



**STRONG
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for the well-being of the feet

Staying on your feet... with diabetes

How to avoid foot problems

Comprehensive advice for diabetes
patients and how to prevent

Diabetic Foot Syndrome

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1. Diabetics and their feet



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Diabetes is a chronic metabolic disorder which is marked by elevated blood sugar levels. Diabetes is differentiated into two types. Approximately 95 percent of affected persons suffer from type 2 diabetes. Other diabetics suffer from the insulin-requiring type 1. The symptoms of diabetes are not always clear, so that it often takes some time for it to be discovered. But the earlier the illness is detected, the easier it is to help patients. This also applies to the symptoms that accompany diabetes.



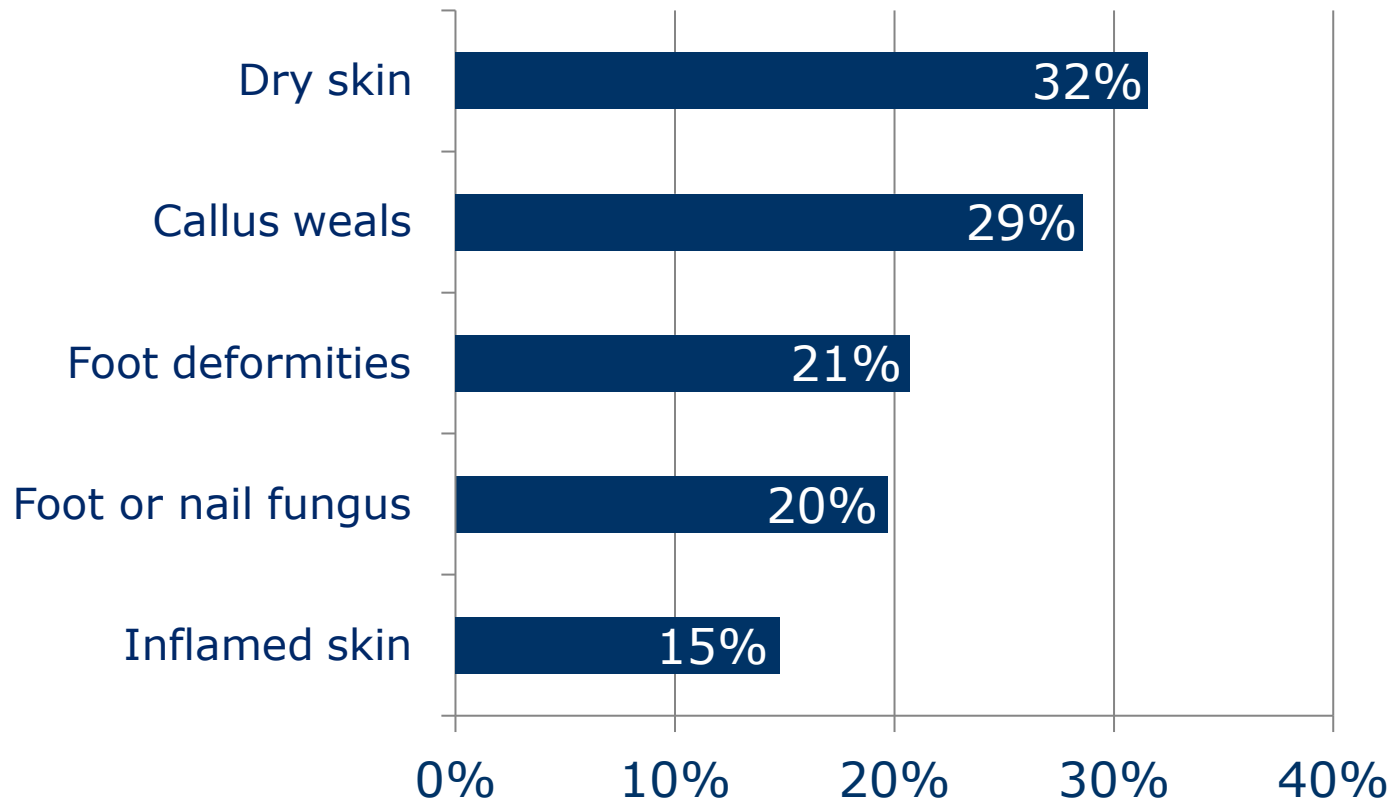
1.1 | What is Diabetes mellitus?

