The Four Application Techniques

Birgit Kumbrink

2.1 Muscle Applications – 14
2.1.1 Muscle Function – 14
2.1.2 Effect of the K-Tape Application – 14
2.1.3 Application Technique for Muscles – 14

2.2 Ligament Applications – 16
2.2.1 Applications for Ligaments (Ligamenta) – 17
2.2.2 Ligament Application for Tendons – 21
2.2.3 Spacetape – 23

2.3 Corrective Taping Applications – 25
2.3.1 Functional Correction – 25
2.3.2 Fascial Correction – 27

2.4 Lymph Applications – 28
2.4.1 Causes of Lymphostasis – 29
2.4.2 Effects of Lymph Application – 31
2.4.3 Application Technique for the Lymphatic System – 31

B. Kumbrink, *K-Taping in Pediatrics*,
DOI 10.1007/978-3-662-46585-1_2, © Springer-Verlag Berlin Heidelberg 2016

2.1 Muscle Applications

Muscle applications are used in cases of **increased** or **decreased resting muscle tone** (hypertonus, hypotonus) or injuries to the musculature, and have a normalizing effect on resting muscle tone, alleviating pain and improving resilience to speed the healing process.

Muscle applications are affixed using 10% tape tension. As the tape is already pre-stretched to 10% on the roll, this is referred to as an unstretched application. The patient is placed in a **pre-stretched position,** and the tape is affixed to the relevant body part, with 10% pre-stretch. Depending on the type of application used, the K-Taping treatment can have a toning or detoning effect.

During K-Taping training, students are taught that a **tonus-stimulating application** should be affixed running from the muscle origin in the direction of its insertion. A **tonus-reducing effect** is produced by affixing an application in the opposite direction, running from insertion toward the origin of the muscle. However, origin and insertion may alter depending on muscle movement and function, and in some cases muscle applications may be applied in contradiction to the above rule. The classic representation of muscle origin and insertion as prescribed points does not allow for this »alternative« approach, and can lead to misunderstandings among some therapists during the training process and in practice.

The characterization of muscle function using the terms **punctum fixum** (fixed end) and **punctum mobile** (mobile end) is useful, as the fixed and mobile ends may be reversed according to the action of the muscle.

Tip

Tonus-stimulating applications are attached from punctum fixum to punctum mobile, tonus-reducing from punctum mobile to punctum fixum.

This ground rule should be followed for all diagnoses and the muscle application affixed accordingly.

As in previous publications, and in accordance with K-Taping training, this book will use the terms **origin** and **insertion**. In cases where punctum fixum and punctum mobile deviate from the designations of muscle origin and insertion, this fact will be referred to specifically when describing the muscle application.

As described in ▶ Sect. 1.7, muscle applications begin with the attachment of a **tension-free base.** The base is affixed using the hand (pressed against the body), with the skin stretched (**skin displacement**). Tonus-stimulating applications are affixed in the direction of the origin (punctum fixum), tonus-reducing applications in the direction of the insertion (punctum mobile). Skin displacement should stretch the skin as far as possible, without causing the patient pain.

2.1.1 Muscle Function

When performing a movement the muscle contracts, drawing the insertion of the muscle toward the muscle origin, or the punctum mobile toward the punctum fixum as explained in ▶ Sect. 2.1. Muscle, fascia, and skin also shift in the same direction.

2.1.2 Effect of the K-Tape Application

In the case of a **tonus-stimulating muscle application,** the **resilience** of the elastic tape creates traction in the direction of the muscle origin (punctum fixum), which also shifts the skin toward the fixed base of the tape. This **facilitates muscle contraction**.

With a **tonus-reducing application**, the tape resilience creates traction in the direction of the muscle insertion (punctum mobile) and toward the fixed base of the tape, shifting the skin in the same direction. This **decreases muscle contraction**.

2.1.3 Application Technique for Muscles

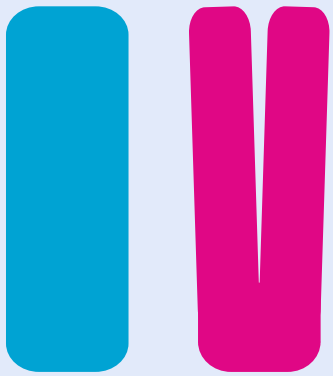
- Measure the required tape strips against the patient, with the muscles in a pre-stretched position (Fig. 2.1a).
- If necessary, cut the tape strips into the required form (e. g., Y-tape).
- Cut tape ends into a rounded form.
- Place the patient in a comfortable position.
- Affix the base (Fig. 2.1b).
- Position the patient so that the relevant muscles are pre-stretched.
- With one hand, the therapist attaches the base with skin displacement (Fig. 2.1c).
- Affix tape strips along the length of the muscle using the other hand, with 10% tension.
- Rub the tape strips while the muscle is pre-stretched.



