

# Scar Management

Information and tips about  
skin and scars

Freedom in Motion



# Made in Germany

## Innovation with experience

Who are we? That's simple! We are more than 1,100 employees working together across the world. As specialists in compression therapy, we have made it our mission to improve patients' quality of life and provide lasting relief from their symptoms. To achieve this, we are constantly developing new, intelligent products to meet our customers' individual requirements and ensure that treatment is successful. We have been pursuing this goal for over 100 years and are always looking for new solutions in lymphology, phlebology, scar management and orthopaedics.

We are working on something new every day to make the impossible possible and ensure more "Freedom in Motion".

You can find more information about Juzo at [juzo.com](https://www.juzo.com).

# Our aspiration: your wellbeing

We want to help you feel good. In this brochure, you will learn everything you need to know about scars and scar management. Scar management is a complex issue that often raises many questions for those affected, but also for their relatives. How is skin structured? How and why do scars form? What scar therapy options are there and how can scar therapy help you? We will try to answer many of your questions so that you can receive the best support and experience Freedom in Motion!

You can find more information about scar therapy at [juzo.com/scar-therapy](https://juzo.com/scar-therapy).

## The topics at a glance

All about skin	4
Scars	8
Scar therapy	16
Therapy methods	10
Tips	28

# All about skin

## Skin: the mirror of soul

At a size of 1.5 to 2 square metres, the skin is the human body's largest organ. It has the greatest number of nerves and accounts for up to 20% of your body weight. It performs various complicated bodily functions such as regulating heat, protecting the body against infections and environmental influences, and preventing it from drying out. It is therefore extremely important that it can function properly, yet your skin is much more than "just" an organ: skin is our contact with the outside world and is an indispensable communication tool in social relationships. All types of touches are sensed by the skin's surface and it is a means of perceiving and expressing sensations and feelings.

We don't refer to skin as the "mirror of soul" for nothing. Many changes in your body, your personal lifestyle and mood as well as hormone fluctuations become visible in your skin.



### Good to know

A baby's skin is around 20 to 30% thinner than by adults. Although it comprises the same number of skin layers, the individual layers are considerably thinner, making it especially delicate and sensitive.

Female skin has a different composition than male skin, with a man's epidermis (see page 6) being a lot thicker compared its counterpart in women. Its connective tissue is also networked more intricately and contains considerably smaller fat deposits.



## The skin's structure

The structure of skin is complicated. It is the same at every point, comprising three layers (epidermis, dermis and subcutis) that all have different functions. The thickness of the skin differs depending on the area of the body. Skin on your face or the back of your hand is much thinner than that on your thigh, for example.

### Epidermis: protection and immune organ

Despite being very thin, the top layer of the skin (epidermis in Latin) acts as the body's protective shield. The epidermis is the layer that people perceive as skin. It is responsible for protecting the body from various external influences such as UV rays or pollutants. An intact epidermis stops microorganisms like bacteria from getting into your body and prevents your body from drying out.

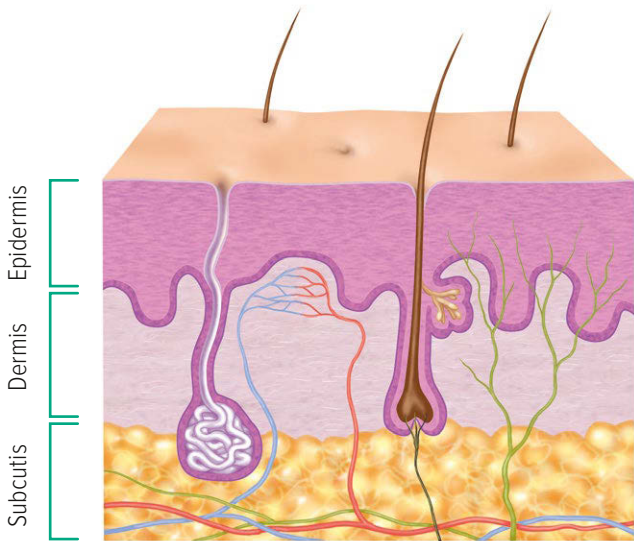
The epidermal cells constantly renew themselves and have a life cycle of approximately one month, when they die and detach themselves from the skin's surface layer.

