stable & mobile

A practical immobilization guide for beginners and advanced users in orthopaedic, surgery and traumatology departments

Prof. Dr. Dr. K. A. Matzen • Peter Staudinger
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Introduction

Immobilization is the treatment of choice for the most varied indications in orthopaedics, traumatology and surgery. Immobilization supports and stimulates the healing process.

In line with this trend, PAUL HARTMANN AG produces a varied range of products and bandaging materials meeting the medical requirements for appropriate use in every situation and applicable to all indications.

These effective and innovative products enable immobilization of affected parts of the body while also meeting medical requirements for early mobilization.

This booklet is entitled “stable & mobile” because PAUL HARTMANN AG promotes the principle of achieving medically necessary stability together with the greatest possible mobility.

In an easily understandable way, this booklet illustrates the different degrees of immobilization and the bandaging techniques needed to achieve them.

The booklet is intended to provide clear information on this complex subject for the benefit of doctors and professional carers, and may be used as a handy reference guide.

Since the individual healing process takes a certain time depending on each patient, this booklet does not contain any specifications for duration of treatment, as this is subject to medical direction.

PAUL HARTMANN AG
Heidenheim/Germany
Medical information
Preface by Peter Staudinger

During my training as a nurse, I already had the idea of writing and publishing a practical guide on applying plasters and functional bandages. Many books and publications on these subjects are available which describe various topics in great detail. However, they are not always available during daily practice.

After publishing the “Plaster Master” brochures, I decided to write this guide to discuss not only the application of casts but also the most suitable taping techniques and the use of new materials such as Thermocast. In doing this, I was guided by the thought of “as stable as necessary and as mobile as possible”.

The fact that I had the honour of working twice in my life with Prof. Sarmiento and that I studied his philosophy has helped me greatly in writing this guide.

The sound training I received under the supervision of Prof. Dr. Dr. Matzen was not only the basis of my own personal development. It also encouraged me to think about what I do and why.

The aim of this booklet is to convey my experience to students and to serve as a basis for discussion for the more experienced.

I am sure that there are many alternatives to the bandages presented. However, it would go totally beyond the scope of this guide to present them all. It is a practical guide for use in practice and it should remain as such. It only becomes alive when referred to constantly.

My special thanks are expressed to PAUL HARTMANN AG, whose generous support and great encouragement made the production of this guide possible. I also would like to thank Hans-Jürgen Darlison, the photographer, and Hartmut Völker, who mastered the difficult task of illustration.

Finally, I would like to extend a very special word of thanks to Prof. Dr. Dr. Matzen and Hans Jürgen Montag †, my mentors in casting, taping and bandaging.

Tornesch/Germany, July 2002 Peter Staudinger
Preface by Prof. Dr. Dr. K. A. Matzen

Even in the era of stable internal fixation, plaster and tape bandages have not lost their significance.

In numerous indications, stabilizing and immobilizing bandages are still required to protect the result of healing.

This guide refers to proven techniques and impressively documents conventional standards and innovations.

The concise text and the excellent illustrations make the guide easy to use for both experienced and inexperienced users.

This guide should be used by medical and care professionals to ensure quality.

Prof. Dr. Dr. K. A. Matzen
**Immobilization materials**

**Conventional Plaster of Paris casts**

As far back as during the Persian Wars, plaster casts were used to immobilize the broken limbs of the wounded during transport. This technique, however, subsequently fell into oblivion.

Dissatisfied with the therapeutic state of affairs, the Dutchman Mathijsen (Dutch military physician 1805 – 1878) and the Russian Pirogov discovered a new method of treating fractures independently of each other in the middle of the 19th century. Mathijsen published his findings in 1851 and is now regarded as the inventor of the powdered plaster of Paris bandage.

In this prototype of the plaster bandage, the finely ground plaster of Paris is spread dry onto a gauze bandage.

These days, modern, fixed plaster bandages are used. The plaster is applied to the fabric in combination with a suitable water-soluble binder to make it less likely to lose plaster during handling or wetting.