Fig. 2.1a–d Muscle application. **a** Measure the tape with the muscle pre-stretched, **b** affix the base with the muscle at normal length, **c** apply the tape to the pre-stretched muscle, **d** completed muscle application

Memo

- The muscle application is affixed with **10% tape tension**.
- The patient is positioned with the muscle in a pre-stretched position.
- Predominantly **I-** and **Y-tapes** are used.



Blue I-tape Red Y-tape

2.2 Ligament Applications

Ligament applications are utilized for injured and strained ligaments (lat.: ligamentum, plural: ligamenta) and tendons. The same technique can also be used to treat **localized pain, trigger points,** or **spinal segments.** Ligament applications provide support, alleviate pain, and improve resilience to promote faster healing and shorten the period of rehabilitation. The term »ligament application« is therefore not a full description of the numerous benefits for which the technique has become known.

Ligament applications are affixed with **maximum tape tension**. As with muscle applications, the tape ends are attached unstretched to increase the longevity of the application. When making applications to ligaments, the relevant joint should be positioned with the ligaments under tension Applications for tendons are applied with the muscle fully stretched, and pain points are treated with the patient's **body in an elongated position**.

There are two techniques available, depending on whether ligaments, tendons, or pain points are to be treated (▶ next section).

Ligaments and tendons are structures loaded with **sensors** that play a crucial role in joint and muscle function. Afferents in the skin and subcutaneous tissue supplement **proprioceptive sensitivity** (proprioception) and attenuate the pain impulse **(nociceptive afferents)**. K-Taping therapy makes use of these relationships to influence movement of the body through stimulation of the skin.

2.2.1 Applications for Ligaments (Ligamenta)

This application technique is utilized for ligaments that connect two adjacent bones, e.g., the collateral ligaments of the knee joint. The tape is affixed **en bloc** (French: as a whole).

The backing paper is torn down the middle and partially removed, leaving only a two-finger-wide area of paper attached at each end (to provide the base). As one piece, the tape is then affixed over the ligament and its insertion onto the bone, using **maximum stretch.** The joint should be positioned with the ligaments under tension. Following this, the remaining backing paper can be removed, and the tape ends attached without tension.

Care should be taken that the joint is initially positioned to create maximum stretch of the skin, so that joint movements do not create tension on the tape ends following the application. This ensures that the tape ends will remain tension-free through the full range of joint motion.

Ligament Function

Ligaments connect two adjacent bones. They are placed under tension or relaxed according to the position of the joint, and function to **stabilize and guide the joint**. Except for the ligamenta flava connecting the vertebral laminae, ligaments can only be minimally stretched. They contain numerous **nerves** and **mechanoreceptors**, allowing them to perform a broader role than simple mechanical support and direction of the joint. They provide **information** about the position of the joint, its movements, and speed of motion. In addition, ligaments register stretch and pain. Together with the joint capsule and muscles, the mechanoreceptors contained in the ligaments play a role in **regulating joint motion**, as capsular tension, movement, and **joint pressure** can be measured continuously and information transmitted via the respective spinal segment to the muscles surrounding the relevant joint. The muscles react and adapt to the current situation constantly.

Effect of the K-Tape Application for Ligaments

The initial attachment of the tape en bloc using maximum tension, followed by the attachment of the bases, allows the tape to be anchored simultaneously to both insertion points at the bone.

In this way, the tape pulls toward the center of the ligament. This supports the ligament mechanically, as joint motion places the tape under equal tension to the ligament itself. The displacement of the skin toward either the base or center of the tape, depending on the position and movement of the joint, also creates a **sensory stimulus** that affects muscle function as previously described.



Fig. 2.2a–e Application for ligaments. **a** Measure the tape strips, **b** attach the tape strips en bloc, with maximum tension, **c** attach tape ends with the joint positioned at end of range, **d** attach the tape ends, **e** completed ligament application

Application Technique for Ligaments

- Position the joint with the ligament under tension.
- Measure the tape length from insertion to insertion (Fig. 2.2a).
- Cut the tape strips and round the tape ends.
- Tear the backing paper down the middle and remove, leaving the paper attached to the bases at either end of the tape.
- With maximum stretch, affix the tape en bloc to the ligament structure (Fig. 2.2b).
- Position the joint at the end of range (max. skin stretch) (Fig. 2.2c).
- Remove backing paper and affix tape ends (Fig. 2.2d).

Memo

- The tape application for ligaments is affixed en bloc, with maximum stretch.
- The joint is positioned with the ligaments under tension.
- **Only I-tapes** are used.