### Dermis: network and transport system

Attached to the epidermis, the dermis is situated directly beneath. It is thicker than the outer layer of skin and is very strong, elastic and tearproof owing to its collagen and elastin fibres. Unlike the epidermis, this layer comprises nerve cells, blood and lymph vessels. Among other things, the dermis is responsible for sensing touches, pressure, pain, temperature or even itching. The blood vessels in the dermis also regulate the skin's heat.

## Subcutis: the skin's fat storage

The subcutis primarily consists of fatty tissue, which stores energy, protects the body against the cold and acts as padding. This skin layer varies in thickness depending on where it is in the body. The body's hair roots, sebaceous and sweat glands can also be found in the subcutis.



# Scars

Every injury leaves behind marks in the form of scars. If an injury is only superficial or minor, these scars are often barely noticeable. If a large section of the skin is affected or the injury extends to the deep layers of the skin, this can lead to very distinct scars and major hindrances in day-to-day life. Each patient deals with their scars differently, with the story behind the scars playing a great role. The aim of scar therapy is not just to recover movement, but also to restore aesthetics. Be they large or small, scars can have a major effect on a person's quality of life. Every scar can therefore be treated to have the greatest possible influence on the quality of the scar.

## Formation of scars

If our skin is damaged as a result of accidents, surgeries or illnesses, our organism tries to repair it, but often does not achieve the same level of functionality as before the injury. This is only possible if there are no other accompanying illnesses that could impede the skin's repair.

In the case of superficial injuries that only affect the epidermis, wounds can heal completely without leaving any marks (epithelial wound healing). These types of injuries to the epidermis include sun burn or also superficial abrasions.

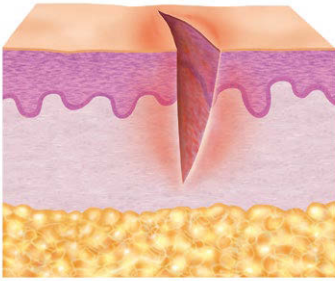
If deeper layers of skin are affected, such as in the case of surgeries etc., scars are formed after the various stages of wound healing. The wound healing process depends on the type, size and depth of a wound.

## Wound healing

In order to understand how scars are formed in the final stage of wound healing, it can help to take a closer look at the wound healing process.

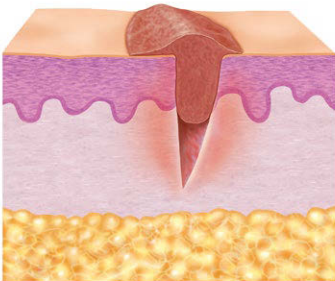
### 1. Cleaning or inflammation phase

The blood clotting process begins immediately after the skin is injured. The body tries to stop the bleeding and at the same time remove germs and bacteria from the wound or prevent them from entering. This stage can last up to three days.



### 2. Granulation phase

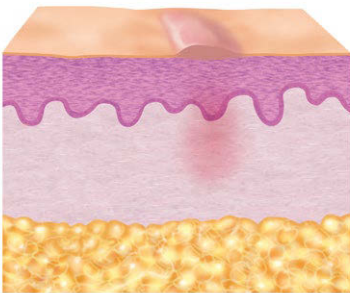
A few days after the injury, the body starts to rebuild vessels and tissue (granulation tissue) with the aim of closing the wound as quickly as possible.



### 3. Reparative phase

The last stage – closing the wound at the epidermis – starts between five and ten days after the wound was sustained. Scars start to form during the last stage of wound healing. The repair stage can span out over several weeks or months.