Definition:

Diabetes, also known as sugar disease, is a chronic disorder that affects the metabolic system. Diabetics have too much sugar in their blood. In the case of type 2 diabetes, the pancreas still produces insulin but the body does not react accordingly. The glucose absorbed with food is no longer available to the body cells for the purposes of energy. This results in two problems: Cells do not have enough energy to function properly and, at the same time, the blood has an elevated glucose concentration, which, in the long term, will damage organs, blood vessels and nerves.

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1.2 | Common skin problems in diabetics



Source: GEHWOL Diabetes Report 2019, Foot Deformities 2018

1.3 | The diabetic foot: Definition DFS

Definition: Diabetic foot syndrome, or DFS for short, is a common complication of diabetes mellitus. It is characterized by the following clinical findings:

- Poorly healing wounds of the skin, that can very quickly develop into ulcers, and necrosis of the tissue, especially without sufficient treatment
- Reduced sensitivity and pain sensation
- Weak or missing foot pulses (circulatory disorders)
- Diabetic osteoarthropathy (DNOAP; so-called Charcot foot) possible as a result
- Cascade endpoint: minor or major amputation

1.4 | The diabetic foot: risk factors

Cause: Prolonged periods of high sugar levels in the blood can damage many areas of the body. The consequences:

- Diabetics develop neuropathy and angiopathies, which are considered the biggest risk factor for foot lesions
- 10% of all patients with foot lesions had calluses or pressure marks on the skin, 15% missing foot pulses and 17% peripheral polyneuropathy

Other risk factors: biopsychosocial condition, smoking, decreased vision (foot inspection) impaired joint mobility, pressure from inappropriate footwear, foot deformities, overweight/obesity



1.5 | How do these skin and foot problems develop?

- The main causes are nerve damage and reduced blood circulation.

Consequences are:

- Problems with walking and pressure distribution
- Dry skin
- Callus weals
- Cracked skin, tears
- Inflammation
- In the worst case: poorly healing wounds

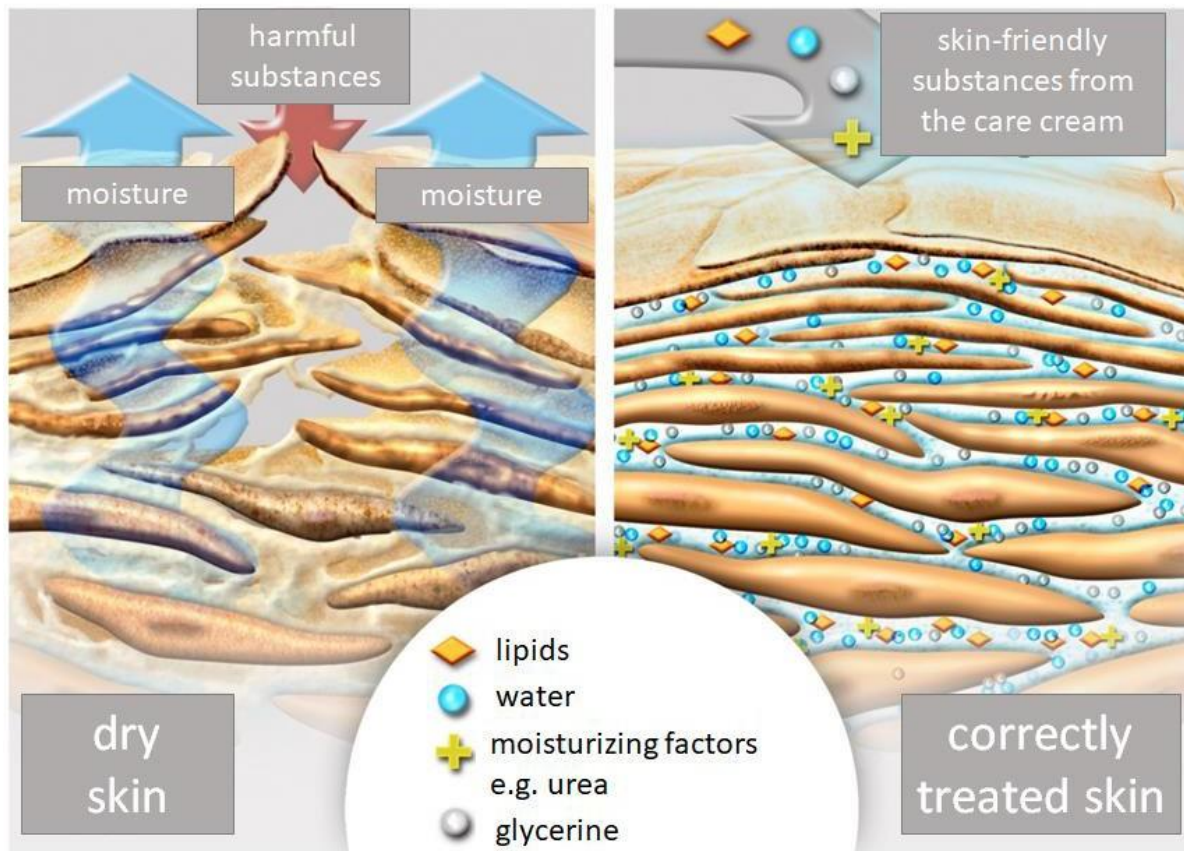
1.6 | The cause: A decrease of sensation in the feet