Red I-tape



Fig. 2.3a–d Ligament application for tendons. **a** Measure the tape strip in the pre-stretched position, **b** attach the base in a resting position, **c** affix the tape strip in the pre-stretched position, **d** completed tendon application

2.2.2 Ligament Application for Tendons

In this technique the application is affixed over tendons and tendinous structures, including the musculotendinous junction and osseous insertion.

In contrast to the technique for ligaments, an **unstretched base** is first affixed over the osseous insertion. The joint to be treated is then placed in a pre-stretched position. In this position, the base is fixed using the hand, and **skin displacement** is performed in the direction of the length of the tendon, and in the opposing direction to the pull of the tape. Lastly, the tape is affixed over the length of the tendon structure, with maximum stretch. The tape end is attached to the musculature without tension.

This application technique causes the tape to pull toward the base, displacing the skin in the same direction.

Tendon Function

In contrast to ligaments, which are attached to two bones, tendons have only one point of attachment to bone; the opposing end of the tendon is joined to the fascia of a muscle. They transfer **contractile forces,** caused by contraction and gravity, from muscle to the bones. They also contain receptors known as **Golgi tendon organs;** these measure the amount of muscle tension exerted on the osseous insertion of the tendon, and provide **protection from overloading**.

Effect of the K-Tape Application for Tendons

Tendon applications allow the K-Tape to affect tendons, fascia, and muscles. Mechanical support of tendon function and the stimulation of receptors (afferents in the skin and subcutis) via skin displacement are significant, in addition to the effect on muscle tonus (▶ Sect. 2.1) and the displacement of fascia in the direction of the base.

Application Technique for Tendons

- Place the muscle and thereby the tendon in a pre-stretched position; if the patient is unable to achieve this position independently, the therapist may assist the movement **without causing pain.**
- Measure the tape in the pre-stretched position, from insertion to the musculotendinous junction (◘ Fig. 2.3a).
- Cut the tape strips and round off the ends.
- Place the muscle in a resting position, and attach the tape base at the point of insertion (◘ Fig. 2.3b).
- Place the muscle in the pre-stretched position.
- The therapist holds the base with one hand and displaces the skin (◘ Fig. 2.3c).
- Affix the tape with maximum tension along the length of the tendon, as far as the musculotendinous junction.
- Place the remaining tape end over the muscle and attach without tension.
- With the muscle still in the pre-stretched position, rub the application.

Memo

- The ligament application for tendons is affixed from insertion to the musculotendinous junction, with **maximum tension**.
- The patient is positioned with the muscle pre-stretched.
- Only **I-tapes** are used.



Red I-tape



Fig. 2.4a–d Spacetape application. **a** Measure the tape strip, **b** affix the first tape strip, **c** affix the second tape strip at a 90-degree angle to the first, **d** completed Spacetape application

2.2.3 Spacetape

The term *Spacetape* describes an application utilizing tape strips of equal length, affixed over a single point in a cross or star form. As with the application for ligaments, each tape is attached en bloc with maximum tension. Usually, **four tapes are applied in star form**. Once the first tape is affixed, the second tape is applied at a 90-degree angle across the center of the first, forming a cross. The third and fourth tapes are subsequently affixed at 45-degree angles over the initial cross.

The application is used for **pain points** and **trigger points, spinal segments, connective tissue massage zones** and across the **sacroiliac joint (SIJ)**. The tape length can be halved, depending on the size of the area to be treated or when treating children. Tape strips are generally between 15 cm and (in the case of an application to the back) 20 cm in length, and will need to be even shorter for smaller treatment areas such as the elbow. In special cases, fewer than four strips may be used.

Effect of Spacetape

The Spacetape creates a **localized raising** of the skin, thereby releasing tissue adhesions. Patients describe the effect of the star-shaped application as similar to the **action of a suction cup**, with a palpable lifting of the adhered structure. As the name suggests, the Spacetape provides the damaged structure with more space, effecting a **decrease in pain.** Spacetapes can also be used for the mobilization of connective tissue.

Application Technique for Spacetape

- Place the body in a pre-stretched position.
- Measure and cut the tape strips (rounding tape ends; ◘ Fig. 2.4a).
- Tear the backing paper down the middle and remove, except for the length required for the base at each end.
- Affix the tape en bloc with maximum stretch, at the site to be treated (◘ Fig. 2.4b).
- Using the same method, attach the second tape strip at a 90-degree angle to the first (◘ Fig. 2.4c).
- Place the third and fourth strips at 45-degree angles to the tape cross (◘ Fig. 2.4d).
- Rub the application in the pre-stretched position.

