

# Lipoedema



**Information  
Leaflet for Patients**



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## Dear Patient,

although much has been published about lipoedema during the past decade, this disease continues to be relatively unknown; it is still overlooked and/or mistaken for obesity (overweight) or lymphoedema by many doctors. As a result, the information and therapy instructions given to afflicted individuals is often either incorrect or only partially covers the aspects of this disease.

This brochure was designed to help you learn more about lipoedema and to enable you to evaluate and get the most benefit from available therapeutic options. All important information is presented concisely in the form of questions and answers. Please keep in mind that many aspects of this disease remain unclear to date. As with most other diseases (e.g. diabetes, high blood pressure, varicosis, rheumatism, etc.), the symptoms and discomforts are fairly well known, but the underlying causes are not. However, our insights have become much more extensive in the past few years.

Since crucial progress has been made in recent years especially with regard to the treatment of lipoedema, there are some very effective measures now available that have a positive impact on all aspects of this chronic disease. This allows you to live a largely „normal“ life without major limitations, at a quality level that until recently was unthinkable.

Meanwhile, a wealth of information has become accessible through the internet, where you can get help from specialised doctors, physiotherapists, and other patients afflicted by this disease. There is no longer reason for despair.

With the compliments of

**BSN-JOBST® GmbH**

## Lipoedema

### What is lipoedema?

Lipoedema is a chronic and usually progressive disease (over the course of the years) that afflicts the subcutaneous fatty tissue. It manifests in women exclusively and usually begins to become manifest after puberty, usually afflicting the lower half of the body.

Fig. 1 Queen of Punt, Hatshepsut temple, Egypt  
Stage III lipoedema afflicting the legs and arms

### Since when has this disease been known?

Lipoedema probably manifested very early in the history of man. The typical changes of body shape were displayed some 3,500 years ago on a relief of the Queen of Punt at the Hatshepsut temple in Deir el-Bahari, Egypt (Fig. 1). Body shape changes on the lower legs (Fig. 2) typical of lipoedema are also evident on a 5,000 year-old sculpture of the Major Goddess in the Hal Tarxien temple, Malta (Fig. 3). However, the first scientific description was not published until 1940.

Fig. 2 Statue of the Major Goddess at the Hal Tarxien temple, Malta  
Fat accumulation above the ankles typical of lipoedema



### What are the known causes and risk factors?

The exact causes are not known. However, since women are exclusively afflicted by this disease, hormonal factors appear to play a decisive role. This notion is supported by the onset of disease being at puberty, frequent exacerbation after pregnancy, and late manifestation during the menopause.

Lipoedema manifests in men only in the presence of pronounced hormonal disorders, for example after severe liver damage (testosterone deficiency) or in the course of hormonal treatments (e.g. after prostate carcinoma treatment).

The disease often appears to run in families, but the numbers reported in investigations of this aspect are inconsistent: one to two thirds of the parents or siblings of sufferers have been reported to show similar findings, so heredity does appear to play a role.



Fig. 3 Clinical findings

## What are the typical signs of lipoedema?

Several changes are indicative of lipoedema. In terms of **body shape**, all afflicted individuals show pronounced increases of the subcutaneous fatty tissue on the legs, more rarely on the arms. If the upper half of the body is slim, this increased fat leads to a marked imbalance of the proportions of the upper and lower half of the body (Fig. 4). Afflicted individuals often feel like the lower half of their body belongs to another person („That’s not me down there!“). Changes to body shape can be extreme, and often lead to serious body image problems causing major mental stress for afflicted individuals.

In many cases, the increase of the circumference of the legs is so large that the insides of the upper legs chafe against each other and become sore when the person walks. In extreme cases, the formation of fat ridges on the insides of the knees may even **impede walking**.

Another characteristic feature of lipoedema is recurrent **bruising** on the legs caused by even light touches or bumps. This tendency to bruise easily is a result of the brittleness of the walls of the smallest blood vessels.

## What are the symptoms of lipoedema?

A major strain is the discomfort resulting from oedema, i.e. „water in the legs“. Over the course of the day, **oedemas** manifest in the subcutaneous tissue of the lower legs, but not in the feet. This is caused by increased permeability of the capillaries for liquids. At the onset of disease, the oedemas may not be evident at all or only mild in nature in the mornings and become more pronounced in the evenings. They become more pronounced also by standing or sitting for long periods of time, especially in the hot part of the year. Over the years, these symptoms may deteriorate in that the lower and upper legs are swollen all day and no longer slim down during the night. The accumulation of water leads to a sensation of „**being heavy and tight**“ and causes pain upon touching or applying pressure. The sensitivity to pressure may be so strong that even the gentlest touch feels very unpleasant.