- Nerve damage may impair the circulation of the small blood vessels in the skin
- The secretion of sweat and lipids (skin fats) is reduced
- Insufficient skin circulation may result in skin changes
- The skin feels cool and brittle, and becomes dry
- Dry skin often develops further skin problems



In diabetics, reduced skin circulation can cause problems such as dry skin. Blood transports moisture, supplies nutrients to the tissue, and encourages wound healing.

1.7 | Skin problems: dry skin vs. healthy skin



1.8 | Dry skin

Description:

- White, brittle, tight, itchy, scaling

The cause:

- If the skin lacks the right lipids (fats), the defense barrier loosens. The tight compound of skin cells breaks apart and fine cracks begin to form. The skin loses moisture and elasticity.
- Diabetics often have reduced circulation and sweat less. For this reason, their skin dries out quicker



The skin dries out more quickly in diabetics (circulatory problems). Microfine skin cracks can serve as entry points for pathogens. This results in inflammation.

1.9 | Callus

Description: Callus (Hyperkeratosis) is a thickening of the outer layer of the skin. This outer layer contains a tough, protective protein called keratin. This skin thickening is often part of the skin's normal protection against rubbing, pressure and other forms of local irritation. It causes calluses and corns on hands and feet



The cause: Lack of elasticity due to loss of moisture. The skin compensates by becoming more rigid. More callus cells are produced with pressure. Poorly fitting shoes, foot deformities and nerve disorders may alter the architecture of the foot so that there is increased pressure and strain in some areas: Callus is intended to relieve pressure.



Bilateral pressure from the bones and shoes/floor injures the tissues; wounds may form underneath the callus.

1.10 | Cracks and fissures

Description: superficial (cracks) to deep skin tears (rhagades), often on the heels, is one of the most common causes of heel pain

The cause: If callus is already present and continues to dehydrate while the strain persists, the skin may tear. If the skin barrier is cracked, these tears (cracks/fissures) may allow bacteria, allergens and fungi to spread into deeper skin layers. The immune system is activated, and inflammation develops



Diabetics often fail to notice wounds because they lose sensory function in their feet. Inflammation may develop into ulcers. This is known as diabetic foot syndrome.

1.11 | Sensitive skin at risk of infection

Description: Itching, burning, dry, and red skin

The cause: The symptoms of sensitive skin are at the end of a series of developments, starting with dry skin. The first signs such as tension or redness are easily noticed in the face or on the hands. But the legs and feet are also often affected. Without suitable care, the skin loses lipids and with them, its protective barrier function. Bacteria, fungi or allergens penetrate the skin, the immune system is activated, and the skin reacts with itching and/or redness.



Diabetics are especially susceptible to sensitive skin. Since their skin is often dry and cracked, fungi and pathogens can enter more easily, causing itching, redness and inflammation.