Memo

- Spacetape is a space-creating application for **pain points and trigger points.**
- The application is made with **maximum tension.**
- The body is placed in a pre-stretched position.
- Only I-tapes are used.



Red I-tape



Fig. 2.5a–f Functional corrective application. **a** Measure the tape strip, **b** base is placed on the vastus medialis muscle, **c** fix the base of tape 1 and attach the first tail strips in an upward direction, **d** affix the second tail strip moving upward from tape 2, **e** fix the base of tape 2, and attach the first tail strip moving upward from tape 2, **f** completed corrective patella application in the resting position

2.3 Corrective Taping Applications

Corrective applications can be separated into applications for **functional correction** and **fascial correction**. The functional corrective application is used for osseous malalignments, e.g., patellar malalignment, and effect a **shift in position** of the bony structure. Fascial corrective applications are used to treat muscle fascia adhesions, creating a **release of the fascia** as well as **decreasing pain**.

2.3.1 Functional Correction

Applications for functional correction are always affixed over osseous structures, as their function is to correct the position of the bones. **Y-tapes** are most commonly used. The base is firmly anchored with skin displacement, and the two tail strips affixed over the structure to be corrected. Functional corrective applications are attached with **maximum pre-stretching** of the tape. The adjustment is thus made in the direction of the base. This must be taken into account when attaching the base. When making applications to joints, the tail strips are affixed during movement. In other cases such as the spine, however, they are attached when pre-stretched. It is important to note that for functional corrective applications, the tape tails of the Y-tape should be affixed separately, one after the other.

Causes of Osseous Malalignment

In most cases, osseous malalignments are a result of asymmetric or over-use of the musculature, muscle tension, atrophy, or congenital misalignments. In all cases malalignments lead to **disharmony of the musculature**, causing dysbalances between agonists and antagonists. If they affect **functional processes,** osseous malalignments may also trigger one-sided muscle loading (e.g., an external trauma and subsequent compensatory posture resulting in dysfunctional movement patterns).

Effect of Applications for Functional Correction

Two modes of action are combined in applications for functional correction: firstly, a **slight mechanical adjustment** achieved through skin displacement and secondly, **sensory stimulus** to the interrelations of the muscle–tendon system involved.

Application Technique for Functional Correction

- Measure the tape over the structure to be corrected (Fig. 2.5a).
- Cut the tape strips and round the tape ends.
- **Tape 1:** Affix the base while the patient is in the resting position(Fig. 2.5b).
- Attach the base with maximum skin displacement in the direction of the desired adjustment.
- Affix tail strip 1 over the structure to be corrected, with maximum tension (Fig. 2.5c).
- Attach the tape end (tail strip 1) unstretched, with the joint in maximal position or pre-stretched.
- Affix tail strip 2 in the same way (Fig. 2.5d).
- **Tape 2:** Moving upward, affix tail strip 2 with maximum tension, over the structure to be corrected.
- Attach the tape end (tape strip 1) unstretched, with the joint in maximal position or pre-stretched.
- With the knee in full flexion, attach tail strip 2 over the patella without tension (Fig. 2.5e).
- Rub the application in the pre-stretched position.

Memo

- Attach the base firmly, with skin displacement.
- The application is affixed with **maximum tension**.
- Via the tape strips, the correction is made in the direction of the base.
- Primarily **Y-tapes** are utilized for functional correction, although I-tapes may also be used.



