菌和消炎作用，通过提高一氧化氮的释放改善血液循环和组织补给，刺激线粒体（络合物I中的NADH-脱氢酶）
- Green laser: increase of oxygen supply by detaching adhesive haemoglobin from vessel walls, stimulation of the sodium-potassium-ATPase of the erythrocyte membrane, stimulation of mitochondria (cytochrome-c-reductase at complex III)
- 绿光：通过从血管壁上分离粘性血红蛋白增加供氧，刺激红细胞膜的钠-钾-ATP酶和线粒体（络合物III中的细胞色素-c-还原酶）
- Red laser: increase of cellular activity and microcirculation, stimulation of the immune system by stimulation of different leucocyte groups, increase of fibroblasts activity and improvement of wound healing, stimulation of mitochondria (cytochrome-c-oxidase at complex IV)

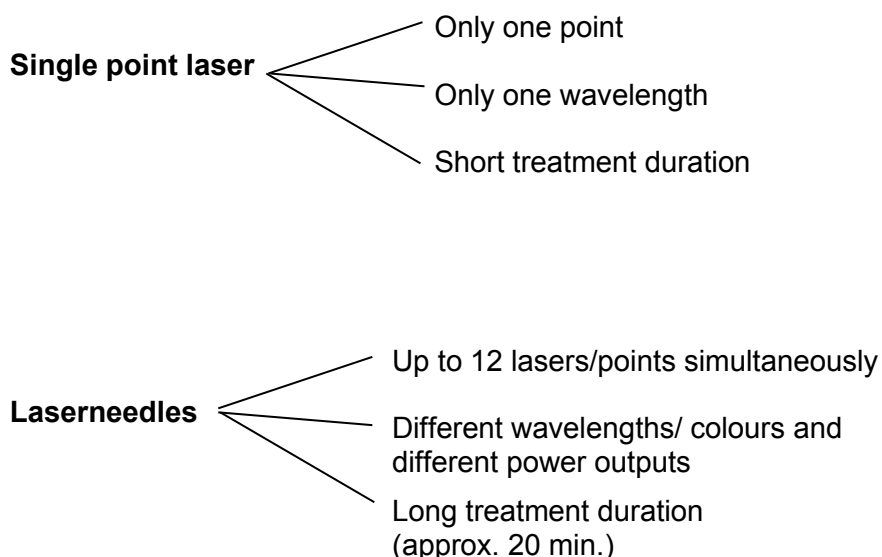
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- 红光：增加细胞活性，改善微循环，通过刺激不同的白细胞群激发免疫系统，增加成纤维细胞活性和加速伤口愈合，刺激线粒体（络合物IV中的细胞色素-c-氧化酶）
 - Infrared laser: increase of ATP production by stimulation of mitochondria (at complex IV)
 - 红外光：通过刺激线粒体增加ATP的生成（络合物IV）

The new Weberneedle® system compared to conventional single point lasers:

新型韦伯针®系统与传统单穴位光的对比：

- Up to 12 treatment points simultaneously instead of only one point
- 同时最多12个治疗穴位，代替一个穴位治疗
- Multiple wavelengths can be combined simultaneously
- 多个波长组合同时进行
- Better and faster clinical effect, leading to a broader range of applications
- 更好、更快的临床疗效，促进更广泛的应用
- Application requires only a minimum of clinical staff
- 应用只需要最少的临床人员
- Highly increased energy density of laserneedles (because of the highly focused laser beam)
- 光针 的能量密度大大增加（因为光束高度聚焦）

Laserneedles vs. Single point lasers



2.2 Laserneedle Acupuncture

2.2 光针灸

The history of acupuncture and laser acupuncture

针灸和光针灸的历史

Classical acupuncture with metal needles has been used in medicine successfully for more than 1000 years and was already established in Europe over 50 years ago. However, many people continue to react negatively to the idea of treating diseases or reducing pain with acupuncture because of their aversion against needles. A further, yet completely painless acupuncture method is the stimulation of acupuncture points by lasers. Single point lasers have been used for a long time but without sufficient success (except for some good results in treating children) and proof of efficacy.

金属针的传统针灸已成功应用于医学达 1000 多年，50 多年前已传遍欧洲。然而，许多人总是对针灸治病或缓解疼痛的理念表现出消极的态度，因为他们对针头反感。然而，完全无痛的针灸法是通过光刺激针灸穴位。单穴位光已经使用了很长时间但未取得令人满意的成功（除了儿科治疗取得一些好的疗效外）与临床疗效。

The first multi-channel system (laserneedle® system) was developed in 2001 by the physicist Schikora in cooperation with the physician Weber and afterwards introduced into clinical practice. The development of this new laserneedle technology was a revolution in acupuncture because of the highly increased energy densities and penetration depths and the possibility of a simultaneous stimulation of multiple acupuncture points.

2001 年第一个多波道系统（光针®系统）由物理学家 Schikora 与 Weber 医师携手研发。随后引入临床实践。这种新型光针技术的开发是针灸史上的一次革命，因为该技术大大增加了能量密度和穿刺深度，使得同时刺激多个穴位成为可能。

Besides the highly improved clinical effects proven by various clinical studies, basic research by Prof. Dr. Litscher from Graz also proved multiple effects on the central nervous system (by using neuromonitoring measurements).

除了通过各种临床研究证实该技术大大提高临床疗效外，在基础研究中，来自格拉茨的 Litscher 博士还证明了对中枢神经系统的多重疗效（通过神经监测）。

A new era of acupuncture was born.

针灸的新时代诞生了。

The new Weberneedle® system:
新型韦伯针®系统:

The new Weberneedle® system was developed four years after the introduction of the first laserneedle multi-channel device and provides several upgrades: It can be equipped with up to 16 lasers which can be used simultaneously. All available laser wavelengths (red, infrared, green, blue) can be combined individually. In laserneedle (body) acupuncture, red and infrared lasers are used because of their high penetration depths. Green lasers can be used for ear acupuncture. The blue laser is most important in dermatology or dentistry.

推出的新型韦伯针®系统是引进第一台光针多波道设备四年后研发的，提供了多项技术的升级：配备多达 16 支光且可同时使用。所有可用的光（红光、红外光、绿光、蓝光）波长可以分别组合。由于穿刺深，红光和红外光被应用在光针人体针灸中。绿光用于耳针灸。蓝光在皮肤科或牙科中最重要。

The laser modules are placed in a special distribution arm outside of the main electronic unit to ensure that the device can be upgraded or modified at anytime and maintenance can be done easily all over the world (by simple exchange of modules by the customer himself).

光模块放置在主电子单元外部的专门配送臂上，以确保设备随时升级或改进，并且在世界范围内轻松完成维护（客户自己简单地更换模块）。

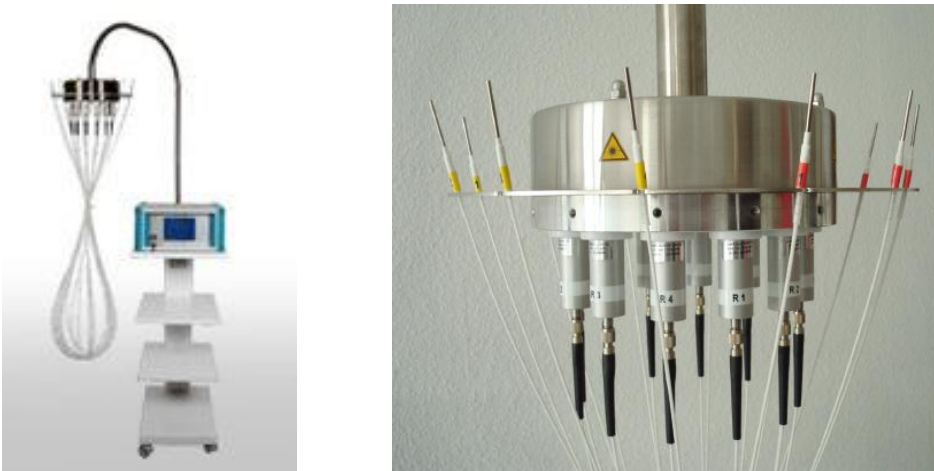


Fig. 2 and 3: Modern laserneedle acupuncture device by Weber Medical Germany (Weberneedle®) with outsourced distribution arm

图 2 和图 3: 德国韦伯医疗（韦伯针®）带外包配送臂的现代光针灸设备

The new Weberneedle® system in comparison to needle acupuncture:

新型韦伯针®系统与针灸相比:

- No lesions at acupuncture points; very convenient for patients
- 穴位无损伤; 非常方便患者
- No risk of collapse or infection
- 无失败或感染风险
- Well-suited for patients sensible to pain or children
- 非常适合对疼痛敏感的患者或儿童
- No side-effects when used professionally
- 专业使用, 无副作用
- Excellent clinical effects
- 出色的临床疗效
- Additional positive laser-specific biological effects within the tissue
- 组织内更多积极的光特异性生物效应
- Application only requires a minimum of clinical staff
- 应用时只需要最少的临床人员

Comparison to other multi-channel laser systems:

与其他多波道光系统相比:

There are several multi-channel laser systems available on the market today.

目前市场上有几种多波道光系统。

In comparison to the Weberneedle® system, most of them have a maximum power output of 50 mW (compared to Weberneedle® with 100 mW lasers) and don't offer infrared lasers. Without infrared laser light, the limited penetration depth of red laser light won't lead to sufficient energy doses in most indications in the field of pain therapy or laserneedle acupuncture and therefore only unsatisfactory clinical effects can be achieved.

与韦伯针®系统相比，它们中的大多数最大输出功率是 50mW（韦伯针®是 100mW 光功率）并且不提供红外光。在疼痛治疗或光针灸领域，没有红外光，只靠红光有限的穿刺深度，在大多数适应症中无法产生足够的能剂量，因此实现的临床疗效差强人意。

These systems are limited to treatment of areas or points on the body as there is no adapter for fixing lasers at the ear or skull (important for transcranial laser therapy or ear acupuncture).

因为没有适配器将光固定在耳部或头部上（对经颅光疗或耳针灸很重要），所以这些系统仅限于治疗体表部位或穴位。

Indications and practical applications:

适应症和实际应用:

Indications of laserneedle acupuncture:

光针灸的适应症:

All indications of classical acupuncture, i.e.:

传统针灸的所有适应症，例如:

- Spine syndromes
- 脊椎综合症
- Osteoarthritis
- 骨关节炎
- Rheumatoid diseases
- 类风湿病
- Tendon inflammations
- 肌腱炎症
- Migraine/ Headache syndromes
- 偏头痛/头痛综合症
- Trigeminal neuralgia
- 三叉神经痛
- Depression

- 抑郁症
- Asthma
- 哮喘

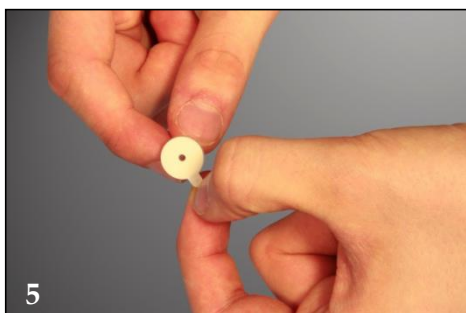
Orthopaedics	Neurology/Psychology	Internal medicine	Dermatology
Spinal column syndromes	Residual paresis after apoplexia	Gastro-intestinal diseases	Eczema
Herniated discs	Migraine and other headache syndromes	Circulatory disorders	Neurodermatitis
Knee arthrosis	Trigeminal neuralgia	Bronchial asthma	Psoriasis
Hip arthrosis	Tinnitus	Allergic diseases	Chronic wounds
Thumb arthrosis	Depressions	Hypertension	Acne
Scapulohumeral periarthritis	Psychovegetative fatigue	Diabetes mellitus	Herpes
Lateral epicondylitis	Drug addictions (Smoking, drugs)	General fatigue	Herpes zoster
Tendinitis	MS and other neurovegetative diseases		Gingivitis
Fibromyalgia and PCP	Morbus Parkinson		
Morbus Bechterew			

Fig. 4: Indications for laserneedle acupuncture

图 4：光针灸的适应症

The laserneedles are fixed to the skin painlessly and without penetration by use of special self-adhesive 'lasertubes' (fig. 5-8).

光针通过专用的自粘式“光管”无痛地固定在皮肤上无需刺入



5

(图 5-8)。

Fig. 5 - 8: Fixing laserneedles to the skin

图 5-8: 光针固定在皮肤上

Treatment examples

治疗病例

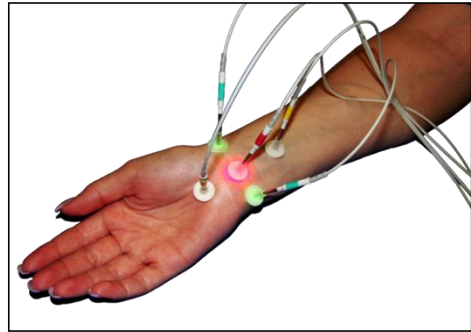
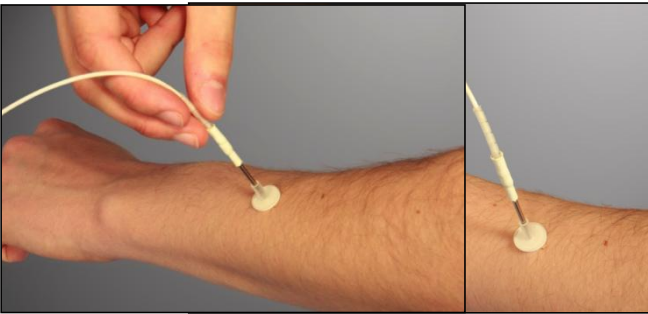
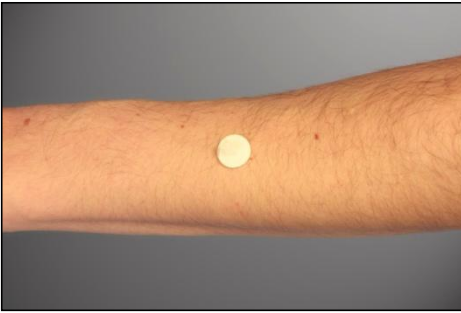


Fig. 9: Carpal Canal Syndrome

图 9: 腕管综合症

Fig. 10: Neck pain

图 10: 颈痛

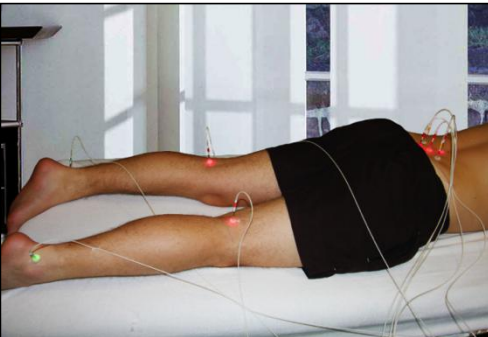


Fig. 11: Spine syndrome

图 11: 脊椎综合症

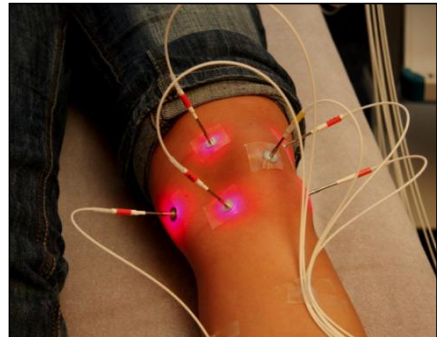


Fig. 12: Knee treatment

图 12: 膝关节治疗

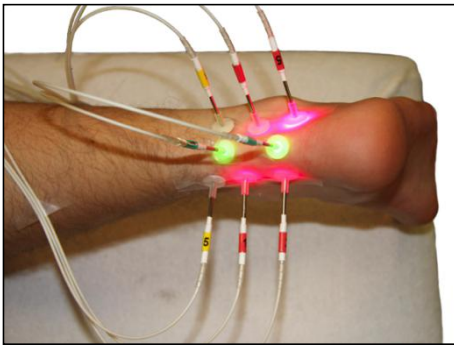


Fig. 13: Achillodynia
图 13: 跟腱痛

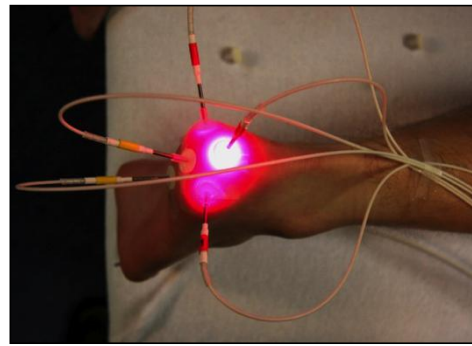


Fig. 14: Heel spur
图 14: 踵骨刺

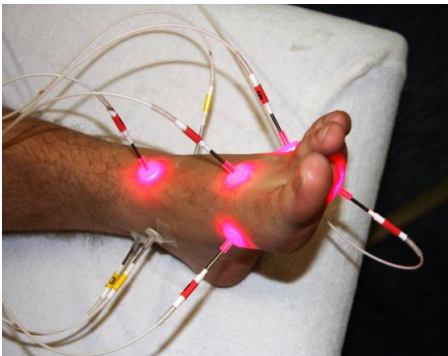


Fig. 15: Ankle joint distortion
图 15: 踝关节扭伤

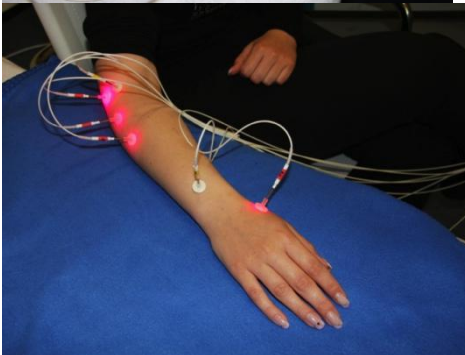


Fig. 16: Tennis elbow
图 16: 网球肘伤

Skull and ear acupuncture with laserneedles

光针灸头部和耳部

To affix laserneedles to the skull, face or ear, a special head adaptor is used (fig. 17-18):

专用头部适配器，固定光针在头部、面部或耳部（图 17-18）：

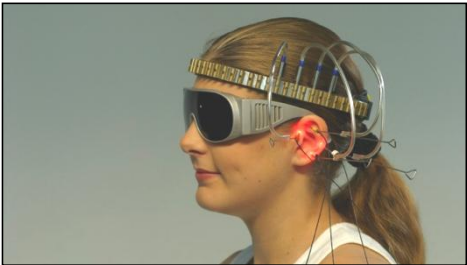


Fig. 17 - 18: Ear acupuncture with special head adaptor

图 17-18: 带专用头部适配器的耳针

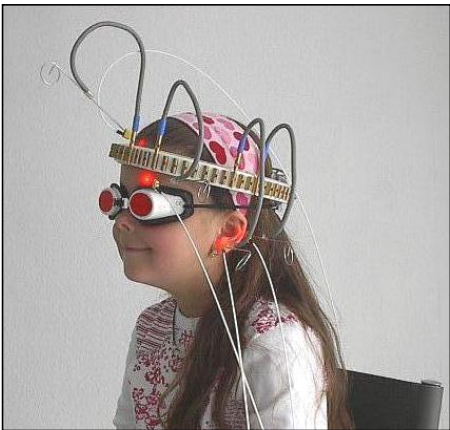


Fig. 19: Migraine treatment
图 19: 偏头痛治疗

灸

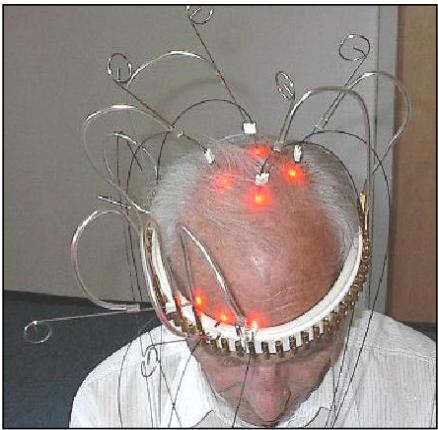


Fig. 20: Cerebral insufficiency
图 20: 脑功能不全



Fig. 21: Sleep disorder
图 21: 睡眠障碍

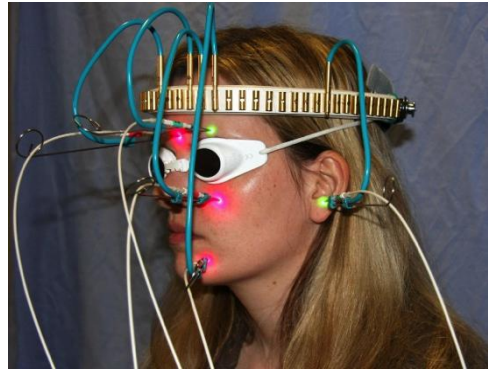


Fig. 22: "Battlefield Acupuncture"
图 22: "战场针灸"

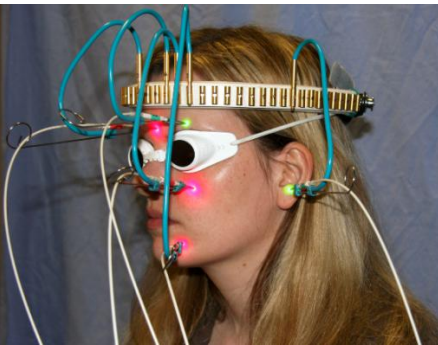


Fig. 23: Trigeminal neuralgia
图 23: 三叉神经痛

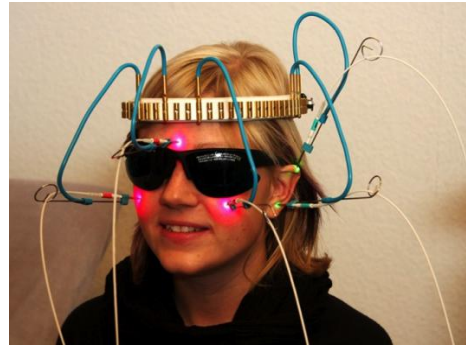


Fig. 24: Chronic sinusitis
图 24: 慢性鼻窦炎

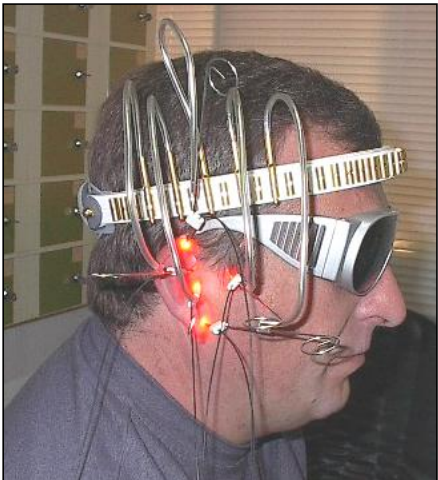


Fig. 25 - 26: Smoking addiction treatment
图 25-26: 烟瘾治疗



Treatment of ear or skull points in lying position

卧位治疗耳部或头部穴位

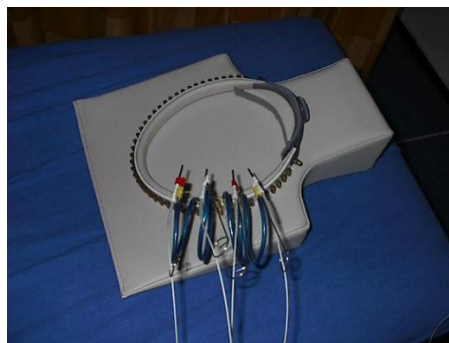
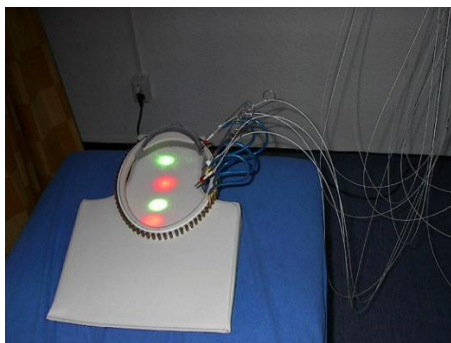


Fig. 27 - 28: Application of head adaptor in lying position

图 27-28: 卧位头部适配器的应用

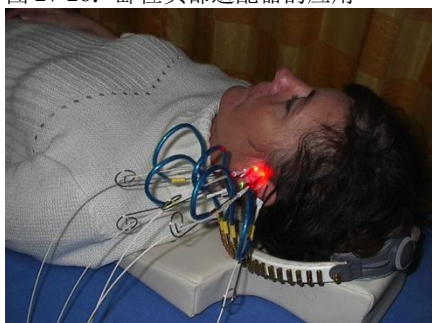


Fig. 29 - 30: Practical application of ear acupuncture in lying position

图 29-30: 卧位耳针灸的实际应用

Ear acupuncture with green laserneedles

用绿光针灸耳部

In ear acupuncture, green lasers can be used because of the perfectly suited penetration depth of 3-5 mm. Because of the strong absorption by haemoglobin in the tissue there is significantly less spreading of light compared to red lasers.

耳针灸使用绿光，因为绿光非常适合 3-5 毫米的穿刺深度。由于组织中血红蛋白的吸收性强，与红光相比，光扩散明显减弱。

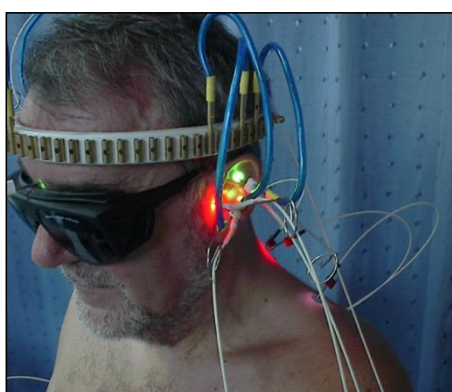


Fig. 31-33: Ear acupuncture with green lasers

图 31-33：用绿光针灸耳部

The application of laserneedles at ear points can be precised by using special stainless steel adapters that are placed on the top of a

laserneedle and lead to even stronger focusing of the laser beam (0,3 mm). The adapter also guarantees a stabilized and very exact position of the laserneedle on ear points that are difficult to treat.

通过放置在光针顶部的专用不锈钢适配器，使光针在耳穴精确应用，光束更聚焦（0.3 mm）。该适配器还保证了光针固定在难以治疗的耳穴上稳定且非常精确的位置。

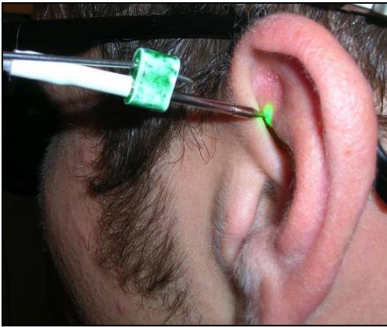


Fig. 34: Ear acupuncture with green laser and special stainless steel adapter

图 34: 用绿光和专用不锈钢适配器的耳针灸

2.3 Local laser therapy for pain management and rehabilitation

2.3 局部光治疗疼痛与康复

Laser therapy can also be used very successfully for local pain management and rehabilitation. The laserneedles can be applied on damaged areas with self-adhesive tubes or alternatively be placed in special adapters (laser showers) for irradiating larger areas.

光也非常成功地用于局部疼痛治疗和康复上。光针可用自粘式导管贴在受损部位，也可放在专用适配器（光淋浴器）中进行大面积照射。

All different available laser wavelengths can be combined for different penetration depths and their specific biological effects within the tissue.

所有不同波长的可用光组合用于不同穿刺深度，且在组织内引起各自的生物效应。

Areas of application:

适用范围:

- Pain Management
- 疼痛治疗
- Rehabilitation: Detumescence and anti-inflammatory effects after traumata, strains or fractures; accelerated healing of fractures; wound-healing
- 康复: 创伤、劳损或骨折后的消肿和抗炎作用;加速骨折和伤口的愈合。
- Transcranial laser therapy (see chapter 3): Treatment of stroke, Parkinson's, migraine, vertigo, tinnitus, degenerative brain diseases (cerebral sclerosis, Alzheimer's)
- 经颅光疗 (见第 3 章): 脑梗、帕金森氏症、偏头痛、眩晕、耳鸣、退行性脑疾病 (脑硬化、阿尔茨海默氏症) 的治疗
- Dermatology (see chapter 7): Eczema, neurodermatitis, psoriasis, chronic wounds, acne, herpes, gingivitis
- 皮肤科 (见第 7 章): 湿疹、神经性皮炎、牛皮癣、慢性伤口、痤疮、疱疹、牙龈炎
- Dentistry: Periodontitis, root canal treatment
- 牙科: 牙周炎、根管治疗
- Photodynamic therapy: Actinic keratoses, basal cell carcinoma
- 光动力疗法: 日光性角化症、基底细胞癌
- Cosmetic Laser Therapy: Vitalization of the skin and wrinkles
- 美容光疗: 恢复皮肤活力和平抚皱纹

Pain management

疼痛治疗

In local pain therapy, the different lasers are used preferably in a special adapter (laser shower) for irradiation of the pain area with very high intensity. The use of all different wavelengths leads to decrease of pain on the one hand and to various regenerative effects on the cellular level on the other hand.

局部疼痛治疗中，在专用适配器（光淋浴器）中优选不同的光，以高强度照射疼痛部位。所有不同波长的使用，一方面缓解疼痛，另一方面诱导细胞水平上的各种再生效应。

Therefore, the therapy is more than reduction of pain: The cellular effects of laser light lead to sustainable regeneration of damaged tissue.

因此，治疗不仅仅是缓解疼痛：光的细胞效应诱导受损组织的可持续再生。

Clinical effects:

临床疗效：

- Pain reduction
- 缓解疼痛
- Improvement of blood circulation
- 改善血液循环
- Detumescence
- 消肿
- Immune modulation
- 调节免疫
- Regeneration on the cellular level
- 细胞再生

Effects on the cellular level:

细胞水平的效应：

- Stimulation of mitochondria metabolism
- 刺激线粒体代谢
- Increase of ATP production
- 增加 ATP 生成
- Stabilisation of cell membrane
- 稳定细胞膜

Rehabilitation

康复

Lasertherapy can be used very successfully in rehabilitation medicine as well. It leads to detumescence and anti-inflammatory

effects after traumata, distortions or fractures and enhances healing of fractures.

光疗法还非常成功地用于康复医学。光疗法诱导创伤、扭伤或骨折后的消肿和抗炎作用，并促进骨折的愈合。

It can be used for post-operative treatments because of the well-known positive effects on wound-healing.

由于对伤口愈合具有积极显著的疗效，被用于术后康复。

Today, laser therapy for rehabilitation is used especially in sports medicine for treatment of distortions, tendinopathies and overload damages of the skeletal muscle system.

今天，用于康复的光疗法尤其适合骨肌系统的扭伤、肌腱病和劳损治疗的运动医学。

Red and infrared lasers are used because of their deep penetration depths. For using green or blue lasers in rehabilitation medicine (strong anti-inflammatory effects), lasers can also be used by interstitial or intra-articular application (see chapter 4).

使用红光和红外光是因为穿刺深。康复医学中使用绿光或蓝光因为强的消炎作用。光也可在间质或关节内应用（见第 4 章）。

In one of the first studies, 90 % of the treated patients showed very positive effects especially in acute traumatic sports injuries.

最初的一项研究中，90%治疗的患者显示出非常积极的疗效，特别是急性创伤性运动损伤。

Moreover, positive effects were also shown in patients with advanced osteoarthritis.

此外，对晚期骨关节炎患者也有积极的疗效。

Application of the Weberneedle® Lasershower:

韦伯针®光淋浴器的应用：



Fig. 35: Lasershower is equipped lasertherapy



Fig. 36: Lasershower for local

with 12 laserneedles
(laserneedles stick out a few mm)

图 35: 光淋浴器配备 12 支光针
几毫米)

图 36: 光淋浴器用于局部光疗 (光针伸出



Fig. 37: Lasershower with 4 red, 4 infrared and 4 green lasers

图 37: 光淋浴器配备 4 支红光、4 支红外光和 4 支绿光

Indications for using the lasershower

光淋浴器的适应症

- Degenerative joint diseases
- 退行性关节疾病
- Spine syndromes
- 脊柱综合症
- Distortions, Tendinitis
- 扭伤、肌腱炎
- Wound healing disorders and other dermatological conditions (i.e. neurodermatitis)
- 伤口愈合障碍和其他皮肤病 (如神经性皮炎等)



Fig. 38: Shoulder treatment with lasershower

lasershower
图 38: 光淋浴器的肩关节治疗



Fig. 39: Knee treatment with

图 39: 光淋浴器的膝关节治疗

Pilot study Lasershower, Lauenförde/ Germany 2006:

《前导性研究光淋浴器》，劳恩弗尔德/德国 2006:

Methodology:

方法:

- Chronic knee and shoulder patients (local treatment with lasershower with red, infrared and green lasers)
- 慢性膝关节和肩关节的患者（用红光、红外光和绿光淋浴器进行局部治疗）
- 6 treatments in total (3 weekly)
- 总 6 个疗程（每周 3 次）
- 15 min. treatment duration
- 15 分钟治疗时间

Database:

数据库:

- Amount of pain immediately before and after treatment with the visual analogic scale (VAS)
- 治疗前后用视觉模拟评分立即记录疼痛程度
- 3 months average before and after treatment (VAS)

- 治疗前后平均3个月的视觉模拟评分

Results:

疗效:

Knee patients:

膝关节疾病患者:

Right after the first treatments, most of the patients felt a significant reduction of pain intensity (6,6 before treatment compared to 3,8 after treatment, see fig. 40)

就在第一个疗程后，大多数患者感觉疼痛程度显著降低（治疗前为6.6，治疗后为3.8，见图40）

Most of the patients could reduce their daily medication. After 3 months, pain levels increased again.

可以减少大多数患者的日常用药。3个月后，疼痛程度再次升高。

Shoulder patients:

肩关节患者:

The effects on pain intensity in patients with shoulder syndromes were less significant compared to the knee patients. On the other hand, the effect was more sustainable (see fig. 41). Additionally, most of the patients felt a significant improvement of sleep quality.

与膝关节疾病的患者相比，对肩关节综合症患者的疼痛缓解疗效不大，但持续时间长（见图41）。此外，大多数患者感觉明显改善了睡眠质量。

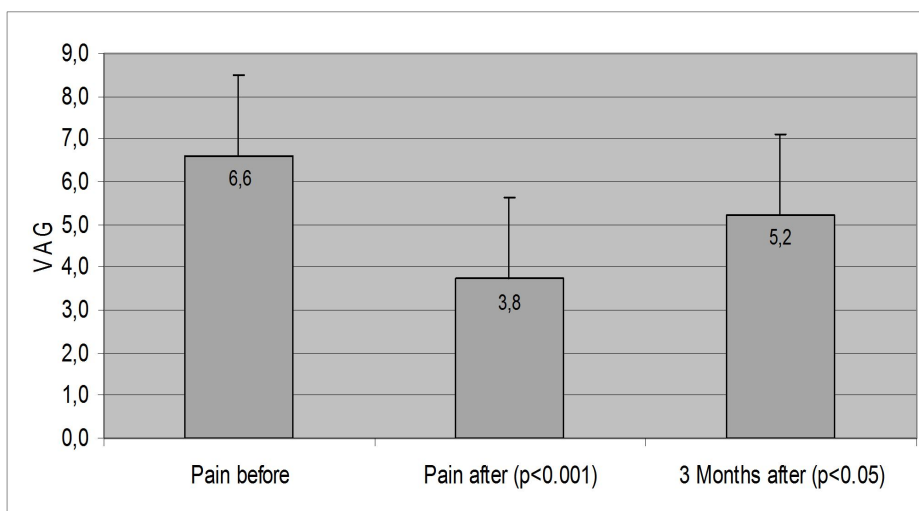


Fig. 40: Pain (VAS) before, after and 3 months after treatment (knee patients)

图 40: 治疗前后和治疗后 3 个月疼痛的视觉模拟评分 (膝关节患者)

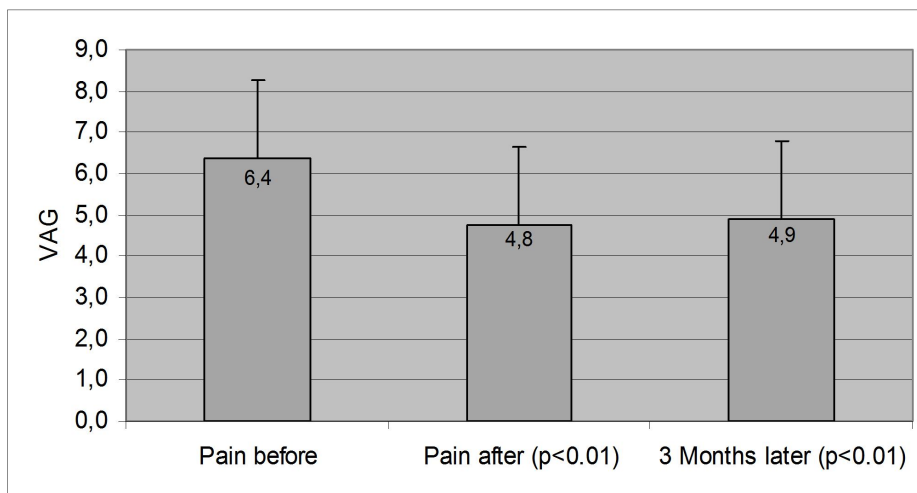


Fig. 41: Pain (VAS) before, after and 3 months after treatment (shoulder patients)

图41: 治疗前后和治疗后3个月疼痛的视觉模拟评分 (肩关节患者)

Conclusion

结论

- Significant improvement of pain in knee and shoulder patients right after 6 treatments
- 6 个疗程后，膝关节和肩关节患者疼痛明显缓解
- 50 % of knee patients and 25 % of shoulder patients could reduce daily medication
- 50%的膝关节患者和 25%的肩关节患者减少每日用药量
- Better results in knee patients compared to shoulder patients after 6 treatments
- 6 个疗程后，与肩关节患者相比，膝关节患者的疗效更好
- More sustainable effects (after 3 months) in shoulder patients
- 肩关节患者疗效的持续时间更长 (3 个月后)
- Significant improvement of sleep quality in shoulder patients
- 肩关节患者睡眠质量显著改善

2.4 Intra-oral laser therapy in dentistry and ENT (by laser mouth shower)

2.4 牙科和耳鼻喉科口腔光疗法（光口腔淋浴器）

In dentistry, especially the blue laser is highly important because of its antibacterial effects, i.e. in the treatment of root canals, periodontitis or gingivitis.

蓝光因抗菌作用在牙科，即在根管、牙周炎或牙龈炎的治疗中尤其重要。

Laser therapy is also used successfully for treatment of ENT diseases. Positive results could be shown in treatment of infections, tonsillitis, acute hearing loss, hardness of hearing, tinnitus or sinusitis.

光疗法也成功用于治疗耳鼻喉疾病。在治疗感染、扁桃体炎、急性听力损失、听力障碍、耳鸣或鼻窦炎方面展现出积极的疗效。

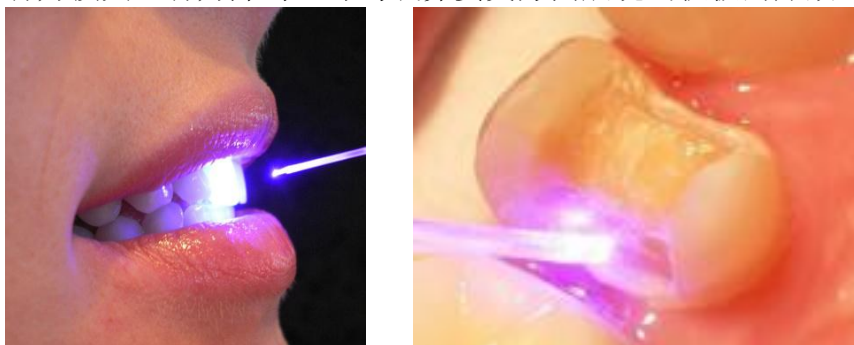


Fig. 42 - 43: Application of blue lasers in dentistry

图 42-43：蓝光在牙科中的应用

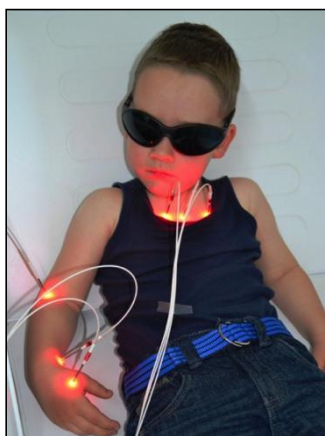


Fig. 44: Treatment of suscep-



Fig. 45: Laser irradiation of the inner ear for

	ibility of infection	treatment of acute hearing
loss		
图 44: 传染病易感性的治疗		图 45: 内耳光照射治疗急性听力损失

Indications in dentistry and ENT:
牙科和耳鼻喉科的适应症:

- Root canal treatment
- 根管治疗
- Periodontitis
- 牙周炎
- Gingivitis
- 牙龈炎
- Ulcers
- 溃疡
- Tonsillitis
- 扁桃体炎
- Aphthae
- 口腔溃疡
- Infections
- 感染
- Acute hearing loss
- 急性听力损失
- Hardness of hearing
- 听力障碍
- Sinusitis
- 鼻窦炎
- Tinnitus
- 耳鸣

Practical application:
实际应用:

A special applicator (laser mouth shower) with up to 5 laserneedles can be used for intra-oral laser applications.

多达 5 支光针的专用施药器（光口腔淋浴器）可用于口腔内光疗法。

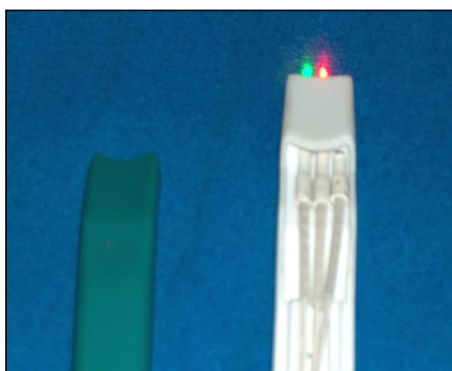
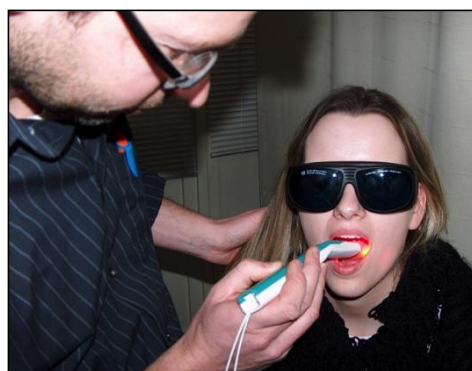


Fig. 46: Laser mouth shower with 5 Fig. laserneedles

shower

图 46：配备 5 支光针的光口腔淋浴器



47: Intra-oral treatment with the laser mouth shower

图 47：用光口腔淋浴器进行口腔内治疗

Transcutaneous laser blood irradiation

光经皮照射血液

The laser mouth shower can also be used for sublingual irradiation of the blood (systemic laser blood irradiation, see chapter 5). This procedure can be an alternative treatment option for patients with bad veins or children.

