

How the skin ages

The skin is the link and barrier between the body and the world outside. The range of stresses extends from water and soap to the almost daily companion „sunlight“. Both, like other external influences, cannot be avoided, but both can also cause damage. Reason enough to take a look at the interactions of the skin with these extremely different strains.

4.1 What makes us look older

Grey hair makes a person look older, the ears, which become bigger over the years, the nose, which gets bigger over time. Also, the elasticity of the skin decreases, because the elastic fibers of the skin and also the inelastic collagen fibers in the dermis are no longer sufficiently formed because the productivity of the connective tissue cells decreases. An infant has a very smooth skin with a silky shimmer and even color, but the skin looks more and more irregularly pigmented with brown, red or white spots over the years. These pigment spots are caused by the formation of freckles in light-skinned people. People who do not develop freckles develop pigment modifications in old age, which are then called age spots. They are the same as freckles in young people with lower pigmentation.

4.2 The skin relief changes

Pores of young people are generally hardly recognizable, the pores of older people become larger, which can be seen especially in the nose. The skin cells, which also reach into the muzzle passages of the sebaceous glands, continue to grow so that the nose becomes larger and the skin more coarse-pored. Furthermore, skin relief changes naturally due to the formation of larger and smaller wrinkles. Very small wrinkles and possibly

slight scaling already occur in young people due to dehydration of the skin. However, this wrinkle formation disappears immediately when the skin is treated with an oily and moisturizing cream. In contrast, age wrinkles cannot be removed with creams. At first, the mimic wrinkles become coarser and deeper, e. g. the wrinkles that go around the mouth from the nostrils (the so-called nasolabial wrinkles). These wrinkles become deeper and sharper with increasing age, in addition, the cheeks hang because of the decreasing elasticity of the skin.

The eyelids show this problem particularly clearly in some people that the eyelids, in particular, the upper eyelid become flaccid and can hang over the eyelashes (so-called drooping eyelids). This can only be treated surgically, but it is quite simple and good surgically.



4.3 Age spots

From a medical point of view, age spots are the same as freckles. They are overloading of the skin with ultraviolet light. This does not concern a single sunbath, but it concerns the whole life. The skin forgives a lot, but it forgets nothing. So if you have light skin and have been in the sun a lot in your life, you will get age spots. That's why the easiest way to prevent age spots, protect yourself from the sun and enjoy a solarium only in moderation. Of course, there is nothing wrong with a light tan.

Sunlight causes age spots: UV light not only promotes the aging of the skin and takes away its elasticity prematurely. An excess of UV light also causes age spots in the long term: an uneven pigmentation of the skin, medically speaking, in the form of freckles, but larger areas.

The lighter the skin, and the more sun it has seen in life, the higher the probability of age spots. The easiest way to prevent age spots is therefore to sunbathe prudently and slowly get the skin used to the sun and protect it from too much.

4.4 Causes of wrinkle formation

Regarding the skin, a distinction is made between biological aging on the one hand and light aging of the skin on the other. The biological aging of the skin is due to the fact that over the years the fibroblasts, the cells that form the connective tissue, the elastic fibers and the collagen fibers, decrease in pure number and also lose activity. After a few years, therefore, not enough connective tissue fibers are produced. The thickness of the skin decreases so that the skin of an elderly person becomes much thinner and more vulnerable. In addition, the elasticity of the skin decreases. This means that the skin no longer contracts and hangs down so well that wrinkles appear.

The biological aging of the skin can only be avoided a little.

However, what can be well avoided is the light aging of the skin. If the skin or genetic material in the cells must be constantly regenerated because it is destroyed by light, the cells of the skin also lose their ability to form elastic fibers and collagen fibers over time. In addition, elastic fibres are destroyed under the influence of light. This can be recognized by the fact that skin particularly exposed to light develops small yellowish nodules. These are the degenerated elastic fibers. They can be seen particularly often and well in older women above the upper lip.

Another possibility to develop wrinkles is a mechanical overload of the skin so that the fibers are overstretched. However, this is probably the least likely cause of wrinkles, especially on the face.



4.5 Types of skin aging

Dermatologists distinguish two factors in skin aging: normal, biological aging and light aging. In addition, a mechanical overload, an overstretching, can destroy the elasticity of the skin.

4.5.1 Inevitable: biological aging

In the course of the normal biological aging of the skin, the number, production, and quality of the cells of elastic and collagen fibers slowly diminish. This reduces the elasticity and firmness of the skin. This process also makes the skin thinner and more vulnerable.

Bad exchange: wrinkles against tan: light aging is triggered by the UV radiation of the sun. Each beam causes tiny damage to the elastic fibers. Of course, a little sunlight does not harm the skin as a whole. But over the years all the many small damages add up so that in the result frequent, deep tanning is paid later with inelastic, wrinkled skin. The elasticity of the skin is irretrievably exchanged for a temporary tan.