Red Y-tape

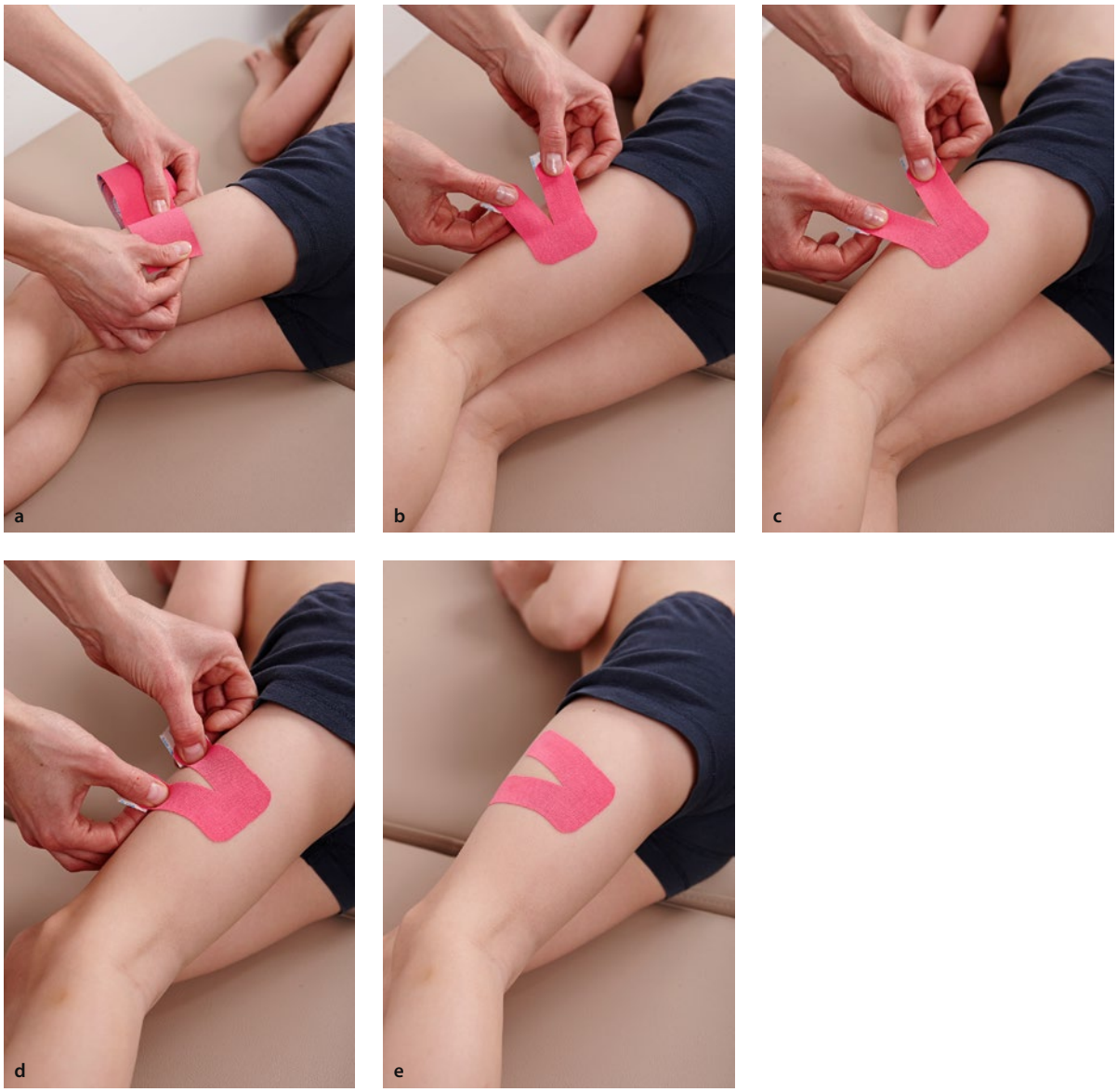


Fig. 2.6a–e Fascial correction. **a** Measure the tape at a right angle to the length of the muscle, **b** attach the base in front of the pain point, **c** pull the tail strips rhythmically, **d** affixed stretched tail strips with unattached, unstretched tape ends, **e** completed fascia correcting application

2.3.2 Fascial Correction

Fascia-correcting applications are used for adhesions of the muscle fascia, and completed using **Y-tape**. In contrast to applications for functional correction, both tail strips are attached simultaneously. The base is not anchored, but is drawn by the parallel tail strips, thereby shifting the pain point. In terms of the direction of movement, the base is located in front of the pain point. The direction in which the fascia can more easily be shifted should be established by the therapist beforehand. This is the direction in which the tail strips will be moved when affixed. In contrast to previous application techniques, the tape is affixed rhythmically rather than with an even tempo. Using this **pulsing motion**, the tail tapes are affixed slowly and with maximum tension. This does not refer to the maximal stretch of the tape fibers themselves, but to the **threshold** that can be applied over the structure. This can be the overlapping of skin folds, for example. Once the limit has been reached, the tape strips are affixed. The tape ends are also attached without stretch. During the application of the taping, the patient is in a resting position. A pre-stretch in the area of the joint is only necessary when attaching the tape ends.

In some cases, the fascia-correcting technique may also be used as a substitute for functional correction, if a more subtle adjustment is desired. In this case, an I-tape is used instead of a Y-tape, and the tape strips are attached evenly with variable tension, rather than rhythmically. The movement of the base is the deciding factor here.

Causes of Fascial Adhesions

Fascial adhesions can be caused by tension, one-sided strain, and overuse of the musculature.

Effect of the Fascia-Correcting Application

The movement of the base causes a mechanical displacement of the fascia. Manual tests are used to establish the position of the base and the direction in which the fascia can be moved freely. As a result of the fascial application, the muscle fibers work continuously against the fascia during movements of the body. This results in a gradual loosening and breaking down of adhesions.