1.12 | Corns

Description: round, slightly convex shape, yellowish color, callus growing in a thorn-like form towards the bone

The cause: This is usually due to poorly fitting shoes. Corns are commonly found on the toes or over the toe joints, as well as soles and other areas of the feet, and are painful. About 21% of diabetics suffer from foot deformities. Increased callus and pressure are responsible for corn formation.



**Loss of sensation in the feet alters the gait. Pressure spots and callus form, especially if the shoes don't fit properly.
The consequence: Corns!**

1.13 | Ingrown nails

Description: Inflammation of the nail edge, open wounds, "proud flesh" (overgrown granulation tissues); often on the big toe; severe pain.



The cause: Incorrectly fitting shoes putting too much pressure on the toes are the usual cause. Excessive sweating promotes ingrown toenails by softening the cuticles. Additional causes of ingrown nails: changes of the foot arch and/or toes, genetic predisposition, and incorrectly trimmed nails.



For diabetics, inflammation can quickly become dangerous, especially if it is not noticed due to loss of sensation in the feet. Then the risk of wounds arises.

1.14 | Foot and nail fungus



Description: Itching on the feet, redness, scaling; the nail is dull, cloudy and non-transparent; small white spots form on the protruding edge, followed by a yellow-brown discoloration and unnatural thickening; the nail becomes brittle and detaches from the nail bed.

The cause: If the skin barrier is damaged, the skin loses its protective mechanism. Dry and sensitive skin is especially susceptible to infections such as foot fungus that can easily cause infections - first on the feet and then also on the nails.



Diabetics are especially susceptible to foot fungus, since they often have skin problems. Infections may spread. When foot fungus is suspected, you should immediately see a doctor.



1.15 | **The diabetic foot: The role of the diabetes consultant**

As foot care professionals, you can make a lasting contribution to the prevention of the DFS and the resulting consequences.

→ You are the first point of contact for education and prevention for DFS and diabetics related foot problems in everyday life!

It is important not only to impart knowledge, but also to motivate patients in a sustainable way, because compliance is usually difficult – foot care is often completely forgotten.

1.16 | The diabetic foot: The role of the diabetes consultant

- Ask new clients or patients who have not been with you long if they are diabetics and record this in your patient records.
- Always look in your patient records before commencing treatment. The fact that you are treating a diabetic will not, then, escape your notice.
- Pay even greater attention to hygiene when treating the feet of diabetics:
 - Point out the importance of correctly fitting footwear if you note any pressure points, and recommend GEHWOL pressure relief items made from polymer gel.
 - Give your patients Foot care tips that they can use between appointments. Regular Foot care with preparations suitable for diabetics is important, i.e. the tolerance and soothing properties of which have also been tested on the skin of diabetics. No special range of diabetic preparations is required
- Thoroughly document your treatment procedures (using photos) as closely as you can to treatment.

1.17 | Prevention is possible!

Note: Diabetics have a high risk of follow-up diseases due to the consequences of a long term elevated blood sugar level, especially for neuropathies and angiopathies.

The problem: Diabetics often notice wounds on the feet too late!

The reasons: lack of problem awareness and compliance on the part of the patient, neglected foot care (prevention), low education in the context of diabetes training

→ The DFS can be avoided by prevention!

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2. Daily foot inspection



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Around 1/3 of diabetics still do not know that they have to do something for their feet. There is a clear plan: as soon as diabetes is diagnosed, every patient should receive training and learn to keep their feet healthy. The reality is that less than half take part in any training.

2. Daily foot inspection

1. As important as brushing your teeth
2. Shoe and stocking check
3. Foot check

2.1. Foot inspection: As important as brushing your teeth :

Even minor wounds can have dire consequences, that can be prevented with the **daily foot inspection**:

- Patients should examine their feet and soles for redness, pressure points, swelling, blisters, cracks, foreign bodies and injuries, e.g. with a mirror. Especially after long walks or with new shoes
- Patients who are no longer able to carry out the inspection themselves should ask a relative for help.

2.2. | Foot inspection: Shoe and stocking check suggestions for the diabetes patient

1

Look at your shoes:

- Is the upper leather deformed?
- Is the heel worn more on one side?
- Is the heel higher than two finger-widths?
- Do your toes touch the upper?
- Do your heels touch the heelcap?
- Are there constrictions, eyes or seams?
- Is the insole incomplete or wrinkled?
- Is the foot bed too hard for you?