A common problem in virtually all patients is the **mental stress** resulting from the steady deterioration of one's physical appearance. Moreover, many afflicted individuals wrongly blame themselves for their appearance. Despite all kinds of counter-measures, such as dieting or sports, the subcutaneous volume of the legs and arms does not go down; while the trunk may get slimmer, the existing disproportion gets even worse. The lack of success of one's sustained efforts is often frustrating and then leads to so-called „snack attacks“ in some patients. These snack attacks, in turn, cause additional weight gain, which worsens the clinical status of the disease.



In addition, the recurrent pain in the legs is also the cause of major mental stress. The symptoms are described by afflicted people using terms like „dull“, „pressing“, and „heavy“. After extended periods of sitting or standing up, the symptoms may become so strong that afflicted persons feel their legs „want to burst at the seams“, „explode“ or „burst from the insides“ as if there was „concrete inside the legs“.

Fig. 4 Disproportion due to lipoedema

## Are there other names for lipoedema?

There are various synonyms that include the word for fat (lipo-, adipos-) and the word for pain (-algia, dolorosa): lipoedema is also called lipalgia, adiposalgia, adipositas dolorosa, lipomatosis dolorosa of the legs, „schmerzhaftes Säulenbein“ (German term meaning pain-causing column-shaped leg) or pain-causing lipoedema syndrome.

## Which degrees of severity and forms are known?

Since lipoedema usually progresses in the form of a chronic disease, various stages can be distinguished according to the severity of disease (Figs. 5-7). The rating of the severity is based on the visible surface of the skin and the findings of physical examination (Table 1).



Fig. 5 Stage I



Fig. 6 Stage II



Fig. 7 Stage III

### Table 1:

#### Stages of lipoedema

**Stage I:** Surface of the skin is smooth, subcutaneous fatty tissue is thickened and soft without hard spots

**Stage II:** Surface of the skin is uneven, subcutaneous fatty tissue is thickened and shows small hard spots

**Stage III:** Surface of the skin is very uneven, subcutaneous fatty tissue is thickened and hardened, and there are large ridges of fat under the skin; possibly some walking impediment



**Table 2:**

Sites afflicted by lipoedema

Type 1	Hip	Type 4	Arms
Type 2	Hip and upper leg	Type 5	Lower legs
Type 3	Hip, upper and lower leg		



Fig. 8 Whole-leg type



Fig. 9 Upper-leg type



Fig. 10 Lower-leg type

Several shape variants can be distinguished according to the site afflicted by lipoedema (Table 2). The arms and legs can be afflicted over either their entire length or only in part (upper or lower leg or upper or lower arm) (Figs. 8-10).

## How common is lipoedema?

Exact numbers for the incidence of lipoedema are not known. Results from a preliminary study in Germany indicate that the order of magnitude is approx. 10 percent of the population. Surveys in specialised clinics for lymphology in 2005 showed that approx. 10 to 15 percent of the in-patients of these clinics had visible signs of lipoedema.



Fig. 11a  
Findings at the age of 17

## What is the course of disease?

Which course the disease will take in the individual case cannot be predicted. Usually, the severity of the findings and symptoms progresses over time, i.e. the pronounced fat accumulations under the skin and oedemas increase and cause the pressure and tension pain to increase as well.



Fig. 11b  
Findings at the age of 27

This increase can be fairly rapid without any cause being apparent; there is definitely no correlation to increased food intake. Cases are known in which marked exacerbation occurred over just a few years (Fig. 11) whereas other patients experience little change of the findings over the course of decades.

## Which complications can occur?

One serious complication is the formation of secondary lymphoedema leading to critical exacerbation of the lipoedema. This so-called lipo-lymphoedema can occur if the oedema part of the lipoedema was not treated appropriately for many years, i.e. if the legs were decongested only insufficiently. Over time, the protein-rich oedema accumulating in the soft subcutaneous tissue leads to an increase in collagen formation in these places and the originally soft tissue becomes harder. This leads to „immurement (walling-in)“ of the lymphatic vessels, which reduces their ability to contract and thus reduces the transport of lymphatic fluid.



