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What is flossing?

In everyday usage, the words “floss” and “flossing” refer to the use of dental floss in oral and dental hygiene. More recently, in a worldwide trend, “flossing” has acquired a new meaning, namely the specific use of elastic bands in the areas of training and rehabilitation. This involves compression bandages made of elastic rubber bands, which are applied to treat disorders of the musculoskeletal system.

The method has often been referred to as “voodoo flossing” due to its astonishingly good effect, which could not be explained with any degree of certainty (in this context, “voodoo” may be interpreted to mean an obscure, unexplainable witchcraft).



THE CLEAR AIMS OF FLOSSING

- Pain relief
- Improved mobility
- Reduction of swellings
- Building and strengthening muscle
- Improved coordination

Recently, it was Kelly Starrett who included the term “voodoo flossing” and the treatment method itself in his book on fitness training (Starrett 2014).

The elastic bands are wound directly around the extremity affected by pain, restricted mobility and acute swellings, and the extremity is then actively moved. The treatment’s aims are pain relief, improved mobility, the

reduction of swellings, and rapid healing. Increased use of the method in medical training therapy has now also paved the way for hypotheses to explain its efficacy.

Material

Flossing bands (see Fig. 1) are made of 100% natural rubber and are available in various lengths of approx. 1.03 to 2.06 m. The thickness of the material varies between 1.1 mm and 1.6 mm. Bands used on arms, legs, and the body are 5 cm wide. Shorter and narrower bands 2.5 cm in width are available for use on small joints and the hands. Apart from correct technique, the quality of the bands is a key factor for a successful treatment. The surface of the band must not be too smooth, i.e. it needs to show the necessary grip. Elasticity plays another important role.

The band has to fit well and cling to the skin to the optimal extent. Only good elasticity and fit can lead to the desired therapeutic stimulus in the tissues and target structures. The uniform elasticity allows the tension to be dosed accurately and adjusted individually to the structures being manipulated. Flossing bands are free of softeners and other toxic substances and are therefore safe for use on the skin. However, an allergy to rubber will need to be ruled out beforehand. If such an allergy is present, the flossing band may be applied over clothing.

HOW TO RECOGNICE A “GOOD” BAND FOR USE IN FLOSSING

A suitable band has a very slightly silky surface; it must not feel smooth. When the band is pulled, its resistance should be soft but elastic, and the band should stretch uniformly. Regardless of the brand or manufacturer you choose, make sure that the surface and elastic stretch are as described.

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Material properties



MATERIAL PROPERTIES WHICH DETERMINE AN EFFECTIVE TREATMENT

- Soft and elastic, stretching uniformly without slackness
- Silky surface, not too smooth, to ensure a good grip on the skin
- Free of toxic substances
- Easy to clean

Fig. 1 Detailed view of rolled flossing bands.

Mechanisms of action

Blood flow and tissue drainage

To date, there are only very few scientific studies on flossing. Its exact active principle has not been clearly elucidated as yet, although there are a number of possible effects. The mechanism of action of flossing bands is not attributed exclusively to their compression, since additional movements always need to be performed.

When the band is tightly wound, this immediately reduces blood flow in the treatment area. Tissue fluid is squeezed out by the elastic ligature (see Fig. 2). The subsequent rapid loosening of the ligature leads to immediate, enhanced blood flow, which one might picture as a sponge effect (see Fig. 3). Metabolic by-products are pretty much squeezed out by the compression and are then washed out by the subsequent hyperemia. In general, the compression is released again after 1–2 minutes, immediately allowing blood and lymph to circulate freely again.



Fig. 2 The blood is forced out by the powerful compression.

At the level of the lymphatic system, one might imagine that the powerful pressure transports swellings into regions with a functioning lymphatic system. Recent studies show that optimal pressures for the reduction of edema can be considerably higher than previously recommended in lymphatic drainage (Taradaj et al. 2015; Zaleska et al. 2014). Thus, pressures of around 120 mmHg (equivalent to 0.16 kg/cm²) show the best edema reduction when the transient compression is repeated several times. For now, the mechanisms of action of lymphatic drainage in flossing remain a matter for speculation, because no studies on the subject currently exist.



Fig. 3 The diminished blood flow is immediately followed by intense reddening of the treated area.