光口腔淋浴器也可用于舌下照射血液（光周身照射血液，见第 5 章）。对于不良静脉或儿科的患者，该设备可作为替代治疗方案。

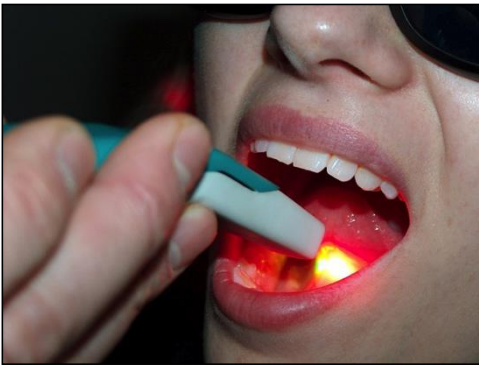


Fig. 48: Transcutaneous sublingual laser blood irradiation
图 48: 光经皮下照射血液

2.5 Summary of scientific publications and studies

2.5 科学出版物和研究摘要

2.5.1 Basic research

2.5.1 基础研究

2.5.1.1 Research on laserneedle acupuncture by Prof. DDr. Gerhard Litscher (Graz, Austria)

2.5.1.1 Gerhard Litscher 博士《光针灸的研究》(奥地利格拉茨)。

Most of the basic research on laserneedle therapy has been performed by Professor Litscher (Karl Franzens, University of Graz, Austria) by means of various neuromonitoring procedures. To this end, various procedures such as measuring the speed of the blood flow in different brain arteries with pulsed-Doppler examination, the determination of the arterial oxygen saturation, as well as the metabolic activity in various areas of the brain by using cerebral magnetic resonance imaging (MRI), have been applied. In 2002, Litscher proved for the first time an effect of laserneedles on the blood flow rate in the ophthalmic artery using the pulsed-Doppler method. In this context, an effect of at least 50 % as compared with classical needle acupuncture could be verified. 光针治疗的大部分基础研究是Litscher教授（奥地利格拉茨大学的Karl Franzens）通过各种神经监测程序完成的。为此，光针被应用于

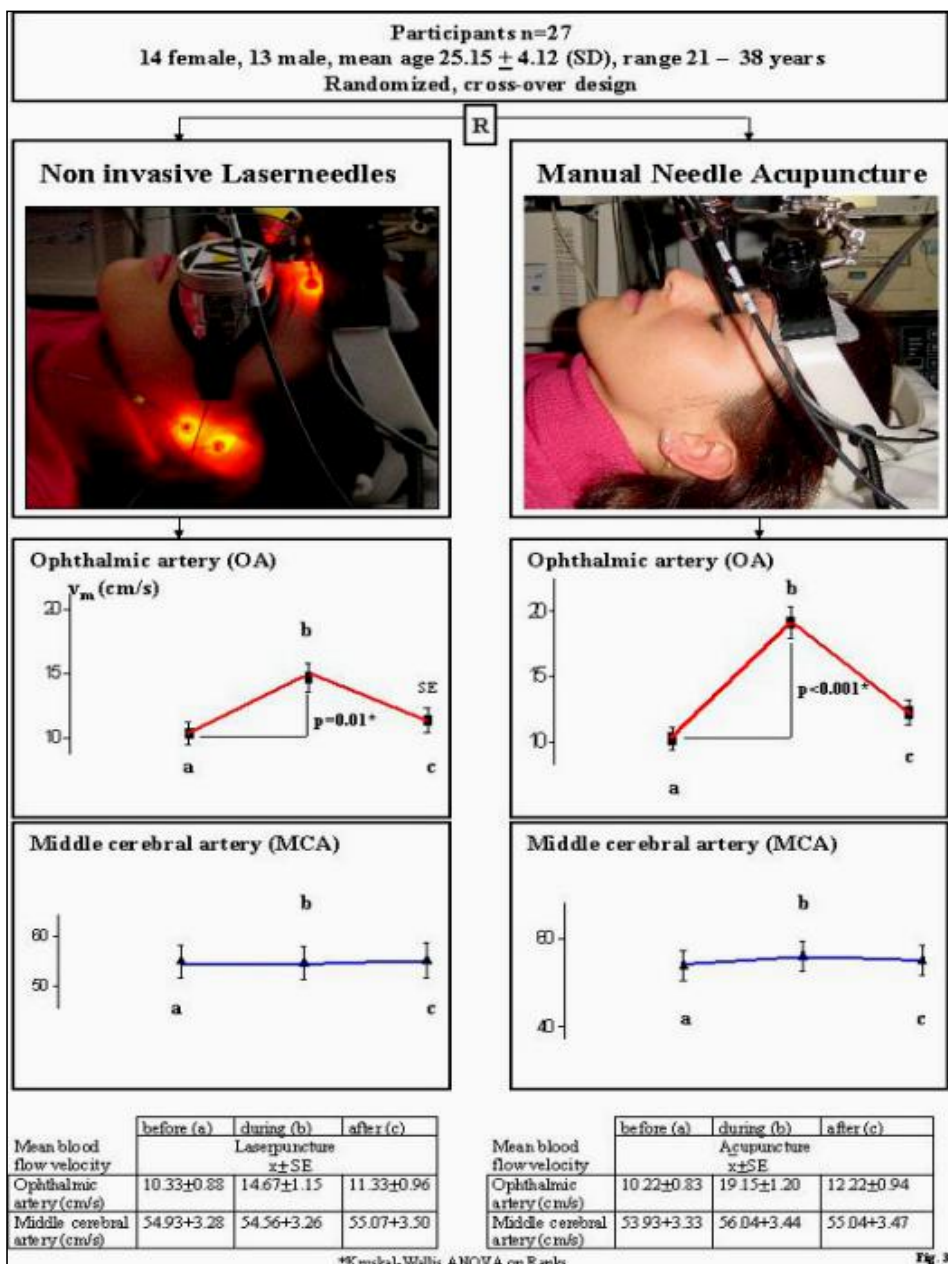
各种测定程序，诸如用脉冲多普勒检查测定不同脑动脉血流速度，测定动脉血氧饱和度，以及脑磁共振造影测定大脑各个部位的代谢活动等等。2002年，Litscher首次用脉冲多普勒法证明了光针对眼动脉血流速率的效应。因此，证明至少相当于传统针灸疗效的50%。

A study concerning the oxygen saturation in haemoglobin in various areas of the brain showed that laserneedles achieved virtually the same effect as needle acupuncture. The previously postulated term “needle equivalence” could now be verified.

一项关于大脑不同部位血红蛋白的氧饱和度的研究表明，光针实现了与传统针灸几乎相同的疗效。同时验证了先前的假说术语“针等效”。

In a double-blind study begun in early 2004, an enhanced activity of the sight and smelling region under laser needle therapy was demonstrated. Similar results were demonstrated in a placebo-controlled double-blind study by Siedentopf et al at the University of Innsbruck, Austria. A summary of the various works about laser needles can be found in the first book about laserneedle acupuncture, republished in 2004.

2004年初开始的一项双盲研究，证实了光针治疗下视觉和嗅觉区的活动增强。Siedentopf等人在奥地利因斯布鲁克大学进行的安慰剂对照双盲研究证实了类似的疗效。光针各种疗效的摘要，请参阅2004年再版的《光针灸》书的第一册。



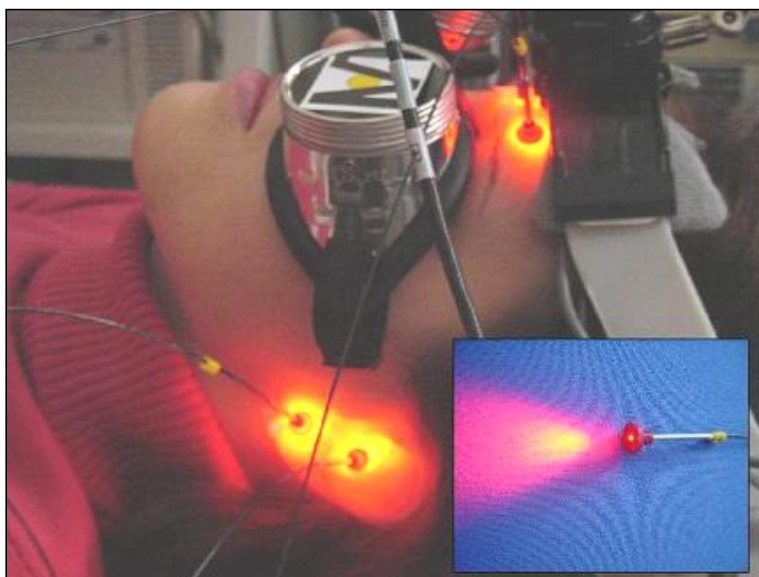


Fig. 49 - 50: Measurement of blood flow in the arteria ophthalmica after laserneedle acupuncture, comparison metal needle and laser needle

图 49-50：光针灸后眼动脉血流量的测定，比较金属针和光针

During and after laserneedle acupuncture (with red laser), blood flow velocity in the arteria ophthalmica increased significantly. Short-time stimulation (20 seconds/ point) on the other hand showed no significant effect (see fig. 49 - 50).

光针灸（红光）期间和之后，眼动脉中的血流速度显著提高。此外，快速刺激（20 秒/穴位）不显著（见图 49-50）。

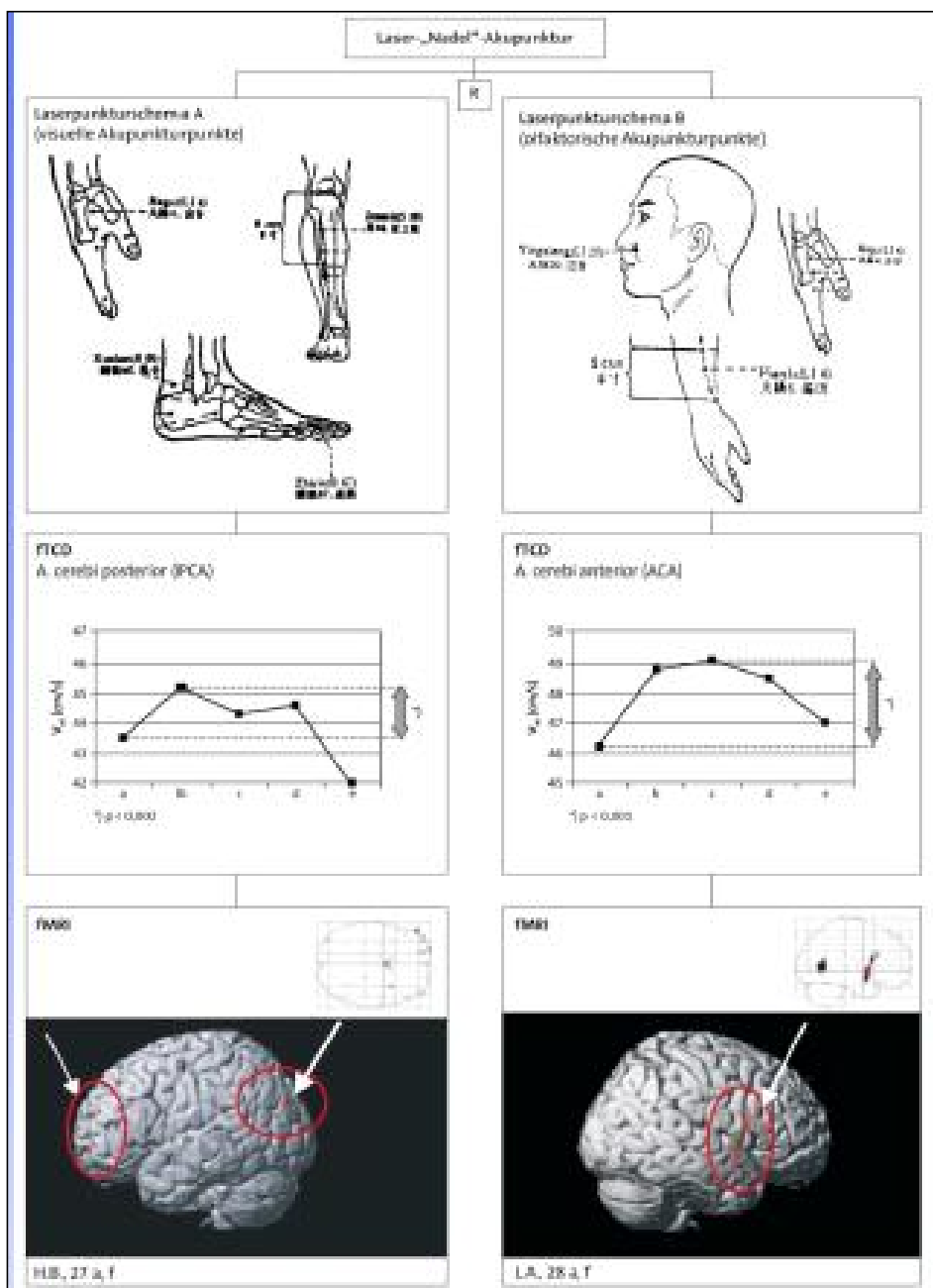


Fig.: 51: Measurement of a) cerebral blood flow velocity in the PCA and ACA (see graph) and b) brain stimulation by laserneedle acupuncture
 图： 51： 测定 a) PCA 和 ACA 中脑血流速度（见图）和 b) 光针灸脑刺激

The measurement of the mean cerebral blood flow velocity in the PCA and ACA before and after laserneedle acupuncture showed significant increase as well (see fig. 51a).

测试表明光针灸前后PCA和ACA中平均脑血流速度也显著增加（见图51a）。

Additionally, fMRI-measurement could illustrate significant brain activity in the occipital and olfactory cortex during and after laserneedle acupuncture (fig. 51b).

此外，功能磁共振造影测试显示光针灸期间和之后枕部和嗅皮质中的脑活动显著增加（图51b）。

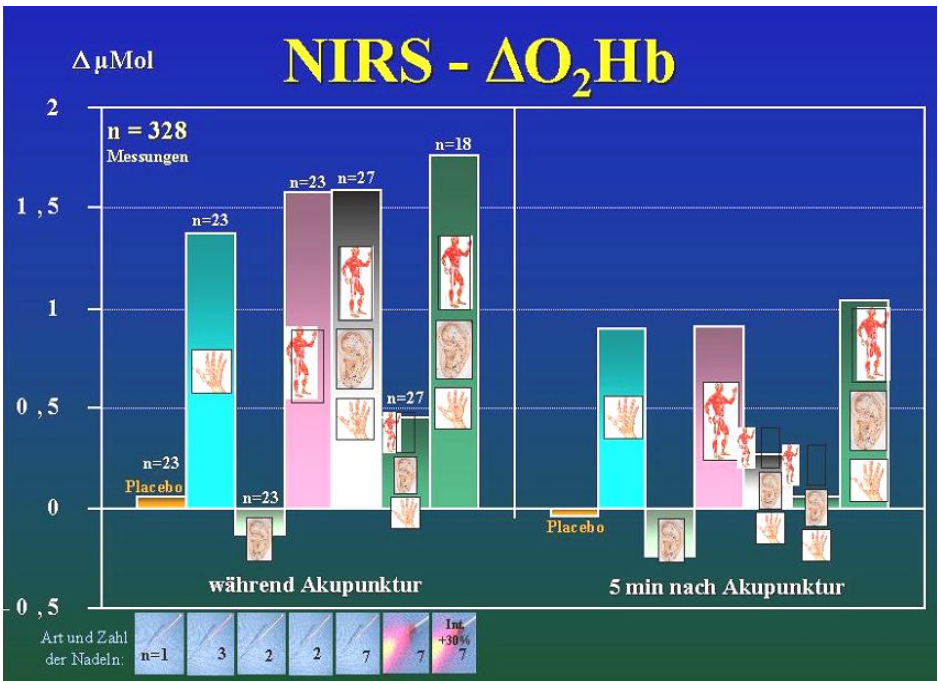


Fig. 52: Increase of oxyhaemoglobin (O₂Hb) with laserneedle acupuncture (measurement by NIR spectroscopy)

图 52：光针灸增加氧合血红蛋白（近红外光谱法测定）

Another measurement (with NIR spectroscopy, see fig. 52) shows the increase of oxyhaemoglobin during and after laserneedle acupuncture. While there was no effect in the placebo treatments, a significant effect could be achieved with laserneedle acupuncture. This effect was still sustainable 5 minutes after the treatment.

另一项测试（近红外光谱，见图 52）显示光针灸期间和之后氧合血红蛋白增加。虽然安慰剂治疗没有效果，但光针灸可以获得显著疗效。治疗后 5 分钟，这种效果仍持续。

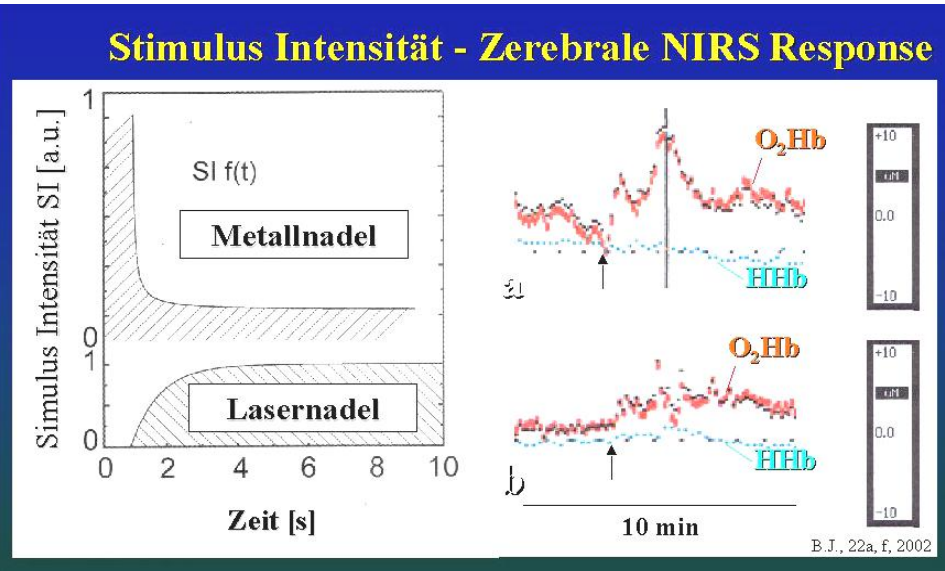


Fig. 53: Comparison of metal needle and laserneedle: Theoretical model of stimulation and haemoglobin oxygen saturation curves.

图 53：金属针和光针的比较：刺激和血红蛋白氧饱和度曲线的理论模型。

Fig. 53 illustrates the comparison of stimulation intensity between metal needle and laserneedle. The hypothetical model (fig. 53 left) argues that metal needle stimulation leads to a strong stimulation intensity in the beginning (because of the tissue penetration) that slows down drastically afterwards. The laserneedle (see left bottom) on the other hand is expected to achieve constant stimulation intensity.

图 53 显示了金属针和光针之间刺激强度的比较。假说模型（图 53 左）认为金属针刺刺激在开始时诱导强烈的刺激强度（由于组织穿刺），之后急剧骤减。此外，光针（见左下）有望实现恒定的刺激强度。

The right side of the illustration shows the comparison of increased oxyhaemoglobin during metal needle and laserneedle stimulation (measured by NIR spectroscopy) to verify the argued hypothesis.

图右侧显示了金属针和光针刺激期间增加氧合血红蛋白的比较（近红外光谱测定）以验证所提及的假说。

2.5.1.2 Changes in heart rate variability (HRV) during low level laser-needle acupuncture- A Placebo controlled trial in 19 healthy subjects (Dr. med. Beate Hausmann, Kiel/Germany)

2.5.1.2低强度光针灸期间心率变异性分析 - 19名健康受试者的安慰剂对照试验（德国基尔市医学博士Beate Hausmann）

Important basic research was published by **Dr. med. Beate Hausmann** from Kiel, Germany:

德国基尔市医学博士 **Beate Hausmann** 发表了重要的基础研究：

Background: Experimental and clinical studies postulate a neurobiological mechanism of acupuncture by modulating central pain systems, neurohormones and -transmitters. It is likely that the autonomic nervous system (ANS) plays an important mediating role in this neuromodulation.

背景：在实验和临床研究中，通过调节中枢疼痛系统、神经激素和信使来假设针灸的神经生物学机制。在这种神经调节中可能自主神经系统起重要的媒介作用。

Aim: In measuring heart rate variability (HRV), as a noninvasive approach to the ANS-function, the object of this study was to monitor probable acupuncture-induced changes of autonomic balance. The innovative technology of laser-needle acupuncture offers for the first time a stimulation method which fulfills the demands on a placebo controlled acupuncture trial not requiring controversial sham acupuncture.

目标：在测定心率变异性时，作为自主神经系统功能的非侵入性方法。本研究的目标是监测针灸诱发自主平衡变化的可能性。光针灸的创新技术首次提供了一种刺激疗法，满足安慰剂对照针灸试验的要求，抛开有争议的假针灸。

Method: 19 healthy voluntary subjects underwent 3 treatments in randomized sequence, consisting of placebo-, 1-point- (PC 6) and

simultaneous 3-point- (PC 6, LR 3, SI 3) laser-needle-stimulation over 20 minutes. Before, during, and after placebo-/verum laser-needle acupuncture, HRV-data for normalised HF(high frequency)- and LF(low frequency)-Power (nHF, nLF) and their quotient nLF/nHF obtained by power spectrum analysis (FFT), were measured and analyzed statistically at 5 different time points (ANOVA repeated measures, $p < 0,05$).

方法: 19名健康的自愿受试者按随机顺序接受3个疗程，包括安慰剂，1个穴位（内关）和同时3个穴位（内关、太冲、后溪）光针刺刺激20分钟。安慰剂/真实光针灸期间和之后，通过功率谱分析（快速傅立叶变换）计算出标准高频和低频功率的心率变异性数据及其低频/高频的商数。在5个不同时间点进行统计学测定和分析（重复测定方差分析， $p < 0.05$ ）。

Results: During both verum applications, the 1-point- (PC 6) as well as the simultaneous 3-point- (PC 6, LR 3, SI 3) laserneedle stimulation, significant changes of the ANS-activity were found in comparison to the placebo application. The most significant modification of HRV was an increase of nHF ($p < 0,05$ (PC 6), $p < 0,0001$ (PC 6, LR 3, SI 3)) as an expression of growing vagal activity during acupuncture.

疗效: 在真实应用中，1个穴位（内关）以及同时3个穴位（内关、太冲、后溪）光针刺刺激期间，发现与安慰剂应用相比，自主神经系统活性发生更显著的变化。心率变异性的变化最显著的是高频时活动增加（ $p < 0.05$ （内关穴）， $p < 0,0001$ （内关、太冲、后溪穴）），表现出针灸期间迷走神经活动增加。

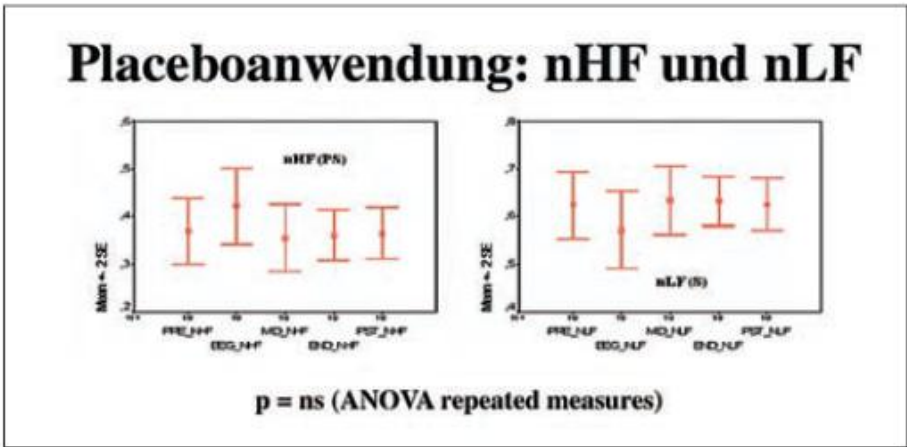


Fig. 54: Slight but insignificant increase of nHF (PS) and decrease of nLF (S) in placebo application
 图54: 安慰剂应用中，高频（内关穴和后溪穴）增加和低频（后溪穴）减少不明显

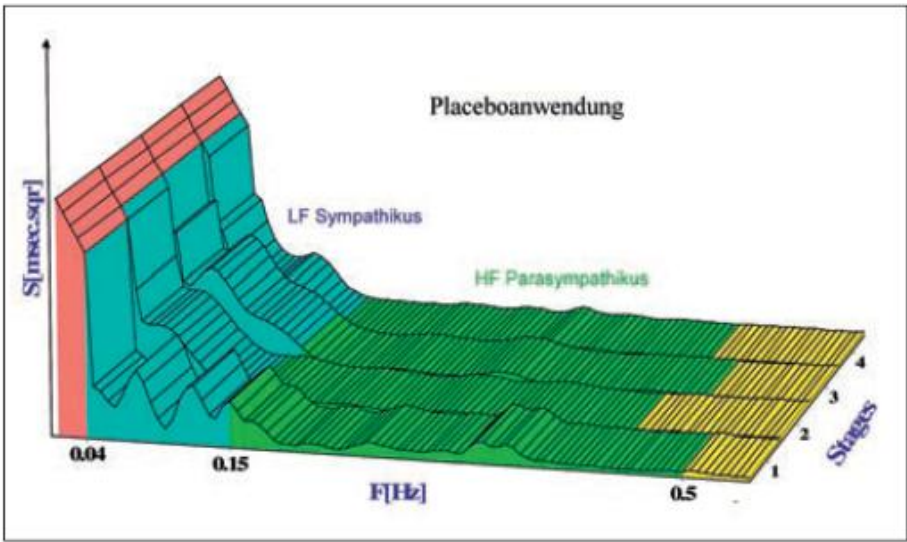
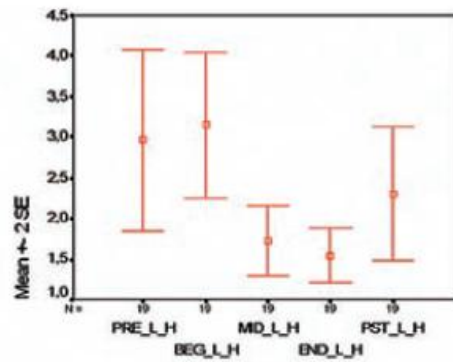


Fig. 55: 3D representation of consecutive HRV spectograms during placebo stimulation, no significant changes in energy density
 图55: 安慰剂刺激期间连续心率变异性3D光谱显示，能量密度无显著变化

1-Punkt-Laser-Stimulation von Pe 6: Stressquotient nLF/nHF (S/PS)



$p < 0,05$ (ANOVA, repeated measures)

Fig. 56: Significant decrease of the stress quotients nLF/nHF during and after laserneedle stimulation

图56: 光针刺激期间和之后低频/高频的应力商显著降低

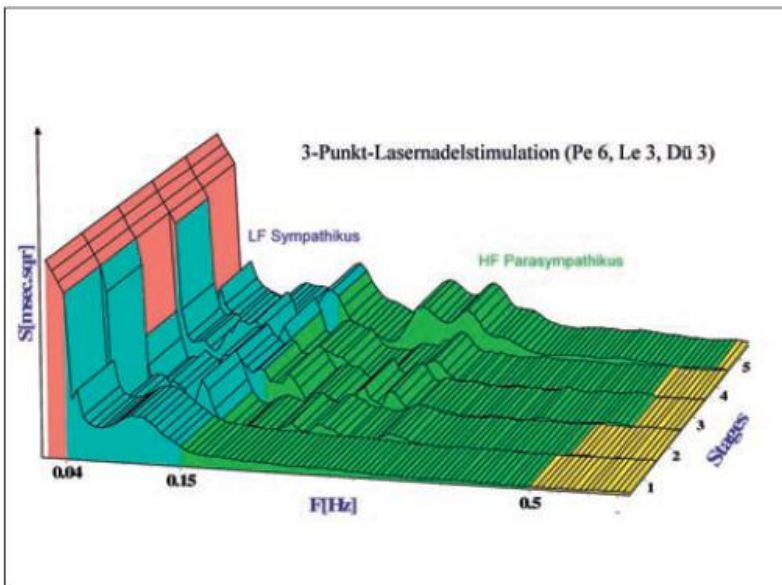


Fig. 57: 3-point-laserneedle stimulation, energy density increases significantly in the HF area (green, parasympathetic nervous system), while it decreases in the LF area (blue, sympathetic nervous system)

图 57: 3 个穴位光刺激, 高频部位 (绿光, 副交感神经系统) 的能量密度显著增加, 而低频部位 (蓝光, 交感神经系统) 的能量密度减少

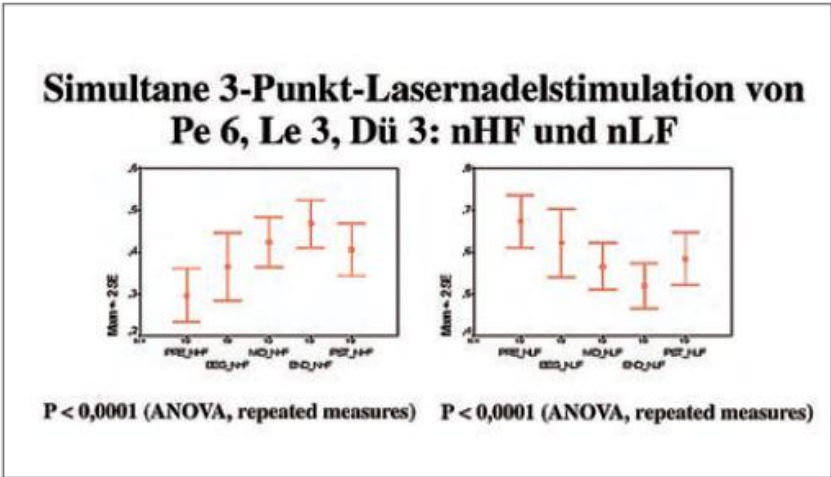


Fig. 58: Significant increase of nHF (PS) and decrease of nLF (S) in 19 test persons during and after 3-point-laserneedle stimulation

图 58: 3 个穴位光刺激期间和之后 19 名测试者高频时内关穴和后溪穴活动明显增加和低频时后溪穴活动减少

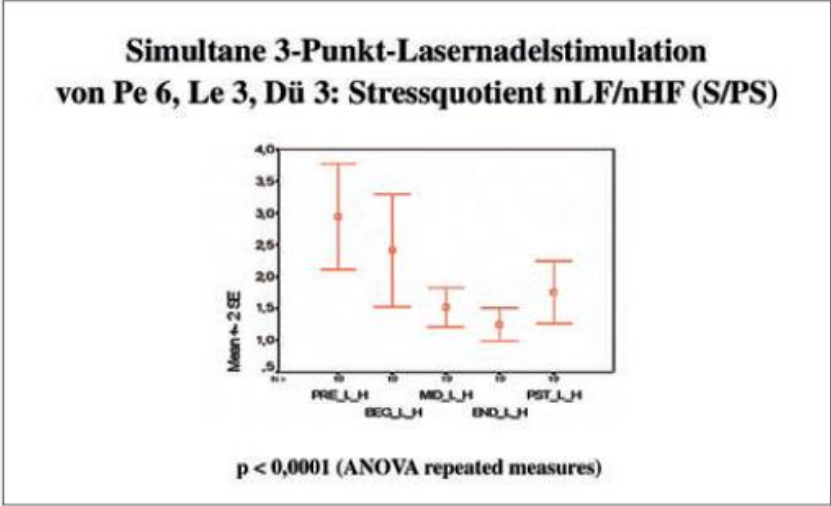


Fig. 59: Significant decrease of the stress quotient nLF/nHF in 19 test persons during and after 3-point-laserneedle stimulation

图59: 3个穴位光刺激期间和之后19名测试者低频/高频的应力商显著降低

Conclusion: Laser-needle acupuncture causes in 1-pointstimulation (PC 6) as well as in simultaneous 3-point-stimulation (PC 6, LR 3, SI 3) significant changes in HRV in

comparison to placebo application. HRV-monitoring seems to be a suitable approach in exploration of acupuncture-induced changes of ANS and could possibly be established in combination with laser needle acupuncture as a standard for further scientific and clinical acupuncture investigations which are greatly needed.

结论：与安慰剂应用相比，光针灸刺激 1 个穴位（内关）以及同时刺激 3 个穴位（内关、太冲、后溪），在心率变异性上引起显著变化。可见心率变异性监测是探索针灸诱导自主神经系统变化的适合方法，配合光针灸，可以进一步建立系统和临床针灸研究标准，这是急需的。

2.5.2 Clinical studies

2.5.2 临床研究

The author performed approximately 25,000 treatments with laser needles at our institution between 2001 and 2006. In this context, about 15,000 treatments were performed for orthopaedic syndromes. The remaining treatments concerned various other areas such as neurological, internal, otolaryngologic, and gynaecological disorders. The overwhelming majority of treatments were for orthopaedic pain syndromes, an inevitable reflection of a general medical practice.

在2001年至2006年期间，作者在我们机构进行了大约25,000次光针治疗。其中对骨科综合症进行了大约15,000次治疗。其余治疗涉及其他各个领域，如神经科、内科、耳鼻喉科和妇科等疾病。绝大多数治疗都是骨科疼痛综合症，是一般医学实践的必然反映。

Therapy evaluations in the beginning were established in the frame of an extensive observational study. The first treatments served as proof of the general effects of the laser-needle therapy and for comparing the latter to classical acupuncture. The laser needles soon demonstrated a positive effect similar to that achieved with classical needles.

开始的治疗评估是建立在广泛的观察性研究的框架内。首批治疗作为一般光针疗法效果的证据，并与传统针灸进行比较。光针很快就显示出与传统针灸相似的积极疗效。

The first developed laser-needle system (8 needles only, red light at 680 nm) had an especially beneficial effect on structures close to the surface, such as tendinites and neuritides, or in the area of

small finger joints. However, a clinical double-blind study in cooperation with the University Bochum/ Germany showed that the red light laser needles did not exceed placebo effects with regard to lumbar spine syndromes. This first disappointing result was because the penetration depth of red laser light is not high enough to stimulate points in the depth of the tissue (e.g., in the Bladder Meridian). Therefore, a combination of 6 red (658 nm) and 6 infrared (810 nm) laser needles was used in a new advanced laser-needle system as described above, and significantly better results were achieved with regard to the described syndromes.

第一次开发的光针系统（仅 8 支针，680nm 红光）对近体表的人体结构，例如腱和神经突或小指关节等部位具有特别好的疗效。然而，与德国波鸿大学合作进行的临床双盲研究表明，红光针对腰椎综合症的疗效没有超过安慰剂。这是第一个令人失望的结果，因为红光的穿刺深度不足以刺激组织深处的穴位（例如，膀胱经络中的穴位）。因此，如上所述，在新型先进光针系统中使用 6 支红光（658nm）和 6 支红外（810nm）光针的组合，显著提高了所述综合症的疗效。



Fig. 60: Publication in 'Medical Acupuncture'

图60:《医学针灸》出版物

In Germany (2001-2006), the world's largest acupuncture study was undertaken. This study, the German Acupuncture Trial (Gerac-study), initiated by the government and health insurance companies, examined 2,201 patients with low back pain, gonarthrosis, and headache/migraine. Patients were randomly assigned to treatment with TCM needle acupuncture, sham acupuncture, or a conventional therapy. Additionally, a cohort study with 367,646 patients was performed to prove the efficacy of acupuncture in general medical practice. In this study, low back pain, arthrosis of knee and hip joint, headache, and migraine were

included as well. The authors' patients took part in these studies, and 1,395 patients were treated with needle acupuncture, using the protocol of the Gerac-study. Results of the Gerac-study, recently published in January 2007, showed that acupuncture was superior to conventional treatment in lower back pain and gonarthrosis patients, even up to 6 months later.

德国（2001-2006）进行了世界上最大规模的针灸研究。这项由政府和健康保险公司发起的德国针灸试验检测了2,201名腰痛、膝关节炎和头痛/偏头痛的患者。患者在中医针灸、假针灸或常规治疗之间被随机分配。此外，一项针对367,646名患者的队列研究，验证了针灸在一般医疗实践中的疗效。这项研究也包括腰痛、膝关节和髋关节炎、头痛和偏头痛的患者。参与了作者这些研究的患者中，1,395名患者接受使用了《德国针灸研究》的治疗方案的针灸治疗。于2007年1月最新发表的《德国针灸研究》结果显示，针灸对腰痛和膝关节炎患者的疗效优于常规治疗，而且持续长达6个月。

TABLE 2. OVERVIEW OF TREATMENT DATA, 2001–2006*		
<i>Orthopedics</i>	<i>Neurology/Psychology</i>	<i>Internal Medicine</i>
Gonarthrosis (n = 425)	Migraine and other headache syndromes (n = 343)	Allergic diseases (n = 76)
Spinal column syndromes (n = 405)	Psychovegetative fatigue (n = 98)	Gastrointestinal disorders (n = 65)
Tennis elbow (n = 144)	Depressions (n = 95)	Disorders in peripheral circulation (n = 49)
Coxarthrosis (n = 135)	Tinnitus (n = 81)	Bronchial asthma (n = 44)
Shoulder syndromes (n = 127)	Toxicomania (smoking, drugs) (n = 80)	
Morbus Bechterew and polyarthritis (n = 88)	Residual paresis after stroke (n = 77)	
Tendinitis (n = 88)	Trigeminal neuralgia (n = 29)	
Rhizarthrosis (n = 48)		
Fibromyalgia (n = 28)		

*Patients receiving ≥ 10 treatments.

Fig. 61: Overview of treatment data, clinic Dr. Weber, 2001-2006

图 61: 治疗数据概述，临床博士韦伯(2001-2006)

Consequently, acupuncture treatments for these indications are now accepted and reimbursed by health insurance companies starting in January 2007. Treatment of migraine with acupuncture was considered successful, but not significantly better than conventional therapy. Thus, acupuncture for this indication is not supported as yet by insurance companies.

因此，自2007年1月起对这些适应症的针灸治疗已被健康保险公司接受并准予报销。公认针灸治疗偏头痛是非常成功的，但与常规治疗相比，疗效相似。因此，保险公司尚未支持针对该适应症的针灸。

To compare laser needle acupuncture with metal needle acupuncture, we chose random samples from our orthopaedic patients only treated with laser needles (n = 1,500). Fifty patients each with knee, shoulder, low back pain, and headache/migraine were included. The results are shown in fig. 62 and 63.

为了比较光针和金属针针灸的疗效，我们从骨科患者中随机选择样

TABLE 3. ORTHOPEDIC PATIENTS RECEIVING LASER NEEDLE ACUPUNCTURE (N = 1,500)*				
	Mean (SD) Visual Analog Scale Score			
	Knee (n = 50)	Low Back Pain (n = 50)	Shoulder (n = 50)	Headache/Migraine (n = 50)
Baseline	6.7 (1.9)	6.6 (2.1)	6.3 (2.2)	7.3 (2.5)
3 Months	3.6 (2.5)	3.3 (2.6)	4.0 (2.4)	3.5 (2.7)
6 Months	3.8 (2.3)	3.5 (2.7)	4.1 (2.6)	3.4 (2.8)
*Significant differences were found between baseline and 3-6 months after treatment ($P < .01$ by t test), but not between the third and sixth months. (Error bars indicate SD.)				

本，仅用光针治疗（n = 1,500）。包括50名膝或肩关节痛、腰痛和头痛/偏头痛的患者。疗效如图62和63所示。

Fig. 62: Clinical results with laserneedle acupuncture
图62：光针灸的临床疗效

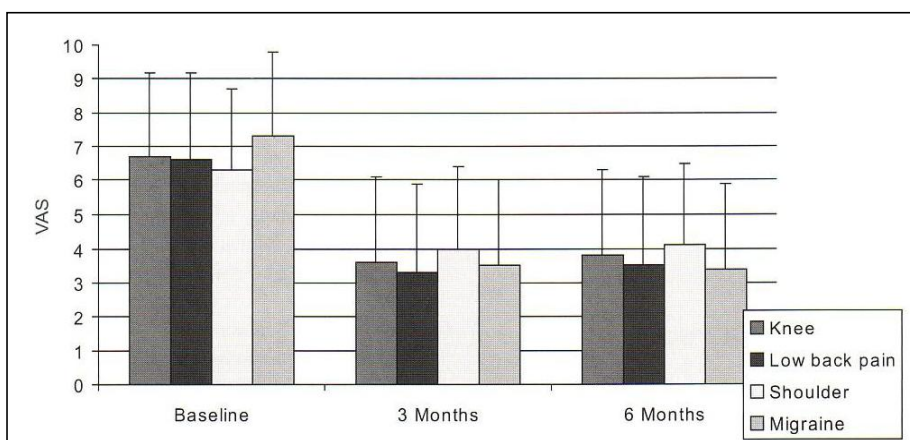


Fig. 63: Clinical results with laserneedle acupuncture

图63: 光针灸的临床疗效

We determined that there were no significant differences in our results when comparing them with those of the Geracstudy. Only the results of migraine treatment seemed to be better than in the Gerac-study. Our results were further proof that laser-needle acupuncture could be therapeutically equivalent to classical needle acupuncture. The above mentioned studies on healthy volunteers by Litscher and Siedentopf were confirmed by treatment of our patients. Further advantages of laser-needle acupuncture over classical metal needle acupuncture have been demonstrated. Apart from 2 cases of near-collapse in about 25,000 treatments with laser-needle acupuncture, there were no cases of pneumothorax, erysipelas, intra-articular knee infection, or dangerous collapse as documented in the Gerac-study as potential side effects of needle acupuncture. Because of the painless laser light, this method is more accepted by most of the patients. Therefore, a wider patient group may benefit from laser-needle therapy (i.e., children, patients taking coumadin, pain-sensitive patients, etc). Perhaps the most beneficial effects of the laser needle are the additional biological effects of laser light, which have been investigated and documented in numerous publications, for suppression of inflammation, tissue repairing and regeneration, and immuno-stimulative effects.

我们的测定，与《德国针灸研究》的成果进行比较，我们的患者疗效没有显著差异。只有偏头痛的疗效比《德国针灸研究》好。我们的研究成果进一步证明光针灸在治疗上可与传统针灸相媲美。我们对患者的治疗证实了上述提及的Litscher和Siedentopf对健康志愿者的研究。证明了光针灸比传统金属针针灸的更多优势。除了光针灸治疗的约25,000名患者中只有2例失败外，均未见《德国针灸研究》所记录的针灸的潜在副作用，诸如气胸、丹毒、膝关节内感染或风险等。由于大多数患者更易于接受这种无痛光针灸疗法。因此，更多的患者组（如，儿童、服用香豆素的患者、疼痛敏感的患者等）从光针疗法中受益。也许光针的最有益效果是光的额外生物效应，在许多出版物中均有研究和记录，诸如消炎、组织修复或再生以及刺激免疫功能等。

Comparison of metal needle and laserneedle acupuncture

金属针与光针的针灸比较

Another clinical study was done by Dr. Peter Dorsher (Mayo Clinic, Florida), who compared the effects of classical metal needle acupuncture and laserneedle acupuncture:

另一项Peter Dorsher博士（佛罗里达州梅奥诊所）进行的临床研究，比较了传统金属针和光针的针灸疗效：

Pilot Study of the Clinical Equivalence of Laser Needle to Metal Acupuncture Needle in Treating Musculoskeletal Pain (Peter T Dorsher MS, MD, Mayo Clinic Florida, 4500 San Pablo Road, Jacksonville, Florida 32224)

“光针与金属针针灸治疗肌肉骨骼疼痛的临床等效性的初步研究”
（佛罗里达州梅奥诊所Peter T Dorsher治疗的多发性硬化症和肌肉萎缩症，佛罗里达州杰克逊维尔市圣巴勃罗路4500号，邮编32224）

Abstract

摘要

Background: Acupuncture has been in clinical use for over 3000 years, and its methodology has evolved as new technological advances occurred over time.

背景: 针灸已在临床上使用了3,000多年，随着时间的推移和新技术的进步，其疗法也在不断发展。

Objective: To determine if relief of regional musculoskeletal pain using metal and laser needles at acupoints have clinical equivalence.

目标: 就穴位处测定金属针和光针对局部肌肉骨骼疼痛的缓解是否具有临床等效性。

Design: A prospective crossover cohort study of subjects previously treated for musculoskeletal pain with metal needles using laser stimulation of those same acupoints.

设计: 一项前瞻性交叉队列研究, 受试者之前用金属针治疗肌肉骨骼疼痛, 现用光刺激他们的相同穴位。

Setting: Outpatient clinic.

地点: 门诊。

Subjects: 30 adults with chronic joint (knee or shoulder) and/or spine musculoskeletal pain previously successfully treated with acupuncture using metal needles.

受试者: 30名成人患有慢性(膝或肩)关节炎和/或脊柱肌肉骨骼疼痛, 之前成功进行了金属针的针灸治疗。

Intervention: Focused laser (Laserneedle) stimulation of the same acupoints previously treated with metal needles alternating with treatments using metal needles for 2 cycles (metal → laser → metal → laser).