However, plaster of Paris is still a natural product and thus fluctuations in quality can never be ruled out entirely. To keep these to a minimum, manufacturers apply stringent quality standards to the raw materials and to the manufacturing process itself.

Plaster of Paris is relatively easy to use if certain basic rules are observed:

- Immersion water temperature 20°C or 68°F
- Short immersion time so that the plaster does not absorb or store too much water
- Do not squeeze out the plaster during immersion
- Do not wash out the bandage or slab in the immersion water
- Squeeze out excess water after immersion
- Rapidly apply the immersed, moist bandages or slabs
- When applying the bandage, make firm but not tight turns to avoid constriction

The available range of products includes ready-made bandages and slabs. The bandages are available in widths of 6, 8, 10, 12, 15 and 20 cm and in lengths of between 2 and 4 metres. A length of 3 metres has proven ideal in everyday practice.

Slabs are four-ply layers of plaster available in lengths of 1 to 25 metres. Anyone working a lot with slabs is best served by the economical 20 m pack. Wide slabs are more suitable for large-area plaster casts such as body casts and plaster shells. Bandages should be stored in their packaging in such a way that the bandages which are not required do not absorb moisture. This is why the twin pack has proven most useful in practice.

Unpacking of bandages in advance is not recommended because even slight contact with moisture makes bandages unusable at a later date.

**Synthetic casts**

The development of synthetic casts started in 1955 and has continued with ups and downs until the present day.

**Composition of bandages impregnated with polyurethane**

Modern synthetic bandages are resin-coated fabric bandages. The fabric is a synthetic yarn knitted in such a way as to adapt easily to the individual shape of the body. The resin used is a self-hardening chemical mixture which is activated by moisture to form a networked polymer. This polymer joins up the fabric and subsequently forms the cast.

**Thermoplastic casts (Thermocast)**

Thermoplastic material is used as an alternative to eliminate to a great extent the unfavourable side effects of the resin used when making a cast.

The impregnated synthetic or cotton fabric is knitted in such a way that it becomes flexible
when immersed in warm water (60 – 70°C or 140 – 158 °F). It can then be applied easily to the individual contours of the body like a support bandage.

The layers join up together during the setting time and are a uniform, stable compound after cooling. The cast may be remodelled or adapted at any time by warming it up with warm water (60 – 70°C or 140 – 158 °F) or simply with a hairdryer.

Unused remaining material can be reactivated at any time and can be used in other casts.

Thermoplastic materials do not require any special protection such as sealed packaging or special storage conditions.

Application is also very simple. No special precautions are required for the patient or user because the material does not adhere to the skin.

Thus padding is not required for normal skin conditions. The edges of the cast can be warmed up and rounded at any time.

If padding is required, a synthetic tubular bandage is recommended.

Thermoplastic materials are currently available in widths of 5, 7.5, 10 and 12 cm.

**Functional taping**

From the very beginnings of medicine, a lot of attention has been devoted to injuries to the locomotor system. Complicated linen dressings found on mummies allow us to assume that similar dressings were also used for the treatment of injuries to the locomotor system. According to records from Roman times, the gladiators also applied special bandages to prevent injuries. The consequences of total immobilization were known even then but appropriate bandaging material was not available.

This changed in 1892 when Paul Beiersdorf invented the fabric-based, ready-to-use plaster, spread evenly with an adhesive mass, known later as Leukoplast. The New York surgeon Virgil Pendleton Gibney (1847 – 1927), is regarded as the inventor of the first functional bandage because immobilization was possible for the first time with his bandaging technique and ready-to-use adhesive plaster. The Gibney bandage, albeit in a very modified version, is still as important as ever.

Another milestone in the development of various bandaging techniques for the functional treatment of joints was the invention of the elastic adhesive bandage made of a special type of woven fabric which is called “Idealbinde”. Practical experience in the care of professional sportspeople and the continuous refinement of bandaging materials created the basis for this new bandaging technique called taping.