Skin and fascia network

The skin is in direct contact with the flossing band and conducts the stimuli to the central nervous system via numerous receptors (see Fig. 4). The intensive flossing treatment of the skin leads to powerful stimulation of the mechanoreceptors and the conduction of these stimuli to the brain causes suppression of pain stimuli in the spinal cord. This increased input also enables the nervous system to compensate for any discrepancies and imbalances.

The body's fascial network begins directly below the skin. Thanks to the fact that they are prolifically supplied with nerve fibers and receptors, and to their ability to bind water, fascias may be defined as the body's biggest sensory organ. The fascial network links all the body's organs, from head to foot and from the outside in. The central element is the mobility of the individual fascia layers and their relationship with neighboring structures such as tendons, muscles, ligaments, blood vessels, and nerve fibers (see Fig. 5).

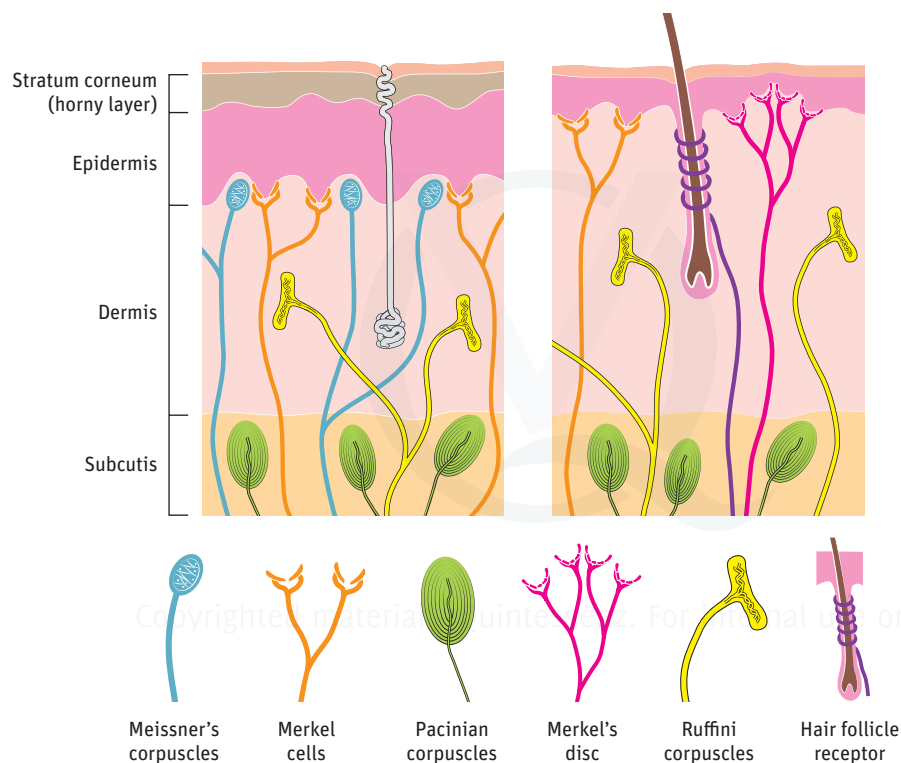


Fig. 4 The numerous mechanoreceptors of the skin and fascia conduct the therapeutic stimulus to the spinal cord and brain.