干预: 聚焦光(光针)刺激先前用金属针治疗的相同穴位, 与金属针交替治疗2个疗程(金属针→光针→金属针→光针)。

Main Outcome Measures: VAS pain rating one to three weeks after treatment, patient preference (metal needle versus laser), laser complications

主要成果指标: 治疗后对疼痛进行一至三周的视觉模拟评分, 患者偏好(金属针与光针), 光针并发症

Results: For subjects with knee and shoulder arthritis, metal needle VAS was 5.9 while

Laserneedle VAS was 3.1 (mean difference 2.8, $P < 0.001$ single tail).

For subjects with spine pain, the metal needle VAS was 3.7 while Laserneedle VAS was 2.95 (mean difference 0.75, $P < 0.074$). 9/10 subjects with joint arthritis reported more efficacy with

Laserneedle and the other found it equally efficacious. 10/20 spine pain subjects reported more pain relief efficacy with Laserneedle,

and another 6 found the interventions equally efficacious. No complications from the laser treatment were noted.

疗效：对于膝关节和肩关节炎的受试患者，金属针的视觉模拟评分为5.9，光针的视觉模拟评分为3.1（平均差2.8， $P < 0.001$ 单尾）。对于脊柱疼痛的受试者，金属针的视觉模拟评分为3.7，而光针的视觉模拟评分为2.95（平均差0.75， $P < 0.074$ ）。报告显示患有关节炎的9/10受试者使用光针更有效，1/10等效。10/20脊柱疼痛受试者使用光针具有更大的疼痛缓解疗效，6/20干预措施等效。光治疗未见并发症。

Conclusions: This prospective, crossover cohort study of subjects with chronic musculoskeletal pain demonstrates that metal and laser acupuncture needles have clinical equivalence in reducing pain, and that patients (especially those with shoulder and knee arthritis) report preference for laser needle treatments.

结论：这项对慢性肌肉骨骼疼痛受试患者的前瞻性交叉队列研究表明，金属针和光针灸针在缓解疼痛方面具有临床等效性，患者（尤其是肩关节和膝关节炎）偏爱光针治疗。



Fig. 64: Indications treated in this study (knee, shoulder, spine)

图64：本研究治疗的适应症（膝和肩关节炎、脊柱疼痛）

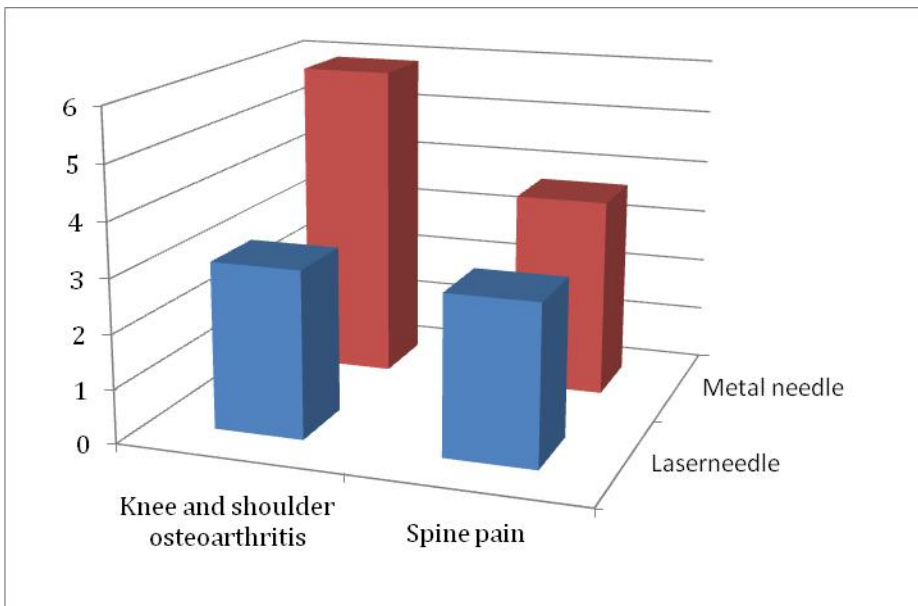
Summary:

摘要：

VAS (pain intensity):

视觉模拟评分（疼痛强度）:

- knee and shoulder osteoarthritis metal needle: 5,9
- 膝和肩骨关节炎的治疗中金属针为： 5.9
- knee and shoulder osteoarthritis laserneedle: 3,1
- 膝和肩骨关节炎的治疗中光针为： 3.1
- spine pain metal needle: 3,7
- 脊柱疼痛的治疗中金属针为： 3.7
- spine pain laserneedle: 2,95
- 脊柱疼痛的治疗中光针为： 2.95



Low-Level-Laser therapy in the management of neck pain:

低强度光治疗颈痛:

Efficacy of low-level laser therapy in the management of neck pain: a systematic review and meta-analysis of randomised placebo or active-treatment controlled trials (Roberta T Chow, Mark 'Johnson, Rodrigo A B Lopes-Martins, Jan M Bjordal)

低强度光治疗颈痛的疗效: 随机安慰剂或积极治疗对照试验的系统评价和荟萃分析 (Roberta T Chow、Mark'Johnson、Rodrigo A B Lopes-Martins、Jan M Bjordal)

In 2009, Chow et al. published the results of a systematic review on laser therapy in the treatment of neck pain the famous Lancet journal.

2009年, Chow等人发表了“关于光治疗颈痛的系统评价结果”, 著名的《柳叶刀》期刊。

The results showed that low-level-laser therapy leads to immediate pain reduction in acute neck pain right after treatment with sustainable effects even in chronic pain patients for up to 22 weeks. 结果显示, 即使在长达22周的慢性疼痛患者中, 低强度光疗在治疗后立即缓解急性颈痛, 疗效持久。

“We identified 16 randomised controlled trials including a total of 820 patients. In acute neck pain, results of two trials showed a relative risk (RR) of 1.69 (95% CI 1.22–2.33) for pain improvement of LLLT versus placebo. Five trials of chronic neck pain reporting categorical data showed an RR for pain improvement of 4.05 (2.74–5.98) of LLLT. Patients in 11 trials reporting changes in visual analogue scale had pain intensity reduced by 19.86 mm (10.04–29.68). Seven trials provided follow-up data for 1–22 weeks after completion of treatment, with short-term pain relief persisting in the medium term with a reduction of 22.07 mm (17.42–26.72). Side-effects from LLLT were mild and not different from those of placebo.”

“我们确定了16项随机对照试验, 共计820名患者。在急性颈痛中, 两项试验的结果显示, 与安慰剂相比, 低强度光治疗疼痛的相对风险为1.69 (95% CI 1.22-2.33)。5项慢性颈痛报告的分类型数据显示, 低强度光治疗疼痛的相对风险为4.05 (2.74-5.98)。11项试验报告中

患者的视觉模拟评分的疼痛强度降低了19.86 mm (10.04-29.68)。 7项试验提供了治疗结束后1-22周的随访数据，中短期疼痛缓解持续，疼痛强度降低22.07 mm (17.42-26.72)。低强度光疗的副作用轻微，与安慰剂无明显差异”。

This data establishes LLLT as evidence based treatment for neck pain. It is at least equivalent to and probably better than other accepted medical treatments for neck pain.

该数据提供了低强度光治疗颈痛的证据。至少等效或好于其他可接受的医疗。

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Chapter 3: Transcranial laser therapy

第 3 章：经颅光疗法

The transcranial (infrared) laser therapy in combination with additional local laser therapy (i.e. for improvement of local movement), is an innovative and promising new treatment option for stroke, Parkinson's, Alzheimer's, migraine, vertigo, tinnitus or other cerebral disorders.

针对脑梗、帕金森氏症、阿尔茨海默氏症、偏头痛、眩晕、耳鸣或其他脑部疾病，经颅（红外）光疗法配合另一局部光疗（诸如改善局部运动）是富于创新精神和前途无量的新疗法选择。

Transcranial laser application with direct irradiation of the human brain is done with highly focused infrared lasers due to the ability of infrared light to penetrate bones and bring the light energy into the targeted brain areas. Early studies could show that *only* infrared laser light is able to penetrate skull bone and liquor for successful stimulation of the human brain with sufficient energy dosage.

由于红外光能穿透骨骼并将光能带入靶向脑部位，因此用高度聚焦的红外光直接照射人脑，即经颅光应用治疗。早期研究表明，只有红外光能够穿刺颅骨和体液，以足够的能剂量成功刺激人脑。

Various experiments could demonstrate that transcranial infrared laser therapy improves intra-cerebral microcirculation and reduces the area of infarction. Additionally, activation of neuronal growth after laser therapy could be observed.

各种实验证明了经颅红外光治疗改善了脑内微循环并减少了梗塞面积。另外，观察到光疗后神经元生长的激活。

The mechanism behind this approach seems to be an induction of biochemical metabolic pathways within the neurons. The light

spectrum of infrared light is equivalent to the absorption spectrum of copper ions in the cytochrom-c-oxidase (terminal enzyme complex of the inner mitochondria membrane). Thus, it can be supposed that infrared laser irradiation leads to increased mitochondrial ATP production. Due to the increased energy metabolism in the penumbra and a reduced rate of apoptosis, neuro- reparative processes are achieved.

这种方法背后的机制可能是诱导神经元内的生化代谢通路。红外光的光谱相当于细胞色素-c-氧化酶（线粒体内膜的末端酶络合物）中铜离子的吸收光谱。因此，认为红外光照射诱导线粒体 ATP 生成数量的增加。由于半影中能量代谢的增加和细胞死亡率的降低，实现了神经修复。

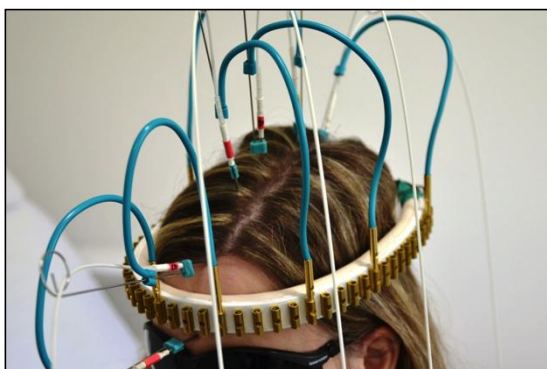


Fig. 1: Transcranial infrared laser therapy

图 1：经颅红外光疗法

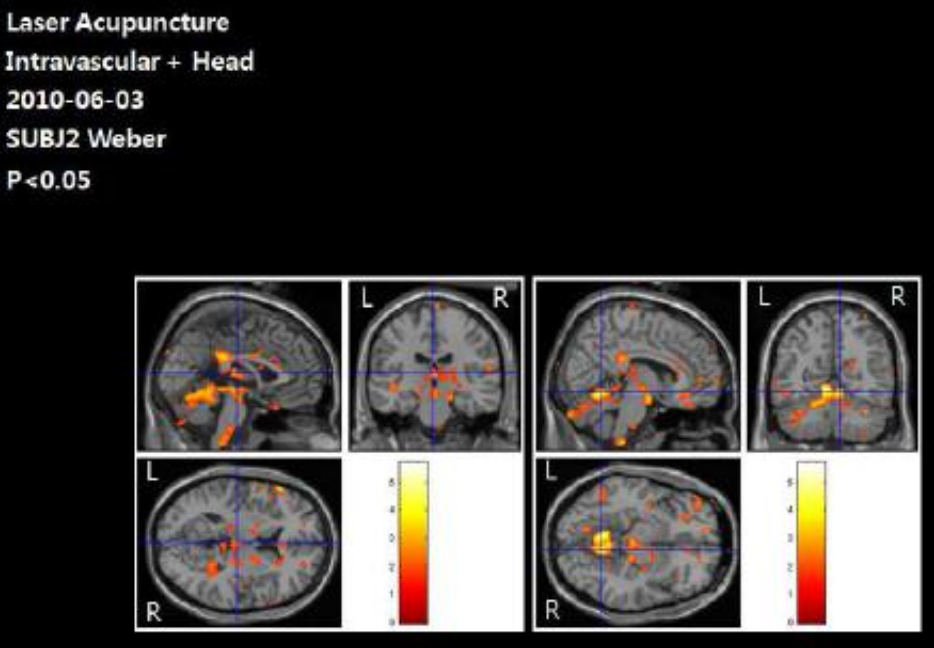


Fig. 2: Measurement of brain stimulation during transcranial laser therapy
图 2: 经颅光疗期间脑刺激的测定

3.1 Post-treatment of cerebral stroke

3.1 脑梗的后期治疗

First results from clinical trials in post-treatment of acute cerebral stroke are very encouraging: The so-called NEST studies could show that active treatment with transcranial infrared light therapy lead to a significant reduction (15 %) of disability and death.

后期治疗中，急性脑梗临床试验的初步成果非常喜人：该项《神经疗效和安全试验》研究表明，经颅红外线的积极疗法可明显降低伤残和死亡率高达 15 %。

Naeser et al. demonstrate various case reports where cognitive functions improved significantly after transcranial irradiation of the patient's brain.

Naeser 等人展示的不同病例报告表明在患者大脑经颅照射后显著改善了认知功能。

All these findings can be evaluated as a revolutionary development in treatment of cerebral stroke as this can be a highly effective new therapeutical option for stroke patients without any side-effects.

所有这些研究成果都被评为脑梗治疗的革命性突破。因为这是一种卓有成效的崭新的治疗方案，对脑梗患者无任何副作用。

The following effects could be verified by basic in-vitro research:

基础体外研究可验证以下疗效：

- Increase of cortical ATP production
- 增加皮质三磷酸腺苷的生成
- Improvement of neurological capabilities
- 改善神经功能
- Improvement of cognitive deficits
- 改善认知障碍
- Positive effects on inflammatory processes within the brain
- 对脑内炎症具有积极疗效

New results of a double-blind study performed by the department of neurophysiology of University Göttingen (Germany, Paulus et al. 2014) were recently presented. The researchers tested the effect of transcranial laser therapy on the cortical excitability of the healthy human brain.

最近哥廷根大学神经生理学系（德国 Paulus 等人，2014 年）完成了双盲研究，取得了新成果。研究人员试验了经颅光疗对健康人脑皮质兴奋性的效应。

“Neuroplastic effects of transcranial near-infrared stimulation (tNIRS) on the motor cortex” (Paulus et al. 2014):

“经颅近红外光刺激对运动皮质的神经可塑性效应”（Paulus 等人，2014 年）：

Results: By evaluating the mean amplitude of single-pulse TMS elicited motor-evoked-potentials (MEPs), a significant decrease of the amplitude was observed up to 30 minutes post-stimulation. The short interval cortical inhibition (SICI) was increased and facilitation (ICF) decreased significantly after the tNIRS. [...] Results of a study questionnaire demonstrated that tNIRS did not induce serious side effects apart from light headache and fatigue.

成果：评估单脉冲经颅刺激疗法诱导电位的平均振幅变化，在刺激后 30 分钟可见振幅的显著降低。在经颅近红外光刺激后，显著增加短间隔皮质抑制并且促进惯性约束聚变降低。研究调查问卷的结果表明，经颅近红外光刺激除轻度头痛和疲劳外，无严重的副作用。

Conclusion: tNIRS offers the potential to induce neuroplastic changes in the intact human cortex with a high spatial resolution.

结论：颅近红外光刺激具有以高空间分辨率诱导完整人体皮质内神经可塑性变化的潜力。

This experiment is another milestone in research on medical laser therapy: For the first time, a double-blind, placebo-controlled study could verify that transcranial infrared laser therapy can induce neuroplastic changes within the human brain.

该实验是医学光疗研究的又一里程碑：双盲、安慰剂对照研究首次证实经颅红外光疗可以诱导人脑内的神经可塑性变化。

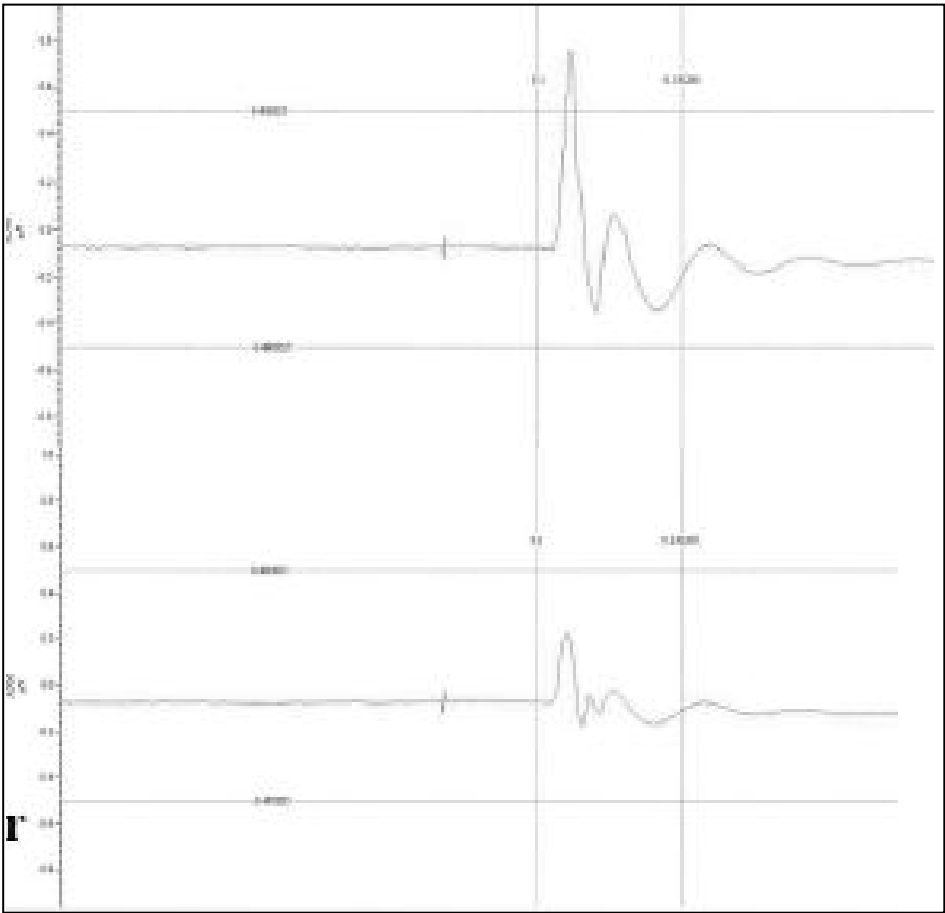


Fig. 3: MEP (Motor-evoked-potential) before (left) and after (right) laser therapy
图 3: 光疗前 (左) 和后 (右) 诱导电位变化

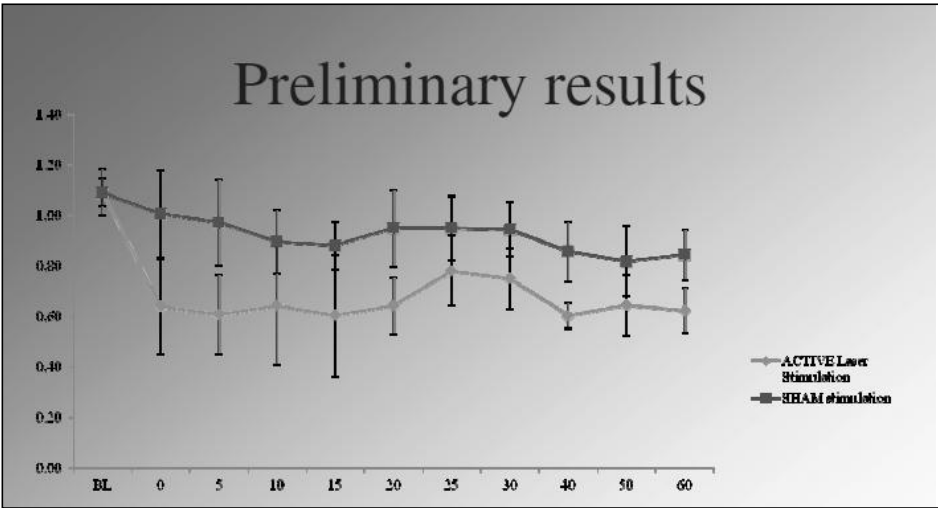


Fig. 4: Comparison of the effects of laser stimulation and sham stimulation
图 4: 光刺激和假刺激疗效的比较

3.2 Parkinson's

3.2 帕金森症

Parkinson's is a neurodegenerative disease that affects many older people. In this context, mitochondrial dysfunctions in the electron transport chain are of great importance, too.

帕金森症是一种影响众多老年人的神经退行性疾病。其中，电子传递链中的线粒体功能障碍很关键。

As the positive effect of laser light on mitochondrial activity is well known, transcranial infrared laser therapy can be a promising new therapeutical option for treating Parkinson's (additionally, intravenous laser therapy should be used, see treatment protocols in chapter 10).

由于光对线粒体活性的积极影响是众所周知的，经颅红外光疗可以成为治疗帕金森病的一种有前景的新疗法（此外，还应使用静脉光疗，参见第 10 章治疗方案）。

The following effects could be shown by basic (in-vitro) research:
基础（体外）研究证实以下疗效：

- Increase of neuronal protective functions
- 增加神经元保护功能

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- Reparative effects on neuronal functions
 - 对神经元功能的修复效应
 - Regeneration of mitochondrial transport chains
 - 线粒体传递链的再生
 - In animal experiments, neuronal functions could be restored completely
 - 实验中，动物神经元功能完全恢复

Transcranial laser therapy can be a very promising new treatment option, especially for decelerating progression of the disease.

经颅光治疗是一种非常有前景的新型治疗方案，尤其适用于减缓疾病恶化。

3.3 Alzheimer's

3.3 阿尔茨海默氏症

Very encouraging findings in Alzheimer's research have recently been published by the Institute for Micro- and Nanomaterials, Faculty of Engineering, University Ulm/Germany (Sommer et al. 2011) in the journal "Photomedicine and Laser Surgery".

阿尔茨海默氏症的研究成果非常令人鼓舞，近日由德国乌尔姆大学工程学院微纳米材料研究所（Sommer 等人，2011 年）发表在“光医学和光外科”杂志上。

The researchers were able to reduce Alzheimer's related amyloid-beta aggregates in human neuroblastoma cells (in-vitro) by more than 60 percent with a combination of Epigallocatechin gallate (EGCG, from green tea extract) and laser light.

研究人员用表没食子儿茶素没食子酸酯（来自绿茶提取物）和光将人体神经母细胞瘤细胞（体外）中与阿尔茨海默氏症相关的淀粉样蛋白 β 聚合物减少 60% 以上。

These aggregates accretions are responsible for the disordered neurotransmission in the brain and therefore cause the common symptoms of Alzheimer's disease.

这些聚合物的增加是造成大脑神经传递紊乱的原因，因此诱导阿尔茨海默氏症的常见症状。

Other basic research could show the following effects:

其他基础研究的疗效显示以下：

- Increase of cerebral blood flow

- 增加脑血流量
- Activation of cranial nerve activity
- 激活颅神经活性
- Increase of ATP production and cell membrane stabilisation
- 增加 ATP 生成和细胞膜稳定性
- Reduction of apoptosis of brain cells
- 减少脑细胞凋亡

First clinical trials could also demonstrate positive effects of transcranial laser therapy in Alzheimer's treatment, especially regarding attenuation of memory loss.

首批临床试验也证明经颅光疗法在阿尔茨海默氏症治疗中的积极作用，特别是缓解健忘。

Zenba et al. performed a one-year experiment with 15 patients and illustrated positive effects for the indicators sociability, excitement (nervous), cooperativeness, conversation ability and disorientation (fig. 5).

Zenba 等人对 15 名患者进行了为期一年的实验，在社交能力、兴奋（神经）、合作能力、会话能力和定向障碍等指标上显示出积极的疗效（图 5）。

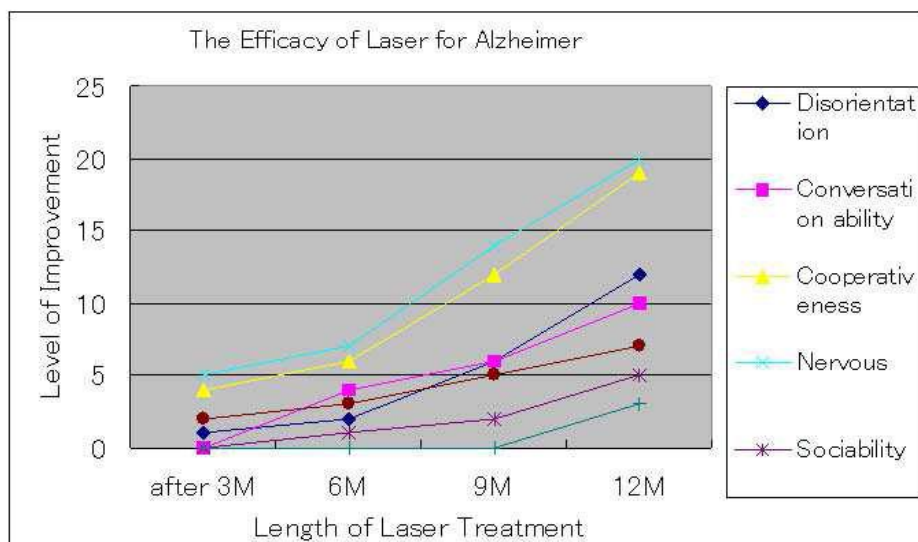


Fig. 5: Effects of transcranial laser therapy in Alzheimer's patients (Zenba et al.)

图 5: 经颅光治疗阿尔茨海默氏症患者的疗效 (Zenba 等人)

However, the protocol by Zenba et al. used only short treatment intervals and low laser intensity. The application of highly focused infrared lasers with highly increased energy dosage is supposed to increase the success of the therapy significantly.

但是, Zenba 等人的治疗方案仅用于短治疗间隔和低光强度。用高度聚焦的红外光和高能剂量应该可以显著提高治疗的成功率。

In conclusion, the following clinical effects have been observed:

总之, 已获得以下临床疗效:

- Decelerating progression of disease
- 减缓疾病恶化
- Positive behaviour modification (see Zenba et al.)
- 积极的行为矫正 (参见 Zenba 等人)
- Positive influence on patient's care
- 对患者护理产生积极影响

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Chapter 4: Interstitial and intra-articular laser therapy

第 4 章: 间质和关节内光疗

4.1 Interstitial Laser Therapy

4.1 间质光疗

A new technique, the so-called percutaneous interstitial laser therapy (with the use of a sterile catheter), allows the laser light to

be used even deeper in the tissue for successful treatment of slipped discs or spinal stenoses.

一种新技术，即经皮间质光疗（使用无菌导管），允许光在人体组织深层使用，以成功治疗椎间盘突出或椎管狭窄。

Using this technique, therapeutic results can be improved significantly due to a highly increased penetration depth of up to 12 cm. Also, green and blue lasers, which are normally already absorbed on the surface of the tissue, can now be used deeper in the tissue, leading to anti-inflammatory effects on damaged tissue.

由于高达 12 厘米的穿刺深度，这种技术使得疗效显著提高。此外，组织表面一般吸收绿光和蓝光，这时可以在组织更深处使用，诱导对受损组织的抗炎效应。

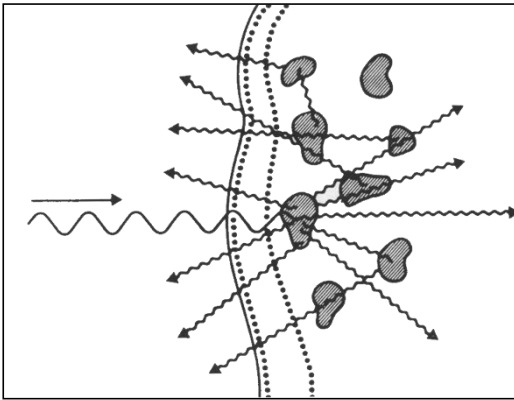


Fig. 1: Skin barrier hinders deep penetration of lasers (see chapter 1)

图 1：皮肤屏障干扰光的深度穿刺（见第 1 章）

Indications of interstitial laser therapy:

间质光疗的适应症：

- Chronic spine syndromes
- 慢性脊柱综合症
- Slipped discs
- 椎间盘突出
- Scar pain after surgery
- 术后疤痕疼痛
- Spinal stenoses
- 椎管狭窄

- Neural lesions
- 神经损伤
- Deep tendinitis and strains
- 深部肌腱炎和劳损

4.2 Intra-articular Laser Therapy

4.2 关节内光疗

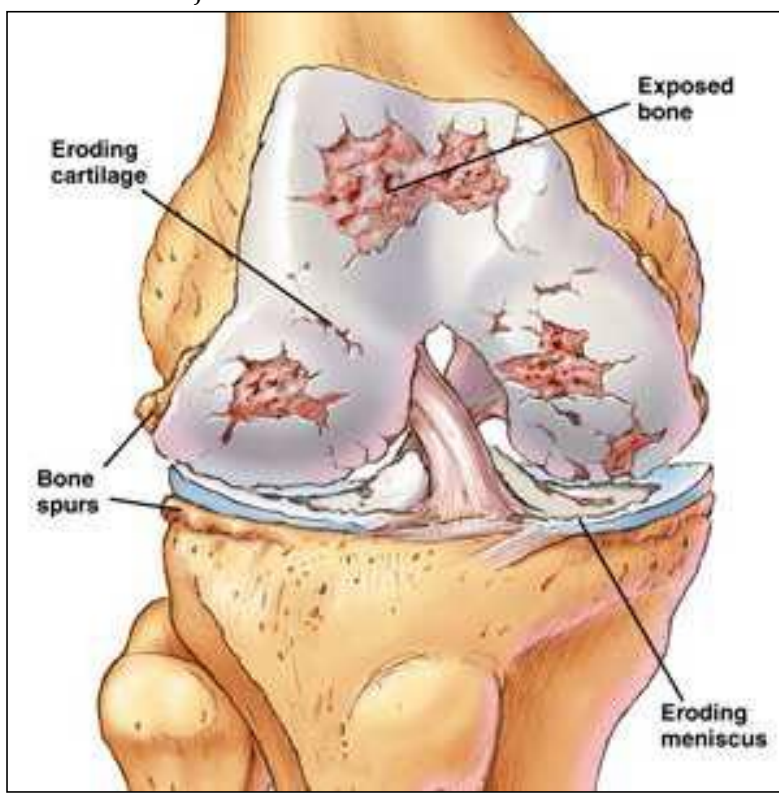
In addition to interstitial laser therapy, the new technology also enables the therapist to treat injured joints (i.e. knee or shoulder osteoarthritis) by highly effective intra-articular laser application.

除了间质光疗外，该项新技术还使治疗师能够通过高效的关节内光应用来治疗受损关节（如膝或肩骨关节炎）。

Application areas of intra-articular laser therapy:

关节内光疗的应用部位：

- Knee osteoarthritis
- 膝骨关节炎
- Hip osteoarthritis
- 髋骨关节炎
- Chronic shoulder syndromes
- 慢性肩关节综合征
- Ankle joint osteoarthritis



- 踝骨关节炎

Fig. 2: Damaged joint

图 2: 受损关节

Widespread disease osteoarthritis (OA)

普遍性疾病骨关节炎

- Globally approx. 250 million people have OA of the knee
- 全球约 2.5 亿人患膝骨关节炎
- OA affects nearly 27 million people in the USA, accounting for 25% of visits to primary care physicians, and half of all NSAID prescriptions
- 美国骨关节炎影响近 2,700 万人，占初级保健医生就诊人数的 25%，非甾体抗炎药处方的一半
- It is estimated that 80% of the population have radiographic evidence of OA by age 65
- 据估计，65 岁之前，80% 的人都有过放射造影治疗。
- As of 2004, OA globally causes moderate to severe disability in 43.4 million people
- 截至 2004 年，全球范围内骨关节炎诱发 4340 万人患有中度至重度残疾
- With an aggregate cost of \$14.8 billion (\$15,400 per stay), it was the second-most expensive condition seen in U.S. hospital stays in 2011. By payer, it was the second-most costly condition billed to Medicare and private insurance

-
- 总费用为 148 亿美元（每次住院费用 15,400 美元），2011 年这是美国医院住院的第二大最贵费用。通过付款人，可知这是医疗保险和私人保险报销的第二大最贵的疾病。
 - In Germany, 8-10 million patients are affected by OA
 - 德国，800 万至 1,000 万骨关节炎患者
 - Economic loss in Germany due to AO is approx. 20-25 billion € per year
 - 骨关节炎导致德国经济损失约为每年 200-250 亿欧元
 - Due to demographic development these numbers will increase drastically in the next decades
 - 由于人口增长，这些数字将在未来几十年急剧增加
 - Treatment is supposed to affect symptoms and progression of AO
 - 治疗影响骨关节炎的症状和进展
 - Pain reduction
 - 缓解疼痛
 - Improve movement
 - 改善运动
 - Increase muscle tissue
 - 增强肌肉组织

Intra-articular Laser Therapy with regenerative hyaluronan injections:

再生透明质酸注射的关节内光疗：

Intra-articular therapy is particularly effective in combination with hyaluronan injections.

关节内治疗配合透明质酸注射是特别见效的。

Hyaluronan is a substance that is produced naturally within the body and is present in the skin, cartilage, bones, synovial fluid and blood. It has a very high water-binding capacity. One gram of hyaluronan binds around 3 litres of water.

透明质酸是一种在人体内自然产生的物质，存在于皮肤、软骨、骨骼、滑液和血液中。具有很高的结合水能力。一克透明质酸结合约 3 升水。

The hyaluronan is formed by the cells of the joint mucosa. From there it is released into the joint where it is deposited on the surface of the cartilage. There it forms a protective layer against mechanical shocks. The so-called visco-elastic properties of hyaluronan improve the elasticity within the joint and lead to a shock-absorbing effect. Furthermore, healing properties are attributed to the substance due to the inhibition of pro-inflammatory cells.

透明质酸由关节粘膜的细胞形成。透明质酸在释放到关节中的位置就沉积在软骨的表面上，形成防止机械冲击的保护层。透明质酸的粘弹性改善了关节内的灵活性，并诱导减震效果。此外，抑制促炎细胞，改善愈合功能。

In worn joints, the natural hyaluronan content is considerably reduced. When conservative procedures, such as physiotherapy or even arthroscopy, are not able to bring the patients any noticeable pain relief, a hyaluronan injection directly into the joint can be a sensible alternative.

在磨损的关节中，天然透明质酸含量显著降低。当保守疗程（例如物理疗法甚至关节镜检查）无法使患者明显缓解疼痛时，透明质酸直接注射到关节中是一种明智的选择。

The final effect is significantly strengthened through subsequent irradiation with laser light, leading to a long-term improvement in joint function.

通过随后的光照射，最终疗效显著提高，诱导关节功能的长期改善。

4.3 Interstitial and Intra-articular Laser Therapy with body's own serum (Sanakin®):

4.3 用人体自身血清进行间质和关节内光疗（Sanakin®）

Interstitial and intra-articular laser therapy can also be performed in combination with a therapy using the body's own serum ("Sanakin"® therapy) in order to further improve effects in the treatment of osteoarthritis or other disorders.

间质和关节内光疗也可以配合自身血清疗法（“Sanakin”疗法），以进一步提高骨关节炎或其他疾病的疗效。

Application:

应用：

Regenerative and anti-inflammatory substances (based on growth factors and cytokines) from the patient's blood are specifically prepared and subsequently injected into the respective joint.

特别配备来自患者血液的再生和抗炎物质（基于生长因子和细胞因子），随后注射到相应的关节中。

Afterwards, the joint is irradiated by lasers directly from inside (by intra-articular application) in order to stimulate regeneration of cartilage and tissue. The body's own potency of regeneration can be activated by using the innovative serum therapy in combination with laser therapy.

然后，通过光直接从内部照射关节（通过关节内应用），以刺激软骨和组织的再生。通过用创新的血清疗法配合光疗，激活体内自身的再生功能。

This new therapy approach is a very efficient procedure for knee or shoulder treatments and also for difficult-to-treat osteoarthritis of the finger and thumb joints. Study results show a success rate of more than 70 per cent. Treatment success is normally observed after 1 - 5 treatments. The regeneration process still advances for up to approx. three months after treatment and lasts for about 1.5 to 2 years (as shown by the mean values from study results).

这种新型疗法对于膝或肩关节疾病的治疗以及手指和拇指关节难以治疗的骨关节炎卓有成效。研究成果显示，成功率超过 70%。治疗成功通常在 1-5 个疗程后可见。治疗后再生过程还提前约 3 个月，持续约 1.5 至 2 年（如研究成果的平均值所示）。

The main indications are inflammations of arthritic joints (*knee, shoulder, spine, arthrosis of thumb or toe joints*) as well as tendinopathy (*diseases of the tendons and ligament attachments*) as regularly seen especially in sports medicine. Golfer's elbow, tennis elbow, supination trauma of the ankle, irritation of the plantar aponeurosis, heel spur, and fresh muscular injuries can be treated very successfully with this innovative therapy approach.

主要适应症包括伴有关节炎的关节（膝、肩、脊柱、拇指或脚趾关节）的炎症以及肌腱病（肌腱和韧带附件疾病），特别适合运动医学的治疗。这种创新疗法非常成功地治疗高尔夫球手的肘伤、网球肘伤、踝关节外翻创伤、足底腱膜刺激、踵骨刺和新鲜肌肉受损。

Biological effects of cytokines:

细胞因子的生物学效应:

- Due to a imbalance of cytokines, the damaging Interleukin-1 (IL-1) is leading to inflammations, pain and cartilage damages
- 由于细胞因子失衡，破坏性白细胞介素-1诱导炎症、疼痛和软骨损伤
- The natural antagonist of IL-1 is the Interleukin-1 receptor antagonist (IL-1Ra). Thus, it is also called osteoarthritis-inhibiting protein.
- 白细胞介素-1的天然拮抗剂是白细胞介素-1受体拮抗剂。因此，也被称为骨关节炎抑制蛋白。
- The specifically conditioned serum contains an increased concentration of IL-1Ra as well as important growth factors from the patient's own blood
- 健康特异性血清含有的白细胞介素-1受体拮抗剂以及来自患者自身血液的重要生长因子浓度增加
- IL-1Ra leads to a distinct inhibition of inflammation and supports (together with other growth factors) regeneration of damaged cartilage and tissue
- 白细胞介素-1受体拮抗剂诱导明显抑制炎症和支持（与其他生长因子一起）受损软骨和组织的再生
- Tissue homeostasis is re-established
- 重建组织内平衡

Effects of important Interleukins:

白细胞介素的重要效应:

- IL-1Ra blocks IL-1 and has anti-inflammatory, analgetic and neuroprotective effects
- 白细胞介素-1受体拮抗剂阻断白细胞介素-1并具有抗炎、镇痛和神经保护效应
- IL-4, 10, 11 prevent exceeding inflammatory reactions and are important for homeostasis of the immune systems

-
- 白细胞介素-4,10,11可防止超标的炎症反应，对免疫系统内平衡非常重要

Effects of important growth factors:

生长因子的重要效应:

- PDGF (platelet-derived growth factor) regulates entry of fibroblasts, osteoblasts and muscle cells
- 血小板衍生生长因子调节成纤维细胞、成骨细胞和肌细胞的进入
- FGF (fibroblast growth factor) stimulates vessel generation, collagen synthesis and wound contraction
- 成纤维细胞生长因子刺激血管生成，胶原合成和伤口愈合
- TGF- β (transforming growth factor) reduces scarring and coordinates wound-healing
- 转化生长因子可减少疤痕形成并协调伤口愈合
- VEGF (vascular endothelial growth factor) increases permeability of blood vessels and leads to entry of different plasma proteins in the damaged area
- 血管内皮生长因子增加血管通透性，诱导受损部位内不同血浆蛋白进入

Advantages of a therapy using body's own serum

人体自身血清疗法的优点

1. Natural procedure
- 1.自然疗程
2. Individual therapy
- 2.个人治疗
3. Supports the body's own potency of healing
- 3.支持人体自身的治愈能力

4. Cartilage protection and anti-inflammatory effects

4.软骨保护和抗炎效应

5. Prevention or delay of surgery

5.预防或延迟手术

6. Improvement in quality of life

6.改善生活质量

Indications:

主治:

- Osteoarthritis of all joints: Level I – III (according to Kellgren)
- 所有关节的骨关节炎：I级 - III级（根据凯尔格伦）
 - Gonarthrosis
 - 膝关节病
 - Coxarthrosis
 - 髋关节炎
 - Osteoarthritis of shoulder joints
 - 肩关节骨性关节炎
 - Osteoarthritis of ankle joints
 - 踝关节骨性关节炎
 - Osteoarthritis of hand and finger joints
 - 手和手指关节的骨关节炎
- Spine degeneration
- 脊柱退化
 - Arthrosis of facets
 - 关节面关节病
 - Osteochondrosis
 - 骨软骨病
 - Spondylarthritis
 - 脊柱关节炎
- Spinal disc damage

- 椎间盘损伤
- Tendinitis
- 肌腱炎
 - Achillodynia
 - 跟腱痛
 - Tennis elbow
 - 网球肘伤
- Muscle ruptures
- 肌肉破裂

4.4 Clinical application of interstitial and intra- articular laser therapy

4.4 间质和关节内光疗的临床应用

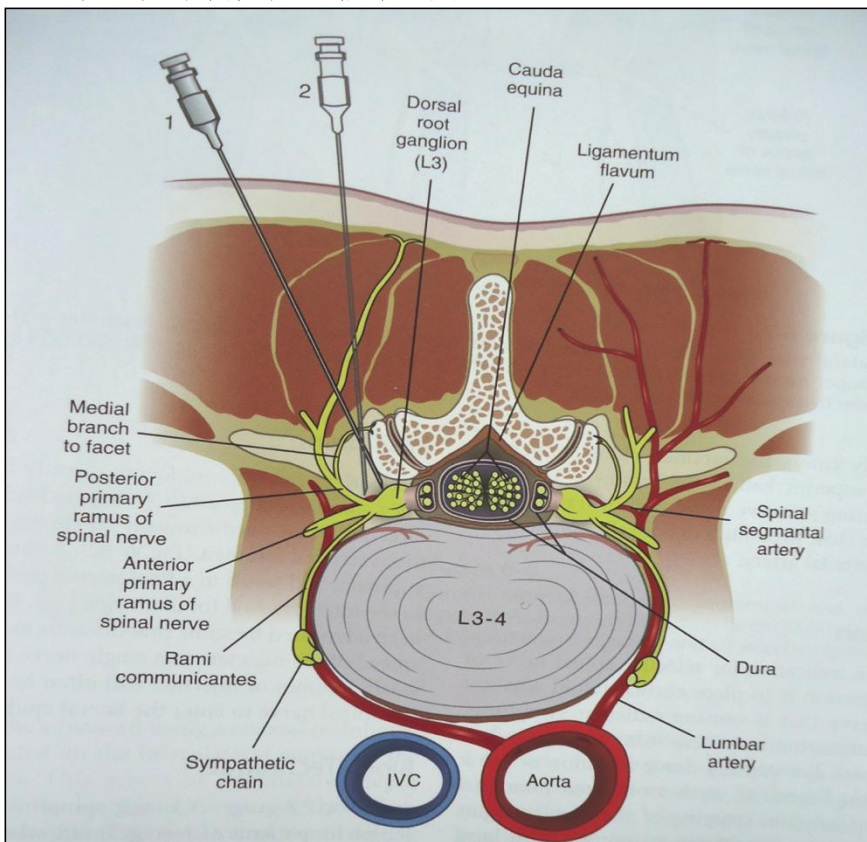


Fig. 3: Application scheme for interstitial laser therapy
图3: 间质光疗的应用方案



Fig. 4: New “interstitial” needles
图4: 新型“间质”针

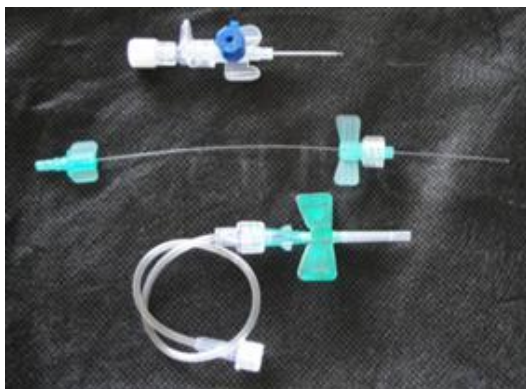


Fig. 5: Combination of laser catheter and butterfly or canula for interstitial laser therapy
图5: 光导管与蝶型管或插管配合用于间质光疗

For clinical application of this innovative therapy approach, a special fibreoptic catheter technique (under sterile conditions) is used for interstitial or intra- articular application of the lasers.