The word “taping” is derived from “adhesive tape” and describes the application of strips of adhesive tape. This physiological bandaging technique adapts itself to the functional anatomy and is performed mainly using non-elastic tapes or cotton-stretch adhesive bandages.

The materials used are mainly adhesive-coated cotton bandages. The adhesives used are traditional zinc oxide-/rubber, with very strong adhesive strength on skin and fabric, and the more skin-compatible polyacrylate adhesive.

The tape is available in widths of 2, 3.75 and 5 cm, and is usually 10 m long. The adhesive bandages are available in the usual compression bandage widths of 6, 8 and 10 cm, and are usually 2.5 metres long. These lengths and widths have proven to be the most useful in daily practice.

Cohesive bandages are used for special cases of skin protection. These bandages stick to themselves but not to skin and fabric. This is why they are equally suitable for use as conforming and as protective bandages.
Padding

Potential pressure points requiring special padding
General guidelines

Selection criteria
The guidelines for applying an immobilizing, stabilizing bandage depend on the objective of the bandage, or generally speaking, on the kind of treatment.

• Is functional treatment recommended or does the injury not allow it?
• Should the bandage immobilize totally or only partially?
• Should the bandage be worn temporarily or for a longer time?
• Is the bandage, applied initially to immobilize totally, to be changed later to a functional bandage?
• Is redressing required?

Indications may be assigned to specific bandages and the required material may be selected when these questions have been answered. The selected bandage can then be applied, considering the generally applicable guidelines and the specific application instructions for the particular material.

Generally applicable guidelines
• Careful preparation of patient, material and additional material required
• Rapid and prudent work
• Consideration of physiological joint positioning
• Smooth, crease-free padding
• Sufficient padding of the bandage edges
• Thorough cast moulding of the bandage without creating pressure points with the fingertips
• Keep the extension of the bandage within limits
• Material-saving application
• Appropriate use of the various bandaging materials.

Special guidelines requiring particular attention

Plaster of Paris cast
• The temperature of immersion water should not exceed 20° C or 68° F
• Keep immersion time short
• Rapidly apply immersed bandages or slabs
• Maintain the same position of the extremity while applying the plaster bandage
• Avoid pressure points when holding the moist cast and avoid letting go the cast too early

• Do not make any adjustments to bandages once they have been applied or when the bandage is complete
• Depending on humidity and ambient temperature, wait 24 – 48 hours before subjecting the bandage to weight bearing.

Synthetic cast
• Always wear gloves during application
• Immerse bandage first and do not squeeze out bandage after immersion
• Fold slabs before immersion
• Do not add any substances between the individual layers
• Avoid pressure points when holding a cast which has not yet set and avoid letting go the cast too early
• Do not make any adjustments to bandages once they have been applied or when the bandage is complete
• Wait 20 – 30 minutes before subjecting the bandage to weight bearing.

Thermocast
• Heat the bandages sufficiently long in warm water (60 – 70° C or 140 – 158°F)
• Use tongs to take the heated bandage out of the water and drip off excess water
• Or wrap the bandage in a towel for a short while to absorb excess water
• Avoid the use of padding because it absorbs water and can cause thermal skin reactions
• If padding is required, the use of a synthetic tubular bandage is recommended
• Special skin protection or gloves are not required
• Cut the cast with plaster shears when the cast is warm and flexible. When set, gently heat the cast with a hairdryer to make it soft.

Functional taping
• Use a protective underwrap in cases of known allergies to zinc oxide/rubber adhesive, or switch to hypoallergenic adhesive
• Never apply tension when making bandage turns
• If tension is required, spread it out over a wide area of the skin
• Avoid creases as far as possible
• Remove the tape in the direction of hair growth.
Indications

Stabilizing bandages are used to immobilize extremities or the trunk for various indications:

- Consolidation of soft-tissue inflammation
- During wound healing
- Immobilization of internal fixation which is not exercise-stable
- Conservative fracture treatment (maintenance of fracture reduction result, guarantee of anatomical / functional positioning)
- Redressment of extremities and spinal malformations
- Capsule, ligament and tendon injuries, or during the healing process following ligament reconstruction.