Application Technique for Fascial Correction

- Test the movability of the fascia.
- Measure the tape in the rest position (Fig. 2.6a) and cut the Y-tape (rounding the ends).
- Affix the base in front of the pain point (Fig. 2.6b).
- Apply rhythmic traction to the tail strips up to the threshold, thereby displacing the base (Fig. 2.6c).
- Attach the stretched tail strips (Fig. 2.6d).
- Attach the unstretched tape ends.

Memo

- The patient is in a resting position.
- The **pulsing stretching technique** can be used with up to maximum stretch, but the limits of the structure should be respected.
- The base is not anchored.
- The adjustment occurs in the direction of the tension provided by the tape strips.
- The fascia-correcting application utilizes **Y-tape**.
- Functional correction is also possible using an **I-tape**.



Red Y-tape

2.4 Lymph Applications

Lymph applications may be used for **disorders of the lymphatic system**. The application effects a lifting of the skin, enlarging the space between the skin and subcutaneous tissue and stimulating the **lymph collectors** to resume normal functioning. The collectors are the active vascular transport system of the human body. Within this transport system, valves prevent a backflow of lymph and ensure central drainage. The vessel between two valves is referred to as **lymphangion** or also as **lymph heart,** and contracts to drive the lymphatic fluid onward.

When this lifting of the skin is combined with movements of the body, it also allows the skin and the tissue beneath it to be stretched. As a result, fibrous bands can be loosened or their formation prevented.

In the case of lymphatic applications, a fundamental differentiation is made between:

- An intact lymph node chain
- Partially or completely removed lymph nodes

Intact Lymph Node Chain

Applications to intact lymph node chains usually utilize tapes cut into four long thin strips, with a common base.

The common base creates an **area of low compression,** providing the lymph with a clearly defined direction of drainage.

Defective Lymph Node Chains

Applications can also be used for defective lymph node chains, but **individual tapes** cut into narrow strips are used more often in this case. When applied to the extremities, the long thin strips are affixed radiating outward from the area to be drained, and the broader drainage area and **connective effect** upon the tissue have the advantage of preventing **fibrosis formation**.

When applying K-Tape to an intact lymph node chain, attention must be paid to **anatomical watersheds** (Fig. 2.7).

Watersheds are areas with **few lymphatic vessels**, which separate the individual lymph node groups from each other (tributary region = drainage region of the lymph