在这种创新疗法的临床应用中，特殊的光纤导管技术（在无菌条件下）用于光在间质或关节内的照射。

Until now it was difficult - if not impossible - to achieve sufficient laser dose supply in deep tissue for irradiation of spinal nerves or within joints as externally applied laser sources are absorbed in the skin by more than 70 % in the first millimetres of tissue already. Therefore, external laser therapy is very limited in achieving measurable energy supply deep in the tissue at the origin of pain.

到目前为止，很难但还是有可能在深部组织中实现足够的光剂量补给以用于脊柱神经或在关节内照射，因为在第一毫米组织中超过70%体外施加的光源被皮肤吸收。因此，在疼痛源组织内需实现可测定的能量补给深度，使得体外光疗受限。

The new technology finally allows the user to apply a direct fibre-optic treatment very close to nerve roots at the spine or directly within damaged joints. Thus, injured or damaged tissue (e.g. nerve, cartilage, bone) is exposed to direct irradiation with high energy dosage.

该项新技术最终允许用户在脊柱神经根附近或直接在受损关节内施加直接光纤治疗。因此，用高能剂量直接照射受伤或受损组织（例如神经、软骨、骨）。

There are several publications available proving the regeneration of cartilage or nerve tissue by use of low power laser therapy (by in-vitro and in-vivo experiments). The direct irradiation within a joint can be combined with hyaluronic acid or other regenerative or anti-inflammatory injections directly prior to irradiation. The same canula can be used for both injection and irradiation so only a single puncture is necessary. The resulting therapeutic effects are much better than injections of hyaluronic acid or other drugs alone. 有几种已发表的研究说，通过使用低功率光疗法（体外和体内实验）可证明软骨或神经组织的再生。配合透明质酸或其他再生或抗炎药注射关节内后直接照射。相同的插管用于注射和照射，因此仅需要单次穿刺。由此产生的疗效比单独注射透明质酸或其他药物要好得多。

Regarding reimbursement, there is opportunity to use special codes for deep or intra-articular injections. Alternatively, there may be an option to charge for additional laser therapy directly.

为了报销，可以使用特定规范进行深部或关节内注射。此外，可以选择直接付费进行更多的光疗。

This new treatment protocol has a high success rate among patients and can be done quickly.

这种新型治疗方案在患者中具有很高的成功率，并且操作迅速。

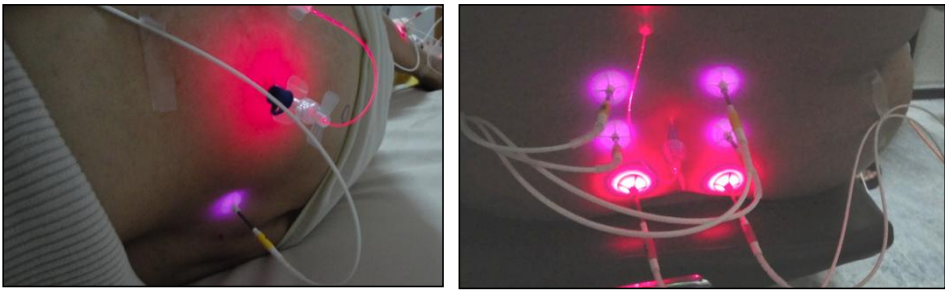


Fig. 6 - 7: Interstitial laser therapy for chronic spine syndromes with additional external infrared laser therapy

图6-7: 配合体外红外光疗对慢性脊柱综合症进行间质光疗

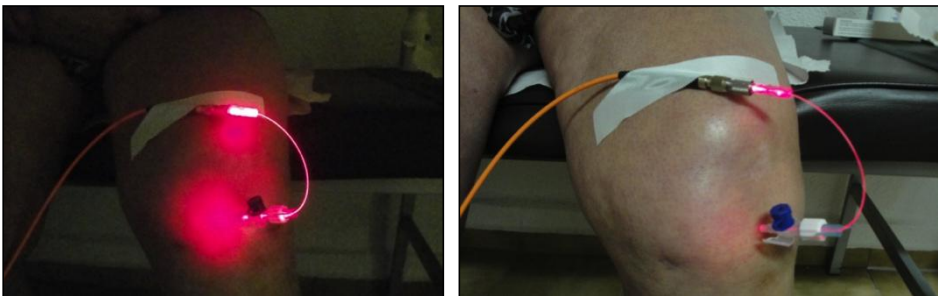


Fig. 8 - 9: Intra- articular laser therapy for knee osteoarthritis

图8-9: 膝骨关节炎的关节内光疗

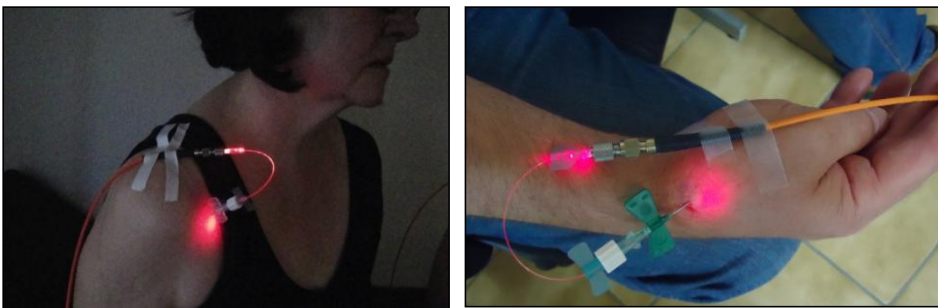


Fig. 10 - 11: Shoulder and wrist joint treatment

图10-11: 肩和腕关节治疗

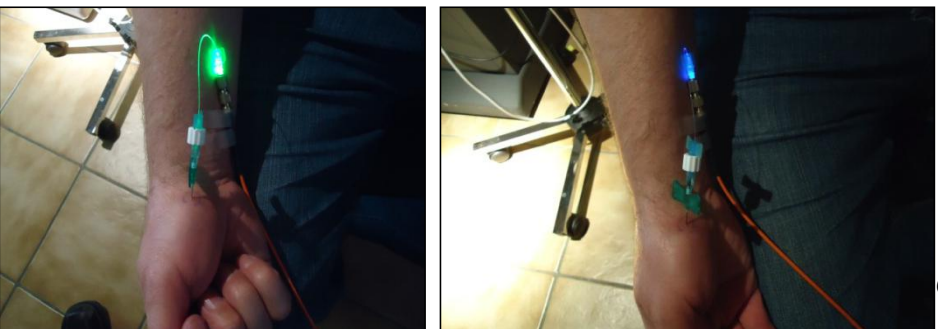


Fig. 12 - 13: Use of green and blue lasers for acute inflammations

图12-13: 绿和蓝光治疗急性炎症

Effects of different lasers in interstitial/ intra- articular laser therapy

不同光在间质/关节内光疗中的作用

Red laser:

红光:

- Increase of cell activity and microcirculation
- 增加细胞活性和微循环
- Regeneration of damaged tissue structures
- 受损组织结构的再生

Green laser:

绿光:

- Anti-inflammatory effects
- 抗炎作用
- Effective in treatment of pain connected to inflammations and swellings
- 有效治疗与炎症和肿胀相关的疼痛

Blue laser:

蓝光:

- Strong anti-inflammatory effects
- 强大的消炎作用
- Effective in wound-healing
- 促进伤口愈合
- Immediate reduction of acute pain
- 立即缓解急性疼痛

→ *Red laser light is most effective in treating chronic joint or spine syndromes, green and blue lasers should be used in acute inflammations.*

→ 红光治疗慢性关节或脊柱综合症最有效，绿和蓝光应用于急性炎症。

4.5 Clinical results

4.5 临床疗效

- 1) Pilot study, Laser Centre Dr. Weber, Lauenfoerde/Germany, January- March 2011 (presented at the World of Pain Conference in Miami 2011)
- 1) 初步研究，德国劳恩福德光中心Weber博士，2011年1月至3月（2011年迈阿密世界疼痛会议上发表）

In a first pilot study, patients who have received external laser therapy or laserneedle acupuncture before, without therapeutical success, were chosen as subjects. This study was a cross-over experiment. Some of the patients had also been treated with additional analgetics and nonsteroidal anti-inflammatory drugs or physiotherapy without any improvement.

在首次试验性研究中，选择之前没有治疗成功的愿意接受体外光疗或光针灸治疗的患者作为受试者。这项研究是一项交叉实验。一些患者之前还接受了其他镇痛药和非甾体类抗炎药或物理治疗，但没有任何改善。

In this first study, it is important to mention that only one interstitial or intra- articular fibre-optic needle was used.

在本项研究中，重要的是仅使用一支间质或关节内的光纤针。

Treatment data:

治疗数据：

- 15 patients with chronic shoulder syndrome
- 15名慢性肩关节综合症患者
- 11 patients with advanced knee osteoarthritis
- 11名晚期膝骨关节炎患者
- 23 patients with chronic spine syndrome
- 23名慢性脊柱综合症患者

Study design:

研究方案：

- All patients had been treated with external laser therapy before (without success)
- 所有接受体外光疗的患者之前的治疗均不成功

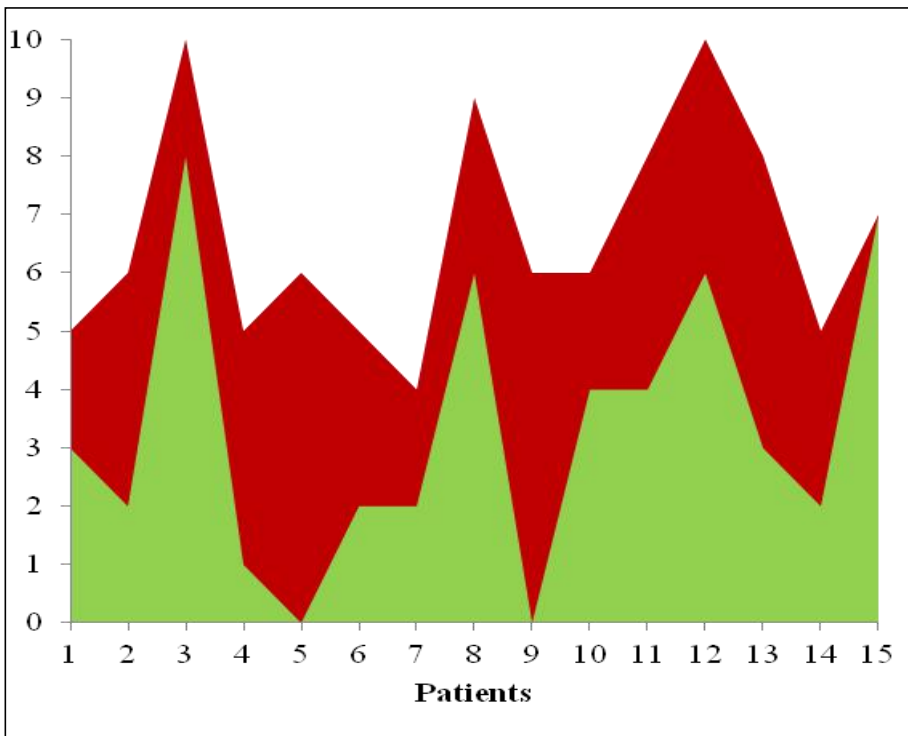
- All patients were treated with one interstitial needle only (at the maximum pain point/ in the damaged joint)
- 所有患者仅接受一支间质针治疗（最大疼痛穴位/受损关节）

a) Shoulder syndrome

a) 肩关节综合症

- Number of patients = 15
- 患者人数= 15
- Number of treatments (mean value) = 9,40
- 疗程（平均值）= 9.40
- Light dosage: approx. 10 J
- 轻剂量：约10 焦耳

- VAS before treatment = 6,67 (red)
- 治疗前视觉模拟评分= 6.67（红光）



-
- VAS after treatment = 3,33 (green)
 - 治疗后视觉模拟评分 = 3.33 (绿光)

Fig. 14: Results in shoulder group

图14: 肩关节患者组的疗效

b) Knee osteoarthritis

b) 膝骨性关节炎

- Number of patients = 11
- 患者人数= 11
- Number of treatments (mean value) = 6
- 疗程 (平均值) = 6
- Light dosage: approx. 10 J
- 轻剂量: 约10焦耳

- VAS before treatment = 7,27 (red)
- 治疗前视觉模拟评分 = 7.27 (红光)
- VAS after treatment = 3,36 (green)
- 治疗后视觉模拟评分 = 3.36 (绿光)

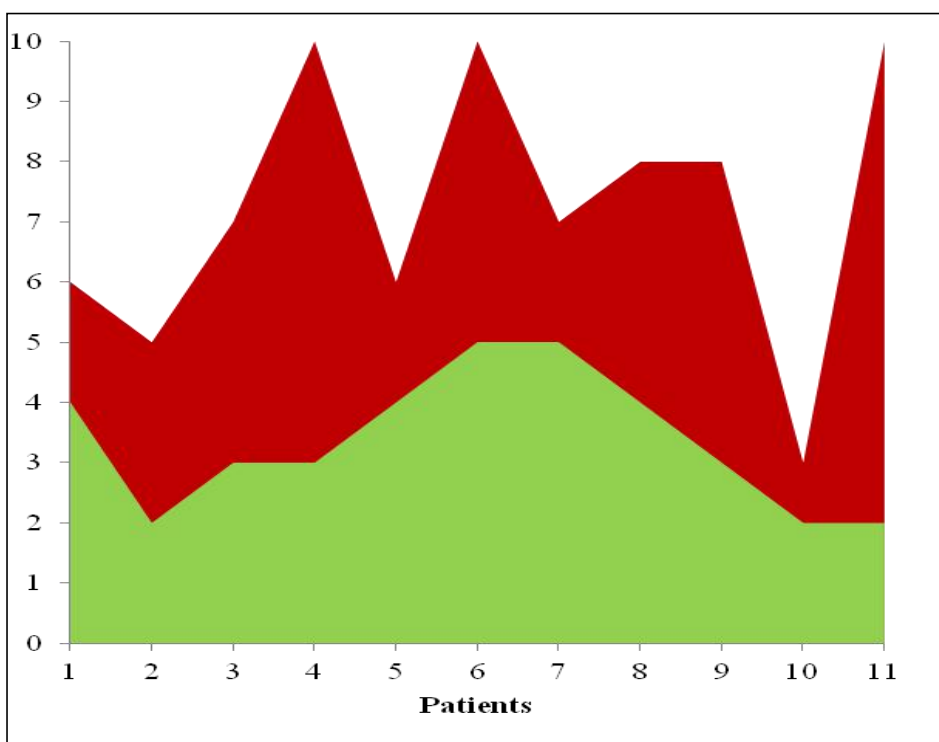


Fig. 15: Results in knee group

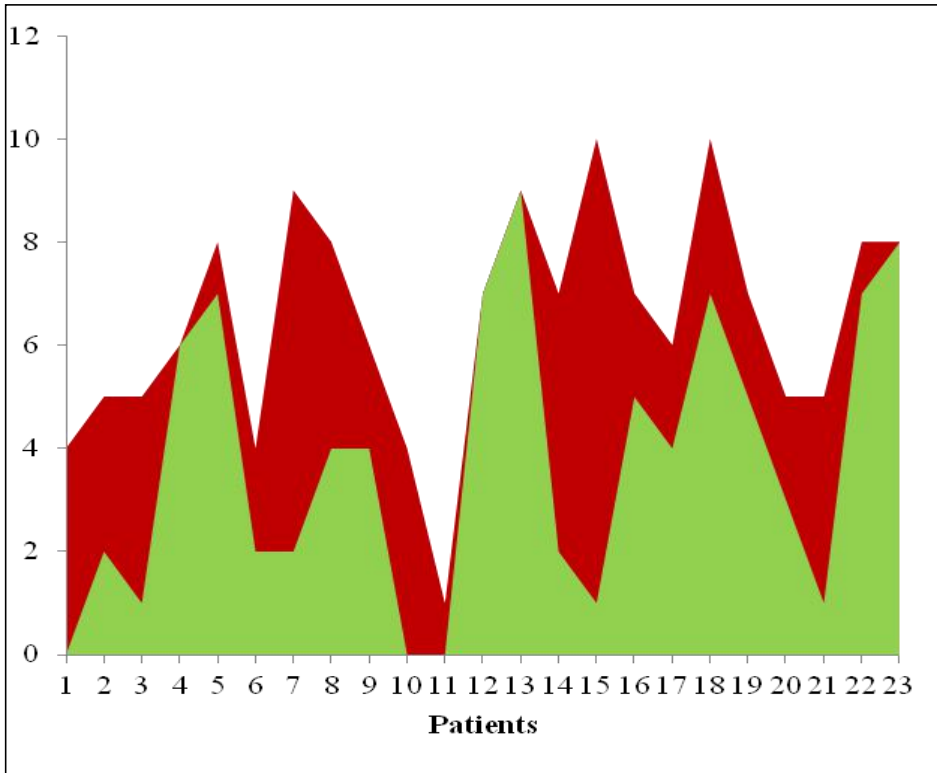
图15: 膝关节患者组的疗效

c) Spine syndrome

c) 脊柱综合症

- Number of patients = 23
- 患者人数= 23
- Number of treatments (mean value) = 8,13
- 疗程（平均值）= 8.13
- Light dosage: approx. 10 J
- 轻剂量：约10焦耳

- VAS before treatment = 6,48 (red)
- 治疗前视觉模拟评分 = 6.48 (红光)
- VAS after treatment = 3,78 (green)



- 治疗后视觉模拟评分 = 3.78 (绿光)

Fig. 16: Results in spine group
图16: 脊柱综合症患者组的疗效

2) Interstitial and intra- articular laser therapy with body's own serum (Sanakin®), Dr. Jörg Warmke, Cologne/ Germany

2) 用人体自身血清 (Sanakin®) 进行间质和关节内光疗, 德国科隆大学JörgWineke博士

Between February 2013 and January 2014, treatment of 36 patients with different indications has been observed and evaluated:

2013年2月至2014年1月期间, 观察并评估了36名不同适应症的患者:

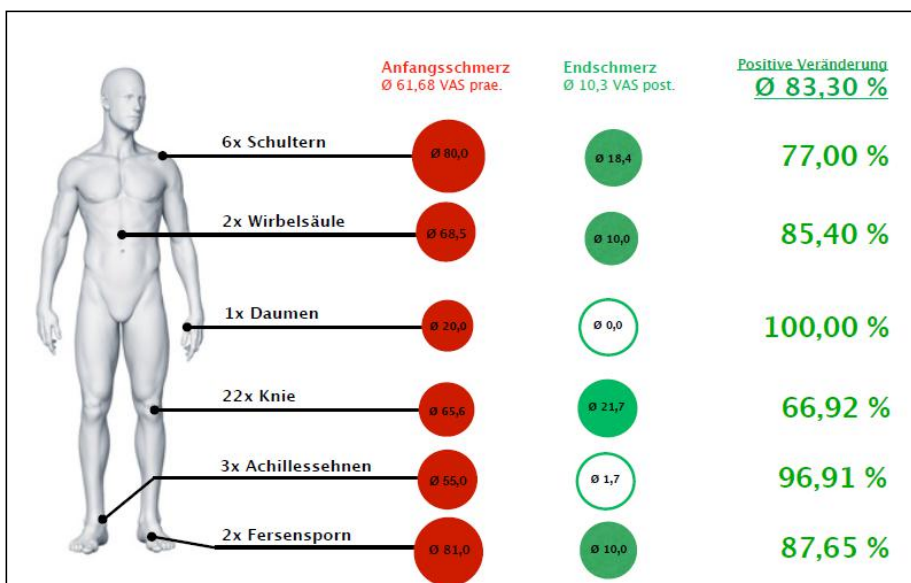


Fig. 17: Improvement after interstitial/ intra- articular laser therapy in combination with Sanakin® therapy: Red = VAS before, Green = VAS after treatment; percentage of improvement in different indications (green); indications (from top to bottom): shoulder (n=6), spine (n=2), thumb (n=1), knee (n=22), achillodynia (n=3), heel spur (n=2)

图17: 间质/关节内光疗配合人体自身血清Sanakin®治疗后得到改善: 红光= 治疗前视觉模拟评分, 绿光=治疗后视觉模拟评分;不同适应症的改善百分比(绿光);适应症(从上到下): 肩关节(n=6), 脊柱(n=2), 拇指(n=1), 膝关节(n=22), 跟腱痛(n=3), 踵骨刺(n=2)

Summary:

摘要:

- Lasers can finally be applied deep in the tissue, leading to significantly improved effects on damaged tissue structures (cartilage, bones, nerves)
- 最终光可以在组织深处应用, 从而对受损组织结构(软骨、骨骼、神经)的疗效喜人
- One or more interstitial needles can be applied and combined with additional external infrared laser application
- 可以应用一支或多支间质针, 配合其他体外红外光治疗
- Pain reduction is accelerated, more effective and in particular more sustainable
- 加速缓解疼痛, 尤其是更长的持续性
- Blue and green lasers with strong anti-inflammatory effects can be used deep in the tissue for the first time in medical

-
- laser therapy, leading to significant improvement especially in acute injuries
- 在光医疗中首次在组织深处使用具有强烈抗炎疗效的蓝和绿光，从而显著改善疗效，特别是对急性损伤最见效
 - Strongly improved regeneration effects
 - 再生效果极其显著
 - Important for patients with dark skin
 - 对深色皮肤的患者很关键

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Chapter 10: Treatment protocols

第 10 章：治疗方案

10.1 *General rules*

10.1 一般原则

10.1.1 External laser therapy and laserneedle acupuncture

10.1.1 体外光疗法和光针灸

Laserneedles have primarily been developed to be employed in pain therapies. On the one hand, they can be used to treat trigger points and thereby lead to an improved microcirculation, tissue warming and the remedy of muscle spasms. On the other hand, they can induce regenerative effects in irradiated areas which are particularly interesting for treatments of osteoarthritis, spine syndromes and other degenerative diseases of fibre-, gristle- and connective tissue.

研发光针主要用于治疗疼痛。一方面，光针用于治疗刺痛点，从而改善微循环，人体组织变暖和缓解肌肉疼痛。另一方面，光针诱导照射部位再生，对于治疗骨关节炎、脊椎综合征和其他纤维、软骨和结缔组织的退行性疾病具有特别重要的意义。

According to the current state of research, trigger points are 95 % identical with acupuncture points. All educated acupuncture therapists are able to apply laserneedles on local pain points and they may further improve their therapeutic results by adding further points of application to the treatment. The only difference to traditional acupuncture is the painless usage of the laserneedles instead of metal needles that are employed in traditional acupuncture.

从目前的研究现状看，95%的刺痛点都发生在针灸穴位上。所有受过培训的针灸治疗师都能够在局部疼痛点上使用光针，并且通过使

得治疗中的应用穴位更深入的方式改善其疗效。与传统针灸的唯一区别是用光针代替传统针灸中的金属针可达到无痛治疗的目的。

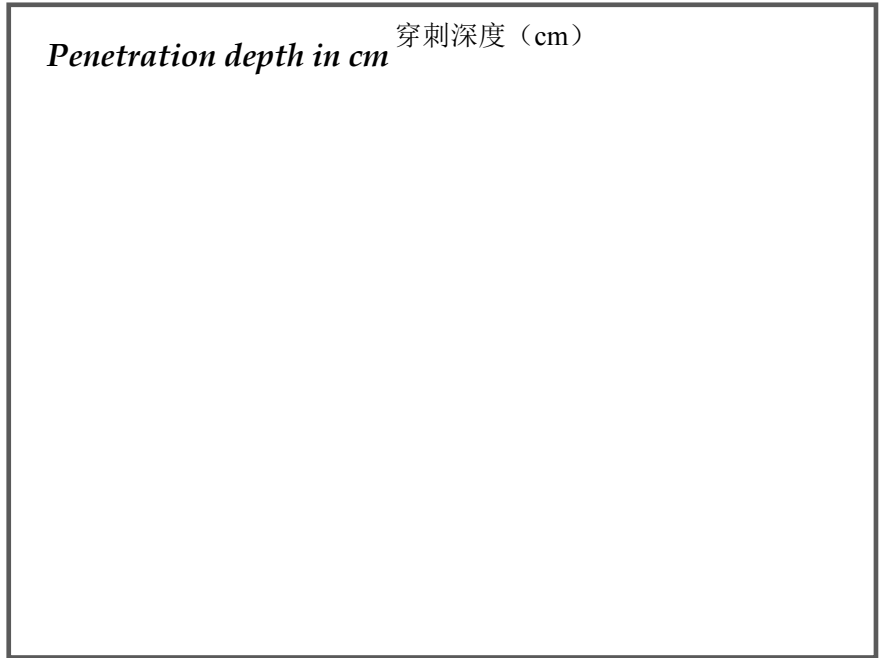
If the therapist is not educated in acupuncture, the easier and quicker conductible trigger point therapy leads to excellent results on its own.

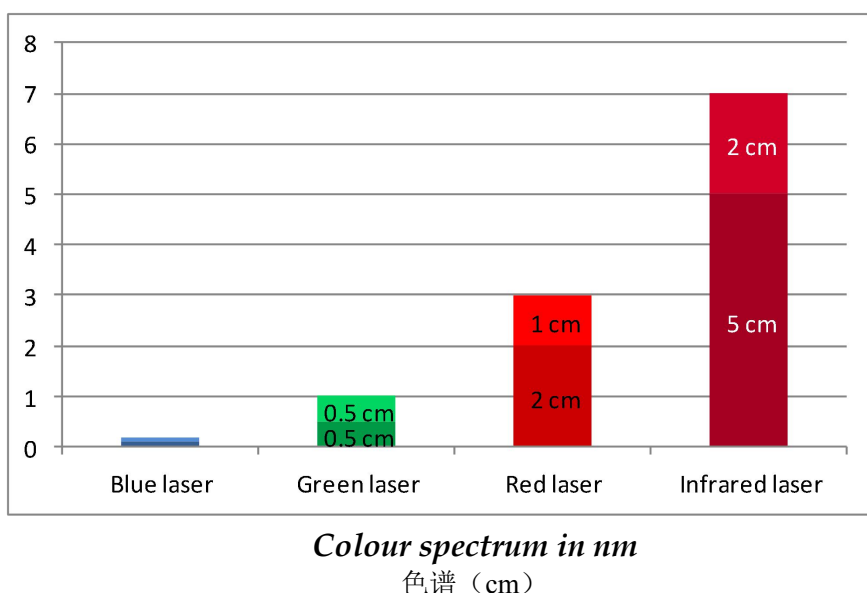
如果治疗师未受过针灸培训，单靠更容易和更快速的传导刺痛点治疗就可以带来出色的疗效。

Estimated penetration depth of different wavelengths (dependent on colour of the skin):

估计不同波长的**穿刺深度**（取决于肤色）:

- Blue laser, 405 nm: 1 - 2 mm
- 蓝光，405 nm: 1-2 mm
- Green laser, 532 nm: 0,5 - 1 cm
- 绿光，532 nm: 0.5-1 cm
- Red laser, 658 nm: 2 - 3 cm
- 红光，658 nm: 2-3 cm
- Infrared laser, 810 nm: 5 - 7 cm
- 红外光，810 nm: 5-7 cm





For acupuncture therapists

针灸治疗师

If you replace metal needles with laserneedles;

如果用光针取代金属针；

- infrared laserneedles are equivalent to metal needles of a length of 5 – 7 cm
- 红外光针相当于长度为 5-7 厘米的金属针
- red laserneedles are equivalent to metal needles of a length of 2 – 3 cm
- 红光针相当于长度为 2-3 厘米的金属针
- green laserneedles are equivalent to metal needles of a length of 1 cm
- 绿光针相当于长度为 1 厘米的金属针
- blue laserneedles are equivalent to metal needles of a length of 0,5 cm
- 蓝光针相当于长度为 0.5 厘米的金属针

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续50%的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至75%，在第三个疗程中上调至100%。

Influence of skin colour

肤色影响

While white skin is very diaphanous for laser light (100 % power can usually be used very soon), skin with a higher share of melanin absorbs a higher percentage of the laser light and thereby heats up stronger. This process is strongest for patients with black skin. Thus, an intensity of 50 % while treating dark- skinned patients with infrared lasers should not be exceeded.

虽然白色皮肤对光的透过性很高（通常可以立即使用100%的功率），但黑色素比例较高的皮肤会吸收较高比例的光，热度升高较快。黑皮肤患者的这一过程最为难忍。因此，用红外光治疗暗黑皮肤患者，强度不得超过50%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为20分钟。对敏感性强的病例，时间可以缩短（例如，儿童为10分钟）。最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3个疗程足以。

Treatment intensity (in W/mW)

治疗强度（瓦/兆瓦）

Red and infrared laserneedles irradiate treatment points with 90 - 100 mW, green laserneedles with 40 - 50 mW and blue laserneedles with 50 - 60 mW. Since the laser beam is coupled into an optic fibre with a calibre of 0,4 mm, the laser beam is bunched and focussed. Thus, the intensity per area (W/cm^2) is increased.

用 90-100mW 红光和红外光针照射，40-50mW 绿光针照射，50-60mW 蓝光针照射治疗穴位。由于光束耦合到口径为 0.4mm 的光纤中，光束聚束并聚焦。因此，单位面积(W/cm^2)的强度增加。

With this technology, the intensity of red and infrared laserneedles can be increased to up to 50 W/cm^2 . Thereby, a much higher penetration depth is achieved and reflexion losses on the surface of the skin are compensated.

利用这项技术，红光和红外光针的强度可以提高到50 W/cm^2 。因此，实现了更高的穿刺深度并且补偿了皮肤表面上的反射损失。

Treatment dosage

治疗剂量

100 mW red and infrared laserneedles deliver up to 120 Joule/ Point within a 20- minute session. Such dosage applications on the surface are necessary to achieve stimulation dosages of 3 - 5 mW in the depth of the tissue because the skin already absorbs up to 80 % of the power (dependent on the share of melanin).

100 mW红光和红外光针20分钟内输出高达120焦耳/穴位的功率。体表应用这样的功率对在深度组织中达到3-5mW的兴奋剂量是必要的，因为皮肤吸收了高达80%的功率（取决于黑色素的比率）。

To solve this problem, the skin barrier can be overcome by employing catheters and fibre optic laser technology to treat pain areas or acupuncture points interstitially.

为了解决这个问题，可以通过采用导管和光纤光技术克服皮肤屏障，以间隙治疗疼痛部位或穴位。

Contraindications

禁忌

Acute inflamed rheumatic joints with overheating, reddening and bruise building should not be irradiated directly as this could deteriorate inflammatory symptoms. In such cases, only far points should be treated.

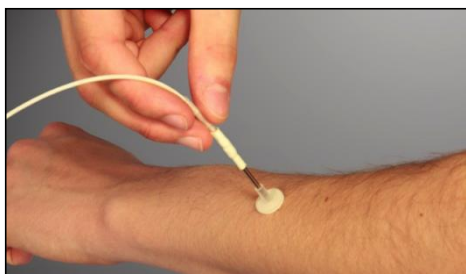
伴有发烧、发红和瘀斑体格的急性风湿性关节炎患者不得直接照射，否则炎性症状可能会恶化。这种病例只适合远穴位治疗。

Sensitive points (especially in the face, e.g. trigeminal neuralgia) should be treated with special care since pain can be activated quickly. Again, only far points should be treated. If the afflictions could be mitigated, the actual pain area can be treated with low dosages.

应该特别小心敏感穴位（尤其是面部，例如三叉神经痛）的治疗。因为疼痛可能迅速被激活。此外，只有远穴位才能治疗。如果疼痛可以缓解，则使用小剂量治疗实际疼痛的部位。

Practical application

实际应用



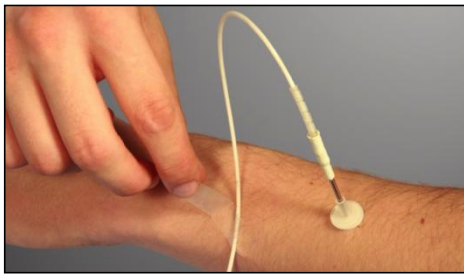


Image: Fixation of laserneedles on skin

图：光针固定在皮肤表面

Image: Example of application, external laser therapy/ laserneedle acupuncture

图：应用实例，体外光疗法和光

针灸



10.1.2 Laserneedle treatment of the skull (transcranial) and the ear

10.1.2颅骨（经颅）和耳部的光针疗法

To conduct an accurate and efficient laserneedle treatment of the skull (transcranial laser therapy) and the ear (ear acupuncture), the usage of a special head adapter is required because the attachment of tubes or patches is complicated at hairy parts of the body or at the complicated structure of the ear. Using the head adapter, fixed flexible plastic- covered wires guarantee the precise and safe application of laserneedles in this area. The treatment is highly efficient because treated points are located very close to the central nerve system or directly connected to it.

对颅骨（经颅光疗法）和耳部（耳部针灸）进行准确而高效的光针治疗，需要专用头部适配器，因为在人体的毛发部位导管或贴片的连接物以及耳朵结构相当复杂。使用头部适配器固定软塑料绝缘线保证了光针头在该部位精确而安全的使用。疗效高，因为治疗穴位非常靠近或直接连接到中枢神经系统。

Furthermore, infrared laserneedles that are applied transcranially have a direct effect on the brain (in addition to the effect on the

acupuncture points) as (only) infrared light is able to penetrate bones.

此外，经颅应用红外光针对大脑具有直接疗效（除了对针灸穴位的疗效外），因为只有红外光能够穿透骨骼。

It is recommended to apply several infrared lasers head- on, from both lateral sides and directly from Sinus Sagitalis. Thereby, laser light can most efficiently be disseminated in the brain. As studies using functional MRI showed, irradiation via Sinus Sagitalis induces an especially strong effect.

建议从两侧和直接从矢状窦部位，正面应用几条红外光。使得光在脑部进行最有效地传播。功能性核磁共振的研究表明，经由矢状窦的照射产生特别强大的疗效。

For all chronic pain syndromes, an additional treatment of relaxing psychoactive points to cure muscle spasms is recommended as well.

对于所有慢性疼痛综合症，建议应用另外一种缓解精神兴奋穴位的疗法治疗肌肉痉挛。

Yin-Tang 印堂	Above the root of the nose between the eyes (only infrared) 双眼之间的鼻根上方（只应用红外光）
Governor vessel 20 督脉20	In middle of the skull between the top of the ears (only infrared) 双耳顶部之间的颅骨中点（只应用红外光）
Anti- depression point (right side) at the ear 耳部抗抑郁治疗穴位	Red or green laserneedles 红光或绿光针

(右侧)	
Valium point (left side) at the ear 耳部安定穴位 (左侧)	Red or green laserneedles 红光或绿光针
Gyrus cinguli point at the ear 耳部扣带回穴位	Red or green laserneedles 红光或绿光针

Typical (relaxing) points:

典型（缓解）穴位：

Yintang: Above the root of the nose between the eyes (only infrared)

印堂：双眼之间的鼻根上方（只应用红外光）

GV 20: On top of the middle of the skull, at the same pitch as the top of the ear

督脉20：颅骨中间的顶部，与耳朵顶部同间距处

Anti depression point at the ear: Red or green laserneedles

耳部抗抑郁穴位：红光或绿光针

Valium point at the ear: Red or green laserneedles

耳部安定穴位：红光或绿光针

Gyrus cinguli point at the ear: Red or green laserneedles

耳部扣带回穴位：红光或绿光针

Appropriate lasers:

适用光：

Transcranial laser therapy: Infrared laser

经颅光疗法：红外光

Ear acupuncture: Green- and red laser

耳部针灸：绿光和红光

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser

power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续50%的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至75%，在第三个疗程中上调至100%。

Influence of skin colour

肤色影响

While white skin is very diaphanous for laser light (100 % power can usually be used very soon), skin with a higher share of melanin absorbs a higher percentage of the laser light and thereby heats up stronger. This process is strongest for patients with black skin. Thus, an intensity of 50 % while treating dark- skinned patients with infrared lasers should not be exceeded.

虽然白色皮肤对光的透过性很高（通常可以立即使用100%的功率），但黑色素比例较高的皮肤会吸收较高比例的光，热度升高较快。黑皮肤患者的这一过程最为难忍。因此，用红外光治疗暗黑皮肤患者，强度不得超过50%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为20分钟。对敏感性强的病例，时间可以缩短（例如，儿童为10分钟）。最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3个疗程足以。

Treatment intensity (in W/mW)

治疗强度（瓦/兆瓦）

Red and infrared laserneedles irradiate treatment points with 90 - 100 mW, green laserneedles with 40 - 50 mW and blue laserneedles with 50 - 60 mW. Since the laser beam is coupled into an optic fibre with a calibre of 0,4 mm the laser beam is bunched and focussed. Thus, the intensity per area is increased.

用 90-100mW 红光和红外光针照射治疗穴位，40-50mW 绿光针照射，50-60mW 蓝光针照射。由于光束耦合到口径为 0.4mm 的光纤中，光束聚束并聚焦。因此，单位面积的强度增加。

With this technology, the intensity of red and infrared laserneedles can be increased to up to 50 W/ cm². Thereby, a much higher penetration depth is achieved and reflexion losses on the surface of the skin are compensated.

利用这项技术，红光和红外光针的强度可以提高到50 W /cm²。因此，实现了更高的穿刺深度并且补偿了皮肤表面上的反射损失。

Treatment dosage

治疗剂量

As mentioned above, only infrared light is able to penetrate bones and has thus to be used in transcranial laser therapies.

如上所述，只有红外光能够穿透骨骼，因此红外光可用于经颅光治疗。

The infrared laserneedles deliver up to 120 Joule/ Point within a 20- minute session. Such dosage applications on the surface are necessary to achieve stimulation dosages of 3 - 5 mW in the depth of the tissue because the skin absorbs a certain percentage of the power already (dependent on the share of melanin).

红外光针20分钟内输出高达120焦耳/穴位的功率。体表应用这样的功率对在深度组织达到3-5mW的兴奋剂量是必要的，因为皮肤吸收了一定比例的功率（取决于黑色素的比例）。

To solve this problem, the skin barrier can be overcome by employing fibre optic laser technology to treat pain areas or acupuncture points interstitially.

为了解决这个问题，可以通过采用光纤光动力技术克服皮肤屏障，以间隙治疗疼痛部位或穴位。

Contraindications

禁忌

Sensitive points (especially in the face, e.g. trigeminal neuralgia) should be treated with special care since pain can be activated quickly. Only far points should be treated. If the afflictions could be mitigated, the actual pain area can be treated with low dosages.

应该特别小心敏感穴位（尤其是面部，例如三叉神经痛）的治疗。因为疼痛可能迅速被激活。只有远穴位才能治疗。如果疼痛可以缓解，则使用小剂量治疗实际疼痛的部位。

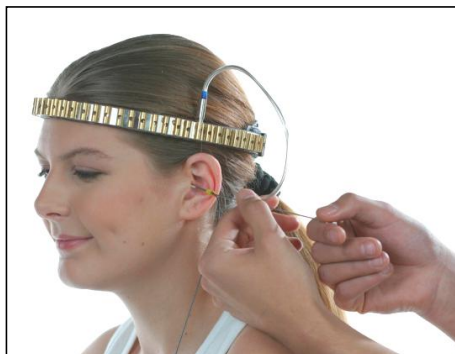
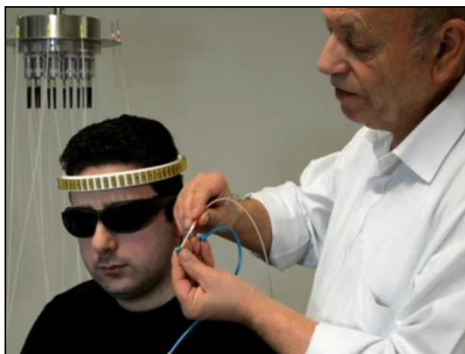
Babies should not be radiated through open fontanelles.

婴儿不得通过开放的囟门照射。

Treatments of epilepsies should be conducted with special attention because no safeguarded findings exist.

治疗癫痫症时应特别注意，因为在癫痫症治疗上现有的研究成果还不成熟。

Practical application 实际应用



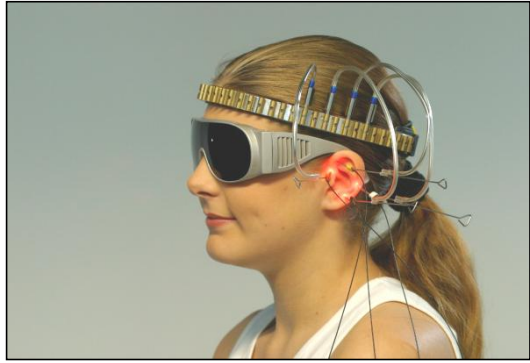
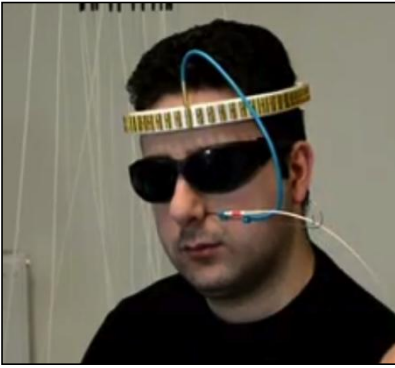


Image: Attachment of laserneedles at the ear using a special head adapter.

图：专用头部适配器将光针附着在耳部。

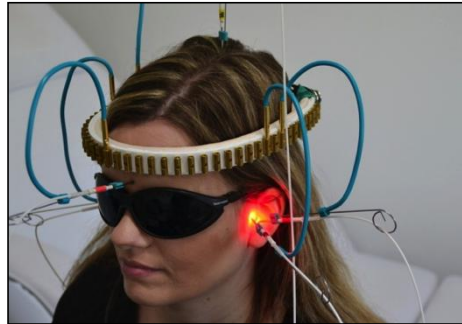
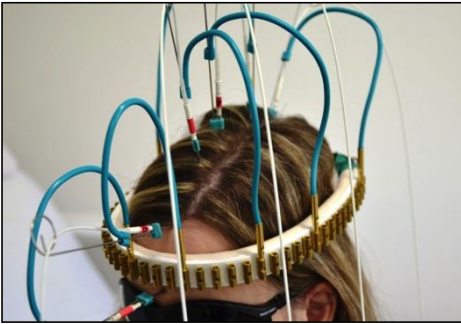


Image: Attachment of laserneedles to the skull to conduct transcranial laser therapies and ear acupuncture.