Sometimes, the scars formed in the repair stage do not just give rise to an aesthetic problem. Due to thickening, shrinkage and hardening of the skin, it has less elasticity at the scarred sites.



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#### Good to know

Scar tissue can change for up to two years after its formation. During this time, scar therapy can have a positive effect on the formation of a scar. The therapy can somewhat reduce itching and pain, especially in the early stages of scar formation, i. e. in the case of immature scars.

## Factors affecting scar quality

No two scars are the same. If you were to monitor the healing of two identical wounds on different people, the resulting scars would not be exactly the same. A scar, and its appearance and development, depends on all manner of factors – some of which can be influenced.

## Factors we can influence

### Mobilisation

Depending on the type and severity of the injury leading to the scarring, passive movement by a therapist may be necessary. Mobilising the scar and the surrounding areas increases circulation and makes the connective tissue looser, softer and more supple, improving the quality of the scar.

### Avoiding the sun

Fresh scars should never be directly exposed to the sun, otherwise they may darken. You should always be sure to cover yourself with sun-protective clothing or compression garments and/or sun cream.

### Compression therapy

Wearing compression garments every day has a positive effect on the quality of a scar, and can support healing and prevent an overgrowth of scarring tissue. You can find everything you need to know about compression therapy from page 22 of this brochure onwards.

### Silicone patches and ointments

Using silicone patches and special ointments has a positive effect on scar tissue. They keep it moist, supple and can support healing. Please note: do not combine directly with care products.

You can find more information about this on page 26.

## Factors we cannot influence

### Location

Scars on parts of the body that are often moving are constantly under strain. The continuous tension can lead to the development of undesirable scar formations.

### Age

Wound healing is often impaired in elderly people, owing to a change in skin structure. It is less elastic, there are fewer layers of fat and blood supply decreases. Children and young people tend to have thicker, raised scars as there is often an overproduction of new connective tissue.

### Skin thickness

Thicker skin forms more visible and distinct scars. Skin thickness starts to increase in childhood and then decreases again from the age of 65.

### Skin type and origin

People with highly pigmented skin are prone to scarring and an overgrowth of scar tissue resulting from an excessive production of new connective tissue.

### Other illnesses

Accompanying illnesses or pre-existing conditions (impaired circulation, diabetes, etc.) negatively affect scarring.



## Types of scars

Depending on the injury and subsequent wound healing, different types of scars may form that vary in their appearance and shape.

### Hypertrophic scars

Raised, reddened or even bulging scars are referred to as hypertrophic scars. They arise when there is an excessive production of new connective tissue, which results in prominent and thick scars. They grow quickly within the original wound area, in other words they don't develop uncontrollably. Hypertrophic scars can spontaneously regress over a longer period of time, which tailored scar therapy can support.

The most common cause of hypertrophic scars are tensile forces at play when the wound is healing. This is especially the case for joints.

### Keloids

Like hypertrophic scars, keloids also develop due to an overgrowth of scar tissue. With keloids, however, the scar grows beyond the borders of the wound area and sometimes even continues to grow after the wound has healed. The growth can also start months later, which is a result of uncontrolled and intense growth of connective tissue. Although the excessive growth stops after some time, the keloid that was formed never recedes. The area is reddened or darker than the rest of the skin and can feel itchy or painful.

A keloid can even reappear after being surgically removed. Scar therapy, which sometimes combines various different treatment methods to achieve long-term positive results, is therefore important.

## Atrophic scars

Unlike the two types of scars mentioned before, atrophic scars consist of sunken recesses and the scar is lower than the surrounding skin. Not enough new connective tissue is produced to completely fill out the wound again.

Atrophic scars are formed when wounds, such as acne, heal badly and they can often be found in the facial area.

## Contractures

Scar tissue can contract and harden based on shrinkage. This causes irregular and quite overgrown scars to develop. These complications mainly occur in scars after thermal injuries and are referred to as contractures. They occur in particular when large areas of the body are affected by burning or scalding. Contractures restrict mobility and, in the worst case scenario, can lead to stiffening of the affected body part. Surgical correction is therefore often necessary.