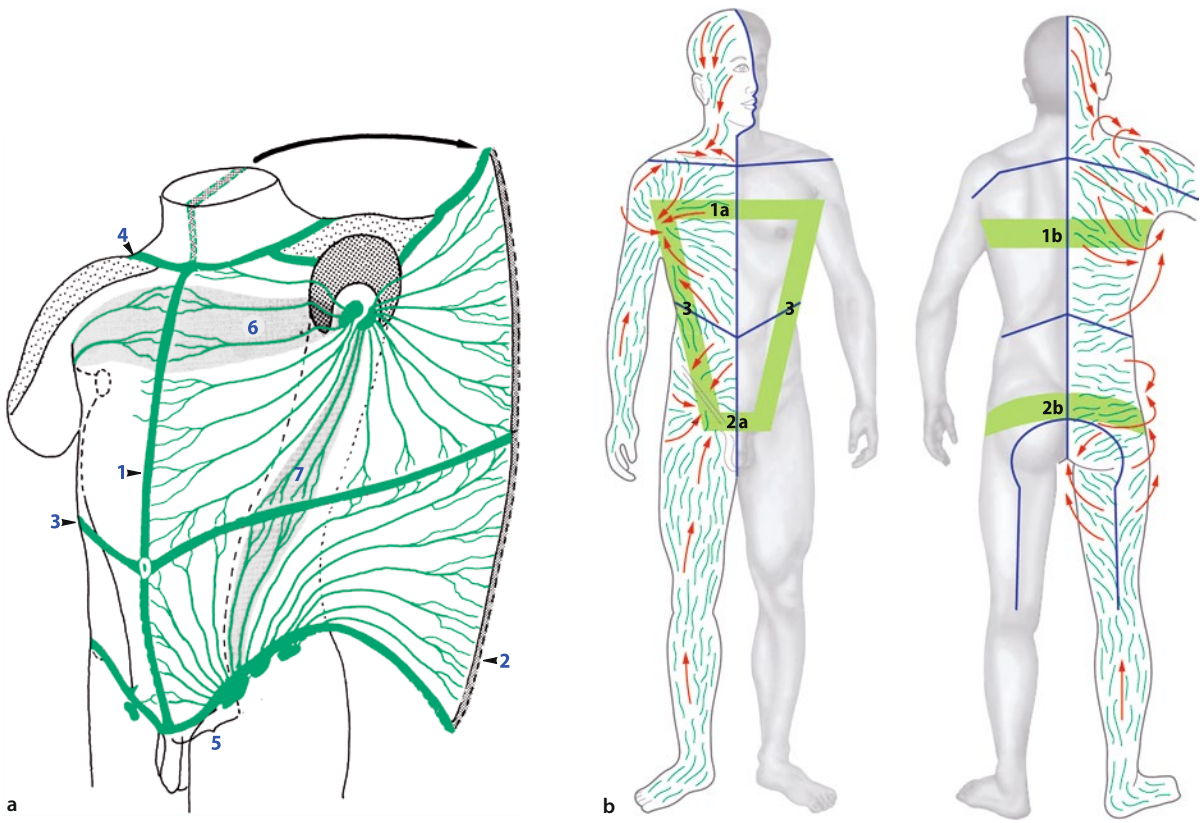


Fig. 2.7a,b Superficial lymphatic vascular system with therapeutically significant watersheds, **a** ventral and dorsal overview, *1* ventral vertical watershed, *2* dorsal vertical watershed, 3 transverse watershed, *4* clavicular watershed, *5* seat of the pants watershed, *6* ventral interaxillary anastomosis, *7* axillo-inguinal anastomosis; **b** diagram of the trunk wall showing watersheds and direction of lymphatic drainage, anastomotic pathways illustrated in *green*, *1a* ventral interaxillary anastomosis, *1b* dorsal interaxillary anastomosis, *2a* ventral interinguinal anastomosis, *2b* dorsal interinguinal anastomosis, *3* axillo-inguinal anastomosis. (© Fa. Pascoe, with kind permission)

node). However, watersheds are not insurmountable barriers, as the network of valveless lymphatic capillaries covers the entire body. Watersheds are also bridged by **pre-lymphatic channels** (joining blood capillaries and lymph capillaries). At certain points on the trunk, links between the larger lymph vessels connect **collectors** from adjacent **territories** (interaxillary anastomoses in the area of the sternum and the scapula between the right and left axillae, and axillo-inguinal anastomoses in the flank area between axilla and groin).

The location of the watersheds gives rise to **four lymph territories** in the trunk region**,** also referred to as **quadrants**:

- Two horizontal watersheds, one at the height of the navel, the second at the level of the clavicles.
- One watershed running vertically with the central axis of the trunk.
- The so-called seat-of-the-pants **watershed** at buttock level delineates the dorsomedial and dorsolateral thigh regions.

In the case of an **incomplete lymph node chain**, the K-Tape application utilizes the lymph capillaries and pre-lymphatic channels in addition to the anastomoses, allowing the **accumulated lymph** to be transported to a healthy quadrant where the lymph nodes are intact.

2.4.1 Causes of Lymphostasis

Edema may have various causes and can be divided into high-volume insufficiency (dynamic insufficiency), low-volume insufficiency (mechanical insufficiency), and safety valve insufficiency.

High-Volume Insufficiency

There are healthy lymph vessels present and a normal transport capacity of the lymphatic system in cases of high-volume insufficiency. However there is a greater **lymph obligatory load** (quantity of lymphatic fluid) than available capacity for transportation. This causes **extracellular edema**.

There can be many reasons for this, e.g., trauma or organic disease. Trauma may cause lymph vessels to be damaged and in cases of organic disease, heart (chronic venous insufficiency– Stage I, CVI I) and kidney (hyperproteinemia) disorders are most commonly involved. An excess of fluid is caused by **differences in pressure.** The organic disease must first be brought under control medically before a K-Tape application can be considered.

High-Volume Insufficiency
- Healthy lymphatic vessels.
- Normal transport capacity.
- The lymph obligatory load (»lymphatic fluid« or net filtrate) is, however, greater than the body is currently able to transport.
- **Result:** fluid collects in the tissue, resulting in extracellular edema.

Low-Volume Insufficiency

In cases of low-volume insufficiency, diseased lymphatic vessels and a **limited transport capacity** can be observed, although the lymph obligatory load remains within normal range. The resulting lymph edema requires treatment.

The cause may be **primary** or **secondary lymph edema**:

- Primary lymph edemas are due to congenital developmental disorders or damage to the lymphatic vessels or lymph nodes.
- Secondary lymph edemas arise when lymphatic vessels and lymph nodes are damaged, usually by tumors, surgery, or radiation, and the majority of cases in which K-Tape lymph applications are used fall into this category.