图：将光针附着在颅骨上，进行经颅光治疗和耳部针灸。

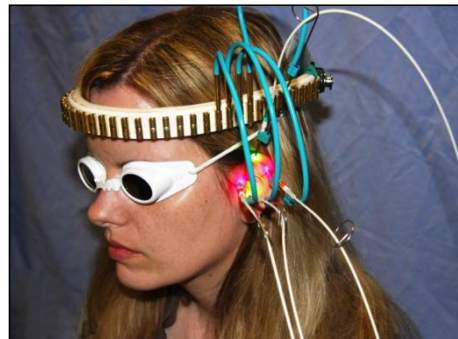
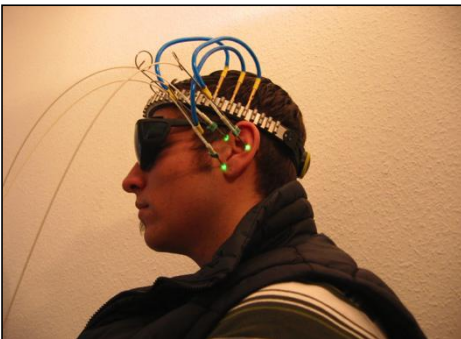


Image: Ear acupuncture with red and green laserneedles

图：用红光和绿光针进行耳部针灸

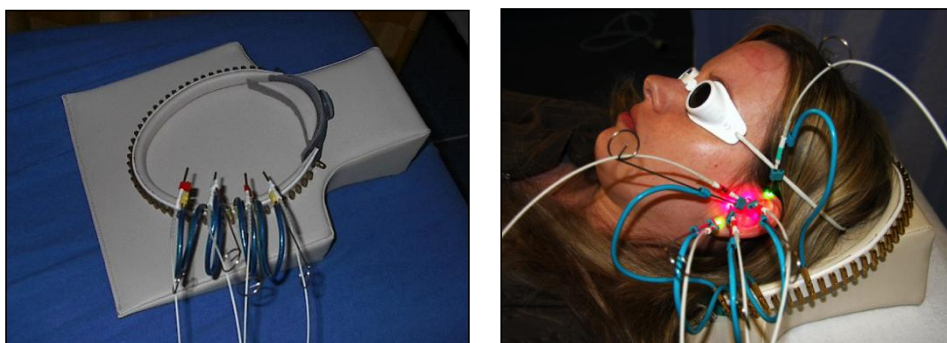


Image: Usage of the head adapter in lying position

图：卧位时头部适配器的用法



Image: New applicator for ear acupuncture

图：耳部针灸的新型敷贴器

10.1.3 Local external laser therapy with a body shower

10.1.3 用人体沐浴器进行局部体外光疗

Large pain areas (e.g. at the backbone) or large joints can be treated locally with a special laser body shower that can be equipped with up to 12 lasers. One key advantage of the body shower is that laserneedles don't have to be fixed separately but can all be inserted in the body shower. The pain area can then be irradiated with 50 – 100 % power for a time period of 20 minutes.

局部治疗大面积疼痛部位（例如骨干）或大关节，可用专用光人体淋浴器，配备多达12支光。人体淋浴器的一个关键优势是光针不必

单独固定，而是全部插入人体淋浴器中。然后用50-100%的功率照射疼痛部位达20分钟。

Irradiation with the body shower is similar to acupuncture treatments of larger areas.

人体淋浴器的照射类似于大面积针灸治疗。

To simplify the application procedure, a laserneedle holder with tripod can be used.

为了简化应用程序，可以使用带三脚架的光针座。

Estimated penetration depth of different wavelengths (dependent on colour of the skin):

估计不同波长的穿刺深度（取决于肤色）：

Blue laser, 405 nm: 1 - 2 mm

蓝光，405 nm: 1-2 mm

Green laser, 532 nm: 0,5 - 1 cm

绿光，532nm: 0.5-1cm

Red laser, 658 nm: 2 - 3 cm

红光，658 nm: 2-3 cm

Infrared laser, 810 nm: 5 - 7 cm

红外光，810 nm: 5-7 cm

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续50%的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至75%，在第三个疗程中上调至100%。

Influence of skin colour

肤色影响

While white skin is very diaphanous for laser light (100 % power can usually be used very soon), skin with a higher share of melanin

absorbs a higher percentage of the laser light and thereby heats up stronger. This process is strongest for patients with black skin. Thus, an intensity of 50 % while treating dark- skinned patients with infrared lasers should not be exceeded.

虽然白色皮肤对光的透过性很高（通常可以立即使用100％的功率），但黑色素比例较高的皮肤会吸收较高比例的光，热度升高较快。黑皮肤患者的这一过程最为难忍。因此，用红外光治疗暗黑皮肤患者，强度不得超过50％。

Treatment time

治疗时间

In general, a treatment time of 15 - 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为15-20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3个疗程足以。

Treatment intensity (in W/mW)

治疗强度（瓦/兆瓦）

Red and infrared laserneedles irradiate treatment points with 90 - 100 mW, green laserneedles with 40 - 50 mW and blue laserneedles with 50 - 60 mW. Since the laser beam is coupled into

an optic fibre with a calibre of 0,4 mm the laser beam is bunched and focussed. Thus, the intensity per area is increased.

用 90-100mW 红光和红外光针照射治疗穴位，40-50mW 绿光针照射，50-60mW 蓝光针照射。由于光束耦合到口径为 0.4mm 的光纤中，光束聚束并聚焦。因此，单位面积的强度增加。

With this technology, the intensity of red and infrared laserneedles can be increased to up to 50 W/ cm². Thereby, a much higher penetration depth is achieved and reflexion losses on the surface of the skin are compensated.

利用这项技术，红光和红外光针的强度可以提高到50 W /cm²。因此，实现了更高的穿刺深度并且补偿了皮肤表面上的反射损失。

Treatment dosage

治疗剂量

100 mW red and infrared laserneedles deliver up to 120 Joule/ Point within a 20- minute session. Such dosage applications on the surface are necessary to achieve stimulation dosages of 3 – 5 mW in the depth of the tissue because the skin absorbs up to 80% of the power already (dependent on the share of melanin).

100 mW红光和红外光针20分钟内输出高达120焦耳/穴位的功率。体表应用这样的功率对在深度组织中达到3-5mW的兴奋剂量是必要的，因为皮肤吸收了高达80%的功率（取决于黑色素的比例）。

To solve this problem, the skin barrier can be overcome by employing fibre optic laser technology to treat pain areas or acupuncture points interstitially.

为了解决这个问题，可以通过光纤光动力技术克服皮肤屏障，以间隙治疗疼痛部位或穴位。

Contraindications

禁忌

Acute inflamed rheumatic joints with overheating, reddening and bruise building should not be irradiated directly as this could deteriorate inflammatory symptoms.

伴有发烧、发红和瘀斑体格的急性风湿性关节炎患者不得直接照射，否则炎性症状可能会恶化。

Sensitive points (especially in the face, e.g. trigeminal neuralgia) should be treated with special care since pain can be activated

quickly. If the afflictions could be mitigated, the actual pain area can be treated with low dosages.

应该特别小心敏感穴位（尤其是面部，例如三叉神经痛）的治疗。因为疼痛可能迅速被激活。如果疼痛可以缓解，则使用小剂量治疗实际疼痛的部位。

Practical application 实际应用

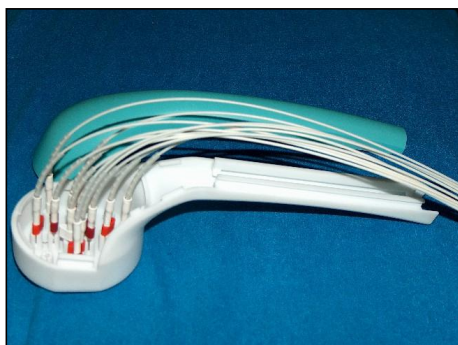


Image 1: Placement of up to 12 laserneedles in the body shower

图 1：人体淋浴器中配置多达 12 支光针

Image 2: Equipped laser shower for irradiation of pain areas

图2：配备照射疼痛部位的光淋浴器



Image 3: Laser body shower with 4 red, 4 infrared and 4 green
Laserneedles

图 3：带 4 红、4 红外和 4 绿光针的光人体淋浴器

Image 4: Knee treatment with laser body shower

图 4：光人体淋浴器治疗膝关节

10.1.4 Intraoral laser therapy with laser mouth shower

10.1.4 光口腔淋浴器进行口腔内光疗

For laser treatments in dentistry and ENT medicine, a special laser mouth shower has been developed to treat intraoral diseases such as gingivitis, caries or acute and chronic inflammations of every description. Additionally, the mouth shower can be used sublingually for systemic laser therapy (alternatively to intravenous application).

对于牙科和耳鼻喉科的光疗，开发了一种专用光口腔淋浴器来治疗各种口腔疾病，如牙龈炎、龋齿或形形色色的急慢性炎症。另外，口腔淋浴器还可用于舌下周身光疗（或者静脉内应用）。

The shower can further be used to irradiate small joints or to treat chronic and bad healing wounds and ulcera.

淋浴器还可用于照射小关节或治疗慢性和不良伤口愈合和溃疡。

Appropriate lasers:

适用光:

If an anti- inflammatory effect is desired, green and blue lasers are of interest in this area of application. Red lasers should not be used in such cases because they can exacerbate inflammations.

如果需要消炎，绿和蓝光在该应用领域卓有成效。在这种情况下不得使用红光，因为红光会使炎症恶化。

For other intraoral diseases, a combination of 2 red, 1 infrared, 1 green and 1 blue laser can be used but choices should be made individually.

对于其他口腔内疾病，可以使用2支红、1支红外、1支绿和1支蓝光的组合，需取决于个人的选择。

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续50%的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至75%，在第三个疗程中上调至100%。

Treatment time

治疗时间

In general, a treatment time of 10 minutes is recommended. If necessary, times can be extended. Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为10分钟。如必要，时间可以延长。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3个疗程足以。

Contraindications

禁忌

Acute inflammatory diseases should not be irradiated with red lasers as this could deteriorate inflammatory symptoms. In such cases, only blue and green should be used.

急性炎症性疾病不得用红光照射，因为这会恶化炎症。在这种情况下，只能用蓝光和绿光。

Practical application 实际应用

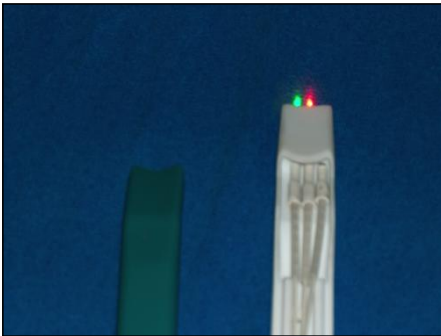


Image 1: Equipping of the laser mouth shower with up to 5
Laserneedles

图 1：光口腔淋浴器配备多达 5 支光针

Image 2: Irradiation of mouth and throat region with the laser
mouth shower

图 2：光口腔淋浴器照射口腔和喉咙部位

10.1.5 Interstitial and intra-articular laser therapies

10.1.5 间质和关节内光疗

Due to new technological developments it is now possible to insert a fibre optic catheter in direct proximity to nerve roots at the back bone or directly in joints and other tissue. Injured or damaged tissue (e.g. nerves, gristles, bones) can thus be irradiated directly.

由于新技术的发展，现在可以将光纤导管直接插入近背骨神经根或直接插入关节和其他组织内。因此可以直接照射受伤或受损的组织（例如神经、软骨、骨等）。

The number of lasers that can be applied simultaneously in interstitial or intra-articular laser therapy is not limited. The effect can further be strengthened through the additional application of external laser needles.

间质或关节内光疗中同时施加光的支数不受限制。配合体外光针应用可以进一步提高这种疗效。

Blue and green lasers can thereby unfold their anti-inflammatory effects deep in the tissue.

因此，蓝和绿光可以在组织深处展现其抗炎疗效。

Appropriate lasers:

适用光:

Red for chronic injuries.

红光治疗慢性损伤。

Green and blue for acute afflictions (see contraindications)

绿光和蓝光治疗急性疾病（见禁忌）

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续50%的光功率进行第一个疗程。

如果患者能够承受，则在第二个疗程中光功率可上调至75%，在第三个疗程中上调至100%。

Maximal power:

最大功率:

- Red laser: 20 mW
- 红光: 20 mW
- Blue laser: 30 mW
- 蓝光: 30 mW
- Green laser: 25 mW
- 绿光: 25 mW

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3个疗程足以。

Contraindications

禁忌

Acute inflammations should not be treated with red lasers as they can exacerbate inflammations (due to their generally stimulating effect). Only blue or green lasers should be used to treat inflammations. Once the inflammations have been eased red lasers can step by step be added.

急性炎症不得用红光治疗，因为红光会恶化炎症（由于红光通常具有刺激作用）。只能使用蓝或绿光来治疗炎症。一旦炎症得到缓解，可以逐步添加红光。

Tip

提示

The usage of hyaluron acid, serum (Sanakin) and common salt can further improve the effect of the treatments.

透明质酸、血清（Sanakin专利）和常规盐的使用可以进一步提高疗效。

Practical application interstitial laser therapy

实际应用间质光疗



线和MRT射线照片。

Step 1:

步骤1:

Identification of pain points (areas). X- ray and MRT radio-graphs can be used.

找到疼痛穴位（部位）。使用X射



Step 2:

第2步:

The injection site has to be marked.

必须标记注射部位。



Step 3:

第3步:

Local anaesthesia with 2 - 5 ml meaverin or procain.

用 2-5 毫升 盐酸卡波卡因 (meaverin)或奴弗卡因局部麻醉。



Step 4: Injection of 5-10 ml physiological saline solution (NaCl 0,9 %).

步骤4: 注射5-10毫升生理盐水溶液 (0.9%NaCl)。



Step 5: Insertion of a fibre optic catheter

步骤5: 插入光纤导管



Step 6: Interstitial irradiation of the treatment points (areas), if useful in combination with external irradiation.

步骤6: 如果配合体外照射, 则治疗穴位 (部位) 的间质照射疗效更好。

Practical application: intra- articular laser therapy

实际应用: 关节内光疗



Step 1:

步骤1:

Identification of injection site (preferably inferolateral position).

确定注射部位 (下侧位置最佳)。



Step 2:

第2步:

The injection site has to be marked (don't use ballpens), disinfected and cooled (with "ice spray": chlorethyl).

必须标记注射部位 (不得用圆珠笔), 消毒和散热 (用氯乙酸 “冰喷雾剂”)。



Step 3:

第3步:

Local anaesthesia with 2-3 ml meaverin or procain.

用 2-3 毫升盐酸卡波卡因 (meaverin) 或奴弗卡因局部麻醉。



Step 4:
第4步:
Injection of the canula.

插管注射。

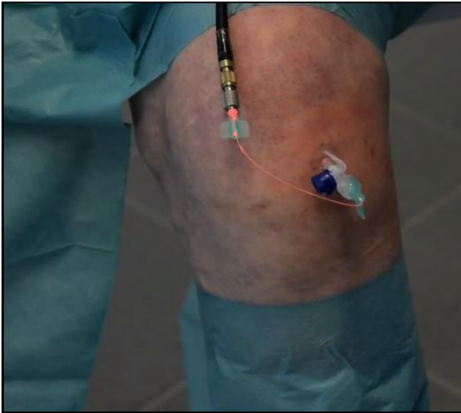


Step 5:
第5步:
Injection of hyaluron acid
or of another compound,
e.g. Sanakin.
注射透明质酸或其他化合
物，例如萨纳金(Sanakin)。
This step is optional.

此步骤任选。



Step 6:
步骤6:
Insertion of fibre optic
catheter
插入光纤导管



Step 7:

第7步:

Direct irradiation of joints
(pain areas).

直接照射关节（疼痛部位）。

10.1.6 Intravenous laser therapy

10.1.6 静脉内光疗

In general, the intravenous laser therapy is a treatment method that can be applied to treat all kinds of chronic diseases that are connected to a lack of energy as it has an energizing effect. It also strengthens the general immune system.

通常，静脉内光疗法，可以用于治疗与缺乏能量有关的各种慢性疾病，因为它具有刺激作用。一般还可以增强免疫系统的能力。

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5 mW.

重要的是要牢记静脉内光疗的最大功率仅为5毫瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerates the treatment, power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow), they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以耐受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射10-15分钟。次序不重要。

Effects of different laser colours:

不同光色的疗效：

Red:

红光：

- Stimulates the immune system
- 刺激免疫系统
- Activates macrophages
- 激活巨噬细胞
- Releases cytokines and interferons
- 释放细胞因子和干扰素
- Opens the micro circulation
- 打开微循环
- Has an coagulation-inhibiting effect and inhibits platelet aggregation
- 具有凝血抑制疗效并抑制血小板聚集
- Improves the deformability of erythrocytes
- 改善红细胞的变形能力
- Stimulates complex IV on cellular level (Cytochrom-C-Oxydase in mitochondrial respiratory chain)
- 刺激细胞水平络合物IV（线粒体呼吸链中细胞色素-c-氧化酶）

Green:

绿光：

- Leads to a steric conformation change of haemoglobin molecules with 20%- increased uptake of oxygen
- 诱导20%血红蛋白分子的空间构象变化-吸氧增加
- Is absorbed by complex III of the mitochondrial respiratory chain and increases the ATP- production by approx. 30%
- 被线粒体呼吸链的络合物III吸收，使ATP生成增加约30%

-
- Stimulates dosage depend the calcium- sodium- ATP- ase on erythrocyte membrans
 - 刺激剂量取决于红细胞膜上的钙-钠- ATP酶

Blue:

蓝光:

- Stimulates complex I of the mitochondrial respiratory chain (NADH- dehydrogenase complex)
- 刺激线粒体呼吸链的络合物I (NADH-脱氢酶络合物)
- Has anti- bacterial effects by destroying micro organisms of all kinds in the blood (by absorption of bacterial porphyrins and by production of reactive oxygen species)
- 通过杀死血液中各种微生物 (吸收细菌的卟啉和生成活性氧物质) 具有抗菌疗效
- Releases NO from the NO- Hb- complex with opening of micro circulation
- 通过打开微循环从氮氧基-血红蛋白-络合物中释放一氧化氮

Infrared:

红外光:

- Stimulates complex IV of the mitochondrial respiratory chain by specific absorption with increase of ATP- production
- 通过特定吸收刺激线粒体呼吸链的络合物IV, 同时增加ATP生成

Yellow:

黄光:

- Stimulates complex III of the mitochondrial respiratory chain (cytochromes)
- 刺激线粒体呼吸链的络合物III (细胞色素)
- Has detoxifying and anti- depressive effects
- 具有排毒和抗抑郁的疗效
- Improves the serotonin and vitamin D metabolism (important for bones, connecting tissue and immune defence)

-
- 促进血清素和维生素D代谢（对骨骼、关节组织和免疫功能很重要）
 - Stimulates the strongest natural photosensitizer Hypericin (extract from St. Johns wart) and is thus very much suited for photodynamic cancer therapy
 - 刺激最强的天然光敏剂金丝桃素（圣约翰草的提取物），因此非常适合光动力学癌症治疗
 - In combination with Hypericin appropriate to treat viral and chronic bacterial infections
 - 配合适于治疗病毒性和慢性细菌感染的金丝桃素的使用

Blood frequencies

血液频率

Until today, there are no studies that examine the effect of frequencies in intravenous treatments.

直到今天，还没有研究试验静脉内治疗中频率的效应。

Apart from that, some recommendations can be found in the literature. The usage of frequencies from Bahr, Nogier, Reininger and Wirz can be helpful but the effect has to be tested with special techniques (e.g. RAC- technique).

除此之外，文献给出了一些建议。Bahr, Nogier, Reininger和Wirz建议频率利用是有所帮助的，但必须使用专门技术（例如RAC技术）测试疗效。

Contraindications

禁忌

If a patient suffers from cancer, it can be presumed intravenous laser therapies should only be conducted as part of photodynamic therapies (see chapter 6 and 10.1.7).

如果癌症患者同意，静脉内光疗只能作为光动力疗法的一部分（见第6章和第10.1.7节）。

Red lasers should not be applied if the patient suffers from acute and inflammatory diseases (e.g. active autoimmune diseases) as it has a stimulating effect and can thus exacerbate inflammations. In such cases, the usage of blue lasers is recommended as they have a

cooling and anti- inflammatory effect. Once the inflammation has been eased, red lasers can be added step by step.

如果患者有急性炎性疾病（例如活动性自身免疫疾病），则不得使用红光，因为红光具有刺激作用并因此炎症加剧。在这种情况下，建议使用蓝光，因为蓝光具有散热和抗炎作用。一旦炎症得到缓解，就可以逐步添加红光。

As intravenous laser therapy has an anticoagulant effect, the INR-figure of marcumarized patients shouldn't be very low.

由于静脉内光疗具有抗凝血作用，因此，血栓患者有关凝血酶的国际标准化比值不得太低。

Furthermore, intravenous therapies strengthen the microcirculation system. Thus, the effect of medicines can be increased which might make a dosage reduction necessary (e.g. blood pressure drugs, insulin). From time to time, slight hypoglycaemic reactions of insulin- dependent patients have been observed.

此外，静脉内治疗促进微循环系统。因此，提升药物的疗效，可使必要的剂量减少（例如血压药物、胰岛素等）。有时，可见依赖胰岛素的患者有轻微低血糖反应。

Practical application

实际应用

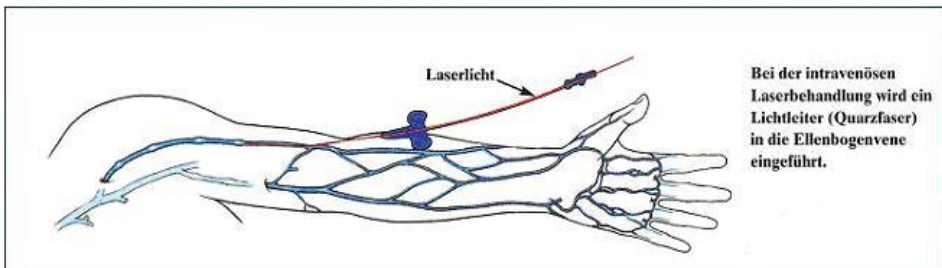


Image: Treatment scheme

图：治疗方案

The technical execution is simple and uncomplicated and has been described in chapter 5.

技术执行简单便捷，见第5章中所述。

At first, an ordinary canula (blue, 22G) or a special butterfly has to be inserted in a vein.

首先，必须用普通插管（蓝色，22G）或专用蝶型管插入静脉内。

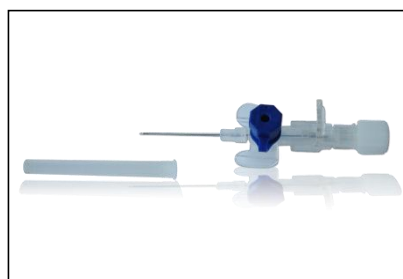
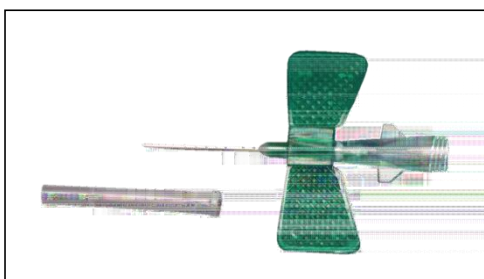


Image: Butterfly and canula

图：蝶型管和插管

Image: Step 1, injection of canula



图：步骤1，插管注射

The patient's arm shouldn't be bended during the treatment (though it is very unlikely for the catheter to break).

治疗期间患者的手臂不得弯曲（尽管导管不易破裂）。

If canulas are used, they should be fixed as usual. The metal pen should remain in the canula half way.

如果使用插管，则应常规固定。金属针应保持在插管中间。

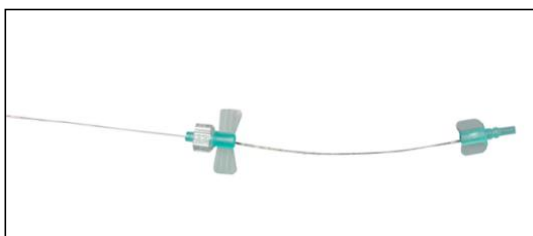


Image: Laser catheter

图：光导管

The catheter should then be unpacked and it's protective cover has to be removed. The metal pen has also to be removed from the canula as the catheter has to be inserted in the canula/ butterfly now. The catheter has to be fixed within the canula/ butterfly with the usual mechanism.

然后应打开导管包装，并且必须取下保护罩。金属针也必须从插管中取出，因为现在必须将导管插入插管/蝶型管中。导管必须用常规设备固定在插管/蝶型管内。

The outer end of the catheter has to be coupled into the special adapter of the laser module. The canula/ butterfly, catheter and the laser fibre have to be fixed to the skin of the patient with patches.

导管外端必须连接到光模块的专用适配器上。插管/蝶型管、导管和光纤必须用贴片固定到患者的皮肤上。

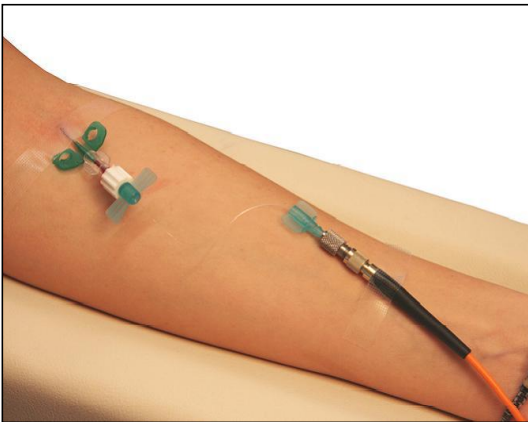


Image: Step 2, Insertion of catheter and connection of light fibre.

图：步骤2，插入导管并连接光纤。

The therapist has to make sure that the system is put together correctly.

治疗师必须确保系统正确装配在一起。

After that, the laser treatment can be started.

之后，开始光疗。

After the treatment, the connection between catheter and laser fibre has to be detached at first. Afterwards, canula/ butterfly and the attached catheter can be pulled out and disposed in usual manner.

在治疗之后，必须首先拆除导管和光纤之间的连接。然后，拉出插管/蝶型管和附着的导管并以常规方式处置。

10.1.7 Topical PDT

10.1.7 局部光动力疗法

Topical photodynamic treatments can be very efficient in the treatment of acne, skin cancer or its pre-stages, e.g. actinic keratosis, basalioma etc. (see chapter 6).

局部光动力疗法能非常有效地治疗痤疮、皮肤癌或其前期阶段，例如，光化性角化病，基底细胞瘤等（见第6章）。

In this context, the usage of 5-ALA as photosensitizer is well established. But other drugs such as (externally applied) St. Johns wort extracts can be useful as well (see chapter 10.2).

在这种情况下，既定5-丙氨酸作为光敏剂的使用。但其他药物（如外用），圣约翰草提取物就很好用（见第10.2节）。

Treatment time and intensity

治疗时间和强度

It is recommended to use lasers with power between 50 – 100 mW.

Instruction:

建议使用功率为50-100兆瓦的光。说明：

1. Apply a thin layer of the photosensitizer (e.g. 20% 5-ALA cream) to the skin area that is going to be treated.
1. 在待治疗的皮肤部位涂一薄层光敏剂（例如20%的5-丙氨酸膏）。
2. Wait for 3 ½ hours.
2. 等待3个半小时。
3. Irradiate the area for 10 minutes with light of appropriate wavelength, corresponding to the absorption spectrum of the photosensitizer. (Example 5- ALA PDT: Use the mouth

shower as applicator with 2 red (100 mW), 1 green (50 mW) and 1 blue laser (60 mW).

3. 用适当波长的光照射该部位10分钟，对应于光敏剂的吸收光谱（例如5-丙氨酸）。光动力疗法：使用口腔淋浴器作为涂药器，配有2支红光（100兆瓦）、1支绿光（50兆瓦）和1支蓝光（60兆瓦）。

4. Reddened skin and scaling of the outer skin layers can be expected within the next days. During this time, special creams can be used.

4. 接下来的几天内，皮肤外层可能发红和变松弛。在此期间，涂专用膏。

5. The therapy can be repeated every 2 weeks until the desired results have been achieved.

5. 每2周治疗一次，直至达到预期疗效。



Image: Topical PDT with mouth shower

图：用口腔淋浴器进行局部光动力疗法

Contraindications:

禁忌：

It is recommended to irradiate just a small area of the skin and to observe the patient's reaction before the actual treatment is conducted.

建议在实际治疗前仅照射小面积皮肤并观察患者的反应。

10.1.8 Local (interstitial) and systemic PDT

10.1.8 局部（间质）和周身光动力疗法

The local and systemic PDT is applicable for all kinds of inner tumours. The photosensitizer is injected systemically or as the circumstances allow locally. It is then activated through systemic (intravenous) and/ or local (external and interstitial) laser irradiation. Therefore, special catheters can be used if necessary (e.g. bladder cancer, prostate cancer).

局部和周身光动力疗法适用于各种体内肿瘤。周身注射光敏剂或根据情况局部注射。然后通过周身（静脉内）和/或局部（体外和间质）光照射激活它。因此，如果需要，使用专用导管（例如膀胱癌、前列腺癌等）。

Treatment time and selection of photosensitizer and laser

治疗时间以及光敏剂和光的选择

Nowadays, three photosensitizers are available to be used in photodynamic tumour therapies:

如今，三种光敏剂可用于光动力肿瘤治疗：

- a) Chlorin E6 which absorbs red light
- a) 吸收红光的二氢卟吩E6
- b) Curcumin which absorbs blue light
- b) 吸收蓝光的姜黄素
- c) Hypericin which absorbs yellow light
- c) 吸收黄光的金丝桃素

At the beginning, the photosensitizer is infused (more than 30 minutes) and afterwards irradiated by light of appropriate wavelength (see above).

开始时，注射光敏剂（超过30分钟），然后用适当波长的光照射（见上文）。

This is followed by a 30 - 45 min laser blood irradiation with all kinds of lasers that are available. At the same time, intravenous oxygen infusions (Oxyven device, Germany) can be added to the treatment.

然后使用各种光进行30-45分钟的光血液照射。同时，在治疗中加入静脉输氧（德国氧设备）。

After the photosensitizer has fully accumulated at the tumour, the latter has to be irradiated either externally¹ or interstitially by using special catheters (e.g. bladder, prostate). Gastrointestinal cancers (esophagus cancer, stomach cancer) have to be irradiated endoscopically.

在光敏剂完全积聚在肿瘤上后，必须使用特定导管（例如膀胱管、前列腺管）从体外¹或间质照射肿瘤。必须通过内窥镜照射胃肠道癌（例如食道癌、胃癌）。

If tumours are located deep in the tissue, photosensitizers can additionally be injected (by using ultrasound technologies if possible) directly into the tumour. The tumour has then to be irradiated locally.

如果肿瘤位于组织较深处，应另加（可使用超声技术）直接注射光敏剂到肿瘤中。然后局部照射肿瘤。

A parallel chemotherapy is recommended for specific cancers. The chemotherapeutics 5-FU and Cis-Platin thereby function as photosensitizers their self. Their effect can thus be enhanced by intravenous blood irradiation without putting extra stress on the immune system. At this point, traditional oncology and modern low- level- laser medicine are brought together.

建议对特定肿瘤进行平行化疗。因为，化学治疗剂5-氟尿嘧啶和顺铂自身起光敏剂的作用。因此，静脉内血液照射可以增强它们的作用，而不会对免疫系统施加额外的压力。在这一点上，传统肿瘤科和现代低强度光医疗相互配合。

¹ An external irradiation does only makes sense if Chlorin E6 is used and if the tumour is not located deeper than 2-3 cm in the tissue as red light is fully absorbed by the skin in a depth of 2-3 cm (see chapter 1).

¹如果使用二氢卟吩E6且肿瘤位于组织深度不超过2-3厘米，体外照射才有意义，因为红光在2-3厘米深处完全被皮肤吸收（见第1章）。

If Hypericin or Curcumin is used, the tumour has to be irradiated interstitially by using catheters/ endoscopes.

如果使用金丝桃素或姜黄素，则必须使用导管/内窥镜进行间质肿瘤照射。

It takes about 3 - 4 hours until the photosensitizer has fully accumulated at the tumour (depending on the photosensitizer). Then, irradiation can be started.

光敏剂在肿瘤上完全积聚需要约3-4小时（取决于光敏剂）。然后，开始照射。

Treatment time:

治疗时间：

Treatment time depends on the applied energy dosage. A dosage of 700 Joule is recommended. If 500 mW red lasers are used (or e.g. 5*100 mW red lasers), the treatment time should thus be approximately 20 minutes.

治疗时间取决于施加的能剂量。建议剂量为700焦耳。如果使用500兆瓦的红光（或5×100兆瓦的红光），则治疗时间应为约20分钟。

Treatment intensity (in W/ mW)

治疗强度（瓦/兆瓦）

Intravenous: 5 mW.

静脉内：5 兆瓦。

External: 100 mW red laser (100 %).

体外：100兆瓦红光（100%）。

Interstitial: red laser 100 mW (100 %), blue 60 mW (50 %), yellow 50 mW (100 %)

间质：红光100兆瓦（100%），蓝光60兆瓦（50%），黄光50兆瓦（100%）

Treatment series

疗程

If different photosensitizers shall be combined, the following scheme is recommended:

如果使用不同光敏剂的组合，建议采用以下方案：

Day 1: Chlorin E6 + red laser

第1天：二氢卟吩E6+红光

Day 2: Hypericin + yellow laser

第2天：金丝桃素+黄光

Day 3: Curcumin + blue laser

第3天：姜黄素+蓝光

The high dosed photosensitizer (in this example Chlorin E6) is only used all 3-4 weeks (depending on the urgency).

高剂量光敏剂（在本例中为二氢卟吩E6）仅在3-4周内用完（取决于紧急程度）。

Hypericin and curcumin can be taken orally for a period of 3 - 4 weeks. Intravenous lasers can be applied twice a week.

可以口服金丝桃素和姜黄素，3-4周为一疗程。可以每周两次静脉内光照射。

Dosage of hypericin and curcumin: 4 days prior to the first treatment, patients should take 4 tablets per day for enrichment.

After the first treatment 2*2 tablets per day for 3-4 weeks.

金丝桃素和姜黄素的剂量：在第一个疗程前4天，患者应每天服用4片进行富集。第一个疗程后每天服用2 * 2片，连续3-4周。

Contraindications

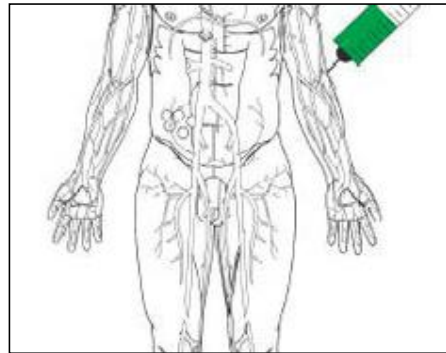
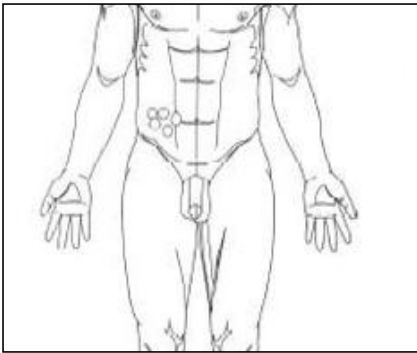
禁忌

Patients should not be exposed to sun light for three days after the treatment.

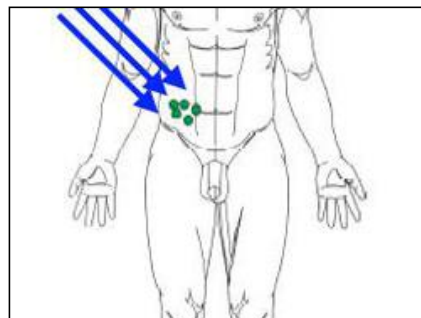
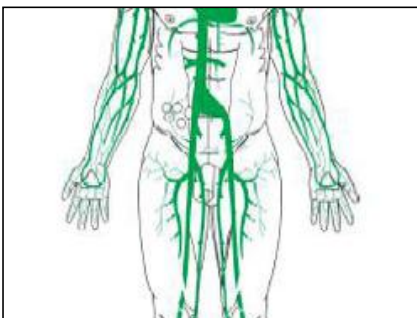
治疗后三天内患者不得暴露于阳光下。

Practical application

实际应用



- 1) Tumour in area of abdomen
- 1) 腹部肿瘤
- 2) Injection of photosensitizer to the blood stream (may be combined with a local injection)
- 2) 光敏剂注射到血液中（配合局部注射）
- 3) Intravenous laser irradiation and oxygen therapy.
- 3) 静脉内光照射和氧疗。





4) Dissemination of PS in blood stream

4) 光敏剂在血液中传播

5) Accumulation of PS at tumour tissue

5) 光敏剂在肿瘤组织上积聚

6) Local irradiation of tumour (externally, interstitially or by using special catheters) to activate the PS and destroy the tumour tissue. The PS will be excreted from the body afterwards.

6) 局部照射肿瘤（体外、间质或通过专用导管）以激活光敏剂并杀死肿瘤组织。之后，光敏剂排出体外。

A particular advantage of PDT towards chemotherapies is that the immune system is not strained. Quite the contrary, it is strengthened by the following treatments. Thus, a secondary immunisation effect is another advantage of the photodynamic therapy (PDT- immunisation).

与化疗相比，光动力疗法的特殊优势在于，不增加免疫系统的负荷。而且，后续治疗加强免疫系统功能。因此，其次的免疫疗效是光动力疗法的另一个优势（光动力疗法-免疫法）。

Treatment examples:治疗实例：

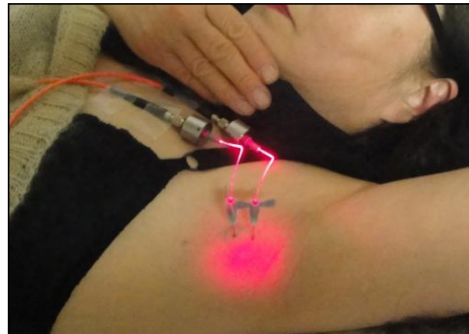


Image: External and interstitial PDT of lymph node metastases.

图：淋巴结转移灶的体外和间质光动力疗法

Pancreas-CA with interstitial PDT

间质光动力治疗胰腺癌



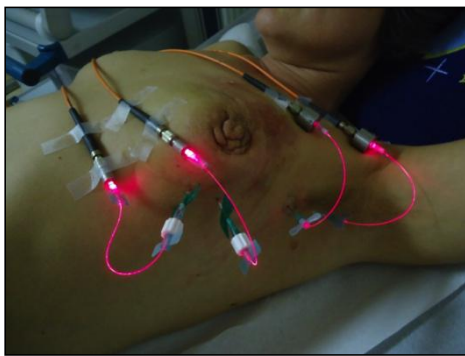
Bladder-CA with special bladder catheter

膀胱癌专用膀胱导管



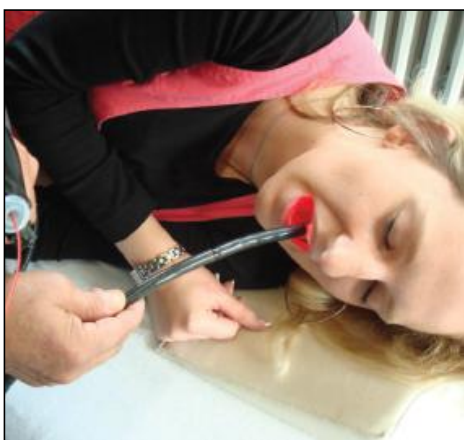
Mamma-CA with interstitial PDT

间质光动力治疗乳腺癌



Esophagus cancer: PDT via endoscope

食道癌：通过内窥镜进行光动力治疗



10.1.9 Dermatology and skin rejuvenation

10.1.9 皮肤科和皮肤再生

In dermatology, laser therapy is used to treat skin diseases such as eczema, neurodermatitis, psoriasis, chronic wounds, acne, herpes or gingivitis. Due to its anti-inflammatory effect, the blue laser is of particular importance in this field. Furthermore, laser therapy can be used for skin rejuvenation if it is combined with hyaluronic acid compounds.

在皮肤科，光疗法用于治疗皮肤病，例如湿疹、神经性皮炎、牛皮癣、慢性伤口愈合、痤疮、疱疹或牙龈炎等。由于光疗法的抗炎作用，蓝光有特效。此外，如果配合透明质酸络合物，光疗可用于皮肤再生。

Usually, all available and appropriate lasers are combined in an applicator to simultaneously apply different effects to the skin. 通常，所有可用且适用的光组合，同时以涂药器施加到皮肤上诱导不同的疗效。

The effects of different lasers in dermatology

不同光在皮肤科的效用

- blue acts bactericidal, improves the microcirculation (release of NO) and stimulates the respiratory chain on the level of the NADH-dehydrogenase.
- 蓝光起杀菌作用，改善微循环（释放一氧化氮）并以 NADH-脱氢酶水平刺激呼吸链。
- green activates membrane potential of cells (K-Na-ATPase) and mitochondria.
- 绿光激活细胞（钾-钠-ATP 腺苷三磷酸酶）膜电位和线粒体。
- red improves healing, binding to cytochrome-c-oxidase in the respiratory chain, build up of cells, leads to immunological effects.
- 红光加快伤口愈合，与呼吸链中的细胞色素-c-氧化酶结合，细胞再生，诱导免疫效应。
- infrared cross-links the hyaluronic acid, binding to cytochrome-c-oxidase.
- 红外光交联透明质酸，与细胞色素-c-氧化酶结合。

Treatment intensity

治疗强度

The lasers can be applied with an applicator (laser mouth shower, see chapter 10.1.4) that facilitates their simultaneous usage. 50-100 mW lasers of all wavelengths are combined in an applicator to irradiate target skin areas.

用涂药器（光口腔淋浴器，见第10章第10.1.4节）施加光，便于同时使用。50-100兆瓦所有波长的光组合在涂药器中照射靶向皮肤部位。

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different

sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续50%的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至75%，在第三个疗程中上调至100%。

Influence of skin colour

肤色影响

While white skin is very diaphanous for laser light (100 % power can usually be used very soon), skin with a higher share of melanin absorbs a higher percentage of the laser light and thereby heats up stronger. This process is strongest for patients with black skin and it is recommended to not exceed an intensity of 50 % while treating dark- skinned patients with infrared lasers.

虽然白色皮肤对光的透过性很高（通常可以立即使用100%的功率），但黑色素比例较高的皮肤会吸收较高比例的光，热度升高较快。黑皮肤患者的这一过程最为难忍。因此，推荐在用红外光治疗暗黑皮肤患者时，强度不得超过50%。

Treatment time

治疗时间

In general, a treatment time of 10 minutes is recommended. If necessary, times can be extended. Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为10分钟。如必要，可以延长治疗时间。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3个疗程足以。

Treatment intensity (in W/mW)

治疗强度（瓦/兆瓦）

Red and infrared laserneedles irradiate treatment points with 90 - 100 mW, green laserneedles with 40 - 50 mW and blue laserneedles with 50 - 60 mW. Since the laser beam is coupled into an optic fibre with a calibre of 0,4 mm the laser beam is bunched and focussed. Thus, the intensity per area is increased.

用 90-100mW 红光和红外光针照射治疗穴位，40-50mW 绿光针照射，50-60mW 蓝光针照射。由于光束耦合到口径为 0.4mm 的光纤中，光束聚束并聚焦。因此，单位面积的强度增加。

With this technology, the intensity of red and infrared laserneedles can be increased to up to 50 W/ cm². Thereby, a much higher penetration depth is achieved and reflexion losses on the surface of the skin are compensated.

利用这项技术，红光和红外光针的强度可以提高到 50 W /cm²。因此，实现了更高的穿刺深度并且补偿了皮肤表面上的反射损失。

Contraindications

禁忌

Red lasers should not be used to treat acute and inflammatory diseases such as acne vulgaris because they can exacerbate inflammations. In such cases, blue lasers should be used as they have a cooling and anti- inflammatory effect.

红光不得用于治疗急性炎症性疾病，如寻常痤疮，因为红光会加剧炎症。在这种情况下，应使用蓝光，因为蓝光具有散热和抗炎疗效。

Once the inflammations have been eased red lasers can step by step be added.

一旦炎症得到缓解，可以逐步添加红光。

Remark

备注

To treat severe skin diseases, the employment of topical PDT is recommended (see chapter 10.1.7.).

为了治疗严重的皮肤病，建议使用局部光动力疗法（见第10.1.7节）。

Practical application

实际应用

Dermatology: Placement of lasers in the laser mouth shower, afterwards irradiation of target skin areas (see chapter 10.1.4).

皮肤科：在光口腔淋浴器中放置光，然后照射靶向皮肤部位（见第10.1.4节）。



Skin rejuvenation:

皮肤再生：

Step 1: Skin clarification / peeling

步骤1：皮肤净化/去死皮

Step 2: Treat 4 points around the eyes and 4 points around the mouth with red and infrared lasers to achieve spasmolytic effects on the face musculature as well as an improvement of the microcirculation. Additionally, the acupuncture points Yintang, the end points of the governor vessel and the conception vessel can be treated as well (Yintang always infrared, all other points red or infrared, 20 min, 50-100 %).