Long lasting immobilization may cause:

- Reduced blood circulation, enhancing the risk of thrombosis
- Bone demineralization
- Atrophy of muscles, tendons and capsules.

Complications resulting from immobilization

- Thrombosis (in particular when the lower extremity is immobilized)
- Irreversible restriction of movement (e.g. Volkmann’s contracture)
- Necrosis (in particular at exposed areas)
- Compartmental syndrome
- Nerve lesions (in particular ulnar, fibular and anterior tibial nerves)

Aim of immobilization

The aim of any kind of immobilization should be earliest possible mobilization in order to regain the best possible function of the affected part of the body and to avoid complications as far as possible.

The “Sarmiento” philosophy

Prof. Augusto Sarmiento, School of Medicine, University of Southern California, Orthopaedic Hospital, Los Angeles, CA / USA. He is regarded as the father of early, functional fracture treatment. He believes that his treatment method is more a philosophy than a technique.

I can only agree with this because I had the honour of working with him on two occasions. At the IOACON Congress in Jaipur/India in November 2000, Sarmiento remarked: “Nowadays, orthopaedic surgeons are more concerned with cosmetic details and forget that they have to treat the skeleton”. The commonly held view that immobilization is good for the treatment of fractures is only correct to a certain extent, or even wrong. Many scientific publications back up Sarmiento’s experience that rigid immobilization delays fracture healing. Sarmiento’s experience demonstrates that gentle movement in the fracture region is the key to success. Movement in the fracture must take place within the pain-free range of movement. It is not the aim to state that no pain means no success.

Essential component of Sarmiento’s philosophy

Consideration of the vascular system plays an important role in treatment. Not only is it important to consider arterial circulation. Venous and lymphatic circulation must also be remembered because they are impaired during total joint immobilization. Sarmiento stated that: “A bone does not heal by itself, only vessels produce bone tissue”. This is why prophylaxis of thrombosis and oedema is an essential part of the total therapeutic approach.

Conclusion

Immobilization only as long as necessary. Early functional treatment combined with sufficient stabilization as soon as possible.
Skin protection
A knitted tubular bandage made of natural fibres has proven to be the best way of enhancing the feeling of support and comfort on the skin, of absorbing sweat and of protecting against synthetic fibres. This tubular bandage is available in different sizes and is thus suitable for all purposes and can be applied without creasing. An important secondary effect can be achieved if the knitted tubular bandage is pulled over the plaster while it is still moist and is then moulded thoroughly into the cast. This greatly increases the bending stability of the plaster bandage, making it more stable, resistant and giving it a better finish.

Padding
Additional padding is required because the tubular bandage alone does not provide sufficient padding between the plaster bandage and the skin. Synthetic padding bandages have come to the fore for this purpose because they are easy to use and they keep their padding effect. The synthetic padding bandage does not store moisture like cotton or cellulose, and it retains its padding effect even after it has been moist or wet.

Crepe paper
Paper bandages are a tried-and-tested connecting element between plaster bandage and padding. The many beneficial features of the paper bandage are just mentioned here briefly. The padding, which is applied in circular fashion with synthetic padding, always creates a stepped profile. However, a smooth padding surface is required. This is achieved by applying the extensible paper bandage on top of the padding. At the same time, the paper bandage secures the padding and the extremity if it is applied using light, uniform tension and without constriction. Another aspect is protection against penetration of water from the plaster (and sometimes plaster paste). After it has dried, this plaster paste could cause pressure points in the padding.

Foam bandages
The thin foam bandages were first launched as “pre-tape bandages”. They were applied under adhesive bandages to prevent direct contact of adhesive to the skin. Since the launch of synthetic casts, however, these foam bandages have a new application. They replace the function of crepe paper bandages, and their structure also makes them suitable as a separating layer between the cast and padding material. This is a great advantage when using the Sarmiento technique because the individual shells can be easily removed from the padding and have a smooth surface on the inside.