Sunlight takes on elasticity: small yellow nodules in particularly light-strained skin areas document the light aging of the skin. They're light-damaged, atrophied elastic fibers. Of course, the areas that suffer the most intense light exposure are those that are particularly often exposed and thus also visible, such as the skin above the upper lip, on the cheeks, nose, and temples.



UV radiation not only costs elasticity, but it also causes further damage: When it attacks a cell nucleus, the cell dies or survives with damaged genome and the cancer risk grows.

4.5.1.1 Victims to perpetrators: the free radicals

Not only when a cell nucleus is hit directly occurs a small damage. In addition, a further reaction chain stresses the skin: every ray of light that reaches the skin carries a little energy into it. This energy can break down chemical building blocks that are and should remain stable. The fragments, which now lack their chemical binding partner, react aggressively and destructively to the separation.

By energy from outside, e. g. sunlight, actually stable chemical compounds (molecules) are torn apart. The so lonely partners then have nothing more urgent to do than to make a new connection, no matter with whom it costs what it takes. These aggressive chemical separation victims are called „free radicals“. In their merciless search for a new partnership, they often push themselves into uninvolved connections that usually do not survive this attack. In this way, a ray of sunlight at the level of the small chemical building blocks can trigger a destructive chain reaction. The more of this the skin suffers, the faster the aging process progresses.

4.5.1.2 Skin damage due to overstretching

Wrinkles also form due to mechanical overloading of the skin. If the fibers are overstretched, they can tear. However in the sensitive area of the face, this happens very rarely.

Elsewhere, however, many women have small light stripes where the skin was once strongly stretched: Overstretching causes the connective tissue in the lower layers of the skin to tear. The skin

repairs these damages with scar tissue, which is then visible due to the lighter color.

People with firmer connective tissue do not get this so easily, but people with „weaker“ connective tissue already get light stripes by jeans that are too tight or by gaining weight in the meantime. These light stripes are simply called „stretch marks“ because they occur particularly often during pregnancy: During pregnancy, the abdomen is stretched considerably; in addition, the pregnancy hormones soften the connective tissue so that the offspring is not too strained.

Stretch marks can hardly be corrected once they're there. But it is possible to prevent it: through gymnastics, sport, hot and cold alternating showers, massages and keeping your body weight stable.

4.5.1.3 The key question: where do the wrinkles come from?

When it comes to aging processes, the central keyword is, of course, wrinkles. Very small wrinkles appear even when a person is young, but the skin becomes dry. However, these wrinkles disappear immediately as soon as the skin gets the necessary lubrication from a cream.

Facial features are becoming more pronounced: In contrast to wrinkles caused by dryness, wrinkles caused by old age cannot simply be removed with a little cream. In the course of time, the mimic wrinkles are formed by wrinkles that run from the nostrils around the mouth or the laugh wrinkles. These wrinkles become sharper and deeper with increasing age.

As long as the skin has its greatest possible elasticity, it follows every movement of the body, be it the wiggling of the toe or the

facial expression in the face. Above all, it always returns completely to its initial position as soon as the movement is complete. If the elasticity of the skin is reduced, it still follows the movements otherwise, the mobility would be limited or the skin would tear. But with the complete return to the starting position, there is more and more difficulty: Instead of returning to the original shape like an elastic band, the skin remains a little stretched. This excess length then gives room for wrinkles and fine lines. Instead of contracting like a rubber band, the skin functions a little like an accordion.

before

*less content of natural hyaluron:
fibroblasts produce less elastin and collagen*

= the skin has less elasticity, deep wrinkles and less volume

after

*after hyaluron treatment:
fibroblast produce lots of elastin and collagen*

= the skin has volume, small wrinkles, is firm, smooth and supple



4.6 Skin aging through sun: beautiful and dangerous

The sunlight contains more ingredients than the human eye can perceive. People only see the rainbow colors, the so-called spectral colors.

Outside of the visible light, the infrared radiation joins on one side of the spectrum, on the other the ultraviolet radiation, in short: UV light or UV radiation. The UV light is subdivided into UVA, UVB, and UVC.

Sun worshipers appreciate the UVA radiation because it triggers in the skin the conversion of skin pigment into the visible brown pigment. As a result, the skin tans within a few minutes. In contrast, UVA can hardly trigger a sunburn. Sunbeds, therefore, rely on this fast tanner. But the quick tint of the skin fades quickly because the colored pigment is only in the upper horny layer. It is shed in the course of a few days, and so is the tanning has gone.

UVA is not harmless. We have to be careful with the UVA radiation, even if the solarium advertising promises something else: although UVA does not cause sunburn, the elastic fibers suffer from it - the elements of the skin that are responsible for firmness. UV light damages the elastic fibres of the skin all the more, the deeper it penetrates into the skin. UVA light

penetrates the deepest, leading to premature skin aging.

Unfortunately, the skin does not complain immediately, rather the many small skin damages add up and avenge themselves only later with a loss of elasticity and premature aging.

If the UVB components of sunlight hit the skin, they stimulate the dye-forming cells there. They then produce more of the dye. Although the tan develops in this way only after two to three days, it remains for several weeks.