In these cases, your shoes are not suitable for your feet. Obtain advice from an orthopedic shoemaker.

2

Look at your stockings or socks

- Are there seams inside your socks?
- Is the sock made from synthetic fibers?
- Does the sock have elastic knit into it?
- Do you notice or feel wetness from sweat?

In these cases, the stocking or socks are not suitable.

2.3 | Foot inspection: foot check

1

Look at your feet and toes

- Do you feel pressure spots or blisters?
- Do you see redness or swelling?
- Do your feet tend to have weals or corns?
- Is your skin cracked?
- Do you see injuries or white coating between your toes?
- Is the skin between the toes wet, or do you notice itching?
- Are your toenails discolored, brittle or deformed?
- Is the lateral nail edge inflamed?

You should absolutely have your feet examined by a medical foot care professional (podiatrist) and obtain their professional care.

2

Pay attention to your skin sensation

- Does the skin feel dry on the foot?
- Is the skin flaky and sensitive?
- Does the skin feel itchy?
- Does the skin feel burning?
- Does the skin have keratinized areas?
- Does the skin have tears?
- Can you feel the feet? Are they warm, rosy and dry?
- Decreased sensation of pain, numbness, tingling and reduced sweating

The patient should pamper his feet with a moisturizing foot cream every day.

2.3 | Foot inspection: foot check

3

Between the toes

- Do you see injuries?
- Is the skin wet?
- Does the skin have white deposits?
- Do you notice itching?

Athlete's foot is suspected. The patient should see a doctor.

4

Nails

- Do your nails thicken or break?
- Are the nails colored white or yellowish?
- Does the nail plate show structural changes?
- Is the lateral nail wall inflamed?

If the nail plate changes, patient should go to a doctor or, if the nail is ingrown, see a podiatrist.

2.4 | **Foot inspection: Regularly remove callus!**

- Unnoticed wounds may form underneath callus.
For this reason, callus must be removed regularly!
- Do not use sharp tools such as callus planes, metal rasps, knives or razor blades.
- Better: Sandpaper callus files, natural pumice stone, fine callus sponges
- **Callus creams? Products with skin-irritating salicylic acid should not be used here.**



Sharp tools may injure the skin! It is best to have your callus professionally removed.

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3. Daily cream applications, formulation examples



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To prevent foot problems, diabetics should apply products to their feet every day. Moisturizing emulsions with urea (urea) are recommended. They strengthen the skin's barrier function and protect against dryness and excessive callus.

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3.1 | Rehydrate dry skin

GEHWOL med® Lipidro Cream

- For optimal care of dry to very dry skin
- Ensures fat-moisture balance

Effect:

- Urea (10%) and algae extract provide moisture in deeper skin layers
- Sea buckthorn oil and avocado oil strengthen the skin barrier
- Allantoin regenerates the skin
- Farnesol has an antibacterial and deodorizing effect, protects against foot odor, athlete's foot and has an anti-inflammatory effect
- Without silicones, PEG emulsifiers and unscented
- Rich texture for intensive and long-lasting care