The oedematic tendency deteriorates and leads to additional swelling in the foot (Fig. 12). The skin of the foot then becomes progressively thicker and shows more skin folds such that it can no longer be pulled up easily with a finger. This is a characteristic symptom of lymphoedema called Stemmer's sign.

## From which other diseases must lipoedema be differentiated?

It is important to differentiate lipoedema and **lipohypertrophy**, which is also characterised by imbalanced proportions of the body with a slim upper body and disproportionate thick lower body. This fat accumulation usually occurs at puberty and mainly at the hip and upper legs („saddlebags“). However, in contrast to lipoedema, the afflicted individuals do not have oedemas and therefore there is no pain. It is therefore a cosmetic disturbance, whereas lipoedema is a true disease.

**Primary lymphoedema** also commences at puberty in the female sex, typically in the form of swelling in one of the legs. Usually, this afflicts the lower leg first and then progresses to the upper leg at a later time. (In contrast, the increase in circumference occurs mainly on the upper leg in lipoedema). After some time, the second leg also begins to show swelling. Since oedema almost always advances to the foot in lymphoedema patients, there is a positive Stemmer's sign in most of the cases. The tissue shows no sensitivity to pressure pain and there is no tendency to bruise easily. Combinations in the form of a lipo-lymphoedema are possible.

**Phleboedema** manifests in the presence of underlying chronic venous disease, i.e. after expansion of superficial veins (varicosis) or after deep vein thrombosis (post-thrombotic syndrome), and may be uni- or bilateral in men and women. Usually, this is accompanied by more changes of the skin and subcutaneous tissue that are evident from reddish, itching eczemas, often associated with brownish discoloration of the skin and hardening of the subcutaneous fatty tissue. In late stages or if left untreated, open leg sores (ulcus cruris) may become manifest. Modern examination procedures, i.e. non-invasive and pain-free techniques (such as ultrasound Doppler, duplex sonography), can be used to locate the site and extent of venous disease.

There are some mixed forms called lip-phleboedema.

**Benign multiple symmetrical lipomatosis** (Madelung's disease) is characterised by a diffuse increase in subcutaneous fat manifesting on the throat, neck, shoulders, and upper arm as well as the pelvis. The disease is more common in men and a correlation with alcohol consumption has been reported.

Lipoedema is often mistaken for **obesity** (overweight, adiposity). A large fraction of the population is afflicted by this disease. However, it is characterised by increased fatty tissue throughout the body and mainly in the trunk („obesity in the trunk“). In addition, the body weight is increased significantly. The proportions of trunk and extremities are fairly normal - i.e. the legs are not overly thick - and the increased fatty tissue does not cause straining symptoms. The disease is equally common in men and women. Obesity can lead to serious secondary disease (diabetes, hypertension, hypercholesterolaemia, etc.). Crucial factors of the therapy of this disease are physical exercise (increased burning of calories taken up) and reduced intake of calories (dieting).

## Which factors cause lipoedema to deteriorate?

Anything that promotes the retention of water in the body makes the symptoms get worse. This includes **venous disease**. If manifest lipoedema is accompanied by varicosis, the varicosis should definitely be treated or remedied first.

Excessive **physical strain**, especially standing or sitting for long periods of time, also increases the tendency to form oedemas. Some people afflicted by this disease experience symptoms only under these circumstances. Usually, the symptoms are more pronounced in the heat of summer and subside when it is cold. If this kind of stress cannot be avoided, e.g. during long aeroplane flights or professions requiring one to be in a standing position, the use of prophylactic measures is indicated (compression stockings, regular physical exercise including gymnastic foot exercises, etc.).

Obesity is also known to exacerbate the tendency to form oedema. It restricts mobility even more and is a risk factor of the secondary diseases mentioned above. Since the disease progresses to lipo-lymphoedema more rapidly in the presence of obesity, it is imperative to strive to normalise the body weight.



## Treatment of lipoedema

### Are there procedures that do not work?



Unfortunately, the pronounced accumulation of fat that is so typical of this disease resists all attempts of reducing food intake and physical exercise. Despite repeated dieting, there is neither an improvement in body shape nor in the symptoms experienced in the afflicted parts of the body. Although the additional weight can be reduced, this does not remedy the disproportion of a slim upper body and voluminous lower body, since fat volume is lost in the trunk only, but not in the legs afflicted by lipoedema.