Low-Volume Insufficiency
- Diseased lymphatic systems
- Reduced transport capacity with normal accumulations of lymph obligatory load
- **Result:** lymph edema forms, necessitating treatment



Fig. 2.8a–f Lymph application with a common base. **a** Measure the tape strip; depending on the width of the arm all four strips may be used, or one strip divided into smaller parts, **b** affix the base at the crook of the arm, **c** completely remove the tape backing and affix the end lightly, **d,e** place the joint in the pre-stretched position, affix the base with skin displacement, detach the tape strips one after the other and apply with 25% tension across the dorsal forearm, **f** completed application to the dorsal forearm

Safety Valve Insufficiency

Safety valve insufficiency is a response to long-term, undiagnosed, or untreated high-volume insufficiency, which decreases transport capacity. Lymphangions are forced to work excessively, and pressure within the lymphatic vessels is too high (lymphatic hypertension). The resulting **valve insufficiency** causes **mural insufficiency,** eventually leading to a hardening of the lymphatic vessels (lymphangiosclerosis). In extreme cases, cells in the affected area may die.

In such cases, K-Tape lymph applications can support additional therapies such as manual lymphatic drainage and compression treatment.

Safety Valve Insufficiency
- Diseased lymphatic vessels
- Decreased transport capacity with increased lymph obligatory load
- **Result:** valve insufficiency, mural insufficiency, lymphangiosclerosis, cell death in the affected area

2.4.2 Effects of Lymph Application

The tape elasticity and pre-stretched position of the body during application result in a **lifting of the skin.** The hypodermis is drawn toward the skin surface, causing the **initial lymph valves to open**.

The resistance of the adhesive tape against the patient's skin during everyday movements causes friction between the connective tissue and the epidermis. The connective tissue is loosened, increasing mobility of the filaments between the endothelial cells of the **lymphatic capillaries** (initial lymphatic vessels) and of the elastic fibers of the connective tissue. The valves of the initial lymphatic vessels are able to open more easily, allowing lymph to drain more rapidly. Accumulations of protein can be more easily broken down and **fibrosclerotic changes** delayed or prevented.

The tape has an additional **channeling effect**. Fluid flows along predetermined channels, stimulated by differences in pressure. The attached tape strips cause alterations in the pressure within adjoining tissues, thereby determining the direction of flow. The K-Tape ensures a more rapid flow of lymph, following the affixed channels in the desired direction.

The three **tape effects** described create a basis for **continuous lymphatic drainage** during the period in which the tape is worn.

Tape Effects That Facilitate Continuous Lymphatic Drainage
- Creating space by lifting the skin
- Loosening of connective tissue through body movements against the resistance of the tape
- Channeling effect of the tape

2.4.3 Application Technique for the Lymphatic System

Lymph Application with a Common Base

- Measure the required tape strips with the patient in a pre-stretched position (Fig. 2.8a).
- Cut the tape strips lengthwise into four equal parts.
- Round off the tape ends.
- Place the patient in a resting position.
- Affix the base (Fig. 2.8b).
- Remove the tape backing completely, and attach the ends lightly (Fig. 2.8c).
- Place the patient in the position required to stretch the joint.
- The therapist fixes the base with one hand and displaces the skin.
- Detach the tape strips one after the other using the other hand, and distribute them evenly across the treatment area with 25% tension (Fig. 2.8d,e).
- Attach the tape ends without tension.
- Rub the tape carefully while in the pre-stretched position.

Memo
- The lymphatic application is attached with **25% tape tension**.
- The patient is in a pre-stretched position.
- Only fan tapes are used.



Fig. 2.9a–d Lymph application with individual I-tape strips. **a** Measure the tape strips in a spiral around the arm, **b** affix base at the supraclavicular fossa; always remove tape backing gradually: pre-stretch the extremity, **c** affix the base with skin displacement and attach the tape strips without tension, moving radially around the extremity, then carefully rub the tape strips, **d** completed application

Lymph Application with Individual Quartered I-Tape Strips

- The tape length is measured in four or five spirals around the extremity (Fig. 2.9a).
- Cut the tape strips longitudinally into four equal parts.
- Round off the tape ends.
- Place the patient in a resting position.
- Affix the base.
- Always remove the tape backing gradually during the application (Fig. 2.9b).
- Slightly abduct the extremity.
- The therapist fixes the base with one hand and displaces the skin.
- Apply the tape strips radially around the extremity, without tension (Fig. 2.9c).
- Carefully rub the tape strips.

Memo

- The lymph application is affixed **without tape tension**.
- The patient is in a resting position.
- Only **I-tapes** are used.

http://www.springer.com/978-3-662-46585-1

K-Taping in Pediatrics
Basics Techniques Indications
Kumbrink, B.
2016, VIII, 148 p.,
ISBN: 978-3-662-46585-1