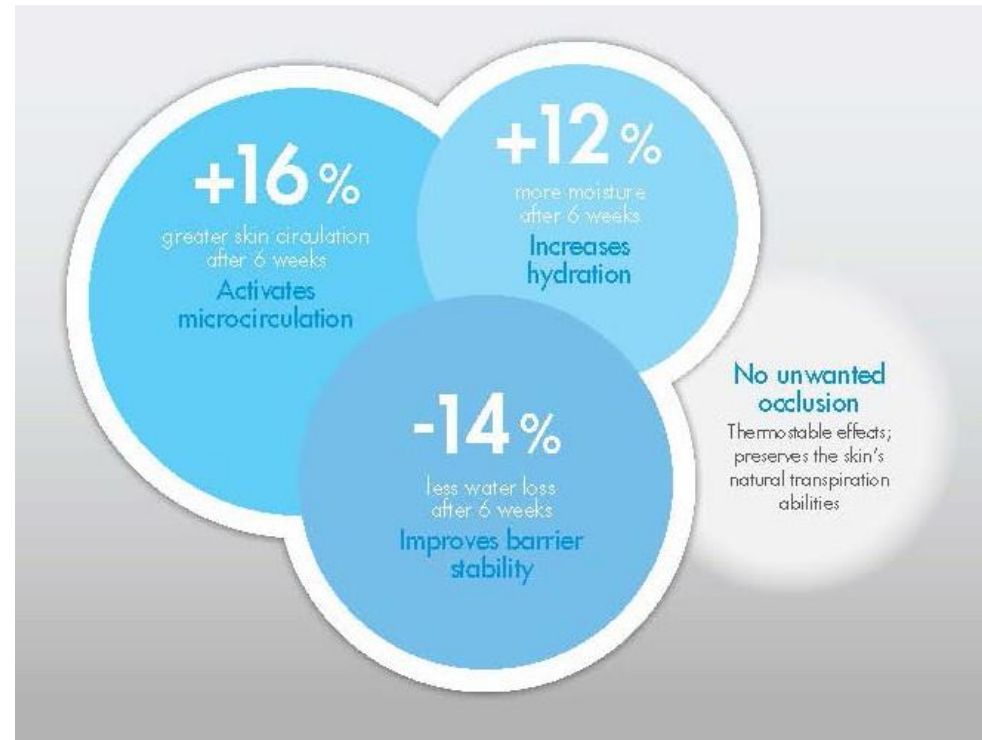


75 ml e 2,6 oz

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3.2 | GEHWOL med® Lipidro Creme

- Outstanding care properties
- Very good skin tolerance
- Improved micro-circulation
- Reduction of pressure marks and callus.
- Anti-inflammatory properties





3.3 | Cream between your toes?

Regardless of the emulsion type, it is advised not to apply cream to the area between the toes, occlusive effects could increase the germ density especially between the toes. Cream residues causes the area between the toes to swell, increasing the risk of bacterial infection

As recent studies show **GEHWOL med Lipidro Creme** does not create an occlusion. Therefore, according to the study authors, it can be recommended for the use between the toes, unless dermatological therapy is generally required.

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3.4 | **GEHWOL med® Express Foam**

- For daily care
- With moisturizing 4-fold hydro complex



Effect:

- Evening primrose oil strengthens the skin barrier and supports the natural skin moisture balance
- Moor plant extract fills the skin's moisture deposits and makes the skin supple
- Urea (3%) moisturizes the skin, reduces pressure points and helps to prevent calluses
- Avocado oil protects the skin from moisture loss and stimulates cell regeneration
- Light, rich texture is quickly absorbed and leaves no greasy residue
- Unscented, without parabens, silicones, and PEG emulsifiers



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3.5 | GEHWOL med® Callus Cream

Suitable for
Diabetics

Effect:

- Care complex with urea (18%), glycerin, allantoin and avocado oil
- Loosens the cell network of the hard outer layers of the skin
- Moisturizes, increases elasticity and reduces callus
- Normal corneal thickness after 28 days
- Silk extract gives suppleness and smooths the skin surface
- Without silicones and PEG emulsifiers
- Rich texture for intensive and long-lasting care (only apply cream to affected skin areas)



3.6 | Supplement: Mechanical remotion of callus

- Do not use sharp tools: such as B. corneal slicer, metal rasps, knives or razor blades.
- Better: callus file, natural pumice stones, fine sponges
- Creams? Products without skin irritating salicylic acid should be used here.



Note: Sharp tools are not recommended due to the increased risk of injury!

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3.7 | GEHWOL med® Salve for Cracked Skin



Effect:

- Ointment base made of special medical soap and lanolin
- Promotes the regeneration of cracked skin areas
- Restores the skin's natural elasticity and resistance
- Protects the skin with anti-inflammatory bisabolol and soothing panthenol
- With natural essential oils
- Without silicones, parabens and PEG emulsifiers



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3.8 | GEHWOL Hydrolipid Lotion

Effect:

- Care complex with urea (10%), glycerin, allantoin and avocado oil
- Is an easily distributed lotion for the daily care of dry skin on the legs and feet.
- The natural protective function of the skin is rebalanced.
- The ingredients urea and glycerin bind moisture in the deep layers of the skin while softening and reducing new build up of calluses.
- Avocado and Jojoba oils replenish the lipids missing from dry skin.
- Ceramides are an important component of the skin's own protection and they strengthen the protective layer while keeping the skin from drying out which lead to a reduction of the flaking of the skin.
- Tapioca starch leaves a silky, pleasant feel on the skin.
- Vegan and Gluten Free.