步骤2：用红光和红外光治疗眼睛周围的4个穴位和嘴周围的4个穴位，以实现对面部肌肉组织的解痉疗效以及改善微循环。此外，针灸印堂穴、督脉和任脉末梢穴也见效（印堂穴总用红外光，所有其他穴位用红光或红外光，20分钟，50-100%功率）。



Step 3: Apply hyaluronic acid compound (hyaluronic acid with nanoparticles, vitamin A and C)

步骤3：涂抹透明质酸络合物（透明质酸纳米粒子，维生素A和C）

Step 4: (optional) Treatment with ultrasound.

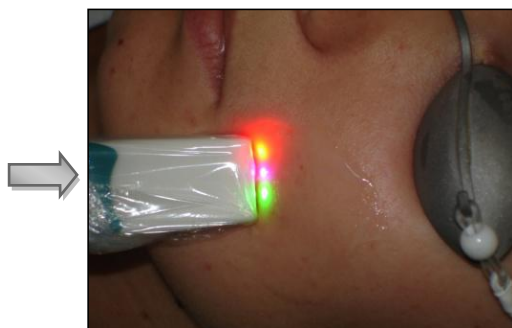
步骤4：(可选) 用超声波治疗。

Step 5: Irradiation with all available lasers by using the mouth shower (recommendation: 2x infrared 100 mW, 1x red 100 mW, 1x green 50 mW, 1x blue 60 mW) for 10- 15 minutes.

步骤5：通过口腔淋浴器使用所有可用光照射10-15分钟（建议：2x 红外光100兆瓦，1x 红光100兆瓦，1x 绿光50兆瓦，1x 蓝光60兆瓦）。

Recommendation: Patients can treat themselves additionally with special homecare products.

建议：患者还可以使用家庭护理专用产品自我治疗。





10.1.10 Weight Loss

10.1.10 减肥

For body countering red lasers between 40 mW and 100 mW are used. The therapy can be conducted externally or (to achieve even better results) interstitially.

用 40 兆瓦和 100 兆瓦之间的红光减肥。可以进行体外或者间质治疗（以获得更好的疗效）。

Treatment intensity

治疗强度

Application of 6-12 red lasers with 40 – 100 mW (100 % power).

施用6-12条红光，最大功率40- 100 兆瓦。

Treatment time

治疗时间

A treatment time of 45 minutes is recommended.

建议治疗时间为45分钟。

Treatment series

疗程

10 sessions is the standard recommendation, but the therapy can be extended until the desired results have been achieved.

建议以10个疗程为标准，但治疗可以延长直到达到理想的效果为止。

Treatment dosage

治疗剂量

100 mW red laser needles deliver up to 120 Joule/ Point within a 20- minute session. Such dosage applications on the surface are necessary to achieve stimulation dosages of 3 – 5 mW in the depth

of the tissue because the skin absorbs up to 80 % of the power already (dependent on the share of melanin).

100 兆瓦红外光针20分钟内输出高达120焦耳/穴位的功率。体表应用这样的功率对在深度组织中达到3-5兆瓦的兴奋剂量是必要的，因为皮肤吸收了高达80%的功率（取决于黑色素的比例）。

To solve this problem, the skin barrier can be overcome by employing fibre optic laser technology.

为了解决这个问题，可以通过光纤光动力技术克服皮肤屏障。

Practical application

实际应用

External application of 6-12 red lasers on fat tissue (balanced placement and fixation with tubes) and subsequent irradiation.

在脂肪组织上体外施加6-12支红光（平衡放置和用导管固定），随后照射。

Alternative (recommendation): Interstitial application of 4-6 red lasers directly in fat tissue (balanced placement) and subsequent irradiation.

替代方案（推荐）：4-6支红光直接间质应用于脂肪组织（平衡放置）和随后照射。

Tip: Additional injection of sodium chloride in fat tissue to improve light dissemination

提示：在脂肪组织中注射氯化钠以促进光传播

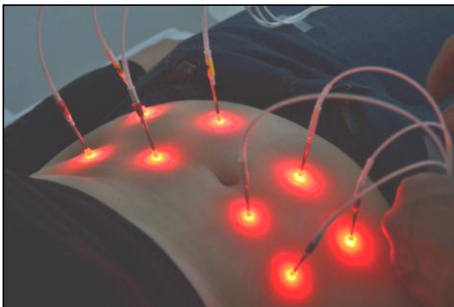


Image: External and interstitial weight loss therapy

图：体外和间质减肥疗法

Recommendation:

建议:

Additional systemic (intravenous) laser therapy to stimulate the metabolism (protocols see 10.1.6.).

此外，周身（静脉内）光疗刺激新陈代谢（方案见第 10.1.6 节）。

Change of alimentation and healthier life style.

营养变化和更健康的生活方式。

More sports/ movement.

多运动/活动。

Special waist massages to support fat transport.

专门腰部按摩以支持脂肪运移。

10.1.11: Laser therapy in paediatrics

10.1.11: 儿科光疗

In general, all therapies that have previously been described can be applied in paediatrics. However, certain rules have to be considered because children usually respond stronger to laser therapies. This is because children have thinner skin (and thus a smaller “barrier”) and a different metabolism.

通常，之前所述的所有疗法均可应用于儿科。但是，必须考虑某些原则，儿童通常对光疗的反应敏感。这是因为儿童皮肤较薄（因此“屏障”较小）和新陈代谢与成人不同。

Treatment intensity external treatments

体外治疗强度

Children between 6 and 15: 50 %

6至15岁的儿童：50%

Children between 1 and 6: 20 %

1至6岁儿童：20%

Treatment intensity systemic treatments

周身治疗强度

Intravenous laser therapy: 20 min with 20 % (from age 6 on).

静脉内光疗：20分钟，20%（6岁以上）。

Alternative: Sublingual laser application (combination of all available lasers with 20 % power (approx. 10- 20 mW laser power)).
替代方案：舌下光应用（所有可用光组合，20%功率（光功率约为10-20 兆瓦））。

Treatment time

治疗时间

In general, a treatment time of 10-15 minutes is recommended for children. Ultimately, the decision has to be made by the therapist.
通常，建议对儿童的治疗时间为10-15分钟。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

Contraindications

禁忌

All contraindications that have previously been mentioned have to be considered in paediatrics.

对于儿科，所有在前文提到的禁忌都应仔细斟酌。

Practical application

实际应用



Image: Sublingual laser application

图：舌下光照射

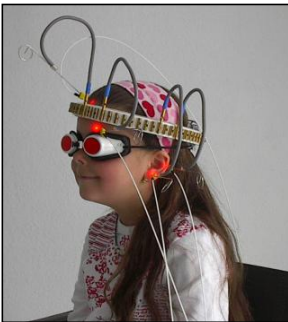


Image: External laser therapy

图：体外光疗

10.2 Treatment protocols by indications

10.2 适应症的治疗方案

1) Achillodynia

1) 跟腱痛

Local laser therapy (external/ interstitial)

局部光疗法（体外/间质）

Appropriate lasers:

适用光：

Acute: Blue and green laser (interstitial)

急性：蓝光和绿光（间质）。

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行：

Local irradiation of Achilles Tendon (directly dorsal and from the side).

跟腱局部照射（直接背侧）。

Laserneedle acupuncture: recommended acupuncture points: KI 7 and UB 60.

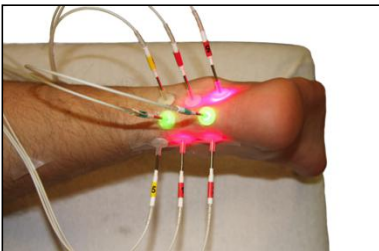
推荐光针灸的穴位：复溜和 UB 60。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。



Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

To treat acute inflammations green and blue lasers (interstitially) are recommended.

建议用绿光和蓝光（间质）治疗急性炎症。

Red and infrared lasers should only be used if acute inflammations have been eased.

如果急性炎症已缓解，只能施用红光和红外光。

2) Acne

2) 痤疮

Local laser therapy with mouth shower

用口腔淋浴器局部光疗

Appropriate lasers:

适用光:

All available lasers (exception: red laser to treat acute inflammatory acne).

所有可用光（例外：红光治疗急性痤疮）。

Execution:

执行:

Protocol see dermatology (chapter 10.1.9): placement of all available lasers in the laser mouth shower (exception: red laser to treat acute inflammatory acne). Afterwards irradiation of target skin areas.

参见皮肤科治疗方案（第10.1.9节）：所有可用光放置在光口腔淋浴器中（例外：红光治疗急性炎症性痤疮）。然后照射靶向皮肤部位。



Treatment time

治疗时间

In general, a treatment time of 10 minutes is recommended. If necessary, times can be extended. Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为10分钟。如必要，治疗时间可以延长，但最终，具体治疗时间取决于临床治疗医师的诊断。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

Red lasers should not be used to treat acute inflammatory acne. If inflammations have been eased, red lasers can be applied as well.

红光不得用于急性炎症。如果炎症已缓解，可施用红光。

The combination with intravenous laser therapy is recommended to generate additional effects on the blood circulation of the skin and to accelerate regeneration processes.

建议与静脉内光疗相结合，以对皮肤血液循环产生更好的疗效并加速再生过程。

If severe acne has been diagnosed, topical PDT is recommended (see chapter 10.1.7).

如果诊断为严重痤疮，建议使用局部光动力疗法（见第 10.1.7 节）。

3) Actinic keratosis

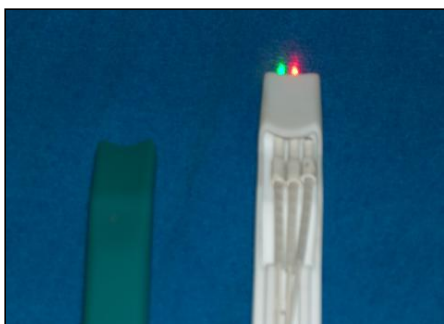
3) 光化性角化病

Application of topical PDT (see chapter 10.1.7) with 5- ALA cream and laser mouth shower for local irradiation.

局部光动力疗法（见第 10.1.7



节) 配合 5-丙氨酸膏和用于局部照射的光口腔淋浴器。



Treatment time and intensity

治疗时间和强度

It is recommended to use lasers with power between 50 – 100 mW.

Instruction:

建议使用功率为 50-100 兆瓦的光。说明:

1. Apply a thin layer of the photosensitizer (e.g. 20% 5-ALA cream) to the skin area that is going to be treated.
1. 在待治疗的皮肤部位涂一薄层光敏剂 (例如20%的5-丙氨酸膏)。
2. Wait for 3 ½ hours.
2. 等待3个半小时。
3. Irradiate the area for 10 minutes with light of appropriate wavelength, corresponding to the absorption spectrum of the photosensitizer. (Example 5- ALA PDT: Use the mouth shower as applicator with 2 red (100mW), 1 green (50mW) and 1 blue laser (60mW).
3. 用适当波长的光照射该部位10分钟, 对应于光敏剂的吸收光谱 (例如5-丙氨酸)。光动力疗法: 使用口腔淋浴器作为涂药器, 配有2支红光 (100兆瓦)、1支绿光 (50兆瓦) 和1支蓝光 (60兆瓦)。
4. Reddened skin and scaling of the outer skin layers can be expected within the next days. During this time, special creams can be used.
4. 接下来的几天内, 皮肤外层可能发红和变松弛。在此期间, 涂专用霜

Contraindications

禁忌:

The combination with intravenous laser therapy is recommended to generate additional effects on the blood circulation of the skin and to accelerate regeneration processes.

建议与静脉光疗相结合，以对皮肤血液循环产生更好的疗效并加速再生过程。

4) Addiction diseases

4) 成瘾性疾病

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以耐受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照照射10-15分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

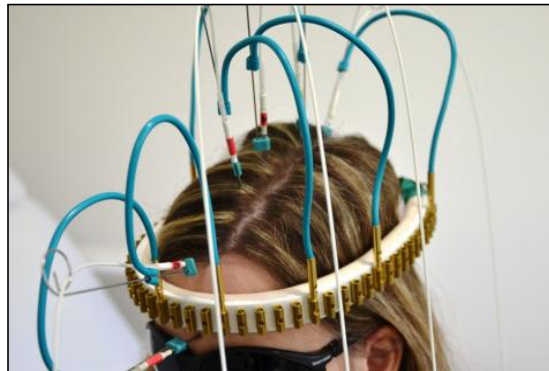
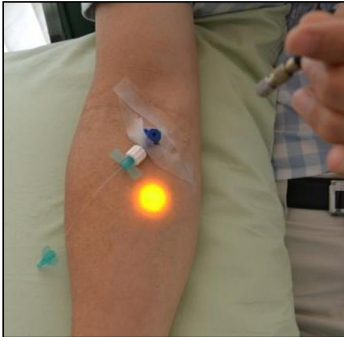
注意/建议/禁忌:

If necessary adjustment of medication.

如必要，调整给药

Recommendation: Combination of Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：金丝桃素（光敏剂）配合黄光。在第一个疗程前3天口服金丝桃素（每日3*600片）。从第4天开始，使用黄光和所有其他可用光进行静脉内光疗。应继续口服金丝桃素片。



Additive therapy recommendation:

更多的疗法推荐：

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸：

Appropriate lasers:

适用光：

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光：较深部位/针灸穴位适用红外光，浅表部位/针灸穴位适用红光

Execution:

执行：

Laser needle acupuncture, recommended acupuncture points: At right ear omega points 1-3, anti aggression point, point at lung, at left ear from top to bottom nicotine point, interferon point, valium point.

推荐光针灸的穴位：右耳欧米加穴位 1-3、抗侵害穴位、肺部穴位，左耳从上到下的尼古丁穴位、干扰穴位，安定穴位。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

Local (transcranial) laser therapy

局部（经颅）光疗

Appropriate lasers:

适用光:

Infrared

红外光

Execution:

执行:

It is recommended to irradiate from frontal position, both lateral sides and directly on Sinus Sagitalis to assure optimal light dissemination in the brain.

建议从额部、两侧或直接在矢状窦部位上照射，以确保光在脑中进行最佳的传播。

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this well, laser power can be increased to 75 % in the second and 100 % in the third session.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10

minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

5) Adipositas

5) 肥胖症

Local weight loss therapy (externally or interstitially)
局部减肥疗法（体外或间质）

Appropriate lasers:

适用光:

For body countering 100 mW red lasers are used.
用 100 兆瓦红光减肥。

Execution:

执行:

External application of 6 - 12 red lasers on fat tissue (balanced placement and fixation with tubes) and subsequent irradiation.

在脂肪组织上体外施加6-12支红光（平衡放置和用导管固定），随后照射。

Alternative (recommendation): Interstitial application of 4 - 6 red lasers directly in fat tissue (balanced placement) and subsequent irradiation.

替代方案（推荐）：4-6支红光直接间质应用于脂肪组织（平衡放置），随后照射。

Treatment time

治疗时间

A treatment time of 45 minutes is recommended.

建议治疗时间为45分钟。

Tip: Additional injection of sodium chloride in fat tissue to improve light dissemination

提示： 在脂肪组织中注射氯化钠以促进光传播

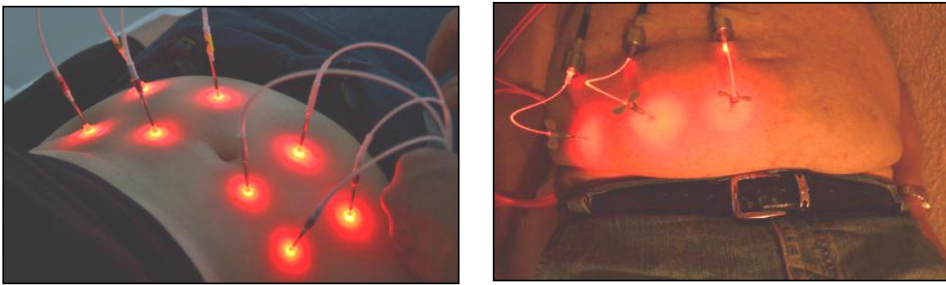


Image: External and interstitial weight loss therapy

图：体外和间质减肥疗法

Recommendation:

建议：

Additional systemic (intravenous) laser therapy to stimulate the metabolism (protocols see 10.1.6.).

此外，周身（静脉内）光疗刺激新陈代谢（方案见第 10.1.6 节）。

Change of alimentation and healthier life style.

营养变化和更健康的生活方式。

More sports/ movement.

多运动/活动。

Special waist massages to support fat transport.

专门腰部按摩以支持脂肪运移。

Details can be found in chapters 10.1.10 and 10.1.5.

详情见第 10.1.10 节和第 10.1.5 节。

6) ADS

6) 成人退行性脊柱侧凸

Local (transcranial) laser therapy
局部（经颅）光疗

Appropriate lasers:

适用光:

Transcranial laser therapy: Infrared

经颅光疗：红外光

Acupuncture: Infrared for deep acupuncture points, red for superficial acupuncture points.

针灸：深针灸穴位适用红外光，浅表针灸穴位适用红光。

Execution:

执行:

Transcranial laser therapy: It is recommended to irradiate from frontal position, both lateral sides and directly on Sinus Sagitalis to assure optimal light dissemination in the brain.

经颅光疗：建议从额部、两侧或直接在矢状窦部位上照射，以确保光在脑中进行最佳的传播。

Laserneedle acupuncture, recommended acupuncture points: governor vessel 20, yintang, ST 6 (bilateral), valium point

光针灸推荐穴位：督脉 20、印堂、颊车（双侧）、安定

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续50%的光功率进行第一个疗程。

如果患者能够承受，则在第二个疗程中光功率可上调至75%，在第三个疗程中上调至100%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

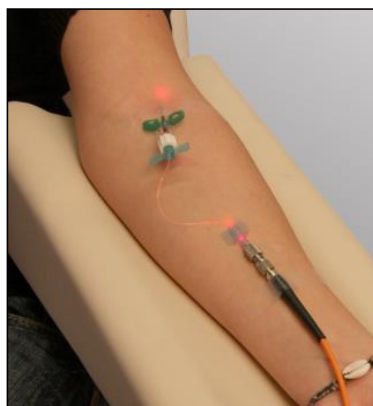
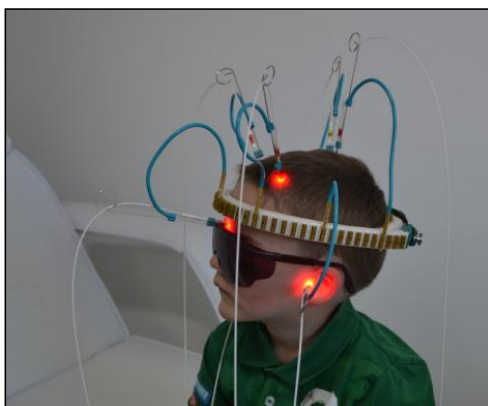
通常，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括 10 个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至 15 或 20 或甚至更多的疗程。我们建议每周进行 2-3 个疗程。每日的疗程均可见效。



Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

The combination with intravenous laser therapy is recommended to generate additional positive effects on the immune system. It can also strengthen the effects of the transcranial laser therapy.

建议配合静脉光疗法，以产生更大的积极的疗效，还能提高经颅光疗的效果。

6) Allergies

7) 过敏症

Systemic treatment (intravenous laser therapy)

周身治疗（静脉内光疗）

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5毫瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

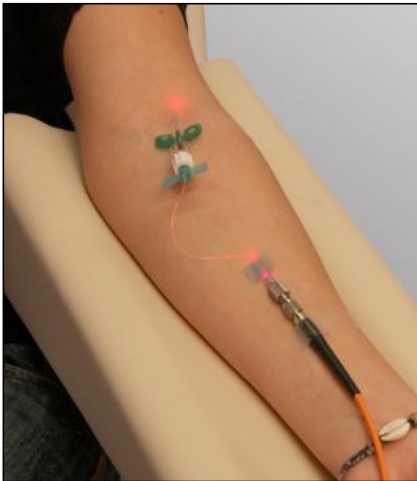
建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以耐受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射10-15分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

If necessary adjustment of medication.

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Laserneedle acupuncture:

光针灸:

Appropriate lasers:

适用光:

Infrared for deep acupuncture points, red for superficial acupuncture points.

深针灸穴位适用红外光，浅表针灸穴位适用红光

Execution:

执行:

Recommendation of the following acupuncture points: LI 20 bilateral, yintang, ST 5 bilateral

推荐以下针灸穴位：迎香双侧、阴堂、大迎双侧

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续50%的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至75%，在第三个疗程中上调至100%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括 10 个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至 15 或 20 或甚至更多的疗程。我们建议每周进行 2-3 个疗程。每日的疗程均可见效。

7) Alopecia/ loss of hair

8) 脱发症

Local laser therapy with laser body shower

用光人体淋浴器局部光疗

Appropriate lasers:

适用光:

Red, infrared, green, blue

红光、红外光、绿光、蓝光

Execution:

执行:

Local treatment of scalp with laser body shower, usage of all available lasers.

使用所有可用光，通过光人体淋浴器局部治疗头皮。

Treatment time

治疗时间

In general, a treatment time of 15 - 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为15-20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

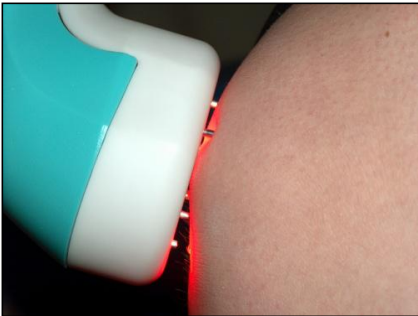
疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。



Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

The combination with intravenous laser therapy is recommended to generate additional hair growth effects.

建议配合静脉内光疗，以产生更好的毛发生长疗效。

8) Alzheimer's and dementia

9) 阿尔茨海默病和痴呆症

Local (transcranial) laser therapy
局部（经颅）光疗

Appropriate lasers:

适用光:

Transcranial laser therapy: Infrared

经颅光疗: 红外光

Acupuncture: Infrared for deep acupuncture points, red for superficial acupuncture points.

针灸: 深针灸穴位适用红外光, 浅表针灸穴位适用红光。

Execution:

执行:

Transcranial laser therapy: It is recommended to irradiate from frontal position, both lateral sides and directly on Sinus Sagitalis to assure optimal light dissemination in the brain.

经颅光疗: 建议从额部、两侧或直接在矢状窦部位上照射, 以确保光在脑中进行最佳的传播。

Laserneedle acupuncture: recommended acupuncture points:

Yintang, governor vessel 19/20/21/22/23

光针灸: 推荐穴位: 印堂、督脉 19/20/21/22/23

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样, 这是由于不同患者的敏感度各异。我们建议用连续50%的光功率进行第一个疗程。

如果患者能够承受，则在第二个疗程中光功率可上调至75%，在第三个疗程中上调至100%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

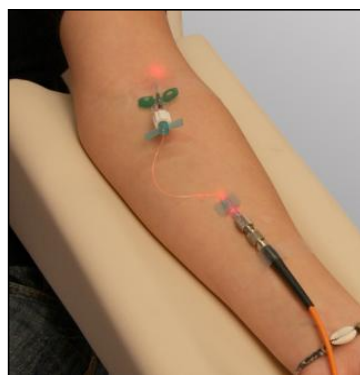
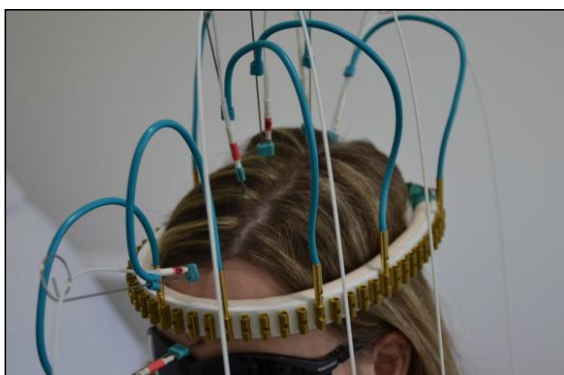
通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。



Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

The combination with intravenous laser therapy is recommended to generate additional effects on the general well-being and to enhance the effects of the transcranial laser therapy.

建议配合静脉内光疗，在一般健康上产生更好的疗效，提高经颅光疗的效果。

The intake of green tea capsules with EGCG is recommended as well (see chapter 3).

建议摄入带表没食子儿茶素没食子酸酯的绿茶胶囊（见第 3 章）。

10) Amblyacousia

10) 听觉减退

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

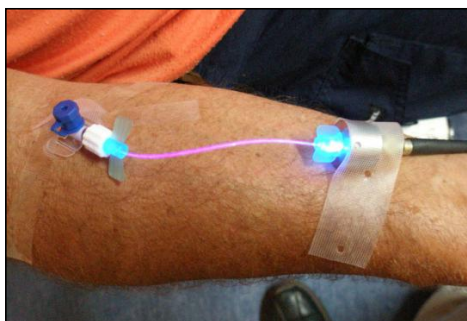
建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以耐受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射10-15分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:
更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:
局部光疗法/光针灸:

Appropriate lasers:
适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 较深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光

Execution:
执行:

Local irradiation of the ear canal with red laser.
用红光进行耳道局部照射

Treatment time
治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常, 建议治疗时间为20分钟。对敏感性强的患者, 时间可以缩短(例如, 儿童为10分钟)。但最终, 具体治疗时间取决于临床治疗医师的诊断。

Treatment series
疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

11) Ankle joint arthritis

11) 踝关节关节炎

Local laser therapy (external/ interstitial)

局部光疗法（体外/间质）

Appropriate lasers:

适用光:

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行:

Local irradiation around the ankle joint. To treat superficial tendon pain, green lasers might be used.

踝关节周围局部照射。用绿光治疗浅表肌腱疼痛。

Laserneedle acupuncture: recommended acupuncture points: KI 1 and 6, ST 40, MP 4 and 6, GB 40, LV 2 and UB 60

推荐光针灸的穴位：涌泉、照海、丰隆、MP 4、MP 6、丘墟、云门和 UB 60

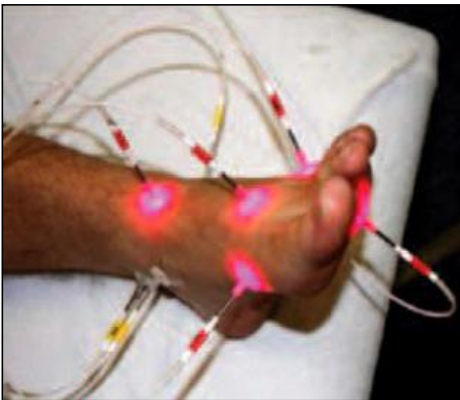
Additional recommendation: Interstitial application of red, green and blue lasers.

更多推荐：红光、绿光和蓝光施用于间质。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.



通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

12) Autism

12) 自闭症

Systemic (intravenous) laser therapy

周身（静脉）光治疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, especially yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、重要的黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

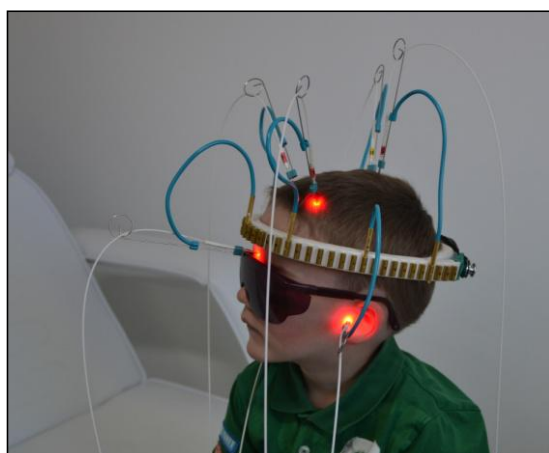
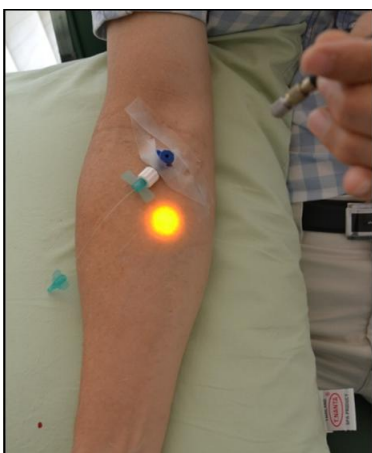
建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以耐受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射10-15分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药。



Additive therapy recommendation:
更多的疗法推荐：

Local (transcranial) laser therapy
局部（经颅）光疗

Transcranial laser therapy: Infrared
经颅光疗：红外光

Acupuncture: Infrared for deep acupuncture points, red for superficial acupuncture points.
针灸：深针灸穴位适用红外光，浅表针灸穴位适用红光。

Execution:
执行：

Transcranial laser therapy: It is recommended to irradiate from frontal position, both lateral sides and directly on Sinus Sagitalis to assure an optimal light dissemination in the brain.
经颅光疗：建议从额部、两侧或直接在矢状窦部位上照射，以确保光在脑中进行最佳的传播。

Laserneedle acupuncture: recommended acupuncture points:
governor vessel 20, yintang, ST 6 bilateral, valium point

光针灸：推荐穴位：督脉 20、印堂、颊车双侧、安定穴

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this well, laser power can be increased to 75 % in the second and 100 % in the third session.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

13) Bacterial (interior) infections

13) 细菌（内部）感染

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, especially yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、重要的黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以耐受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射10-15分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

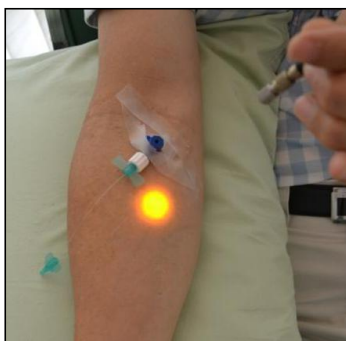
注意/建议/禁忌:

If necessary adjustment of medication.

如必要，调整给药

Recommendation: Photodynamic therapy with Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：配合金丝桃素（光敏剂）和黄光的光动力疗法。在第一个疗程前3天口服金丝桃素（每日3*600片）。从第4天开始，使用黄光和其他所有可用光进行静脉内光疗。应继续口服金丝桃素片。

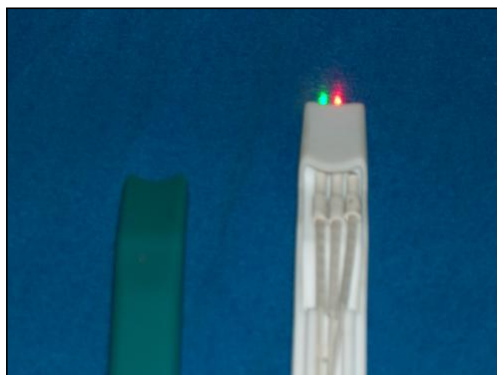


14) Basalioma

14)基底细胞瘤

Application of topical PDT (see chapter 10.1.7) with 5- ALA cream and laser mouth shower for local irradiation.

局部光动力疗法（见第10章第10.1.7节），配备5-丙氨酸膏和光口腔



淋浴器，用于局部照射。

Execution:

执行:

Equipment of the laser mouth shower (10.1.4) with all available lasers and subsequent irradiation of the skin. It is recommended to use lasers with power between 50 – 100 mW.

口腔淋浴器(第 10.1.4 节)适用于所有光和随后的皮肤照射。建议使用功率为 50-100 兆瓦的光。

1. Apply a thin layer of the photosensitizer (e.g. 20% 5-ALA cream) to the skin area that is going to be treated.

1. 在待治疗的皮肤部位涂一薄层光敏剂（例如20%的5-丙氨酸膏）。

2. Wait for 3 ½ hours.

2.等待3个半小时。

3. Irradiate the area for 10 minutes with light of appropriate wavelength, corresponding to the absorption spectrum of the photosensitizer. (Example 5- ALA PDT: Use the mouth shower as applicator with 2 red (100mW), 1 green (50mW) and 1 blue laser (60mW).

3.用适当波长的光照射该部位10分钟，对应于光敏剂的吸收光谱（例如5-丙氨酸）。光动力疗法：使用口腔淋浴器作为涂药器，配有2支红光（100兆瓦）、1支绿光（50兆瓦）和1支蓝光（60兆瓦）。

4. Reddened skin and scaling of the outer skin layers can be expected within the next days. During this time, special creams can be used.

4.接下来的几天内，皮肤外层可能发红和变松弛。在此期间，涂专用膏。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

The combination with intravenous laser therapy is recommended to generate additional effects on the blood circulation of the skin and to accelerate regeneration processes.

建议配合静脉光疗，以对皮肤的血液循环产生更大的疗效，促进再生。

15) Bladder inflammation/ bladder defect

15) 膀胱炎症/膀胱缺损

Systemic (intravenous) laser therapy
周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以接受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射10-15分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laserneedle acupuncture

局部光疗法/光针灸

Choice of lasers:

光选项:

Red, infrared. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red.

红光、红外光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光。

Execution:

执行:

Local irradiation of the bladder.

局部照射膀胱。

Laserneedle acupuncture: Recommended acupuncture points: BL 60 and 61, KI 3, Ren mai 3 and 4, KI 12 bilateral.

推荐光针灸的穴位：昆仑、仆参、太溪、任脉 3 和 4、大赫双侧

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括 10 个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至 15 或 20 或甚至更多的疗程。我们建议每周进行 2-3 个疗程。每日的疗程均可见效。

16) Blood circulation disorder/ Arteriosclerosis

16) 血液循环障碍/动脉硬化

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光：

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

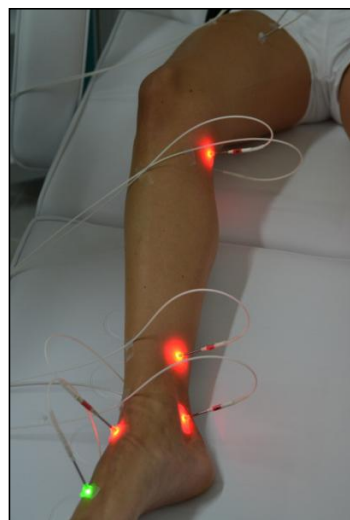
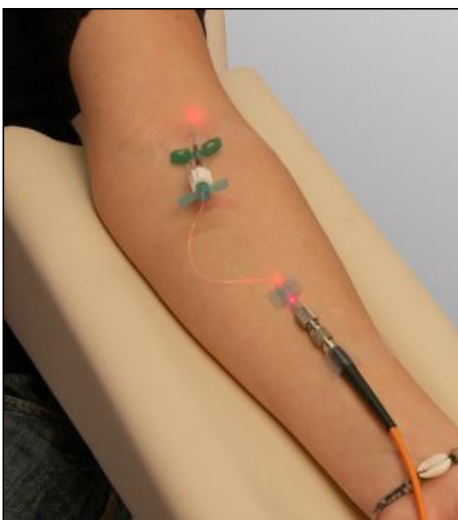
建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以耐受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射10-15分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:
更多的疗法推荐:

Local laser therapy/ laserneedle acupuncture:
局部光疗法/光针灸:

Appropriate lasers:
适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 较深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光

Execution:
执行:

Local irradiation of affected areas.
受影响部位的局部照射。

Laserneedle acupuncture, recommended acupuncture points: ST 41, LV 3, KI 3, Sp 6 and 9, 2 extra points at thigh.

推荐光针灸的穴位: 解溪、LV 3、太溪、三阴交、阴陵泉、2 个大腿经外穴。

Treatment time
治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常, 建议治疗时间为 20 分钟。对敏感性强的患者, 时间可以缩短 (例如, 儿童为 10 分钟)。但最终, 具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

17) Burn-Out/ Chronic Fatigue Syndrom (CFS)

17) 倦怠/慢性疲劳综合症

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5毫瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以耐受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射10-15分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

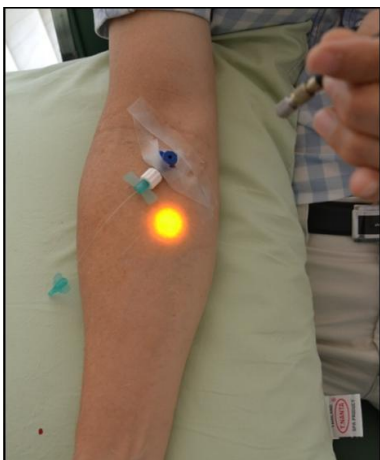
注意/建议/禁忌:

If necessary adjustment of medication.

如必要，调整给药

Recommendation: Combination of Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：金丝桃素（光敏剂）配合黄光。在第一个疗程前3天口服金丝桃素（每日3 * 600片）。从第4天开始，使用黄光和所有其他可用光进行静脉内光疗。应继续口服金丝桃素片。



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy / laserneedle acupuncture

局部光疗法/光针灸

Choice of lasers:

光选项:

Red, infrared. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red.

红光、红外光: 较深部位/针灸穴位适用红外光, 浅表/靠近表皮部位/针灸穴位适用红光

Execution:

执行:

Laserneedle acupuncture: Recommended acupuncture points: KG15, Pericard 6, LV 3, KI 3 and 6, SP 6, ST 36, HT 9, LI 4, LU 9

推荐光针灸的穴位: KG15、内关、LV 3、太溪、照海、三阴交、足三里、少冲、合谷、太渊

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括 10 个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至 15 或 20 或甚至更多的疗程。我们建议每周进行 2-3 个疗程。每日的疗程均可见效。

18) Calcaneal spur

18) 跟骨骨刺

Local laser therapy (external/ interstitial)

局部光疗法（体外/间质）

Appropriate lasers:

适用光:

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行:

Local irradiation of calcaneal spur.

局部照射跟骨骨刺。

Additional recommendation: Interstitial application of red, green and blue lasers.

此外，建议：红光、绿光和蓝光间质应用。

Laserneedle acupuncture: recommended acupuncture points: KI 7 and UB 60.

推荐光针灸的穴位：复溜和 UB 60。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

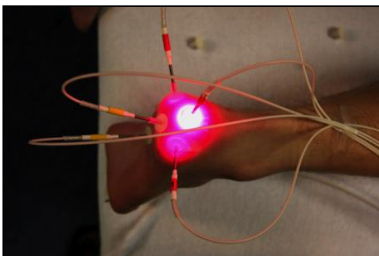
Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.



通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

19) Carpal canal syndrome

19) 腕管综合症

Local laser therapy (external/ interstitial)

局部光疗法（体外/间质）

Appropriate lasers:

适用光：

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行：

Local irradiation of carpal canal.

局部照射腕管。

Laserneedle acupuncture: recommended acupuncture points:

KS 4 - 6

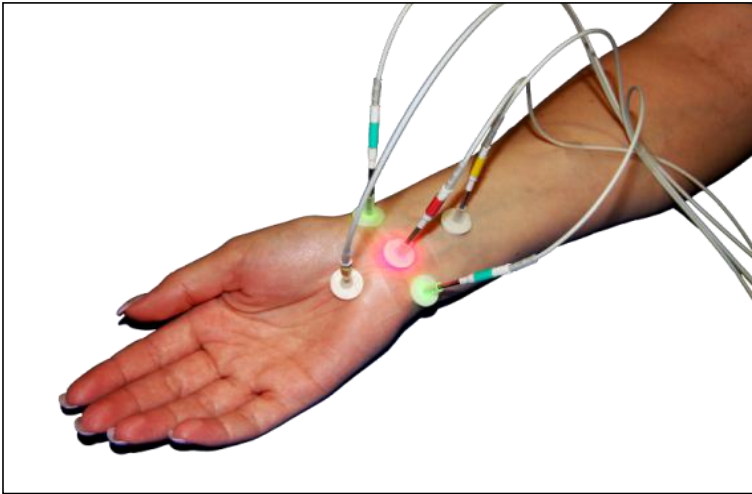
推荐光针灸的穴位：KS 4-6

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。



20) Depression

20) 抑郁症

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, especially yellow), 5 mW

所有可用波长（红光、绿光、蓝光、尤其是黄光）的组合，5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 %

power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以耐受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射10-15分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

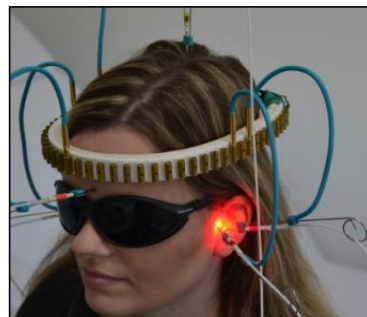
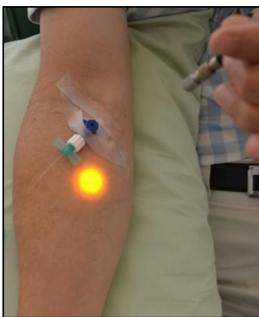
注意/建议/禁忌:

If necessary adjustment of medication.

如必要，调整给药

Recommendation: Combination of Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：金丝桃素（光敏剂）配合黄光。在第一个疗程前3天口服金丝桃素（每日3 * 600片）。从第4天开始，使用黄光和所有其他可用光进行静脉内光疗。应继续口服金丝桃素片。



Additive therapy recommendation:

更多的疗法推荐:

Local (transcranial) laser therapy/ laserneedle acupuncture:
局部（经颅）光疗/光针灸：

Appropriate lasers:

适用光：

Transcranial laser therapy: Infrared

经颅光疗：红外光

Acupuncture: Infrared for deep acupuncture points, red for superficial acupuncture points.

针灸：深针灸穴位适用红外光，浅表针灸穴位适用红光

Execution:

执行：

Transcranial laser therapy: It is recommended to irradiate from frontal position, both lateral sides and directly on Sinus Sagitalis to assure optimal light dissemination in the brain.

经颅光疗：建议从额部、两侧或直接在矢状窦部位上照射，以确保光在脑中进行最佳的传播。

Laserneedle acupuncture: recommended acupuncture points: governor vessel 20, yintang, LU 9, anti depression point, valium point, KG 15, pericard 6, LV 3, KI 3 and 6, ST 36, HT 9, LI 4, LU 9

推荐光针灸的穴位：督脉 20、印堂、太渊、抗抑郁穴位、安定穴位、KG 15、内关、LV 3、太溪、照海、足三里、少冲、合谷、太渊

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this well, laser power can be increased to 75 % in the second and 100 % in the third session.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

21) Detoxication

21) 排毒

Systemic (intravenous) laser therapy

周身（静脉）光治疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以耐受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射10-15分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication.

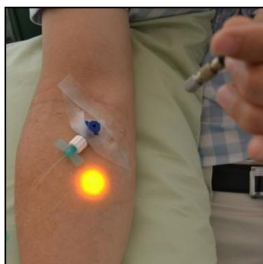
如必要，调整给药

Recommendation: Combination of Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：金丝桃素（光敏剂）配合黄光。在第一个疗程前3天口服金丝桃素（每日3*600片）。从第4天开始，使用黄光和其他所有可用光进行静脉内光疗。应继续口服金丝桃素片。

Remark: Intravenous laser therapy increases liver- and kidney functions and leads thus to increased excretion.

备注：静脉内光疗可增加肝肾脏功能，从而促进排泄。



22) Diabetes

22) 糖尿病

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

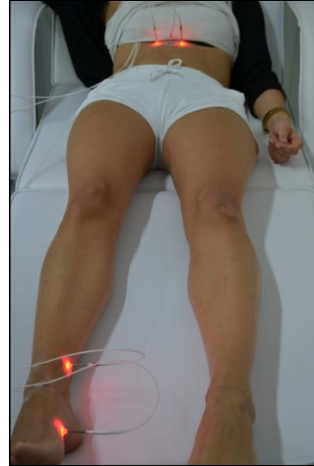
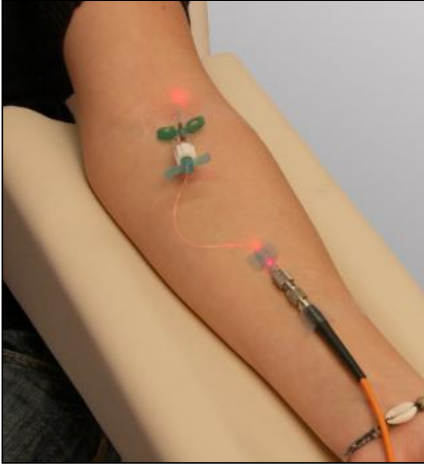
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication and insulin dosage.

如必要，调整给药和胰岛素剂量



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laserneedle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 较深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光。

Execution:

执行:

Local irradiation of the pancreas.