Additional padding
Finally, it is important to mention that additional padding should be placed in areas of the body particularly susceptible to the development of pressure sores (e.g. bony prominences such as the head of the fibula etc.). Thin, moulded pieces of felt or foam are particularly suitable for this purpose. However, a double layer or a three-ply layer of cotton padding often fulfils the same purpose.

Please refer to the illustration entitled “Potential pressure points requiring special padding” (page 10).
### Dorsal forearm plaster splint

- **Recommended material**
  - Tubular bandage, size 2 R
  - Slab, 12 cm wide
  - Padding, 15 cm wide

- **Indications**
  - Wrist distortion
  - Immobilization after wound care
  - After removal of a circular plaster cast

- **Example 1**

### Volar forearm plaster splint

- **Recommended material**
  - Tubular bandage, size 2 R
  - Slab, 12 cm wide
  - Padding, 15 cm wide

- **Indications**
  - Wrist distortion, limitation of palmar flexion
  - Immobilization after wound care

- **Example 2**

### Dorsovolar forearm plaster splint

- **Recommended material**
  - Padding, 6 cm wide
  - Crepe paper bandage
  - Slab, 20 cm wide

- **Indications**
  - Colles fracture, Loco typico, not dislocated
  - Dislocated radial fracture after reduction

- **Example 3**

### Radial thumb plaster splint

- **Recommended material**
  - Slab, 12 cm wide
  - Padding, 15 cm wide if necessary
  - Cohesive conforming bandage

- **Indications**
  - Ruptured collateral ulnar ligament
  - Closed reduction after dislocation
  - Immobilization after distortion

- **Example 4**

### Dorsal forearm cast splint

- **Recommended material**
  - Tubular bandage, size 2 R
  - Cast bandage, 7.5 or 10 cm wide
  - Cohesive bandage or Thermocast, 6 cm wide

- **Indications**
  - Wrist distortion
  - Immobilization after wound care
  - Prevention of dorsal flexion

- **Example 5**

### Forearm plaster cast

- **Recommended material**
  - Tubular bandage, size 2 R; padding, 6 cm wide
  - Paper bandage, narrow
  - 2 plaster bandages, 8 cm wide

- **Indications**
  - Radial fracture after detumescence
  - Severe wrist distortion
  - Some cases of distal greenstick fractures

- **Example 6**

### Forearm scaphoid plaster cast

- **Recommended material**
  - Tubular bandage, size 1 R + 2 R
  - Padding and paper bandage
  - 2 plaster bandages, 8 cm wide

- **Indications**
  - Non-dislocated scaphoid fracture
  - Slightly dislocated scaphoid fracture, treated conservatively

- **Example 7**

### Iselin or metacarpal extension plaster cast

- **Recommended material**
  - Tubular bandage, size 1 R + 2 R; Tape, 3.75 cm
  - Padding and paper bandage (narrow)
  - 2 plaster bandages, 8 cm wide

- **Indications**
  - Non-dislocated metacarpal fractures
  - Dislocated metacarpal fractures

- **Example 8**

### Forearm - synthetic - cast

- **Recommended material**
  - Tubular bandage, size 2 R
  - Padding, 6 cm wide + foam bandage
  - 1 cast bandage, 7.5 cm wide

- **Indications**
  - Secondary cast in radius fractures
  - Primary cast for severe wrist distortions without swelling

- **Example 9**
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| **Recommended material** | - Slab, 20 cm wide  
- Padding, 20 cm wide  
- Cohesive conforming bandage |
| **Indications** | - Preoperative and postoperative in ankle joint fractures  
- Calcaneal fracture  
- Severe distortion of the ankle joint |

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<th>Lower leg plaster cast</th>
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| **Recommended material** | - Tubular bandage, size 2 R or 3 R  
- 2 pieces of padding, 6 cm wide; crepe paper bandage  
- 2 plaster bandages, 15 cm wide; 1 slab, 12 cm wide  
- Walking cast heel |
| **Indications** | - Primary management of severe capsular / ligament injury of the ankle joint  
- Non-dislocated Weber A fracture  
- Postoperative ankle joint fracture (open splitting cast) |