Suitable for
Diabetics



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4. Foot Baths



In addition to blood sugar measurements, and strict diet diabetic patient have to take care of their feet. Many find it difficult, but with the right feel-good approach and motivation, compliance can be increased.



4.1 | **Foot baths: Perfusion and permeation**

Foot baths makes the skin more absorbent (permeation) and stimulates the blood circulation (perfusion)

The advantages of perfusion: Diabetics often suffer from circulatory disorders, which are the most common cause of dry skin. Foot baths promotes circulation and strengthens the sensation of feeling in legs and feet. Circulation accommodates the transport of moisture to the skin

The advantages of permeation: As absorption of the skin increases, so does the amount of the nutrients in the bath and care products that penetrate into deep skin layers



4.2 | Footbath before footcare?

The 5 golden rules:

1. Do not bathe the feet for longer than three to five minutes.
2. The bath temperature should not exceed a maximum of 97.6 - 100.4 degrees Fahrenheit (check with a thermometer!)
3. Cautiously, but carefully dry the feet after the bath with a soft absorbent towel.
4. Cautiously dab the skin between the toes dry with a soft cotton swab
5. Apply special cream to your feet after every bath (**GEHWOL med Lipidro Creme**)
 - Urea and skin-friendly lipids stabilize the hydro lipid barrier, especially sensitive in diabetics.

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GEHWOL
Badesalz Bath Salt
mit echtem Rosmarinöl with real rosemary oil

Badzout
met echte rozemarijnolie




reinigt, erfrischt und belebt die Haut
cleanses, refreshes and revives the skin
reinigt, verfrist en aktiveert de huid

250 g e 8,8 oz

GEHWOL
FUSSKRAFT
Herbal Bath with urea

Softens hard skin.
Combats rough
and cracked skin,
foot perspiration
and foot odour.

With the
natural
strength
of rosemary,
mountain pine
and lavender



400 g e
14,1 oz

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5. The right nail care



©Fotos 593

The sniper tip or scissors increases the risk of injury. Wounds could flare up, no longer heal and thus lead to DFS. Diabetics should file their nails to prevent the ingrown nail corners and avoid injury.

5.1 | **Trimming toenails: Pointed instruments are a taboo.**

- Do not use pointed or sharp instruments such as scissors or nail clippers for your pedicure.
- Trim toenails with a sandpaper file or diamond file.
- Make sure that the nail finishes parallel to the tip of your toe.
- Rounded nail corners increase the chances of an inflamed nail bed and painful ingrown nails.
- Care for nails with a special nail and skin protection oil or nail and skin protection cream to prevent against nail fungus.

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5.2 | Nail care: compliance with athlete's foot and nail fungus

1. It can take several months to over a year for the new nail to grow back healthy and free from fungal infections.
2. To protect healthy nails, an **anti-fungal nail oil** should be used for the entire duration of the nail therapy.
3. Consistent nail care by a professional is preferable for diabetics
4. Foot hygiene is the best protection against fungal infections. Applying a special foot care cream daily stabilizes the skin barrier.
5. After showering, the feet must be properly dried - especially between the toes, e.g. B. with a cotton swab.
6. Socks and shoes should be changed daily, shoes should also be disinfected regularly (shoe deodorant).



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6. Shoes, socks, pressure relief



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6.1 | Shoes and socks

30% of diabetics wear unsuitable shoes. This is the most common reason for pressure spots. If they are noticed too late, ulcers may form.

The ideal shoe for diabetics...