The bad news: UVB does not penetrate as deeply as UVA. But because it is richer in energy, it damages the germ cells of the skin and even kills some of them. These cell corpses must be removed by the body. Among other things, it intensifies the blood circulation so that the transport is faster. The person feels the sunburn.

Cells that have been hit by UV light, but not killed, suffer damage to their genetic material in the cell nucleus. And with each cell damaged, the probability of skin cancer developing years later increases.

The even more energetic UVC radiation, already related to X-rays, is normally filtered out by the ozone in the upper atmosphere. Only since the hole in the ozone layer has been opened can some of this dangerous radiation reach humans and animals.

The sun is not only dangerous. Without sunlight, nothing would work on earth. And feeling the warmth on your skin after a long, dark winter is priceless. But as with so many good things, it is very important to enjoy the sun in moderation.

4.7 Other causes of skin aging

From the age of 30, the skin's hyaluronic acid content decreases steadily, and causing wrinkles.

From the age of 40, the tension of muscles and skin decreases. Since the skin on the face is directly connected to the muscles, the cheeks begin to sag.

The metabolism changes after the age of 50. The effect is particularly noticeable at women. During and after the menopause the estrogen level decreases considerably and you can almost see how the skin becomes thinner and wrinkled and starts to hang down.

The reason for this is that collagen fibers and elastic fibers are less and less newly formed and oxygen radicals can be intercepted less and less. In addition, the body builds up more fat with the consequence of double chin, hanging cheeks, nasolabial fold.

4.8 Unhappy because of cellulite

Orange peel skin, called cellulite, makes many women unhappy about their legs and buttocks. The skin quickly shows a surface structure similar to that of an orange.

4.8.1 The causes of cellulite

In order for the fatty tissue to find sufficient support in the subcutis, it is divided into small sections by the connective tissue. Each of these honeycombs can store fat and is kept in shape by the firmer partition wall. If it is necessary to store more fat, these honeycombs increase in volume. However, the more stable partitions do not adapt to this, the individual connective tissue layers keep the skin at a constant height, while the fat stores inside each honeycomb slightly lift the surface. In addition, the

tensioned partitions press on the lymphatic vessels running inside. They're to remove excess fluid and slag. That's hard for them of course. As a result, additional liquid accumulates in the spaces between the grease. And already the characteristic pattern of the orange peel skin has developed.

As if that weren't enough, the connective tissue of the subcutis also adapts to the load by strengthening and thickening. The early humans certainly didn't mind that much, they were happy about the stored supplies. In times of refrigerators that are always full, however, this purely optical problem of the honeycomb pattern on the skin is annoying.

4.8.1.1 Cellulite: not an issue for men

Cellulite almost always affects women. The reason is that the proportion of subcutaneous fat tissue of women is about twice as high as of men (women: about 30 percent of body weight, men: only about 15 percent of body weight). The cause: The female sex hormone is significantly involved in the formation of subcutaneous fat tissue. If there is a tendency towards orange peel skin, birth control pills, a bundle of female sex hormones, can therefore promote development.

4.8.1.2 Prevent orange peel skin

What helps against cellulite? Again, prevention is the best medicine. First, any extra pounds have to go down. And as quickly as possible, because the longer the connective tissue is overstrained, the more it adapts to the load and hardens. Gymnastics and exercise should also be part of the program, as this burns the body many calories instead of storing them in the subcutaneous fat tissue. In addition, tight, well-trained muscles model the legs, buttocks and skin.

4.8.2 What helps against cellulite

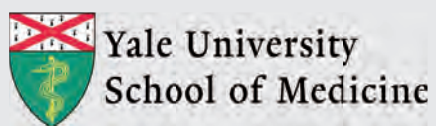
Further mosaic stones to alleviate cellulite: massages, lymph drainage and heat treatments with deep heat or infrared light can help. And alternating showers; they refresh you immensely, get your blood circulation up to speed and support the fight against cellulite. The treatment with modern gentle technologies such as radio frequency (RF) and electro-muscular stimulation (EMS) is highly effective gently and efficiently reducing excess body fat and efficiently tightening the body tissue (see chapter 7. 1 ff).

4.8.3 And what unfortunately doesn't help at all

All the creams and water preparations that are offered and sold for cellulite makes unfortunately only the purse thin, but not the buttocks and legs. Unfortunately, orange peel skin cannot be impressed at all by the active ingredients on the outside of the skin.

4.8.4 When it gets really fat: Suction of fat

In severe cases (such as the so-called „breeches syndrome“, when the thighs extend unpleasantly sideways), in order to effectively control the orange peel skin, only a liposuction operation remains: a surgeon makes incisions of several millimeters in the skin and inserts a probe. Excess fat cells are then removed by this metal tube. However, this bloody surgical procedure naturally involves the risks of any operation and is not cheap at all.



Tests by the Yale University of Medicine have shown: Radiofrequency technology can safely and effectively help to rid the body of surplus fat.



Clinical tests conducted at the University of Galway have shown: EMS increased the muscle volume in the face by almost 20 percent on average.