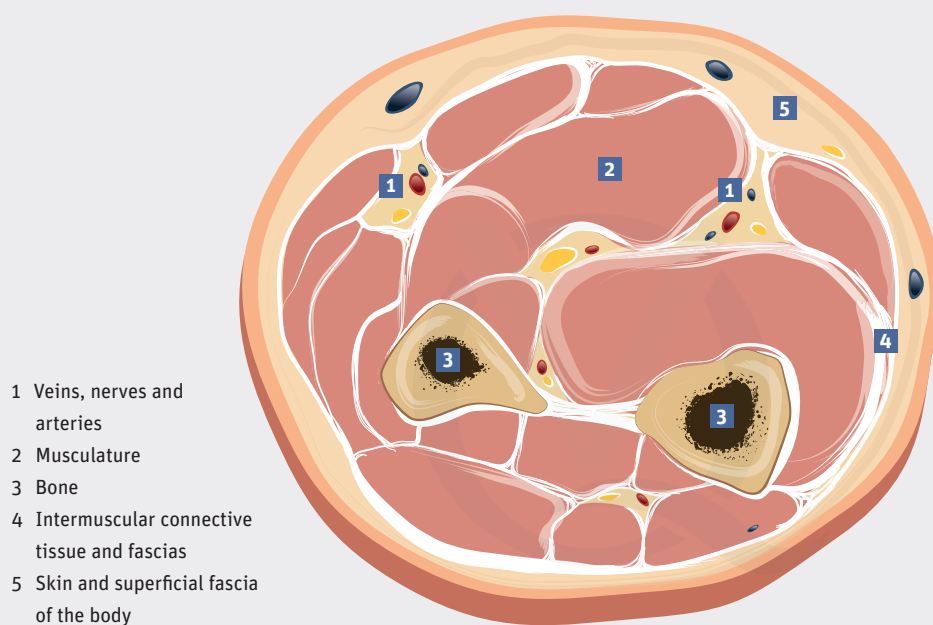


Fig. 5 Forearm in cross-section. The relative positions of bone, muscles, fascias, blood vessels, and nerves are clearly visible. On compression by the flossing band and simultaneous movement of the arm, the resultant shear forces cause mobilization of the various levels.

Forearm fascia



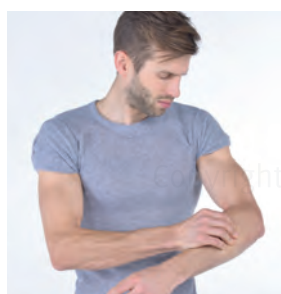
Painful region: the forearm fascia

Adhesions involving the upper arm fascia can lead to pain in various regions of the forearm, depending on which part of the fascia is affected. Pain is often felt during supination and pronation. This also determines the technique used to apply the flossing band wrap.

The flossing band wrap → Here's how it works

- 1** The patient's elbow joint is slightly extended. Wind the first turn with 50% tension to anchor the band around the lower part of the forearm close to the wrist.
- 2** Now wind the flossing band in ascending circular turns. The band should overlap 50% at each turn. A tension of 60–80% should be applied in the region of the adhesions and the painful fascia, with a tension of 50% on the other side of the forearm.
- 3** Using the same technique, wind the band up to the elbow joint and secure it into place.

Where it hurts on movement



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1



2



3

Material: Flossing band
Length: 2.06 m
Width: 5 cm
Tension: Painful region 60–80%,
 other side 50%



Active Exercise

Flex the fingers and wrist joint maximally. After this, extend the fingers and the wrist joint maximally. Finally, perform maximal inward and outward rotational movements with your forearm.

A Word of Advice > If there is pain in the muscles of the forearm and hand, strength sports as well as intensive lifting and carrying should be avoided.

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Ankle joint



Painful region: ankle joint

Pain in the ankle joint region frequently develops following ligament injuries (see p. 84). Injuries to the ligaments and the joint capsule, or ankle joint fractures (Weber B, Maisonneuve etc.) which have not healed properly, can cause pain on weight-bearing. Flossing can accelerate the healing process, but should only be used alongside other treatment measures.

The flossing band wrap → Here's how it works

- 1** The patient lies supine, the foot hangs over the edge of the therapy couch. The patient should pull the foot up slightly. Wind the first turn with 50% tension to anchor it around the metatarsus.
- 2** Now wind the flossing band in figure-of-eight turns around the lower leg and back again to the foot. The band should overlap 50% at each turn. Wind the band with a tension of 60–80% where the pain is most intense and with a tension of 50% on the other side.
- 3** Using the same technique, continue winding the band to the end and secure it into place.

Where it hurts
on weight-bearing





1



2



3

Material: Flossing band
Length: 2.06 m
Width: 5 cm
Tension: Painful region 60–80%, other side 50%