Recently popularised procedures for dissolution of the fat, such as injection lipolysis or laser lipolysis, are unfortunately unsuitable for attainment of a relevant reduction of girth.

The use of dehydrating agents is not sensible either. Although these medications provide some short-term relief, they render the findings worse in the long run since they remove only the water in the tissue, but not the protein fraction. The latter is then deposited even more and impedes drainage of the lymph due to tissue hardening.

### Which effective forms of conservative therapy are available?

The aim of any **conservative** therapy is to remedy the oedema. Early in the disease, the oedema manifests during the day, is most noticeable in the evening, and subsides spontaneously over night without any therapy. In these early stages, the development of oedema can be prevented just by wearing compression stockings.

Once the oedema no longer subsides spontaneously, it is time to use complex physical decongestive therapy. This method of physical therapy was developed in the middle of the last century and is based on compression therapy as well as manual lymphatic drainage (MLD) as its main components.

In this type of lymphatic drainage, specially trained physiotherapists apply various levels of pressure to massage the tissue close to the surface of the skin (skin and subcutaneous fatty tissue) (Fig. 13). A variety of manoeuvres (so-called scooping, rotating, pumping manoeuvres) are used to stimulate the inherent rhythmic motions of the lymphatic vessels to increase the amount of lymph that is transported. The treatment commences away from the oedema on the trunk in order to produce a „suction effect“ and then proceeds to the oedematous parts of the legs or arms. This transports fluid accumulated in the tissues to the heart. The subsequent application of compression supports the removal of fluid („oedema relief“) and prevents liquid from flowing back into the void („re-formation of oedema“). A crucial factor in this process is moving/physical exercise while compression is applied (in the form of bandages, stockings or pantyhose).

Early in this treatment, the decongestive therapy should be carried out twice daily for 45 to 60 minutes each for a period of approx. 3 to 4 weeks - depending on the severity of findings. Since the initial treatment is sometimes quite laborious and time-consuming and the subsequent bandaging is very tedious, admission to a clinic specialising in lymphology may be considered in very serious cases. Treatment in this type of institution is indicated also if out-patient therapy proves to be insufficient. At the onset of treatment, i.e. in the decongestion phase, bandaging with short-stretch bandages should always be applied because the leg or arm volume decreases steadily.



Fig. 13 Manual lymphatic drainage

Flat-knit pantyhose or arm garments - usually of compression class II - are recommended to be used once this „oedema reduction phase“ is completed, i.e. when no further reduction of volume can be attained. MLD is usually required only once or twice a week in this „oedema maintenance phase“.

In addition, so-called intermittent pneumatic compression (IPC) applying multi-chambered pneumatic devices can be used at home. These are tubular plastic cuffs with 6-12 chambers that can be inflated periodically and exert pressure on the tissue in the direction of the heart.

An important aspect is that compression stockings must always be worn after the treatment in order to ensure the success of therapy. Although there will be some slow „leakage“ of tissue fluid despite the compression, this proceeds much more slowly than in the absence of compression. Complex physical decongestive therapy must be performed regularly and for the lifetime of the patient since omission to do so allows the oedema to become manifest again.



## What do I need to know about the stockings?

Since the circumference of the legs in the presence of lipoedema usually by far exceeds the normal range, there is usually a need for custom-made flat-knit compression stockings. They are designed to exert pressure to the skin and mainly on the subcutaneous tissue to prevent „leakage“ of fluid back to the site of oedema and stabilise the successful decongestion attained by manual lymphatic drainage. A variety of compression classes (CCL I to IV) and different designs (knee-length stockings or upper leg stockings or pantyhose) are in common use. If patients experience difficulties when putting on their stockings due to their body shape, it is common to prescribe combinations of „Bermuda pants“ or „Capri pants“ and stockings. This must be adapted to match the individual circumstances. Good co-operation of physician, physiotherapist, sanitary and medical product retailers, and stocking manufacturers is very significant for the success of therapy.



# Knitting technique

## Flat-knitting



Flat-knitted compression stockings are knitted in a row-by-row „back-and-forth“ manner. The loop size is always the same as shape changes are effected on the sides by adding or dropping loops. The sides then need to be sewn together which produces a flat seam extending along the stocking.