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<th>Lower leg plaster walking cast</th>
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| **Recommended material** | - Tubular bandage, size 2 R or 3 R  
- 2 padding bandages, 6 cm wide; crepe paper bandage  
- 2 plaster bandages, 15 cm wide; 1 slab, 12 cm wide |
| **Indications** | - Secondary treatment of Weber A fracture  
- Severe capsular/ligament injury after detumescence  
- Fracture of the big toe basal joint |

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<th>Lower leg synthetic cast without toe protection</th>
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| **Recommended material** | - Tubular bandage, size 2 R or 3 R  
- 2 padding bandages, 6 cm wide; foam bandage  
- 2 cast bandages, 7.5 cm wide |
| **Indications** | - Secondary management of ankle joint injuries  
- Secondary cast in paediatric tibia fractures |

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<th>Lower leg synthetic cast with toe protection</th>
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| **Recommended material** | - Tubular bandage, size 2 R or 3 R  
- 2 padding bandages, 6 cm wide; foam bandage  
- 2 cast bandages, 7.5 cm wide; one 5 cm wide |
| **Indications** | - Secondary management of lower leg injuries  
- Fracture of the big toe basal joint |

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<th>Lower leg synthetic cast after Sarmiento</th>
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| **Recommended material** | - Tubular bandage, size 2 R or 3 R  
- 2 padding bandages, 6 cm wide; foam bandage  
- 2 cast bandages, 7.5 cm wide; one 10 cm wide |
| **Indications** | - Early functional management of fibula and tibia fractures  
- Step by step management of tibia fractures  
- 1. Thigh plaster cast, 2. Funct. Synthetic cast |

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<th>Alternative technique: Functional lower leg synthetic cast after Sarmiento</th>
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| **Recommended material** | - Tubular bandage, size 2 R or 3 R  
- 2 padding bandages, 6 cm wide; foam bandage  
- 2 cast bandages, 7.5 cm wide; one 10 cm wide |
| **Indications** | - Early functional management of fibula and tibia fractures  
- Step by step management of tibia fractures  
- 1. Thigh plaster cast, 2. Funct. Synthetic cast |

<table>
<thead>
<tr>
<th>Lower leg synthetic cast with shell and Velcro straps</th>
</tr>
</thead>
</table>
| **Recommended material** | - Tubular bandage, size 2 R or 3 R  
- 2 padding bandages, 6 cm wide; foam bandage  
- 2 cast bandages, 7.5 cm wide; one 10 cm wide  
- Velcro straps |
| **Indications** | - Immobilization after ankle joint operation  
- Immobilization of lower leg in extensive soft-tissue injuries  
- Early functional management with temporary immobilization |

<table>
<thead>
<tr>
<th>Lower leg synthetic cast with integrated plantar support</th>
</tr>
</thead>
</table>
| **Recommended material** | - Tubular bandage, size 2 R or 3 R  
- Padding (one 10 cm bandages or two 6 cm bandages)  
- Foam bandage  
- 2 cast bandages, 10 cm wide  
- Plantar support |
| **Indications** | - Early functional management of lower leg fractures  
- Management subsequent to application of a lower leg synthetic cast after Sarmiento |

Example 19

Example 20

Example 21

Example 22

Example 23

Example 24

Example 25

Example 26

Example 27
### Combined, reinforced, elastic ankle taping

<table>
<thead>
<tr>
<th>Recommended material</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elastic adhesive bandage, 6 or 8 cm wide</td>
<td>Severe distortions</td>
</tr>
<tr>
<td>Tape, 3.75 cm wide</td>
<td>Capsule ruptures</td>
</tr>
<tr>
<td>-</td>
<td>Partial ruptures of fibular ligaments</td>
</tr>
</tbody>
</table>