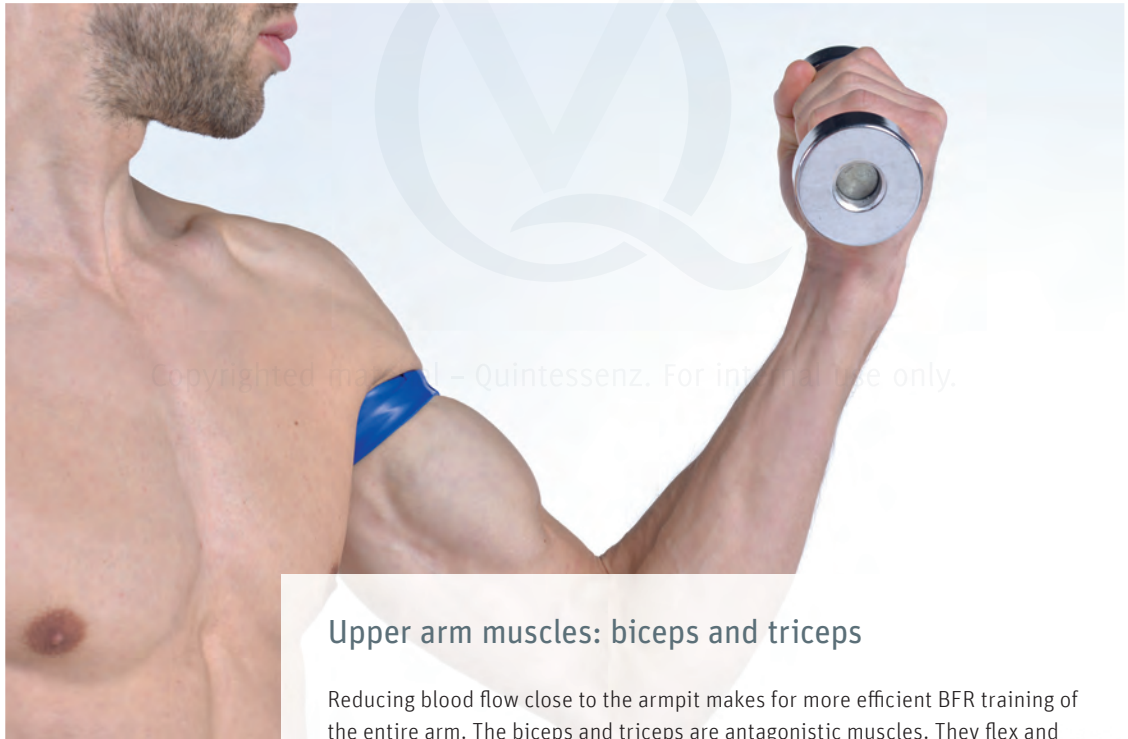
Active Exercise

Do deep knee bends or duck walking. An alternative option is to perform alternate toe and heel stands. In addition, you can make circles with your feet while sitting or lying down.

A Word of Advice > Wrapping the forefoot too tightly can lead to compression pain, so that the wrap should be a bit looser in this region.

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Strengthening the upper arm



Upper arm muscles: biceps and triceps

Reducing blood flow close to the armpit makes for more efficient BFR training of the entire arm. The biceps and triceps are antagonistic muscles. They flex and extend the arm in the elbow joint and are also involved in shoulder movements. This type of training does not just benefit athletes; it can also be used to perform exercises to stabilize the shoulder or for postoperative rehabilitation.

The flossing band wrap → Here's how it works

- 1** Apply the band to the upper arm, as close as possible to the armpit. Wind it tightly enough to feel definite compression of the upper arm, but without causing pain. You need to be able to tolerate the wrap for a prolonged period.
- 2** Grasp a light weight and perform biceps flexes with it in your hand. Do this exercise 30 times in the first set. After this, take a break of 30–60 seconds. There should only be 15 repetitions in each subsequent set. You should do a total of 4–5 sets. Expressed in numerical terms, the training looks like this: 30–15–15–15–15.
- 3** Remove the band only after completing the last set. If you start to experience increasing tingling or pain during the exercise sets, take the band off immediately. There should be no further compression for 10 minutes after the training.

Biceps exercise, light weight





Material: Flossing band

Length: 1.03 m

Width: 2.5 cm

Tension: The tension should be high and uniform but should not cause pain



Active Exercise

Once you have absorbed and internalized the training principle, the training possibilities for the upper extremity become virtually limitless. You could perform extension exercises such as push-ups, bench pressing, and overhead extensions as well as exercises with the Thera-Band®, cable pulley, Flexi-Bar, or other training machines.

A Word of Advice > Make sure to select a level of resistance at which you would normally be able to perform 50–70 repetitions.

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