### Important

Scars improve with time and patience. An existing scar cannot be removed completely. Don't be discouraged if a scar doesn't look the way you want it to at first or if you can't see any noticeable changes straight away during scar therapy. One way of seeing smaller progress is through documenting your therapy with photos, meaning you can compare the changes during the course of the therapy.

# Scar therapy

## Areas of plastic surgery

Every surgical procedure leaves behind visible marks on the skin. Targeted and comprehensive scar therapy may be necessary in many cases, but in others it may be desired to improve the visibility of scars and their structure. The end result depends on the size, type and individual characteristics of the scar (see page 14).

There are four pillars in plastic surgery, which will be discussed below. Plastic surgery focuses on the recovery and improvement of mobility and function and/or an aesthetic result – body shapes or functions are positively influenced by the change. There is also either a medical necessity or personal desire of the patient to undergo cosmetic change.

### 1st pillar: Reconstructive surgery

The aim of reconstructive surgery is to recover bodily functions and shapes after operations (e. g. tumour resections) or accidents as best as possible. Reconstructive surgery also treats congenital malformations.

In some cases, the procedure involves transplanting healthy tissue from an area of the patient's own body to close wound surfaces or replace missing tissue. Scars therefore appear in various parts of the body, which should be treated after the wounds have healed.

The removal of tumours or other defects often leave behind larger scars that are often not only bothersome but can also limit movement in those affected.

## 2nd pillar: Hand surgery

Hand surgery is a special area of plastic surgery. Surgical procedures on the hand are very complicated because of the diverse structures of this extremity.

The hands and individual fingers are the most important “tools” in day-to-day life and it is therefore of utmost importance to recover their functionality in the best possible and quickest way. A precise incision during a procedure is just as important as targeted scar therapy afterwards, as emerging scars can lead to major limitations, especially on the hand’s sensitive tissue.

Intensive and targeted scar therapy comprising various elements and methods focuses on the function and mobility of the hand.

## 3rd pillar: Aesthetic surgery

Aesthetic surgery is another pillar of plastic surgery. Unlike the other pillars, there are no compelling medical indications for the procedures, but rather they are of a aesthetic nature.

Like in reconstructive surgery, these procedures can change the shapes of a body, but the focus is on the aesthetic result. The decision to undergo an aesthetic procedure can either be based on a personal desire for a bodily change or the need for aesthetic reconstruction after accidents or illnesses.

Follow-up scar therapy is possible to improve the scarring and ensure that there is as little trace of the procedure as possible.

#### 4th pillar: Burn surgery

Burn surgery treats acute burns/scalding and burn scars. The treatment of acute burns and scalding mainly takes two factors into consideration: the depth of the burn, and the size of the affected body surface area.

The depth of burns is classified in degrees (I, IIa, IIb, III degree). Surgery is mostly necessary for IIb degree burns (damage to the deep layers of the dermis) and III degree burns (complete destruction including the dermis and damage to the subcutis).

Depending on the depth and size of the burns, the patient must first receive intensive medical care. Owing to the severity of the burns, it is often necessary to remove tissue and replace it with new tissue through skin grafts.

Intensive treatment is especially vital in the case of burns as burn scars often contract or new connective tissue grows quickly. Untreated, this can lead to severe function and movement limitations.



#### Important

The following applies to all four pillars of plastic surgery: scar therapy can be started as soon as the wound area has healed. The earlier the suitable treatment is administered, the better the end results. We will introduce you to the available therapy methods on the next few pages.



# Therapy methods

Unfortunately, scars cannot be made invisible. However, good therapy options exist that can considerably improve their appearance and function.

Every scar is different and thus the requirements for scar therapy are manifold. Starting treatment soon after a procedure is necessary to achieve the best possible scar result. This way, maximum use can be made of the time in which the scar is active. For all types of scars, non-invasive (non-surgical) therapy options should therefore be started as soon as the wound has healed.