**Example 28**

### Functional ankle taping

<table>
<thead>
<tr>
<th>Recommended material</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohesive, protective bandage in individuals allergic to adhesives</td>
<td>Moderate to severe distortions</td>
</tr>
<tr>
<td>1 roll of Tape, 3.75 cm wide</td>
<td>Capsule/ligament ruptures</td>
</tr>
<tr>
<td>-</td>
<td>Ligament insufficiency</td>
</tr>
</tbody>
</table>

**Example 29**

### Support shoe made of Thermocast

<table>
<thead>
<tr>
<th>Recommended material</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Padding for between the toes</td>
<td>Fractures, distortion of cuboid bone, cuneiform bones</td>
</tr>
<tr>
<td>Thermocast bandage, 7.5 cm wide</td>
<td>Metatarsal fractures</td>
</tr>
<tr>
<td>Velcro strap</td>
<td></td>
</tr>
</tbody>
</table>

**Example 30**

### Ankle brace made of Thermocast

<table>
<thead>
<tr>
<th>Recommended material</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin protecting cream (of your choice)</td>
<td>Insufficiency of capsule/ligament structure</td>
</tr>
<tr>
<td>Thermocast bandage, 5 cm wide</td>
<td>Postoperative management after ligament surgery</td>
</tr>
<tr>
<td>Velcro strap</td>
<td>Protection during extreme stress</td>
</tr>
</tbody>
</table>

**Example 31**

### Dorsal thigh plaster splint

<table>
<thead>
<tr>
<th>Recommended material</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slab, 20 cm wide</td>
<td>Preoperative and postoperative prepatellar bursitis</td>
</tr>
<tr>
<td>Padding, 20 cm wide</td>
<td>Severe distortions</td>
</tr>
<tr>
<td>Cohesive bandage or Thermocast, 10 cm wide</td>
<td>After arthroscopy</td>
</tr>
</tbody>
</table>

**Example 32**

### Full leg synthetic cast applied when standing

<table>
<thead>
<tr>
<th>Recommended material</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubular bandage, size 3 R up to 5 R</td>
<td>After lesions of knee ligaments</td>
</tr>
<tr>
<td>2 padding and bandages (10 cm and 15 cm wide)</td>
<td>Patellar dislocations, bursitis</td>
</tr>
<tr>
<td>Foam bandage</td>
<td>Postoperative management after ligament surgery</td>
</tr>
<tr>
<td>3 – 4 cast bandages, 10 or 12.5 cm wide</td>
<td></td>
</tr>
</tbody>
</table>

**Example 33**

### Knee support taping for collateral ligaments

<table>
<thead>
<tr>
<th>Recommended material</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 2 elastic adhesive bandages, 8 cm wide</td>
<td>Straining and distortion of collateral ligaments</td>
</tr>
<tr>
<td>Tape, 5 cm wide</td>
<td>Slight tears</td>
</tr>
<tr>
<td>Tape, 3.75 cm wide</td>
<td>Lateral / medial instability</td>
</tr>
<tr>
<td>-</td>
<td>Straining of meniscus</td>
</tr>
</tbody>
</table>

**Example 34**

### Support taping for the Achilles tendon

<table>
<thead>
<tr>
<th>Recommended material</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elastic adhesive bandage, 10 cm wide</td>
<td>Achillodynia</td>
</tr>
<tr>
<td>1 – 2 rolls of Tape, 3.75 cm wide</td>
<td>Postoperative support after tenosuture</td>
</tr>
<tr>
<td>-</td>
<td>Pain at the insertion of the Achilles tendon at the heel bone</td>
</tr>
</tbody>
</table>

**Example 35**

### Support taping for the calf muscles

<table>
<thead>
<tr>
<th>Recommended material</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elastic adhesive bandage, 10 cm wide</td>
<td>Strained muscles and distortion</td>
</tr>
<tr>
<td>1 – 2 rolls of Tape, 3.75 cm wide</td>
<td>Ruptured muscle fibres</td>
</tr>
<tr>
<td>Cohesive, protective bandage</td>
<td>Ruptured muscle bundles</td>
</tr>
</tbody>
</table>

**Example 36**
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