This knitting technique allows knitting according to the correct anatomical fit and ensures precise adaptation of the compression pressure and pressure profile to the needs of the patient. Some materials are characterised by having a coarser structure that is more permeable to air and supports micro-circulation. This technique produces a significantly greater therapeutic benefit as compared to the circular knitting procedure.



The decision regarding which of the different designs and compression classes to use must be based on the severity of disease and the condition of the connective tissue, presence of skin folds, extent of oedema, etc.



## What does conservative therapy have to offer?

Conservative therapy is focussed on treating the symptoms. It can be used to reduce the amount of fluid accumulating in the tissue and ensuing oedema-related pain when exposed to pressure, tension, and touching. Pain relief can be achieved if the legs are successfully kept free of oedema by wearing compression stockings and continuing lymphatic drainage regularly. Sufficient compression strength and a good comfort of wear/fit of a compression stocking are crucial for the success of therapy. Unfortunately, the progressive fat accumulation over the course of the years is not remedied or reduced by this form of therapy.

## Which options of surgical therapy are available?

The aim of surgical therapy is to remedy or at least reduce the pathological fat accumulation. Until the mid-1990s, liposuction was performed by means of large and pointed drain tubes and using general anaesthesia without filling the subcutaneous tissue with fluid prior to the procedure („dry technique“). This did not only lead to poor cosmetic results in many cases, but also, in some cases, to dangerous haemorrhage and lymphatic vessel injury. Consequently, this procedure is now viewed very critically and has been all but abandoned.

However, new developments in the area of liposuction in the past 10-15 years allow the increased fatty tissue to be aspirated very safely and with very good success. The application of local anaesthesia procedures such as tumescence local anaesthesia (TLA) and vibrating micro-drain tubes have given this procedure very good results in the area of tissue preservation - provided the established international guidelines are observed. The cosmetic results are also very good. Consequently, liposuction has become a standard procedure that is used throughout the world, not only for cosmetic, but also for medical reasons.

Fig. 14 Aspiration drain tubes

The use of **micro-drain tubes** (Fig. 14) is advantageous because the sites of puncture are only approx. 4 mm in size and do not need to be sutured, but can be glued together for wound closure. The blunt end of the drain tube prevents inadvertent cut or puncture injuries and ensures a high degree of safety during the intervention. The use of vibrating drain tubes ensures that only the fat positioned loosely between the connective tissue structures is aspirated, while the surrounding nerves and vessels remain virtually unaffected and are largely preserved.



Fig. 15 Infiltration of the tumescence solution

Regarding the anaesthetic procedure, **tumescence local anaesthesia** (TLA) has become established as the method of choice. It involves infiltrating several litres of an 0.04% anaesthetic solution into the subcutaneous tissue („wet technique“) (Fig. 15). As a result, a low-viscosity mixture of fat and infiltrated solution is removed by aspiration (Fig. 16). No more than approx. 4 litres of pure fat should be aspirated during each session meaning that multiple sessions separated by an interval of several weeks are necessary in many of the afflicted individuals. It has been the experience of specialised centres that not only the external appearance, but also the symptom profile can be improved significantly by this surgical technique. Beyond producing well-balanced body proportions,

the procedure remedies or reduces oedemas and the pain sensitivity of the tissue. Since a short-lived increase in the tendency to swell up always occurs postoperatively, physical therapy (in the form of MLD) should be continued or re-commenced a few days after the intervention. A specialised compression bodice must be worn in the first 4 weeks after the operation.



Fig. 16 Aspirated fat



Fig. 17a Status before liposuction



Fig. 17b Status after 3 sessions of liposuction

The risk of liposuction damaging lymphatic vessels and ensuing manifestation of secondary lymphoedema reported in the past has not been observed with modern procedures, neither in experiments nor in the clinical experience. Anatomical and microscopic studies along the longitudinal direction of the legs after liposuction detected no evidence of **lymphatic vessel damage**. Long-term follow-up (for 6 to 10

Fig. 18a Calves before liposuction



Fig. 18b Calves after liposuction





Fig. 19a Upper leg before liposuction



Fig. 19b Upper leg after liposuction

years) at different centres demonstrated clearly that both the findings and the symptoms were improved and oedema formation had been reduced in the patients who had undergone liposuction.