局部照射胰腺。

Additionally, acupuncture points: SP 4 and 6

此外，针灸穴位: 公孙和三阴交

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

23) Eczema

23) 湿疹

Local laser therapy with mouth shower

用口腔淋浴器局部光疗

Appropriate lasers:

适用光:

Equipment of the laser mouth shower (10.1.4) with all available lasers and subsequent irradiation of the skin.

光口腔淋浴器设备（第 10.1.4 节），配备所有可用光，随后照射皮肤。

Execution:

执行:

Protocol see dermatology (chapter 10.1.9): placement of all available lasers in the laser mouth shower (exception: red laser to treat acute inflammatory acne). Afterwards irradiation of target skin areas.

参见皮肤科治疗方案（第 10.1.9 节）：所有可用光放置在光口腔淋浴器中（例外：红光治疗急性炎症性痤疮）。然后照射靶向皮肤部位。



Treatment intensity

治疗强度

The lasers can be applied with an applicator (laser mouth shower, see chapter 10.1.4) that facilitates their simultaneous usage.

用涂药器（光口腔淋浴器，见第10章第10.1.4节）施加光，便于同时使用。

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续50%的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至75%，在第三个疗程中上调至100%。

Treatment time

治疗时间

In general, a treatment time of 10 minutes is recommended. If necessary, times can be extended. Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为10分钟。如必要，治疗时间可延长。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3个疗程足以。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

The combination with intravenous laser therapy is recommended to generate additional effects on the blood circulation of the skin and to accelerate regeneration processes.

建议配合静脉光疗，以对皮肤血液循环产生更好的疗效并加速再生。

To treat severe eczema, topical PDT (chapter 10.1.7) is recommended.

为了治疗严重的湿疹，建议使用局部光动力疗法（第 10.1.7 节）。

24) Erectile Dysfunction

24) 勃起功能障碍

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5毫瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

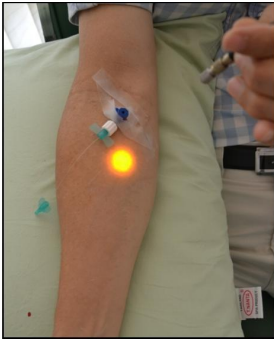
注意/建议/禁忌:

If necessary adjustment of medication.

如必要，调整给药

Recommendation: Combination of Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：金丝桃素（光敏剂）配合黄光。在第一个疗程前 3 天口服金丝桃素（每日 3 * 600 片）。从第 4 天开始，使用黄光和所有其他可用光进行静脉内光疗。应继续口服金丝桃素片。



25) Fat metabolism disorder

25) 脂肪代谢紊乱

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 mW 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波

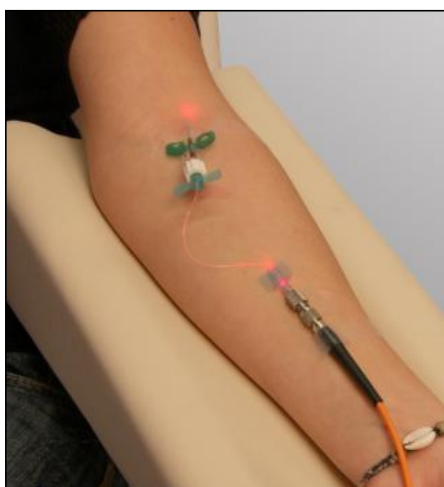
长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laserneedle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 较深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光。

Execution:**执行:**

Local irradiation of liver.

局部照射肝脏。

Laserneedle acupuncture, recommended acupuncture points: KG 15, LV 13 and 14, local points LV 8 and 3

推荐光针灸的穴位: KG 15、LV 13、LV 14、局部穴位 LV 8 和 LV3

Treatment time**治疗时间**

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常, 建议治疗时间为 20 分钟。对敏感性强的患者, 时间可以缩短 (例如, 儿童为 10 分钟)。但最终, 具体治疗时间取决于临床治疗医师的诊断。

26) Finger arthrosis**26) 手指关节病**

Local laser therapy/ laserneedle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared, green: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red and if appropriate green.

红光、红外光、绿光: 深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光和绿光。

Execution:

执行:

Local treatment of finger end joint, middle finger joint, other finger joints.

手指末端关节、中指关节、其他手指关节的局部治疗。

Laserneedle acupuncture, recommended acupuncture points: 3-heater 3 and 4, SI 3 and LI 4.

推荐光针灸的穴位: 3-发热穴位 3 和 4、后溪、合谷

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常, 建议治疗时间为 20 分钟。对敏感性强的患者, 时间可以缩短 (例如, 儿童为 10 分钟)。但最终, 具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.



通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

27) Fractures

27) 骨折

Local laser therapy (external/ interstitial)

局部光疗（体外/间质）

Appropriate lasers:

适用光:

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行:

Local irradiation of fracture.

骨折局部照射。

Additional recommendation: Interstitial application of red, green and blue lasers.

此外，建议：红光、绿光和蓝光的间质应用。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

The combination with intravenous laser therapy is also recommended to achieve further pain therapeutic effects and to accelerate regeneration processes (protocol see chapter 10.1.6).

建议配合静脉光疗，以达到更好的疼痛疗效并加速再生过程（见第 10 章 10.1.6 节方案）。



28) Gastro-intestinal diseases

28) 胃肠疾病

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

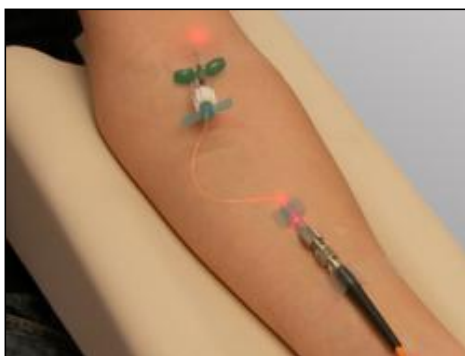
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 较深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光。 .

Execution:

执行:

Local irradiation of gastrointestinal tract

局部照射胃肠道。 .

Laser needle acupuncture, recommended acupuncture points: LV 13, Ren Mai 15, Du Mai 4, ST 36, SP 15

推荐光针灸的穴位: LV 13、任脉 15、督脉 4、足三里、大横

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

29) Gingivitis

29) 牙龈炎

Local laser therapy (intra- oral) with mouth shower

用口腔淋浴器局部光疗（口腔内）

Appropriate lasers:**适用光:**

Red, infrared, green, blue.

红光、红外光、绿光、蓝光

Execution:**执行:**

Equipment of the laser mouth shower (10.1.4) with all available lasers and subsequent irradiation of the skin.

光口腔淋浴器（第 10.1.4 节）设备配备所有可用光，随后照射皮肤。

Treatment intensity**治疗强度**

The lasers can be applied with an applicator (laser mouth shower, see chapter 10.1.4) that facilitates their simultaneous usage.

用涂药器（光口腔淋浴器，见第10章第10.1.4节）施加光，便于同时使用。

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment series**疗程**

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

Treatment time

治疗时间

In general, a treatment time of 10 minutes is recommended. If necessary, times can be extended. Ultimately, the decision has to be made by the therapist.

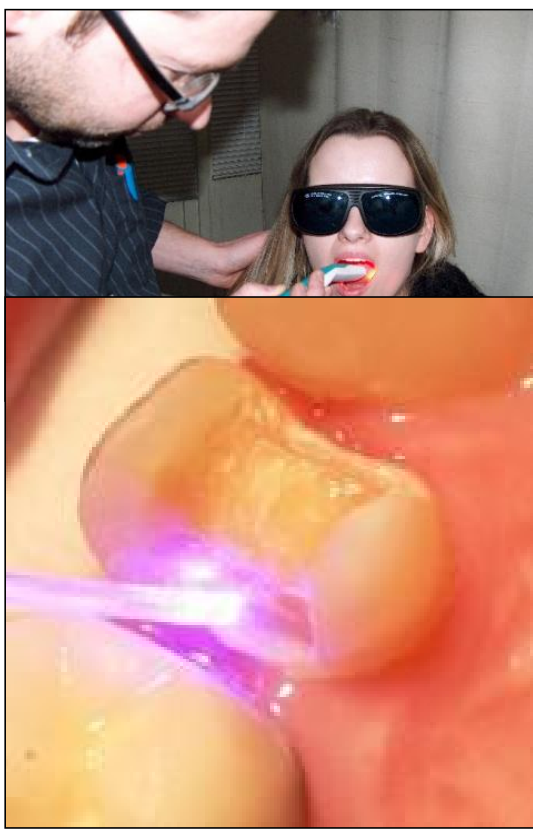
通常，建议治疗时间为 10 分钟。如必要，治疗时间可延长。但最终，具体治疗时间取决于临床治疗医师的诊断。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

The combination with intravenous laser therapy is recommended to accelerate regeneration processes.

建议配合静脉光疗，以加速再生过程。



30) Gonarthrosis

30) 膝关节病

Local laser therapy (external/ intra- articular)
局部光疗法（体外/关节内）

Appropriate lasers:

适用光:

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared. Deep areas/ acupuncture points infrared,
superficial/ near to the surface areas / acupuncture points red.

体外：红光、红外光。深部位/针灸穴位适用红外光，浅表/靠近表皮
部位/针灸穴位适用红光

Execution:

执行:

Local irradiation of patella pols, one laser needle on each outer joint space. To treat medial arthritis, several laser needles can be applied to the joint space next to each other while another one should be applied to the hollow of the knee.

局部照射膝盖骨，每个外关节穴位一支光针。治疗内侧膝关节炎，每个关节穴位用数支彼此相邻的光针，此外应该用于膝盖骨凹窝。

Additional recommendation: intra- articular irradiation with red, green and blue.

建议：红光、绿光和蓝光进行关节内照射。

Laserneedle acupuncture: recommended acupuncture points: GB 34, ST 36, MP 6, 9 und 10, LV 8.

推荐光针灸的穴位：阳陵泉、足三里、MP 6、9 和 10、LV 8。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。



31) Hay fever

31) 花粉症

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

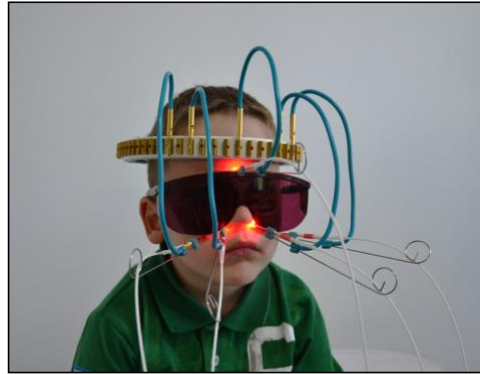
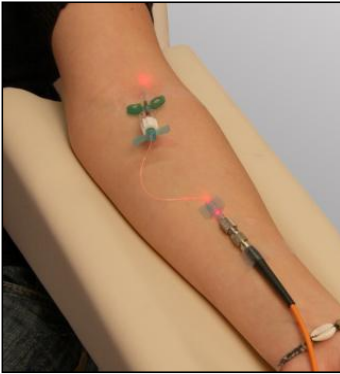
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 较深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光。.

Execution:

执行:

Local irradiation of sinuses and nose.

局部照射鼻窦和鼻子。

Laser needle acupuncture, recommended acupuncture points: LI 20 bilatera, yintang, ST 5 bilateral, allergy point.

推荐光针灸的穴位: 迎香双侧、印堂、大迎双侧、过敏部位。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

32) Headache and migraine

32) 头痛和偏头痛

Systemic (intravenous) laser therapy 周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

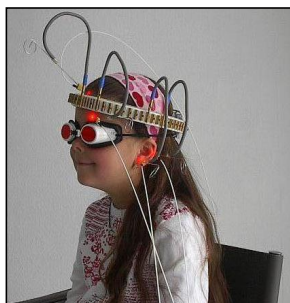
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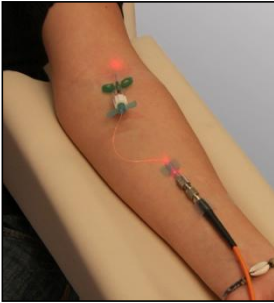
Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication.

如必要，调整给药





Additive therapy recommendation:
更多的疗法推荐：

Local laser therapy/ laser needle acupuncture:
局部光疗法/光针灸：

Appropriate lasers:

适用光：

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光：较深部位/针灸穴位适用红外光，浅表部位/针灸穴位适用红光。 .

Execution:

执行：

Local laser needle acupuncture with head adapter: Yingtang, lateral frontal points, point at middle of skull, shenmen point at the ear (infrared laser at head, red and green at ear).

带头部适配器的局部光针灸：印堂、侧面额部穴位、颅骨中部穴位、耳部神门穴位（头部红外光、耳部红光和绿光）。

Laser needle acupuncture, recommended acupuncture points: LI 4, GB 14, 20 and 34, ST 36, UB 10. Also “battlefield” points at the ear (see pain therapy).

推荐光针灸的穴位：合谷、阳白、 风池、阳陵泉、足三里、天柱。
另外还有耳部“战场”穴位（见疼痛疗法）。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10

minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

33) Hearing loss

33) 听力损失

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5毫瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

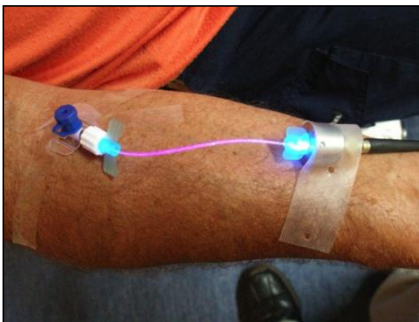
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy

局部光疗法

Appropriate lasers:

适用光:

Red

外光

Execution:

执行:

Local irradiation of ear canal with red laser.

用红光进行耳道局部照射。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

34) Heart diseases / heart failure

34) 心脏病/心力衰竭

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added

in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

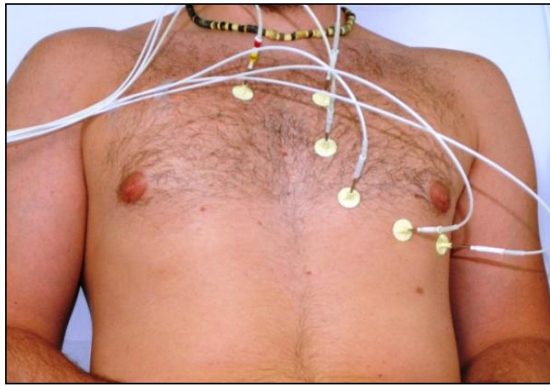
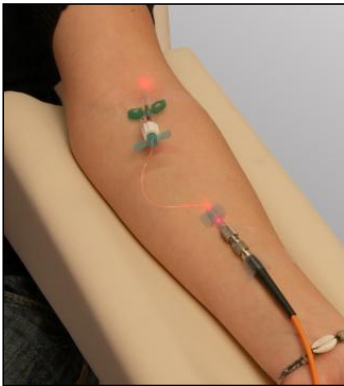
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Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Infrared

红外光

Execution:**执行:**

Local irradiation of the heart (EKG points)

局部照射心脏（心电图点）

Treatment time**治疗时间**

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series**疗程**

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

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Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

35) Herpes

35) 疱疹

Local laser therapy with mouth shower

用口腔淋浴器局部光疗

Execution:

执行:

Protocol see dermatology (chapter 10.1.9): placement of all available lasers in the laser mouth shower (exception: red laser to treat acute inflammatory acne). Afterwards irradiation of target skin areas.

参见皮肤科治疗方案（第 10.1.9 节）：所有可用光放置在光口腔淋浴器中（例外：红光治疗急性炎症性痤疮）。然后照射靶向皮肤部位。



Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser

power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

Treatment time

治疗时间

In general, a treatment time of 10 minutes is recommended. If necessary, times can be extended. Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 10 分钟。如必要，治疗时间可延长。但最终，具体治疗时间取决于临床治疗医师的诊断。.

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

The combination with intravenous laser therapy is recommended to generate additional effects on the blood circulation of the skin and to accelerate regeneration processes.

建议配合静脉光疗，以对皮肤血液循环产生更好的疗效并加速再生过程。

36) Herniated disc

36) 椎间盘突出

Local laser therapy (external/ interstitial)

局部光疗法（体外/间质）

Choice of lasers:

光选项：

Interstitial: Red, blue, green

间质：红光、蓝光、绿光。

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光。

Execution:

执行：

Interstitial application with red, green and blue.

间质应用红光、绿光和蓝光。

Laserneedle acupuncture: Local irradiation of pain-/ trigger points with red and infrared laserneedles. Painful acantha can be treated directly as well.

光针灸：用红光和红外光针局部照射刺痛点/阿是穴。也可以直接治疗疼痛部位。

Recommended acupuncture points: Local and loco- regional points at governing and bladder meridian, as far points LI 4, SI 3, 3-heater-5, UB 40 and 60, KI 6.

推荐的穴位：督脉和膀胱经络处的局部和局部区域穴位，如，远穴位合谷、后溪、3-发热穴位-5、UB 40、UB 60、照海。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

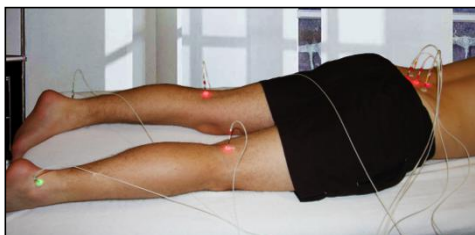
通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括 10 个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至 15 或 20 或甚至更多的疗程。我们建议每周进行 2-3 个疗程。每日的疗程均可见效。



37) High blood pressure

37) 高血压

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

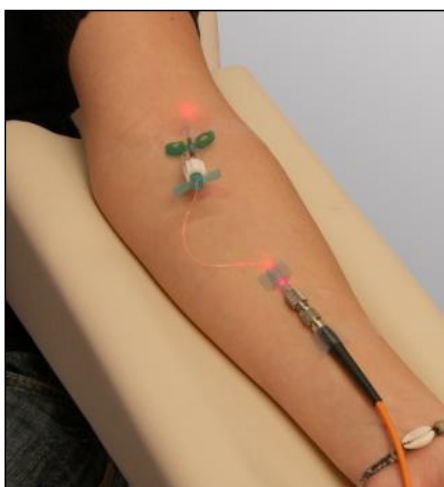
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy / laser needle acupuncture

局部光疗法/光针灸:

Choice of lasers:

光选项:

Red, infrared: Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red.

红光、红外光。深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光。

Execution:**执行:**

Laserneedle acupuncture: Recommended acupuncture points: KG15, Pericard 6, LV 3, KI 3 and 6, SP 6, ST 36, HT 9, LI 4, LU 9

推荐光针灸的穴位: KG15、内关、LV 3、太溪、照海、三阴交、足三里、少冲、合谷、太渊

Treatment time**治疗时间**

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常, 建议治疗时间为 20 分钟。对敏感性强的患者, 时间可以缩短 (例如, 儿童为 10 分钟)。但最终, 具体治疗时间取决于临床治疗医师的诊断。

Treatment series**疗程**

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括 10 个疗程。特殊病例中 (例如, 长期或慢性病疗程), 可以延长至 15 或 20 或甚至更多的疗程。我们建议每周进行 2-3 个疗程。每日的疗程均可见效。

38) Hip joint arthrosis (Coxarthrose)

38) 髋关节炎

Local laser therapy (external/ intra- articular)

局部光疗法（体外/关节内）

Appropriate lasers:

适用光:

Intra- articular: Red, blue, green

关节内：红光、蓝光、绿光

External: Red, infrared. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red.

体外：红光、红外光。深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光。

Execution:

执行:

Local irradiation of pain points in area of M. Gluteus and in area greater trochanter and of lateral thigh to reduce muscle spasms.

在 M. Gluteus 部位和大转子部位以及大腿外侧部位局部照射刺痛点以缓解肌肉痉挛。

Additional recommendation: intra- articular application with red, green and blue lasers.

此外建议：用红光、绿光和蓝光进行关节内照射。

Laserneedle acupuncture: recommended acupuncture points: ST 36, UB 40 and 60

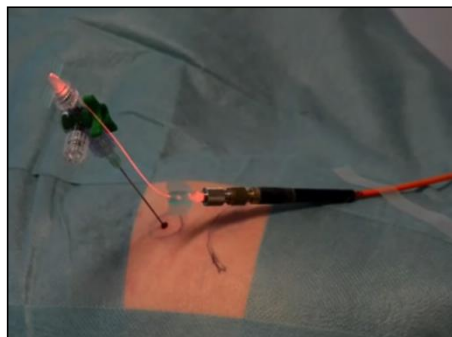
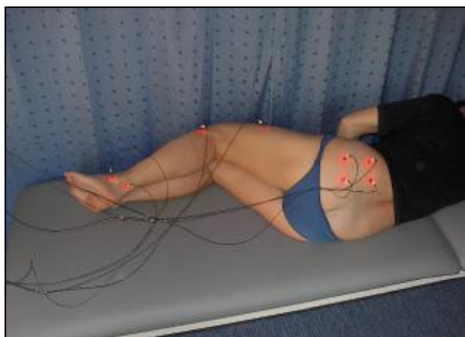
推荐光针灸的穴位：足三里、UB 40 和 60

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shortened (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。



39) Hormonial adjustment

39) 激素调节

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

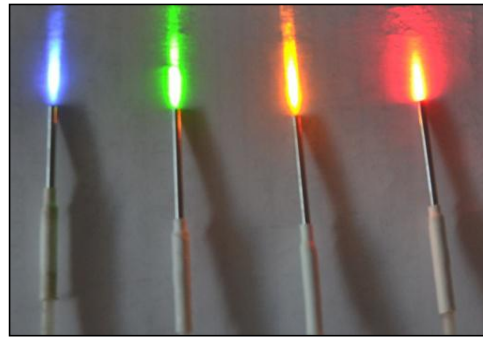
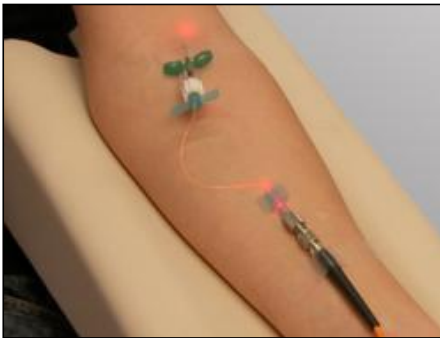
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

If necessary adjustment of medication

如必要，调整给药



40) Infertility

40) 不孕症

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

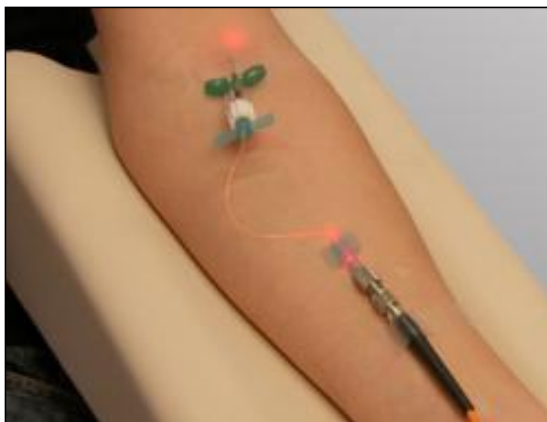
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光。

Execution:

执行:

Local irradiation of lesser pelvis.

局部照射小骨盆。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常, 建议治疗时间为 20 分钟。对敏感性强的患者, 时间可以缩短 (例如, 儿童为 10 分钟)。但最终, 具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

41) Influenza

41) 流感

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5毫瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

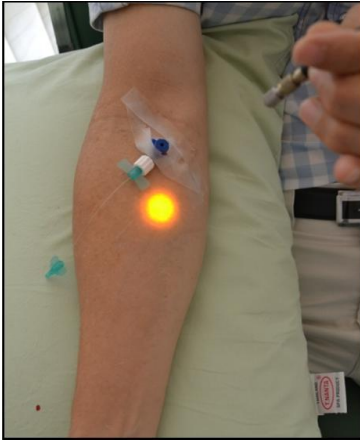
注意/建议/禁忌:

If necessary adjustment of medication.

如必要，调整给药

Recommendation: Photodynamic therapy with Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：配合金丝桃素（光敏剂）和黄光的光动力疗法。在第一个疗程前 3 天口服金丝桃素（每日 3 * 600 片）。从第 4 天开始，使用黄光和所有其他可用光进行静脉内光疗。应继续口服金丝桃素片。



Additive therapy recommendation:
更多的疗法推荐:

Local laser therapy/ laserneedle acupuncture:
局部光疗法/光针灸:

Appropriate lasers:
适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光。

Execution:
执行:

Laserneedle acupuncture, recommended acupuncture points: local points at nose and throat, LU 5, 7 and 10, LI 4.

推荐光针灸的穴位: 鼻子和咽喉的局部穴位, 足泽、列缺、鱼际、合谷。

Treatment time
治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括 10 个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至 15 或 20 或甚至更多的疗程。我们建议每周进行 2-3 个疗程。每日的疗程均可见效。

42) Insomnia

42) 失眠症

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

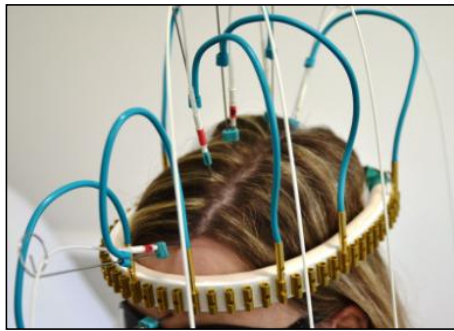
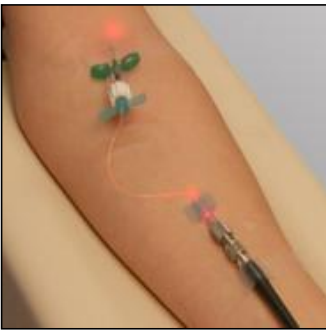
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:
更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:
局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光。

Execution:

执行:

Laser needle acupuncture, recommended acupuncture points:
Governor meridian, yintang, LI 4, LV 3, HT 7, KI 6

推荐光针灸的穴位: 督脉、印堂、合谷、LV 3、神门、照海

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常, 建议治疗时间为 20 分钟。对敏感性强的患者, 时间可以缩短 (例如, 儿童为 10 分钟)。但最终, 具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

Local (transcranial) laser therapy

局部（经颅）光治疗

Appropriate lasers: Infrared

适用光：红外光

Execution:

执行：

It is recommended to irradiate from frontal position, both lateral sides and directly on Sinus Sagitalis to assure optimal light dissemination in the brain.

建议从额部、两侧或直接在矢状窦部位上照射，以确保光在脑中进行最佳的传播。

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this well, laser power can be increased to 75 % in the second and 100 % in the third session.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第

三个疗程中上调至 100%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

43) Ligament rupture

43) 韧带断裂

Local laser therapy (external/ interstitial)

局部光疗（体外/间质）

Choice of lasers:

光选项：

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行：

Local interstitial irradiation of affected ligaments with red, green and blue laser. Laserneedle acupuncture: recommended acupuncture points: KI 7 and UB 60.

用红光、绿光和蓝光局部间质照射损伤韧带。推荐光针灸的穴位：复溜和 UB 60。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括 10 个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至 15 或 20 或甚至更多的疗程。我们建议每周进行 2-3 个疗程。每日的疗程均可见效。

Remarks/ Recommendations/ Contraindications:

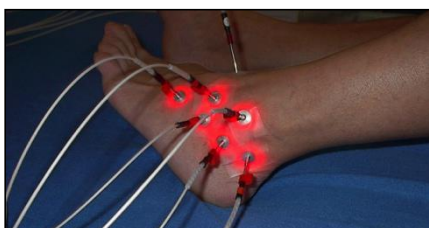
注意/建议/禁忌：

To treat acute inflammations green and blue lasers (interstitially) are recommended.

建议用绿光和蓝光（间质）治疗急性炎症。

Red and infrared lasers should only be used if acute inflammations have been eased.

如果急性炎症已缓解，只能施用红光和红外光。



44) Liver diseases

44) 肝病

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added

in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

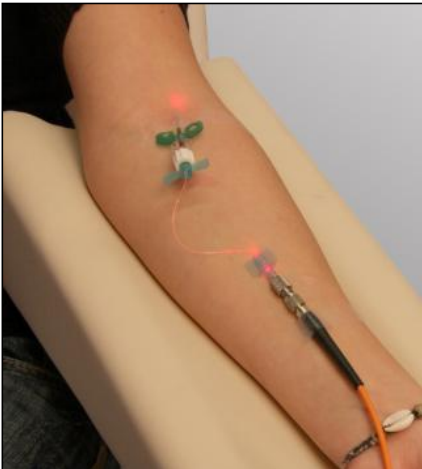
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光：深部位/针灸穴位用红外光，浅表部位/针灸穴位用红

光。

Execution:

执行

Local irradiation of liver (recommendation: interstitial).

局部肝脏照射（推荐：间质）。

Laser needle acupuncture, recommended acupuncture points:

Conception vessel 15, LV 13 and 14, LV 3 and 8.

推荐光针灸的穴位：任脉 15、LV 13、LV 14、LV 3 和 LV 8。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

45) Low immunity

45) 免疫力低下

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

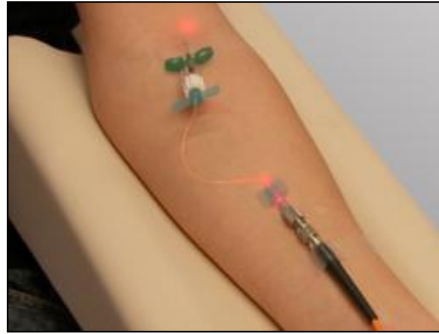
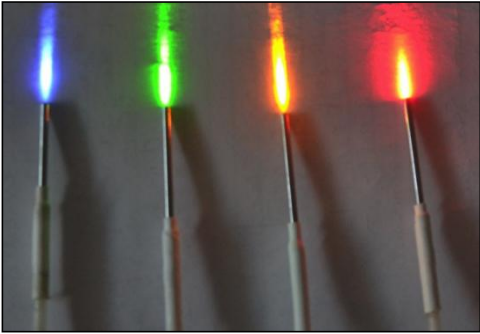
10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication



如必要，调整给药

46) Lyme disease

46) 莱姆病

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are
conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

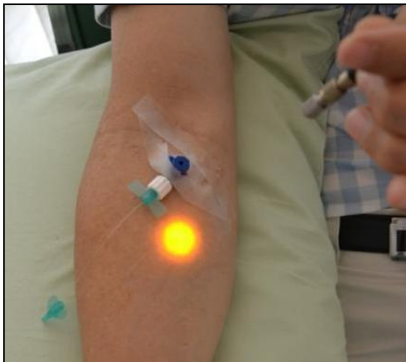
注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药

Recommendation: Photodynamic therapy with Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：配合金丝桃素（光敏剂）和黄光的光动力疗法。在第一个疗程前 3 天口服金丝桃素（每日 3 * 600 片）。从第 4 天开始，使用黄光和所有其他可用光进行静脉内光疗。应继续口服金丝桃素片。



47) Macular degeneration

47) 黄斑变性

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

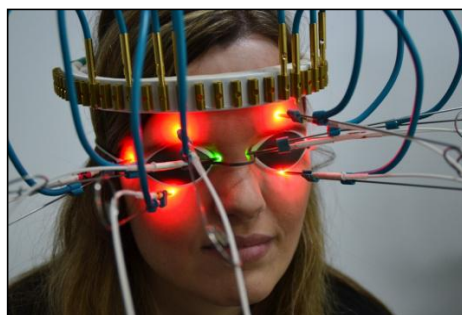
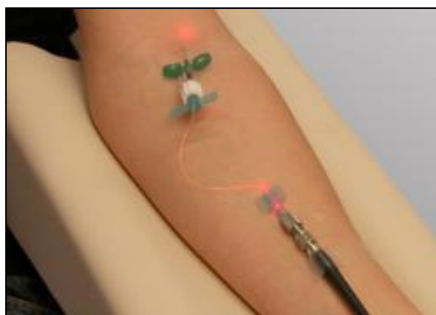
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光。

Execution:

执行:

Local irradiation around the eyes.

局部照射眼部周围。

Laser needle acupuncture, recommended acupuncture points:

Extra point bilateral, taiyang bilateral, UB 1 bilateral, ST 1 bilateral

推荐光针灸的穴位: 奇穴双侧、太阳穴双侧、UB 1 双侧、承泣双侧

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

48) Mental and psychological diseases (anxiety disorder, psychosis)

48) 精神和心理疾病（焦虑症、精神病）

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

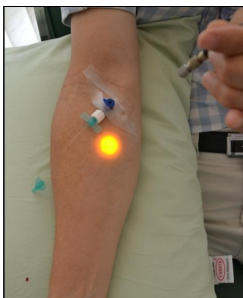
注意/建议/禁忌:

If necessary adjustment of medication.

如必要，调整给药

Recommendation: Combination of Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：金丝桃素（光敏剂）配合黄光。在第一个疗程前 3 天口服金丝桃素（每日 3 * 600 片）。从第 4 天开始，使用黄光和所有其他可用光进行静脉内光疗。应继续口服金丝桃素片。



Additive therapy recommendation:
更多的疗法推荐:

Local (transcranial) laser therapy / laser needle acupuncture
局部（经颅）光疗/光针灸

Appropriate lasers:

适用光:

Transcranial laser therapy: Infrared

经颅光疗: 红外光

Acupuncture: Infrared for deep acupuncture points, red for superficial acupuncture points.

针灸: 红外光用于较深的穴位, 红光用于浅表穴位。

Execution:

执行:

Transcranial laser therapy: It is recommended to irradiate from frontal position, both lateral sides and directly on Sinus Sagitalis to assure an optimal light dissemination in the brain.

经颅光疗: 建议从额部、两侧或直接在矢状窦部位上照射, 以确保光在脑中进行最佳的传播。

Laser acupuncture points: Governor vessel 20, anti depression point, valium point, omega 2, yintang

光针灸穴位: 督脉 20, 抗抑郁穴位、安定穴位、欧米加穴位 2、印堂

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this well, laser power can be increased to 75 % in the second and 100 % in the third session.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

49) Multiple sclerosis

49) 多发性硬化

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

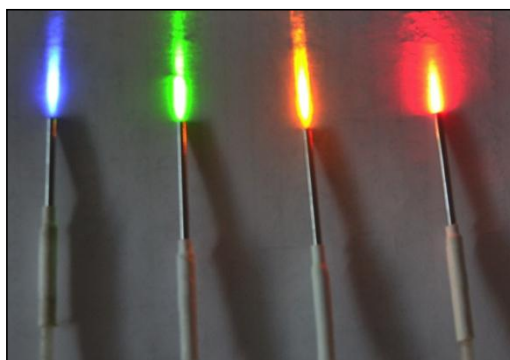
注意/建议/禁忌:

If necessary adjustment of medication.

如必要，调整给药

Recommendation: Combination of Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：金丝桃素（光敏剂）配合黄光。在第一个疗程前3天口服金丝桃素（每日3*600片）。从第4天开始，使用黄光和所有其他可用光进行静脉内光疗。应继续口服金丝桃素片。



Additive therapy recommendation:

更多的疗法推荐：

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸：

Appropriate lasers:

适用光：

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光：深部位/针灸穴位适用红外光，浅表部位/针灸穴位适用红光。

Execution:

执行：

Local irradiation of musculoskeletal system to improve sensorimotor abilities.

局部照射肌骨系统以改善感觉运动能力。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

50) Muscular injuries (rupture of a muscle fiber, strains)

50) 肌肉损伤（肌纤维断裂、劳损）

Local laser therapy (external/ interstitial)

局部光疗（体外/间质）

Appropriate lasers:

适用光:

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行:

Local treatment of injured muscle tissue.

局部照射受损肌肉组织。

Interstitial treatment with red, green and blue laser.

用红光、绿光和蓝光进行间质治疗。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment intensity (in W/mW)

治疗强度（瓦/兆瓦）

Red and infrared laser needles irradiate treatment points with 90 – 100 mW, green laser needles with 40 – 50 mW and blue laser needles with 50 – 60 mW. Since the laser beam is coupled into an optic fibre with a calibre of 0,4 mm the laser beam is bunched and focussed. Thus, the intensity per area is increased.

用 90-100mW 红光和红外光针照射，40-50mW 绿光针照射，50-60mW 蓝光针照射治疗穴位。由于光束耦合到口径为 0.4mm 的光纤中，光束聚束并聚焦。因此，单位面积的强度增加。

With this technology, the intensity of red and infrared laser needles can be increased to up to 50W/ cm². Thereby, a much higher penetration depth is achieved and reflexion losses on the surface of the skin are compensated.

利用这项技术，红光和红外光针的强度可以提高到 50 W/cm²。因此，实现了更高的穿刺深度并且补偿了皮肤表面上的反射损失。



Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

To treat acute inflammations green and blue lasers (interstitially) are recommended.

建议用绿光和蓝光（间质）治疗急性炎症。

Red and infrared lasers should only be used if acute inflammations have been eased.

如果急性炎症已缓解，只能施用红光和红外光。

51) Nerve lesions

51) 神经损伤

Local laser therapy (external/ interstitial)

局部光疗（体外/间质）

Appropriate lasers:

适用光：

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行：

Local irradiation of nerve lesions.

神经损伤的局部照射

Additional recommendation: interstitial treatment with red, green and blue.

此外推荐：用红光、蓝光和绿光进行间质治疗。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.



通常，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

52) Neurodermatitis

52) 神经性皮炎

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

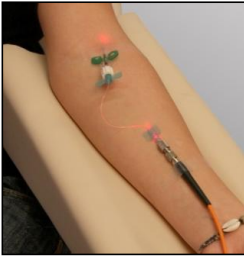
Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药





Additive therapy recommendation:
更多的疗法推荐:

Local laser therapy with mouth shower
用口腔淋浴器进行局部光治疗

Protocol see dermatology (chapter 10.1.9): placement of all available lasers in the laser mouth shower. Afterwards irradiation of target skin areas.

参见皮肤科治疗方案（第 10.1.9 节）：所有可用光放置在光口腔淋浴器中。然后照射靶向皮肤部位。

Treatment intensity
治疗强度

The lasers can be applied with an applicator (laser mouth shower, see chapter 10.1.4) that facilitates their simultaneous usage.
用涂药器（光口腔淋浴器，见第10章第10.1.4节）施加光，便于同时使用。

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

Treatment time

治疗时间

In general, a treatment time of 10 minutes is recommended. If necessary, times can be extended. Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 10 分钟。如必要，可以延长治疗时间，但最终，具体治疗时间取决于临床治疗医师的诊断。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

Red lasers should not be used to treat acute inflammatory afflictions. If inflammations have been eased, red lasers can be applied as well.

红光不得用于治疗急性炎症。如果急性炎症已缓解，可以施用红光。

53) Osteoporosis

53) 骨质疏松症

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

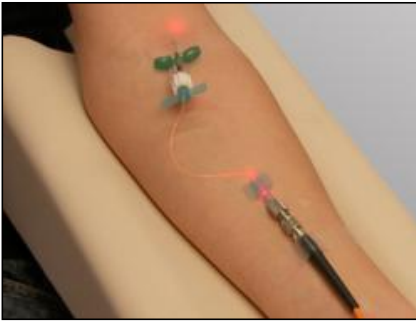
Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药





Additive therapy recommendation:
更多的疗法推荐:

Local laser therapy/ laser needle

acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光。

Execution:

执行:

Local irradiation of affected areas (e.g. lumbar vertebra L1 – L4)

局部照射受影响部位 (例如腰椎 1-4)

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常, 建议治疗时间为 20 分钟。对敏感性强的患者, 时间可以缩短 (例如, 儿童为 10 分钟)。但最终, 具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

54) Pain therapy

54) 疼痛治疗

Local laser therapy (external/ interstitial)

局部光治疗（体外/间质）

Appropriate lasers:

适用光:

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:**执行:**

Local irradiation of pain areas.

局部照射疼痛部位。

Interstitial irradiation with red, blue and green.

间质照射用红光、蓝光和绿光。

Laserneedle acupuncture: „Battlefield Acupuncture“ by Dr. Richard Niemtzow (ear programme with red and green): Omega 2, Shenmen, Gyrus Cinguli, Thalamus from front (anterior).

光针灸: Richard Niemtzow 博士研发的“战场针灸”(红光和绿光的耳部治疗方案): 欧米加穴位 2、神门、扣带回、丘脑前部。

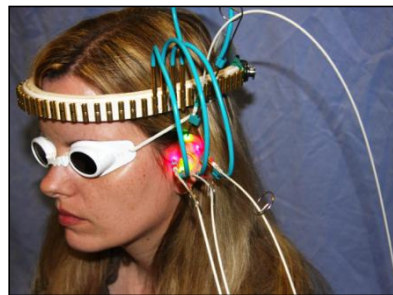
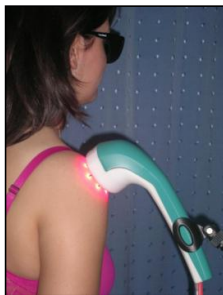
Treatment time**治疗时间**

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常, 建议治疗时间为 20 分钟。对敏感性强的病例, 时间可以缩短 (例如, 儿童为 10 分钟)。最终, 具体治疗时间取决于临床治疗医师的诊断。

Remarks/ Recommendations/ Contraindications:**注意/建议/禁忌:**

The combination with intravenous laser therapy is also recommended to achieve further pain therapeutic effects and to accelerate regeneration processes (protocol see chapter 10.1.6).



建议与静脉光疗法相结合，以达到更好的疼痛疗效并加速再生过程（见第 10 章 10.1.6 节方案）。

55) Parkinson

55) 帕金森病

Local (transcranial) laser therapy

局部（经颅）光疗

Appropriate lasers:

适用光:

Transcranial laser therapy: Infrared

经颅光光疗：红外光

Acupuncture: Infrared for deep acupuncture points, red for superficial acupuncture points.

针灸：红外光用于较深的穴位，红光用于浅表穴位。

Execution:

执行:

Transcranial laser therapy: It is recommended to irradiate from frontal position, both lateral sides and directly on Sinus Sagitalis to assure optimal light dissemination in the brain.

经颅光疗：建议从额部、两侧或直接在矢状窦部位上照射，以确保光在脑中进行最佳的传播。

Laser needle acupuncture: recommended acupuncture points:

Yintang, Governor Vessel 19/ 20/ 21/ 22/ 23

光针灸：推荐穴位：印堂、督脉 19/ 20/ 21/ 22/ 23

Local treatment to improve spasticity: Laser needle acupuncture, recommended acupuncture points: LI 4 bilateral, SI 3, 3-heater 5

局部治疗缓解痉挛：光针灸，推荐穴位：合谷双侧、后溪、3-发热穴位 5

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this well, laser power can be increased to 75 % in the second and 100 % in the third session.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。最终，具体治疗时间取决于临床治疗医师的诊断。

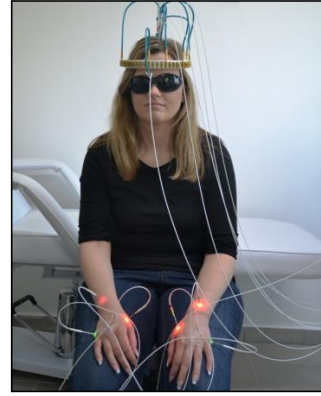
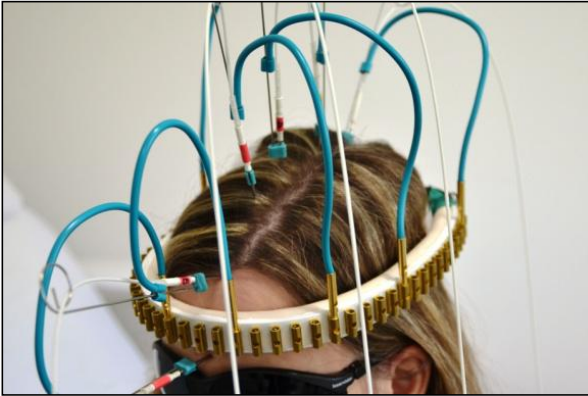
Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

The combination with intravenous laser therapy is recommended to generate additional regenerative effects and to enhance the effects of the transcranial laser therapy.