- Leaves enough room for the feet both in height and in width/length, and is flat (no more than 2 inches heel)
- Has a soft upper, no hard cap and no protruding seams that cause friction; smooth inner liner
- The individual rigid construction of the sole permits a stable roll process and prevents excessive movement in the shoe
- Is stable laterally, and surrounds the heel so that the foot is firmly seated

6.2 | Ways of relieving pressure

- **Special diabetic insoles:**
distributes pressure (partial relief)
- **Diabetic safety shoes:**
For diabetics who suffer from neuropathies and/or circulatory problems
- **Pressure relief shoes:**
Relieve pressure from the areas around ulcers
- **Pressure relief cushions**
Made from elastic polymer gel that adapts to the shape to reduce pressure

Find more at www.gehwolfootcare.com



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7. Motivate Diabetic Patients



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7.1 | Help your patients to set goals for themselves

- The feet keep you mobile:
People with healthy feet stay more independent in old age.
- Patients can give their feet names: "Josh & Eva are doing well today".
- National I LOVE My Feet Day! is observed annually on August 17.
This is a day to appreciate how valuable our feet are, to practice good foot care and pamper our feet
- "Be proud of your feet!": Buy sandals in the spring (make sure they are suitable for diabetics). Well groomed feet can be shown off!
- Care for your feet the same way as you would like your partner to do.
- Set up a special corner in your bathroom or living room to remind you of foot care.

7.2 | Footcare with feeling

Develop a feeling for four feet.

- The blood circulation is boosted with a foot massage.
- Patients can massage their feet by themselves, especially when moving their toes.
- Have your partner massage your feet, e.g. B. with foot cream or massage oil.
- Arrange a professional foot massage with a professional.
- Exercise you feet by immersing them in a bath of unboiled beans or other small objects you can catch by flexing your toes.



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7.3 | Reward yourself with wellness

Make foot bath a part of your wellness routine:

- Decorate the area beautifully
- Dim the lights
- Accompany your bath with calm, relaxing music
- Place blossoms in the water
- Get a beverage ready, such as a cup of herbal tea or hot chocolate.
- Add scented candles for emotionally pleasant foot care experience.



©nape - istockphoto

7.4 | Train your feet



EXERCISES 1 and 2

All exercises are done while sitting in a chair.

1) Lift both feet and circle your heels outward; then do the same with your forefeet

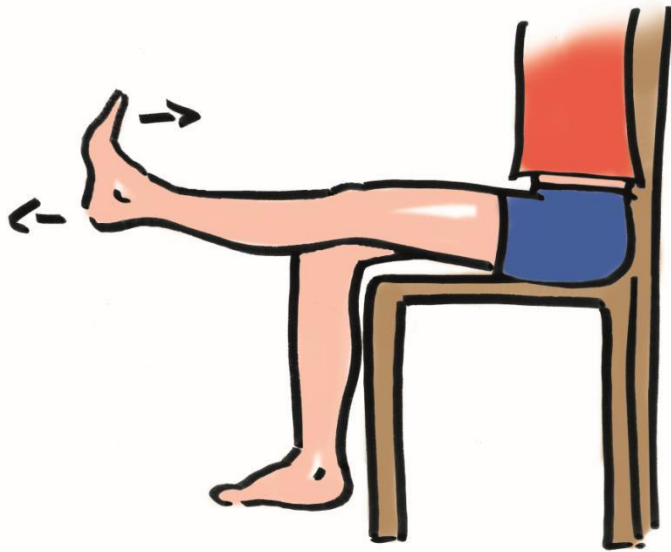
2) Alternately lift the forefoot and heel and set them back down on the floor



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7.5 | Train your feet



EXERCISES 3 and 4

1) First lift your knee, then slowly stretch your leg and your foot; bend the knee and set the foot back down.

2) Lift the stretched leg and point the tips of your toes towards your nose; set your heel on the floor.

The exercises can also be done with both legs at once.

7.6 | Train your feet



EXERCISES 5 and 6

- 1) Claw and then stretch your toes.
- 2) Use your toes to grasp various objects that you have scattered around the room, and then cautiously put them down again. You can use pencils, pebbles, marbles, handkerchiefs or a newspaper page.



7.7 | **Maintain your discipline**

- Name partners or friends as your controls!
- Create wellness moments for yourself, and enjoy them together!
- Set goals for yourself and maintain a care diary!
- Create a "foot meet-up"!
- For every month with daily foot care, fulfill your small wishes, and sometimes also a big wish to achieve your care goals.

Give yourself reward incentives!



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