Scar revision may be necessary for scars causing significant function and movement restrictions. Depending on the characteristics of the scar, this revision can be done surgically or by using laser therapy, etc.

Your treating medical specialist will select the most suitable therapy or a combination of various therapy methods for you.



## Important

Compression and silicone can also have very good results for “old” yet still active scars that were not treated at an early stage.



## Compression therapy

### What are compression garments?

One possible treatment method in scar therapy is the application of pressure (compression) on the scarred area. This can be done using flat-knitted compression garments. Compression has been used successfully in scar therapy for many years now. Compression therapy can even benefit older scars.

### Adjusting the compression garment

If the compression garment fits exactly, it exerts medically effective and constant pressure, considerably helping to improve the scar area. It shouldn't be constrictive, but it shouldn't slip either. Specially trained medical retailers will take your body measurements to manufacture a compression garment with a precise anatomical fit (such as the Juzo ScarComfort) for you. The measuring process also determines whether additional extra options like pressure pads (pressure cushions) need to be incorporated in order to achieve ideal and even pressure in the scarred area. Your doctor will prescribe you with a compression class (pressure intensity).

## The ideal fit

Your compression garment sits very close to your body like a second skin, allowing the desired pressure to be achieved. Particularly at the start of therapy, wearing and putting on the compression garment can therefore need some getting used to and can also sometimes be unpleasant in the event of freshly healed wounds. Please don't let this put you off as a satisfying result can only be achieved if you wear the compression garment continuously throughout the day and at night.

With a bit of practise and handy aids, putting on the garment gets easier with time and wearing it will increasingly become part of everyday life. Your local medical retailer would be happy to recommend a suitable donning and doffing aid and show you how to use it. You can also find more useful tips and information about all of the Juzo donning and doffing aids in our brochure "Compression therapy: Start right!" or on our website at [juzo.com/donning](https://juzo.com/donning).



### Important

Your compression garment's fit must be checked regularly in order to make sure it is still working properly. It is therefore necessary to see your specialist supplier for regular checkups!

## Effectiveness of compression therapy

You can start with compression therapy as soon as a wound has closed.

The uniform surface pressure applied by the compression garments can have various positive effects on the scarred area:

- prevention of uncontrolled growth of the scar
- fading of the scar
- softer scar tissue
- reduced thickness of the scar
- protection of the sensitive skin or skin graft
- reduced itching in the scar area
- pain relief
- increased mobility of scars in joint areas
- minimised risk of scar shrinkage and resulting joint stiffness (contractures)

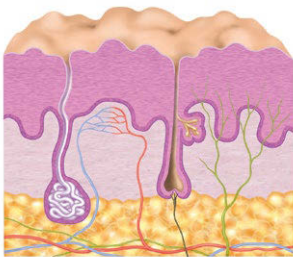


Fig. 1  
Hypertrophic, bulging scar  
without compression

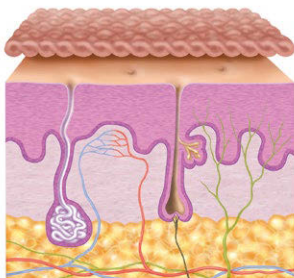


Fig. 2  
Flattened scar below the  
compression fabric

## Therapy duration

The precise duration of your compression therapy cannot be predicted. It depends on various different factors and can therefore range from six months to two years. Your own commitment to the therapy and patience as well as support and encouragement from family and friends can significantly contribute to the success of your therapy.

Wearing the compression garment consistently (as prescribed by your doctor) is the only way to ensure that the scar heals well without any restrictions with regard to function. Other factors that influence the duration of treatment include:

- the severity of the scars
- the site of the scar and the surface affected
- healing responses that may differ from person to person



### Good to know

In many cases, compression therapy can eliminate the need for surgical scar revision. However, this must be determined on a case-by-case basis.