Figures 17-20 show examples of changes of body shape before and after liposuction.

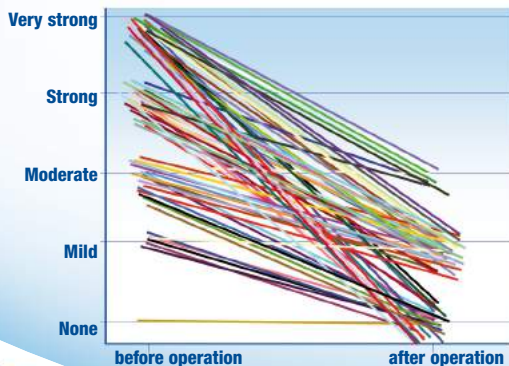
Fig. 20a Upper arm before liposuction



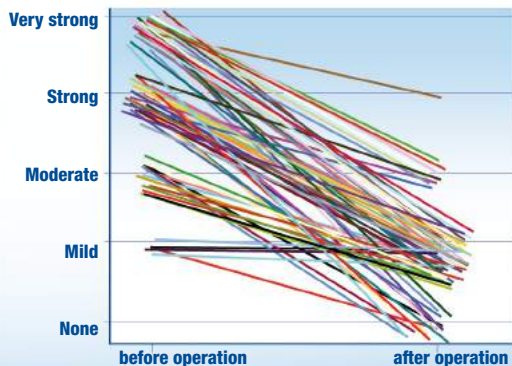
Fig. 20b Upper arm after liposuction



## Pressure pain



## Swelling



The improvement of the symptoms as rated by the patients is shown in Figures 21 a-c.

The improvement of the symptoms as rated by the patients is shown in Figures 21 a-c.

Fig. 22 clearly shows that there is less of a need for conservative therapy after surgery. According to the self-reports of the patients, one in four patients needed no further lymphatic drainage and no compression after the intervention. A total of 41 percent needed less physical decongestive treatment than before, and 23 percent had an unchanged need, but a better postoperative outcome.

Since the majority of patients had some tendency of oedema formation remaining after surgical therapy - though to a lesser extent- physical therapy continues to be an important therapeutic measure. The same applies to compression treatment. Depending on the extent of residual oedema and the shape of the leg, circular or flat-knit compression stockings of the requisite compression class are used - taking into consideration the properties conferred by the knitting technique - aiming for patients to be free of oedema and pain in a sustained manner.

## Complex physical therapy after liposuction

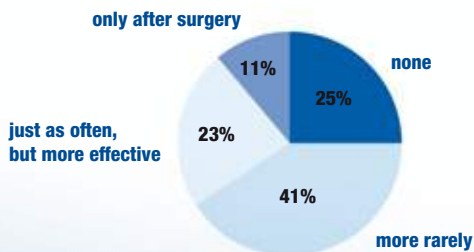
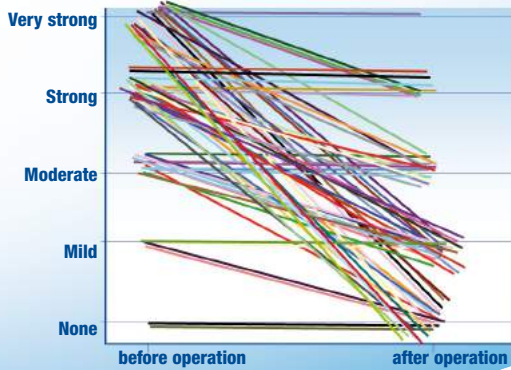


Fig. 22 Reduced need for conservative measures after surgery due to lesser tendency to form oedema

## Tendency to form haematoma



## What is the current state of the art in this field?

Considering these results, it makes sense that the current guidelines of the German Association for Phlebology (Deutsche Gesellschaft für Phlebologie) recommend a combination of treatments for lipoedema. Only a combination of lymphatic drainage, compression, and liposuction offers an effective approach to all of the significant aspects of this disease, i.e. oedema formation and fat accumulation. It needs to be emphasised that neither conservative therapy nor surgical treatment alone are effective; they really work only in combination.

Although the basic treatment in the form of decongestive therapy usually needs to be continued after liposuction, the intervals and the intensity thereof are clearly improved. Some patients can forgo wearing compression stockings altogether or may be able to wear stockings of a lower compression class.