建议配合静脉光疗，以产生更大的再生疗效，提高经颅光疗的效

果。



56) Performance improvement sport

56) 功能改善运动

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

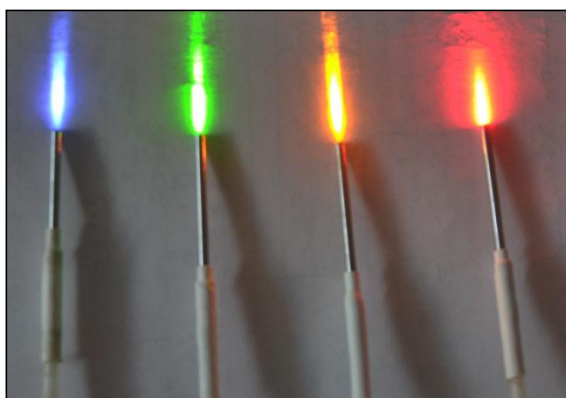
10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

Combination with vitamin supplements or other products possible.
配合维生素补充剂或其他产品应用。



Additive therapy recommendation:
更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:
局部光疗法/光针灸:

Appropriate lasers:
适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光。

Execution:
执行:

Laser needle acupuncture, recommended acupuncture points: ST 36

推荐光针灸的穴位: 足三里

Treatment time
治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10

minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

57) Periodontitis

57) 牙周炎

Local laser therapy (intra-oral)

局部光疗（口腔内）

Appropriate lasers: Red, infrared, green and blue.

适用光：红光、红外光、蓝光、绿光

Execution:**执行:**

Intra- oral laser treatment with laser mouth shower and all available lasers.

用配备所有可用光的光口腔淋浴器进行口腔内光疗。

Treatment intensity**治疗强度**

The lasers can be applied with an applicator (laser mouth shower, see chapter 10.1.4) that facilitates their simultaneous usage.

用涂药器（光口腔淋浴器，见第10章第10.1.4节）施加光，便于同时使用。

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment series**疗程**

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

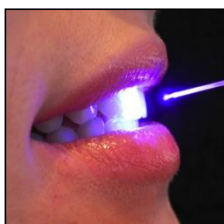
通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

Treatment time

治疗时间

In general, a treatment time of 10 minutes is recommended. If necessary, times can be extended. Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。如必要，可以延长治疗时间，但最终，具体治疗时间取决于临床治疗医师的诊断。



58) Pneumonia and Bronchitis

58) 肺炎和支气管炎

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are

available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

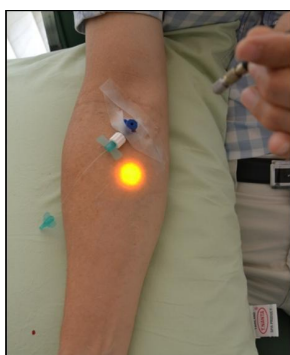
注意/建议/禁忌:

If necessary adjustment of medication.

如必要，调整给药

Recommendation: Combination of Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：金丝桃素（光敏剂）配合黄光。在第一个疗程前 3 天口服金丝桃素（每日 3 * 600 片）。从第 4 天开始，使用黄光 and 所有其他可用光进行静脉内光疗。应继续口服金丝桃素片。



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光：深部位/针灸穴位适用红外光，浅表部位/针灸穴位适用红光。

Execution:

执行:

Local irradiation ventral over main bronchus with red and infrared laser needles.

用红光和红外光针局部照射腹侧主支气管。

Laser needle acupuncture, recommended acupuncture points: LI 4 and 11, 3-heater 5, LU 7 and 9.

推荐光针灸的穴位：合谷、曲池、3-发热穴位-5、列缺和太渊。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

59) Polyneuropathy

59) 多发性神经病

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计10个疗程，每周3个疗程。进一步建议仅以一个波长（通常为红光）开始，持续20分钟，用50%功率。如果患者可以耐

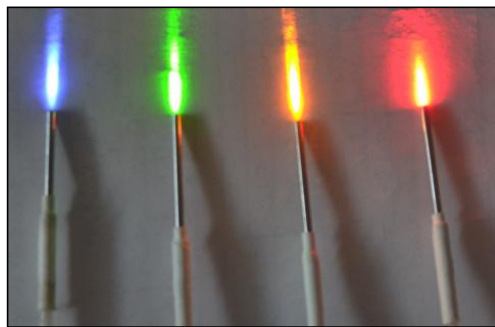
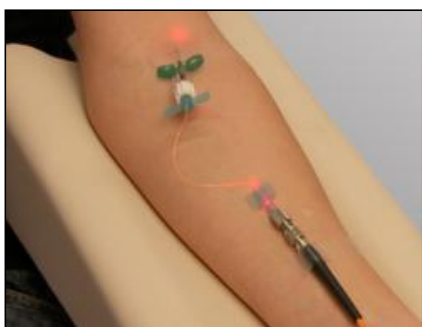
受治疗，则第二个疗程功率增加至100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射10-15分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光：深部位/针灸穴位适用红外光，浅表部位/针灸穴位适用红光。

Execution:

执行:

Local irradiation of affected areas.

局部照射受损伤部位。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

60) Psoriasis

60) 牛皮癣

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

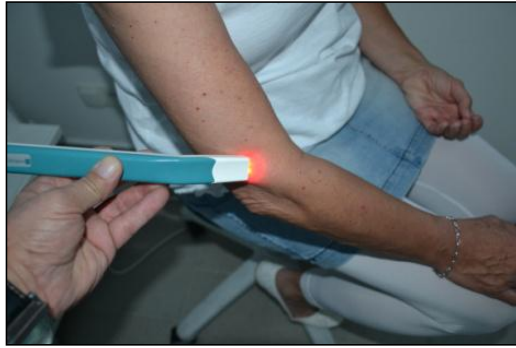
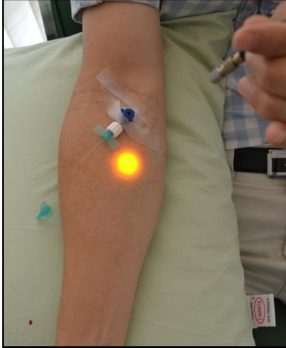
Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

Recommendation: Combination of Hypericin (Photosensitizer) and yellow laser. 3 days prior to the first session oral intake of Hypericin (daily 3* Laif 600 tablets), from day 4 on intravenous

laser therapy with yellow laser and all other available lasers. Oral intake of Hypericin tablets should be continued.

建议：金丝桃素（光敏剂）配合黄光。在第一个疗程前 3 天口服金丝桃素（每日 3 * 600 片）。从第 4 天开始，使用黄光和所有其他可用光进行静脉内光疗。应继续口服金丝桃素片。



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy with mouth shower

用口腔淋浴器进行局部光治疗

Execution:

执行:

Protocol see dermatology (chapter 10.1.9): placement of all available lasers in the laser mouth shower (exception: red laser to treat acute inflammatory acne). Afterwards irradiation of target skin areas.

参见皮肤科治疗方案（第 10.1.9 节）：所有可用光放置在光口腔淋浴器中（例外：红光治疗急性炎症性痤疮）。然后照射靶向皮肤部位。

Treatment intensity

治疗强度

The lasers can be applied with an applicator (laser mouth shower, see chapter 10.1.4) that facilitates their simultaneous usage.

用涂药器（光口腔淋浴器，见第10章第10.1.4节）施加光，便于同时使用。

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

Treatment time

治疗时间

In general, a treatment time of 10 minutes is recommended. If necessary, times can be extended. Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。可以延长治疗时间，但最终，具体治疗时间取决于临床治疗医师的诊断。

Remarks:

备注:

To treat sever psoriasis topical PDT (chapter 10.1.7) is recommended.

建议使用局部光动力疗法治疗严重牛皮癣（第 10.1.7 节）。

61) Renal insufficiency / Chronical kidney diseases

61) 肾功能不全/慢性肾病

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

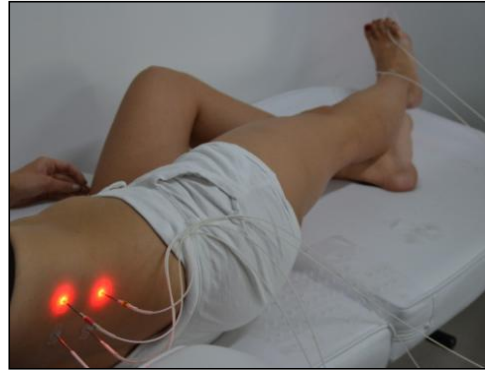
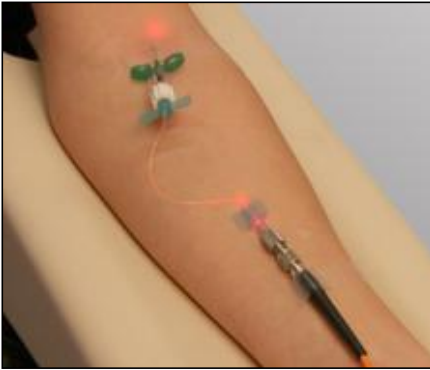
10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication



如必要，调整给药

Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 较深部位/穴位红外光, 浅表部位/穴位红光。

Execution:

执行:

Local irradiation of kidney.

局部照射肾脏。

Laser needle acupuncture, recommended acupuncture points: KI 1 and KI 3

推荐光针灸的穴位: 涌泉和太溪

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

62) Rheumatism & Fibromyalgia

62) 风湿病和纤维肌痛

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

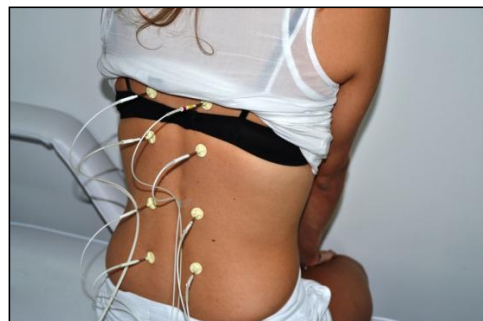
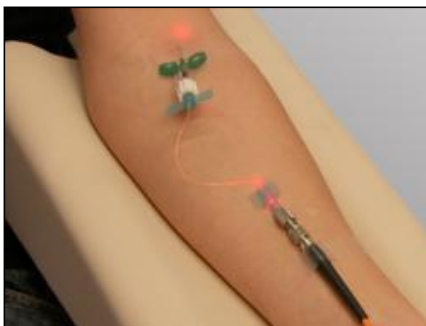
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光: 深部位/针灸穴位适用红外光, 浅表部位/针灸穴位适用红光。

Execution:

执行:

Local irradiation of affected areas.

局部照射受影响部位。

Laser needle acupuncture, recommended acupuncture points: UB 15, 18, 23, 26, 40, 60 (bilateral)

推荐光针灸的穴位: UB 15、UB 18、UB 23、UB 26、UB 40、UB 60 (双侧)

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常, 建议治疗时间为 20 分钟。对敏感性强的患者, 时间可以缩短 (例如, 儿童为 10 分钟)。但最终, 具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

63) Rhinitis and Sinusitis

63) 鼻炎和鼻窦炎

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

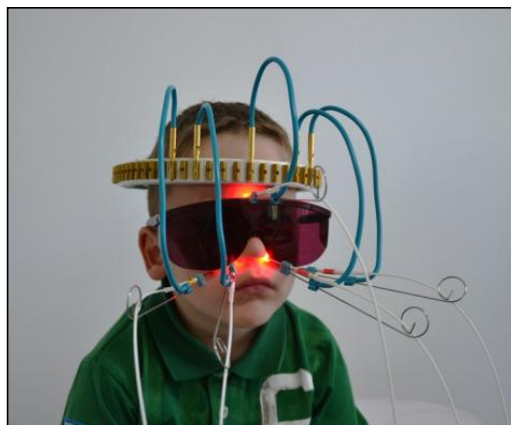
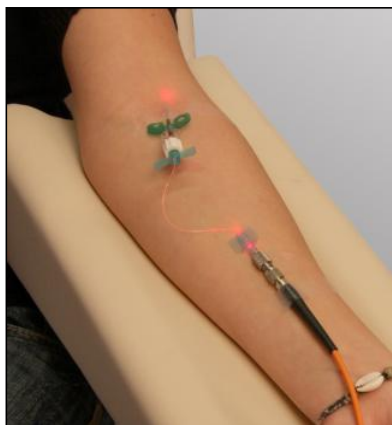
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐：

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸：

Appropriate lasers:

适用光：

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光：深部位/针灸穴位适用红外光，浅表部位/针灸穴位适用红光。

Execution:

执行：

Local irradiation of paranasal sinus and nose.

局部照射鼻旁窦和鼻子。

Laser needle acupuncture, recommended acupuncture points: LI 20 bilateral, yintang, ST 5 bilateral

推荐光针灸的穴位：迎香双侧、印堂、大迎双侧

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

64) Scar treatment

64) 疤痕治疗

Local laser therapy (external)

局部光疗法（体外）

Appropriate lasers:

适用光:

Red, infrared, blue, green

红光、蓝光、绿光

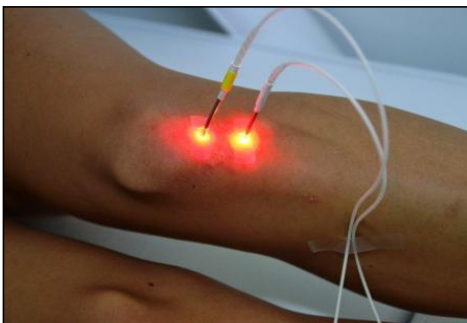
Execution:

执行:

Local treatment of scar tissue.

局部治疗疤痕组织。

Alternative: Utilization of laser shower (chapter 10.1.3) or laser mouth shower (10.1.4) with all available lasers to irradiate the scar area.



替代方案：利用配备所有可用光的光淋浴器（第 10.1.3 节）或光口腔淋浴器（第 10.1.4 节）照射疤痕部位。

Treatment time

治疗时间

In general, a treatment time of 15 - 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 15-20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

65) Shoulder syndrome

65) 肩关节综合症

Local laser therapy (external/ intra- articular)

局部光疗法（体外/关节内）

Appropriate lasers:

适用光:

Intra- articular: Red, blue, green

关节内：红光、蓝光、绿光

External: Red, infrared. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red.

体外：红光、红外光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光。

Execution:

执行：

Local irradiation around the shoulder joint and of dorsal points if ventral pain is treated.

如果治疗腹侧疼痛，局部照射肩关节周围和背侧穴位。

To treat supraspinatus syndrome, a direct treatment of pain points along the “impingement- area” is recommended.

建议直接沿着“影响部位”的疼痛穴位治疗冈上肌综合症。

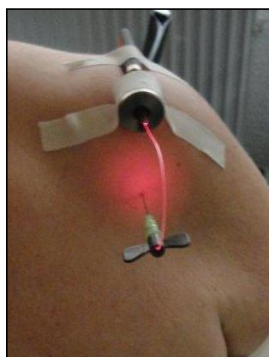
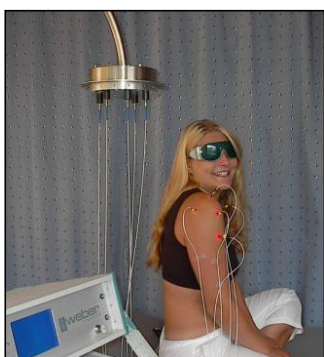
Laserneedle acupuncture: recommended acupuncture points: LI 4, 11 and 15, SI 3, 3- heater 5.

推荐光针灸的穴位：合谷、曲池、肩髃、后溪穴、3-发热穴位-5。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.



通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗

医师的诊断。

66) Side saddle joint arthritis (Rhizarthrosis)

66) 侧鞍关节炎（腕关节病）

Local laser therapy (external/ intra- articular)

局部光疗法（体外/关节内）

Appropriate lasers:

适用光:

Intra- articular: red, blue, green

关节内：红光、蓝光、绿光

External: Red, infrared, green (external). Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光（体外）。较深部位/针灸穴位适用红外光，浅表部位/针灸穴位适用红光或绿光。

Execution:

执行:

Local irradiation of pain area.

局部照射疼痛部位。

Laserneedle acupuncture: recommended acupuncture points: LI 4, LU 9, 3-heater 4

推荐光针灸的穴位：合谷、太渊、3-发热穴位-4

Additional recommendation: interstitial application with red, green and blue laser.

此外，建议：用红光、绿光和蓝光进行间质照射。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

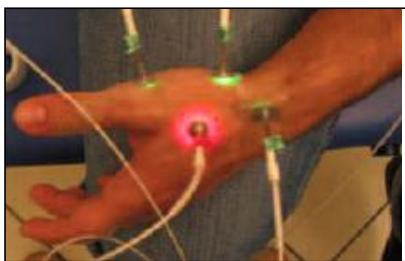
疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3个疗程足以。



67)

Sore throat / Amygdalitis

67) 咽喉痛/扁桃体炎

Local laser therapy (external/ intra- oral)

局部光疗法（体外/口腔内）

Appropriate lasers:

适用光：

External: Red, infrared. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red.

体外：红光、红外光。较深部位/穴位红外光，浅表/近表部位/穴位红光。

Intra- oral laser therapy: red, infrared, green, blue (do not use red to treat acute inflammations).

口腔内光疗：红光、红外光、绿光、蓝光（不得用红光治疗急性炎症）。

Execution:

执行：

Local external irradiation of throat with red and infrared.

用红光和红外光局部体外照射喉部。

Laserneedle acupuncture: recommended acupuncture points: ST 9 and 10 (bilateral)

推荐光针灸的穴位：人迎、水突（双侧）

Intra- oral therapy: begin with infrared, green and blue. (Recommendation: 2 blue, 2 green, 1 infrared). After acute inflammations have been eased, red lasers might be used as well (use 5mw laser).

口腔内治疗：以红外光开始，绿光和蓝光。（建议：2支蓝光、2支绿光、1支红外光）。在急性炎症缓解后，也可以使用红光（功率5兆瓦）。

Treatment time

治疗时间

For laserneedle acupuncture, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children).

对于光针灸，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。

For the intra- oral therapy, a treatment time of 10 minutes is recommended. If necessary, times can be extended.

对于口腔内治疗，建议治疗时间为10分钟。如必要，治疗时间可以延长。

Ultimately, the decision has to be made by the therapist.

但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this, laser power can be increased to 75 % in the second and 100 % in the third treatment.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续50%的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至75%，在第三个疗程中上调至100%。

Remarks/ Recommendations/ Contraindications:

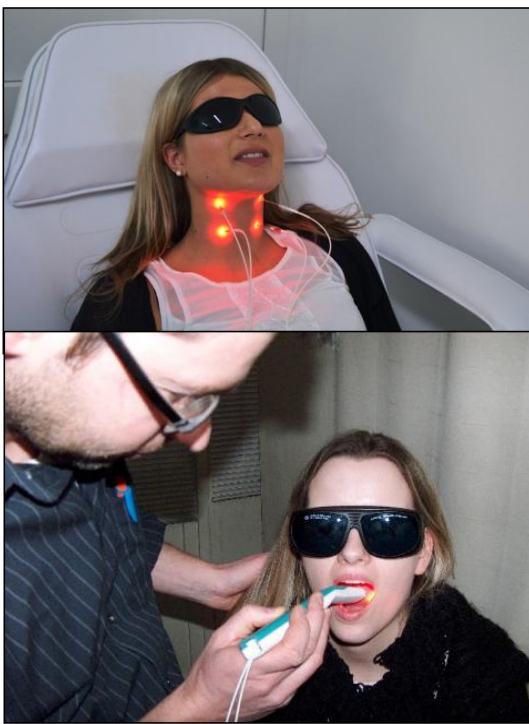
注意/建议/禁忌:

Red lasers should not be used to treat acute inflammations intra-orally as they can exacerbate inflammations.

红光不得用于治疗口腔内急性炎症，因为红光会加剧炎症。

The combination with intravenous laser therapy is recommended to generate additional effects on the general well-being and to accelerate regeneration processes.

建议配合静脉内光疗，以对一般健康产生更多疗效并加速再生。



68) Spinal stenosis

68) 椎管狭窄

Local laser therapy (external/ interstitial)

局部光疗法（体外/间质）

Appropriate lasers:

适用光:

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行:

Local irradiation of spinal stenosis.

椎管狭窄的局部照射

Laserneedle acupuncture: recommended acupuncture points: Local and loco- regional points at governing and bladder meridian, as far points LI 4, SI 3, 3- heater-5, UB 40 and 60, KI 6.

推荐光针灸的穴位：督脉和膀胱经络的局部和局部区域穴位，远穴位合谷、后溪、3-发热穴位-5、UB 40、UB 60、照海。

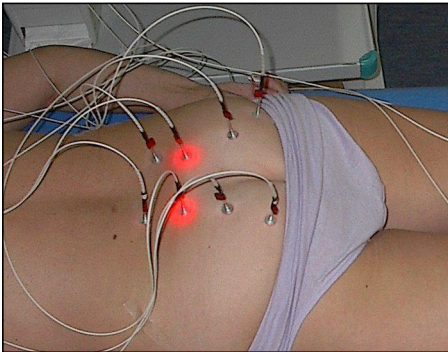
Additional recommendation: Interstitial application of red, green and blue lasers.

此外推荐：用红光、蓝光和绿光照射间质。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.



通常，建议治疗时间为20分钟。对敏感性强的患者，时间可以缩短（例如，儿童为10分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

69) Spine syndromes

69) 脊柱综合症

Local laser therapy (external/ interstitial)

局部光疗法（体外/间质）

Appropriate lasers:

适用光:

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行:

Local irradiation of pain and trigger points with red and infrared lasers. Painful acanthas can be treated as well.

用红光和红外光局部照射刺痛点和阿是穴。也可以治疗疼痛骨刺。

Laserneedle acupuncture: recommended acupuncture points: Local and loco- regional points at governing and bladder meridian, as far points LI 4, SI 3, 3- heater-5, UB 40 and 60, KI 6.

推荐光针灸的穴位：督脉和膀胱经络的局部和局部区域穴位，远穴位合谷、后溪、3-发热穴位-5、UB 40、UB 60、照海。

Interstitial irradiation with red, green and blue lasers.

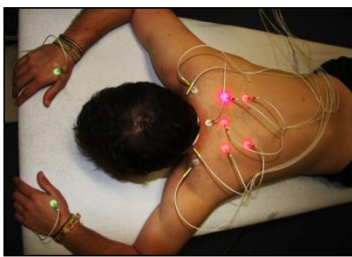
用红光、蓝光和绿光照射间质。

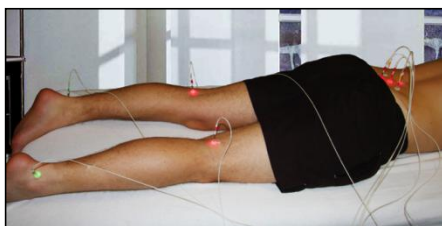
Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。





70) Stroke

70) 脑梗

Local (transcranial) laser therapy / laser needle acupuncture
局部（经颅）光治疗/光针灸

Appropriate lasers:

适用光:

Transcranial laser therapy: Infrared

经颅光治疗：红外光

Acupuncture: Infrared for deep acupuncture points, red for superficial acupuncture points.

针灸：红外光用于较深的穴位，红光用于浅表穴位。

Execution:

执行:

Transcranial laser therapy: It is recommended to irradiate from frontal position, both lateral sides and directly on Sinus Sagitalis to assure optimal light dissemination in the brain.

经颅光治疗：建议从额部、两侧或直接在矢状窦部位上照射，以确保光在脑中进行最佳的传播。

Laser needle acupuncture: recommended acupuncture points:
Yintang, governor vessel 19-23

光针灸：推荐穴位：印堂、督脉 19-23

Local treatment to improve spasticity: Laser needle acupuncture, recommended acupuncture points: LI 4 bilateral, SI 3, 3-heater 5

局部治疗缓解痉挛：光针灸，推荐穴位：合谷双侧、后溪、3-发热穴位 5

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this well, laser power can be increased to 75 % in the second and 100 % in the third session.

治疗所需的强度因患者而异。与其他的疗法一样，这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

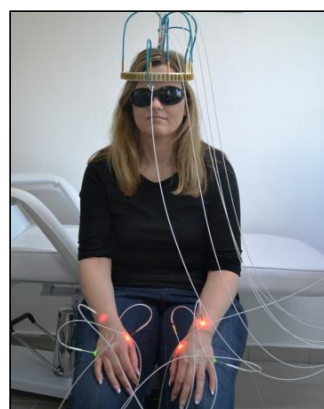
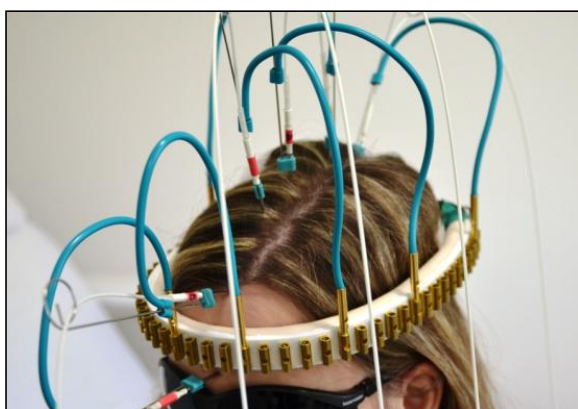
通常，建议治疗时间为 20 分钟。对敏感性强的病例，时间可以缩短（例如，儿童为 10 分钟）。最终，具体治疗时间取决于临床治疗医师的诊断。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

The combination with intravenous laser therapy is recommended to generate additional regenerative effects and to enhance the effects of the transcranial laser therapy.

建议与静脉光疗法相结合，以产生更大的再生疗效，提高经颅光治疗的效果。



71) Susceptibility of infections and asthma

71) 感染和哮喘的易感性

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

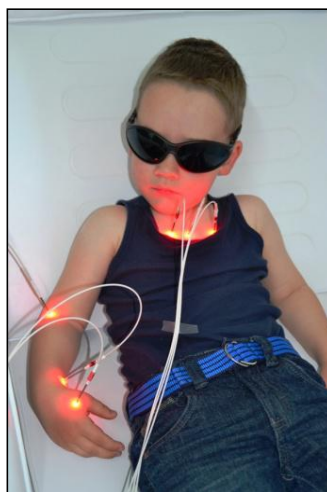
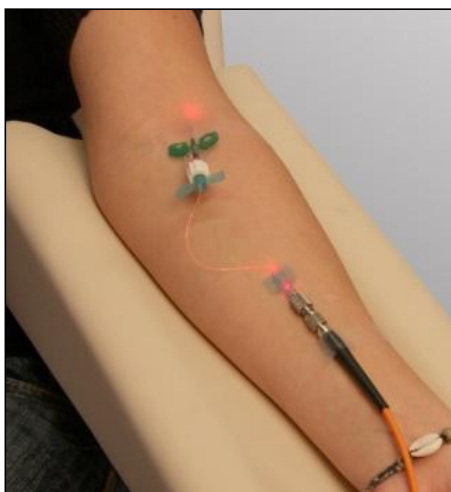
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:
更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:
局部光疗法/光针灸:

Appropriate lasers:
适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光：深部位/针灸穴位适用红外光，浅表部位/针灸穴位适用红光。

Execution:

执行:

Local irradiation ventral above main bronchus with red and infrared.

用红光和红外光局部照射腹上方主支气管。

Laser needle acupuncture, recommended acupuncture points: LI 4 and 11, 3-heater 5, LU 7 and 9.

推荐光针灸的穴位：合谷、曲池、3-发热穴位-5、列缺和太渊。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

72) Tendinopathies

72) 肌腱病

Local laser therapy (external/ interstitial)

局部光疗法（体外/间质）

Appropriate lasers:

适用光:

Interstitial: Red, blue, green

间质: 红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外: 红光、红外光、绿光。较深部位/针灸穴位适用红外光, 浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行:

Local irradiation of affected tendons.

局部照射受损肌腱。

Interstitial irradiation with red, blue and green.

用红光、蓝光和绿光照射间质。

Laserneedle acupuncture: recommended acupuncture points: KI 7 and UB 60.

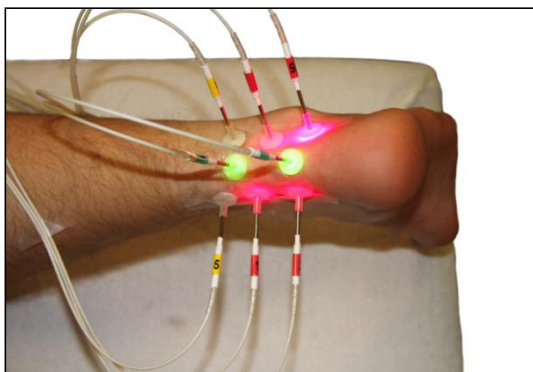
推荐光针灸的穴位: 复溜和 UB 60。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常, 建议治疗时间为 20 分钟。对敏感性强的患者, 时间可以缩短 (例如, 儿童为 10 分钟)。但最终, 具体治疗时间取决于临床治疗医师的诊断。



73) Tennis elbow

73) 网球肘伤

Local laser therapy (external/ interstitial)

局部光疗法（体外/间质）

Appropriate lasers:

适用光：

Interstitial: Red, blue, green

间质：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。较深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行：

Local irradiation of pain points (Ashi- points) and of the appropriate trigger points of the tendon at the forearm to reduce painful muscle spasms.

局部照射压痛点（阿是穴）和前臂肌腱对应的刺痛点，以缓解疼痛的肌肉痉挛。

Laserneedle acupuncture: recommended acupuncture points: LI 4-11. 3- heater 5

推荐光针灸的穴位：合谷、阳溪、偏历、温溜、下廉、上廉、手三里、曲池、3-发热穴位-5。

Interstitial irradiation with red, blue and green.

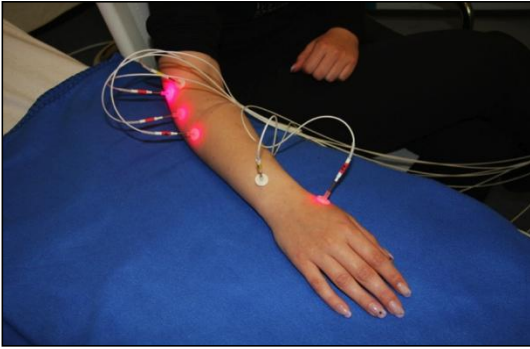
用红光、蓝光和绿光照射间质。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。



74) Thyroid diseases

74) 甲状腺疾病

Systemic (intravenous) laser therapy
周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow),
5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100 %。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

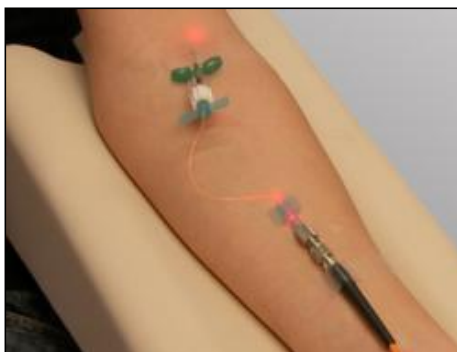
注意/建议/禁忌：

If necessary adjustment of medication

如必要，调整给药

Red should not be used in hyperthyreosis.

红光不得用于甲状腺机能亢进。



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy (not for hyperthyreosis)

局部光治疗（不适合甲状腺功能亢进）

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光：深部位/针灸穴位适用红外光，浅表部位/针灸穴位适用红光。

Execution:

执行:

Local irradiation of thyroid.

甲状腺局部照射。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

75) Tinnitus

75) 耳鸣

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光:

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5兆瓦。

10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are

available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

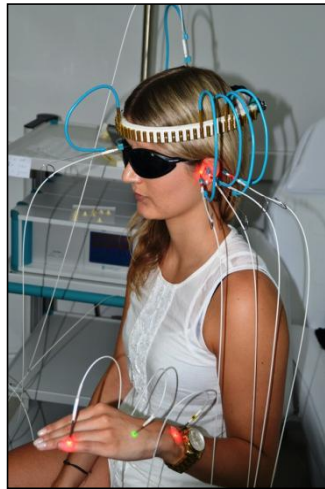
建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication

如必要，调整给药



Additive therapy recommendation:

更多的疗法推荐:

Local laser therapy/ laser needle acupuncture:

局部光疗法/光针灸:

Appropriate lasers:

适用光:

Red, Infrared: Deep areas/ acupuncture points infrared, superficial areas / acupuncture points red.

红光、红外光：深部位/针灸穴位适用红外光，浅表部位/针灸穴位适用红光。

Execution:

执行：

Local irradiation of the ear canal with red laser.

用红光进行耳道局部照射。

Laser needle acupuncture, recommended acupuncture points: 3-heater 3, 5 and 18, HT 9, valium point, anti depression point.

推荐光针灸的穴位：3-发热穴位-5、5 和 18、少冲、安定穴位、抗抑郁穴位。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

一般阶段包括 10 个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至 15 或 20 或甚至更多的疗程。我们建议每周进行 2-3 个疗程。每日的疗程均可见效。

Local (transcranial) laser therapy

局部（经颅）光疗

Appropriate lasers:

适用光:

Infrared

红外光

Execution:

执行:

It is recommended to irradiate from frontal position, both lateral sides and directly on Sinus Sagitalis to assure optimal light dissemination in the brain.

建议从额部、两侧或直接在矢状窦部位上照射，以确保光在脑中进行最佳的传播。

76) Trigeminus neuralgia

76) 三叉神经痛

Local laser therapy (external)

局部光疗法（体外）

Appropriate lasers:

适用光:

Red, green

红光、绿光

Execution:

执行:

The treatment has to be conducted with caution. To treat acute pain, only the contra lateral sides and far points should be treated. If conditions improved, pain points can be treated dircetly (5-10 minutes, 20% power with red laser).

治疗必须小心谨慎。只得在双对侧和远穴位治疗急性疼痛。如果急性疼痛得到缓解，可以直接治疗刺痛点（红光 20% 功率照射 5-10 分钟）。

Recommended acupuncture points: Thalamus point, valium point at ear of affected side, LI 4 and 11, SI 3, 3- heater 5, ST 36

推荐穴位：丘脑穴位、耳部患侧安定穴位、合谷、曲池、后溪、3-发热穴位-5、足三里



Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

The combination with intravenous laser therapy is also recommended to achieve further pain therapeutic effects and to accelerate regeneration processes (protocol see chapter 10.1.6).

建议配合静脉光疗，以达到更好的疼痛疗效并加速再生过程（见第 10 章 10.1.6 节方案）。

77) Vertigo

77) 眩晕

Local (transcranial) laser therapy

局部（经颅）光疗

Appropriate lasers:

适用光:

Transcranial laser therapy: Infrared

经颅光疗: 红外光

Acupuncture: Infrared for deep acupuncture points, red for superficial acupuncture points.

针灸: 红外光用于较深的穴位, 红光用于浅表穴位。

Execution:

执行:

Transcranial laser therapy: It is recommended to irradiate from frontal position, both lateral sides and directly on Sinus Sagitalis to assure optimal light dissemination in the brain.

经颅光疗: 建议从额部、两侧或直接在矢状窦部位上照射, 以确保光在脑中进行最佳的传播。

Laser needle acupuncture: recommended acupuncture points: governor meridian, GB 43, 44

推荐光针灸的穴位: 督脉、侠溪、足窍阴

Treatment intensity

治疗强度

The required intensities of the treatments vary a lot with the patients. Like in other treatments, this is due to the different sensitivity of different patients. We recommend running the first treatment with 50 % laser power. If the patient tolerates this well, laser power can be increased to 75 % in the second and 100 % in the third session.

治疗所需的强度因患者而异。与其他的疗法一样, 这是由于不同患者的敏感度各异。我们建议用连续 50% 的光功率进行第一个疗程。

如果患者能够承受，则在第二个疗程中光功率可上调至 75%，在第三个疗程中上调至 100%。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

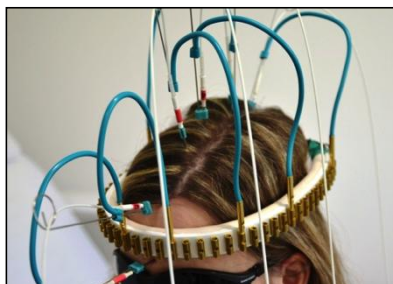
通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Remarks/Recommendations/Contraindications:

注意/建议/禁忌：

The combination with intravenous laser therapy is recommended to generate additional effects on the general well-being and to enhance the effects of the transcranial laser therapy.

建议配合静脉内光疗，以对一般健康产生更多疗效，并提高经颅光疗的效果。



78) Viral infections (e.g. HIV, Hepatitis)

78) 病毒感染（例如艾滋病、肝炎等）

Systemic (intravenous) laser therapy

周身（静脉内）光疗

Appropriate lasers:

适用光：

Combination of all available wavelengths (red, green, blue, yellow), 5 mW

所有可用光波长的组合（红光、绿光、蓝光、黄光），5 兆瓦

Treatment time and intensity

治疗时间和强度

It is important to keep in mind that intravenous laser therapies are conducted with a maximal power of only 5mW.

重要的是要牢记静脉内光疗的最大功率仅为5毫瓦。

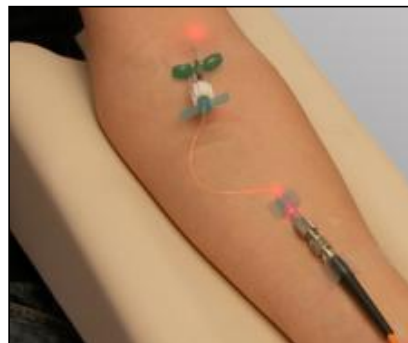
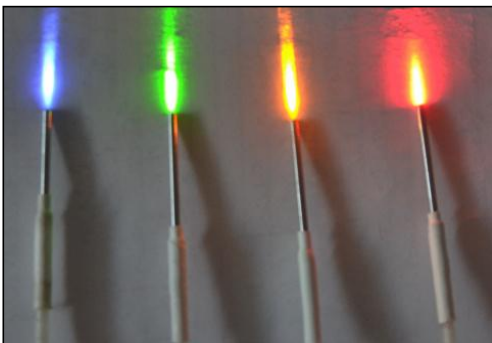
10 sessions in total with a sequence of 3 treatments per week is the standard recommendation. It is further recommended to start with one wavelength only (usually red) for 20 minutes with 50 % power. If the patient tolerated the treatment power can be increased to 100 % in the second session. If more lasers are available (green, blue, infrared, yellow) they can as well be added in the second session. Usually, each laser is then applied for 10-15 minutes. The order is rather subordinate.

建议标准是共计 10 个疗程，每周 3 个疗程。进一步建议仅以一个波长（通常为红光）开始，持续 20 分钟，用 50% 功率。如果患者可以耐受治疗，则第二个疗程功率增加至 100%。如果有更多的光（绿光、蓝光、红外光、黄光），也可以在第二个疗程添加。通常，每支光照射 10-15 分钟。次序不重要。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌:

If necessary adjustment of medication.



如必要，调整给药

79) Warts

79) 疣

Local laser therapy (external)

局部光疗法（体外）

Appropriate lasers:

适用光:

Red, infrared, blue, green

红光、红外光、蓝光、绿光

Execution:

执行:

Local irradiation of warts. Lasers can be directly attached to the warts.

局部照射疣。光可以直接附着到疣上。

Alternative: Equipment of the laser mouth shower (10.1.4) with all available lasers and subsequent irradiation of the skin.

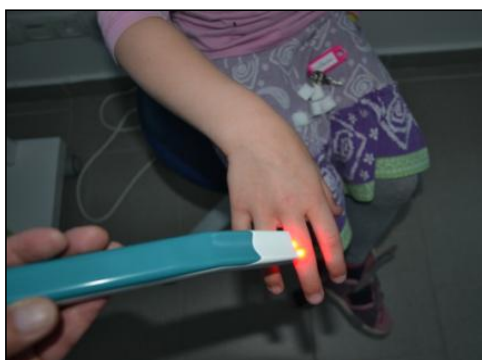
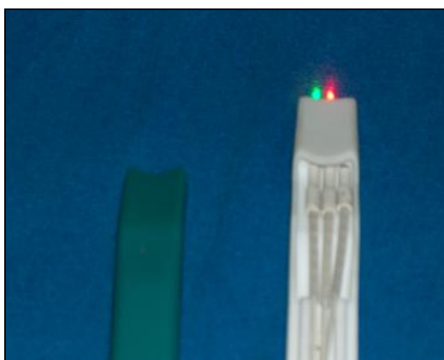
替代方案：光口腔淋浴器（第 10.1.4 节）设备，配备所有可用光，随后皮肤照射。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。



80) Wound healing

80) 伤口愈合

Local laser therapy (external)

局部光疗法（体外）

Appropriate lasers:

适用光：

Red, infrared, blue, green. Maximal 5mW.

红光、红外光、蓝光、绿光。最大功率 5 兆瓦

Execution:

执行：

Local irradiation of wounds with laser shower or laser mouth shower. For protocols, see chapter 10.1.3 (laser shower), 10.1.4 (laser mouth shower) and 10.1.9 (dermatology).

用光淋浴器或光口腔淋浴器局部照射伤口。治疗方案，请参阅第 10.1.3 节（光淋浴器）、第 10.1.4 节（光口腔淋浴器）和第 10.1.9 节

(皮肤科)。

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

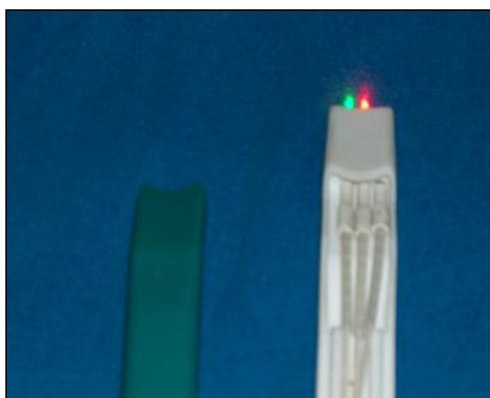
通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Remarks/ Recommendations/ Contraindications:

注意/建议/禁忌：

The combination with intravenous laser therapy is recommended to generate additional effects on the blood circulation of the skin and to accelerate regeneration processes.

建议配合静脉内光疗，对皮肤的血液循环产生更多的疗效，加速再生。



81) Wrist joint arthritis

81) 腕关节炎

Local laser therapy (external/ intra- articular)

局部光疗法（体外/关节内）

Appropriate lasers:

适用光:

Intra- articular: Red, blue, green

关节内：红光、蓝光、绿光

External: Red, infrared, green. Deep areas/ acupuncture points infrared, superficial/ near to the surface areas / acupuncture points red and if appropriate green.

体外：红光、红外光、绿光。深部位/针灸穴位适用红外光，浅表/靠近表皮部位/针灸穴位适用红光或绿光。

Execution:

执行:

Local irradiation of and around the wrist joint.

局部照射腕关节及其周围。

Intra- articular treatment with blue, red and green laser.

用蓝光、红光和绿光进行关节内治疗。

Laserneedle acupuncture: recommended acupuncture points: KS 5 and 6, 3-heater 5 and 6, SI and LI 4, LU 7 and 9

推荐光针灸的穴位：KS 5、KS 6、3-发热穴位-5 和 6、小肠穴位、合谷、列缺和太渊

Treatment time

治疗时间

In general, a treatment time of 20 minutes is recommended. In cases with very strong sensitivity this time can be shorted (e.g. 10 minutes for children). Ultimately, the decision has to be made by the therapist.

通常，建议治疗时间为 20 分钟。对敏感性强的患者，时间可以缩短（例如，儿童为 10 分钟）。但最终，具体治疗时间取决于临床治疗医师的诊断。

Treatment series

疗程

An average treatment series consists of 10 sessions. In individual cases (e.g. for longsome or chronic courses) it can be prolonged to 15 or 20 or even more sessions. We recommend holding 2 - 3 sessions a week. Daily sessions can be effective as well.

一般阶段包括10个疗程。特殊病例中（例如，长期或慢性病疗程），可以延长至15或20或甚至更多的疗程。我们建议每周进行2-3个疗程。每日的疗程均可见效。

Acute diseases usually require less sessions. Sometimes, 2 - 3 sessions can be sufficient.

通常急性病需要减少疗程次数。有时，2-3 个疗程足以。