## Silicone therapy

Treating scars using silicone is another effective option in scar therapy. The uses of silicone are manifold, varying from silicone pads right through to complete face masks.

Silicone patches retain the skin's natural moisture under the silicone, preventing the scar area from drying out. Silicone patches (e. g. the Juzo ScarPad or Juzo Silon-TEX®) are made entirely from 100% medical silicone. They are soft, highly elastic and very adaptable, which means people find the wearing experience to be pleasant rather than disruptive.

Depending on the scar and choice of the pad, silicone patches can also be worn in combination with a compression garment. Using the patches early alongside compression therapy can be an ideal supplement and can boost therapeutic effectiveness:

- medical silicone allows a moist environment to develop on the scar, it keeps the scar soft and has a beneficial
- uncontrolled growth of the scar is reduced or proliferation of the scar
- the fresh scar tissue or skin graft receives
- additional protection of the fresh scar tissue or the graft
- direct rubbing on the skin is avoided

Silicone inserts can also be worn under compression garments at points of the body where compression alone is not enough to build up the required pressure on the scar tissue. This can be the case, e. g., on the ankle or cleavage.



# Tips

We have put together a few helpful tips that can promote the success of your scar therapy. It is often the small things that are not too much effort that can support the progress of therapy and make treatment easier for you.



## Wearing period

Wear your compression garment exactly as prescribed by your doctor. This is the only way to guarantee an optimum treatment outcome.



## Cleaning the compression garment

Your compression garment can be washed in the washing machine on a gentle or delicate wash cycle (40 °C or less).

Wash your compression garment every day – this is the only way the elastic properties are retained over the long term. Residue of skin scaling, ointments, dirt and dust particles have an abrasive effect on the yarns and fibres. Washing the garment every day is the only way to completely remove these residues, increasing the durability of the compression garment.

We recommend using Juzo special detergent every time you wash your garment. Please do not use any fabric softener as the plasticisers it contains damage the compression fabrics!



### Cleaning the ScarPads

Clean your ScarPad every day – this is the only way to ensure the hygiene required in the scar area and that it stays in place. The ScarPad is to be washed using a special soap (Juzo ScarPad Cleaning Soap).

Put a couple of drops of soap onto the ScarPad and wash it thoroughly under warm running water. After cleaning the pad, place it on a dry towel with the sticky side facing upwards. It is ready to be used again when it has completely dried.



### Fit

Compression garments must fit perfectly and should not be constrictive or slip. Body measurements may change due to weight gain or loss, or due to growth in children. If this is the case, please consult your medical retailer. They will check the fit of the garment and, if required, take additional measurements to have a new garment made.



### Caring for your scars

The scarred skin can be kept supple by massaging it and applying a cream every day. Hygiene is very important here: keep the scar area clean to prevent inflammations. Follow the skin care recommendations provided by your treating doctor.



### Sunlight

Do not expose your scars to direct sunlight and protect yourself sufficiently with sun cream. Direct sunlight promotes the formation of hypertrophic scars. The scar tissue can also darken. Juzo compression garments (Juzo ScarComfort) guarantee a UV protection factor of 30. The Juzo silicone patches (Juzo ScarPad) offer additional protection as they have a UV protection factor of 50.



### Physical therapy / occupational therapy

Targeted movement through physical and occupational therapy plays an important role in the effectiveness of scar therapy. This mobilises the scar tissue and improves circulation, making the connective tissue softer. Furthermore, it allows joint deformities or limb stiffening to be treated in the best possible way, achieving the optimum results. Always follow the treatment recommendations provided by your doctor.



### Open wounds

Silicone patches must never be worn on open wounds!

Be sure to consult your doctor before wearing compression garments over existing wounds. In the case of smaller wounds, your doctor may approve the use of a compression garment over a bandage or dressing. Residual defects can heal particularly quickly and without complications with the help of compression.



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