## Where can I get high-quality treatment?

Both the conservative and the surgical interventions need to be carried out by qualified experts having adequate experience in this application.

Physiotherapists must have completed a special training in manual lymphatic drainage. In serious cases and, especially, early in the treatment, admission to a clinic specialising in lymphology may be advisable since these institutions provide not only optimal decongestion of the oedema, but also the intensive training that is crucial for the lifelong quality of life. After this stay, the physical oedema therapy can be continued by trained lymph therapists at a location near your home.

Likewise, **liposuction** should definitely be performed at specialised centres. Crucial factors include the availability of specialised equipment (use of tissue-preserving tumescence local anaesthesia and vibrating micro-probes) and the surgeon's long-standing experience with the clinical aspects of lipoedema. Due to the need for pre-treatment and follow-up, specialised lymph clinics and lymph therapists must co-operate closely.





## How can I contribute to the success of therapy?

You can promote the success of treatment by eating healthy, by sports activities (no high-performance sports though), lots of physical exercise, consistent use of compression stockings, and avoiding being overweight.

In terms of **physical activities**, steady, rhythmic activities such as, e.g., Nordic walking, gymnastics, cycling, and swimming are recommended. Swimming is especially beneficial, since the cold temperature of the water reduces the tendency to form oedema and the skin is massaged while you are swimming. Moreover, the orthostatic strain (of standing erect) is removed and many calories are burnt in the process.

All activities involving sudden starting and stopping motions that you cannot control e.g. team sports or tennis. should be carried out with caution. Most patients benefit from wearing the compression stockings during these activities since the physical activity allows the stockings to exert their best decongestive effect.

**High temperature** often exacerbates the oedemas. Excessive exposure to sunlight, tanning studio and sauna visits, and travel to countries with a hot and moist climate are therefore not beneficial for the majority of patients.

Since lipoedema is a disease that is manifest for the rest of your life, **your sustained and consistent co-operation** is the most important building block of any therapy plan. Crucial factors include wearing the compression stockings each and every day for oedema prevention, regular treatments by the physical therapists to remove „leaked“ oedemas, and repeated visits to the doctor for follow-up on the findings.

## Summary and conclusions

Lipoedema can be detected early and is quite responsive to treatment. A **combination of treatments** is considered to be the optimal therapy. Complex physical decongestive therapy to remove the oedema needs to be applied for life in most patients. Compression stockings can help prevent the formation of new oedemas. Liposuction used for medical reasons aiming to reduce the amount of pathological fat should be applied already in the early stages of disease to prevent progression as early as possible. The improvement of the external appearance and the reduction of pain are major improvements in the quality of life that were unthinkable in the past. Both the number and the intensity of physical therapy sessions can be reduced after the operation.

## Further information for afflicted individuals

### Internet sites

[www.lymphnetzwerk.de](http://www.lymphnetzwerk.de)

Homepage of the German lymph network presenting a broad range of important information on lipoedema, including addresses of specialised clinics, doctors, and physical therapists in Germany and a number of European countries. Experts answer questions related to diagnosis, conservative and surgical therapy in various forums.

[www.bundesverband-lymphselbsthilfe.de](http://www.bundesverband-lymphselbsthilfe.de)

Nation-wide association of individuals afflicted by lymphoedema and lipoedema. Detailed information and schedule of events.

[www.lipoedem-liposuktion.de](http://www.lipoedem-liposuktion.de)

Special patient forum of lipoedema patients who have undergone liposuction and can relate detailed information (addresses, reimbursement of costs, etc.).

[www.hanse-klinik.com](http://www.hanse-klinik.com)

Clinic specialising in liposuction treatment of lipoedema. Detailed information material can be requested from:

### **Capio Hanse-Klinik**

Fachklinik für Liposuktion

St. - Jürgen -Ring 66 · 23564 Lübeck

Email: [info@hanse-klinik.com](mailto:info@hanse-klinik.com) · Tel.: +49-(0)451/50 27 20

## **Useful literature**

### **a) Guide**

Schingale F - J (2007) Lymphödeme, Lipödeme. Ein Ratgeber für Betroffene. Schlütersche GmbH

### **b) Professional literature**

Erkrankungen des Lymphgefäßsystems. 4th edition, 2006, Viavital Verlag.

Overview chapter on lipoedema (p. 301-331) and liposuction (p. 482-499) (in German)

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