

Compression Bandaging



Lymphoedema Therapy, Training & Education

pause - breathe - relax

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This module covers:

Law of LaPlace

Purpose of
Bandaging

Contraindications

Resting and
Working
Pressures

Tailoring
Bandaging

Short Stretch v
Coban

Considerations
when Bandaging

Compression
Suppliers

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Learning Outcomes:

- Describe the Law of LaPlace
- Describe Law of LaPlace in relation to compression bandaging
- Describe the purpose of bandaging
- Describe contraindications and precautions for bandaging
- Demonstrate how to tailor bandaging to different limbs
- Describe the different bandaging alternatives
- Describe the rationale for the choice of bandaging supplies

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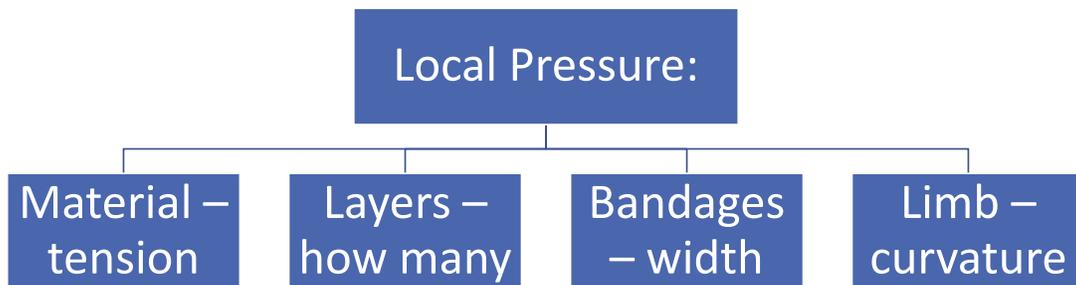
Law of LaPlace

According to the International Lymphoedema Framework position document, Best Practice for the Management of Lymphoedema, 'The pressure generated by a bandage application is a function of the tension in the fabric and the radius of curvature of the limb to which it is applied'.

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Law of LaPlace



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Law of LaPlace - Formula

P	=	$\frac{T \times N \times 4620}{C \times W}$
P	=	sub-bandage Pressure (mmHg)
T	=	bandage Tension (kgf – kilogram force)
N	=	Number of layers
C	=	limb Circumference (cm)
W	=	bandage Width (cm)

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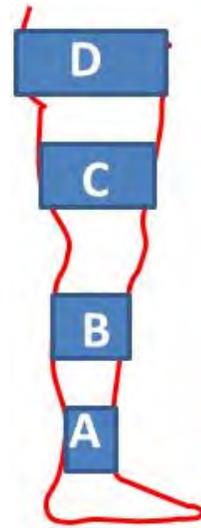
Law of LaPlace

$$\text{Pressure} = \frac{\text{tension}}{\text{radius}}$$

$$A > B > C > D$$

Pressure at:

- ankle > calf
- calf > thigh
- thigh > buttocks



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Law of LaPlace



R = 55

R = 35

R = 20



R = 70

R = 70

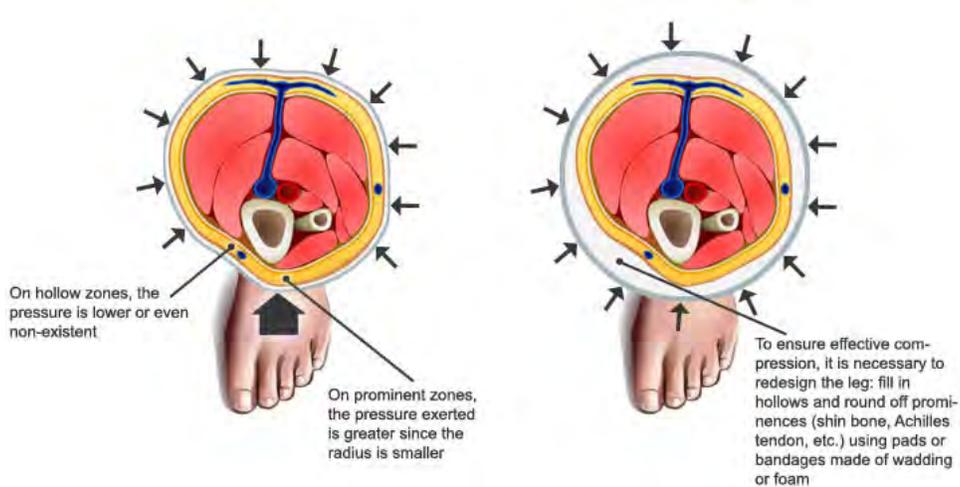
R = 70

R = radius

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Law of LaPlace



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Purpose of Bandaging

correct limb distortion

reduce limb size/volume

reverse tissue changes

improve skin condition

manage skin exudate

assist in break down of fibrosis

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Mechanisms of Action

There is limited research evidence to explain the precise mechanism of action of compression bandaging. However, the following mechanisms have been proposed:

- reduction in capillary filtration
- shift of fluid into non-compressed parts of the body
- increase in lymphatic reabsorption and stimulation of lymphatic transport
- improvement in the venous pump in people with veno-lymphatic dysfunction breakdown of fibrosclerotic tissue.



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Provides skin tissue with a solid counterforce against the muscles during activity



The increase in tissue pressure during this activity increases lymphatic and venous return and prevents fluid accumulation.



Too much pressure on the tissue during rest may lead to tourniquet



Short stretch bandages have about 60% extensibility of original length, have a high working pressure.



This high working pressure (during activity) provides the necessary solid counterforce



The low resting pressure (during rest) alleviates any tourniquet



Of course.....this only happens if the bandages are applied correctly

Why use Short Stretch Bandages?

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General Contraindications

- severe arterial insufficiency
- uncontrolled heart failure
- severe peripheral neuropathy

*Prior to commencing lower limb compression, a comprehensive cardiovascular assessment is recommended to rule out any underlying arterial / venous insufficiency including ABPI

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Caution Advised

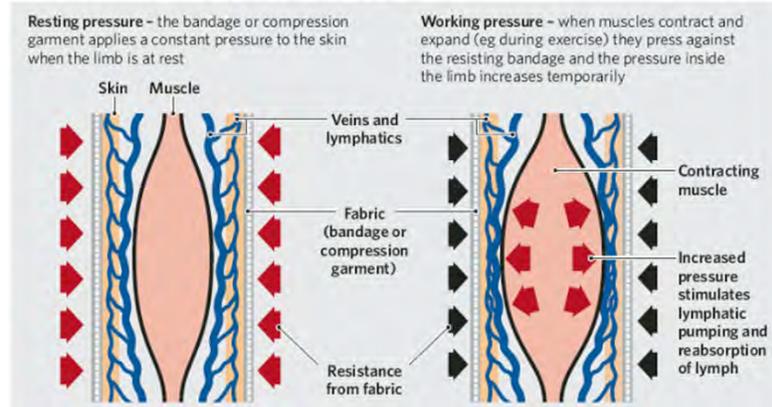
- ABPI less than 0.8 or greater than
- high arterial blood pressure
- cardiac arrhythmia or cardiac stenosis
- controlled heart failure
- scleroderma
- chronic polyarthritis
- complex regional pain syndrome
- malignant lymphoedema
- acute cellulitis/erysipelas
- diabetes mellitus
- paralysis
- sensory deficit
- fragile or damaged skin

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Figure 2 Resting and working pressures



Reprinted with permission: Lymphoedema Framework (2006).

Resting and Working Pressures

The short-stretch bandages which are commonly used in LCB have low extensibility.

They exert high working pressure and low resting pressure.

Resting pressure is the constant pressure externally applied by the bandage.

Working pressure is temporary pressure that is generated internally in the muscle and that also affects the deeper tissues.

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Tailoring Bandaging

The pressure a bandage exerts is determined by three principal factors:

1. tension in the fabric
2. number of layers applied
3. degree of curvature of the limb

Apply compression bandaging:

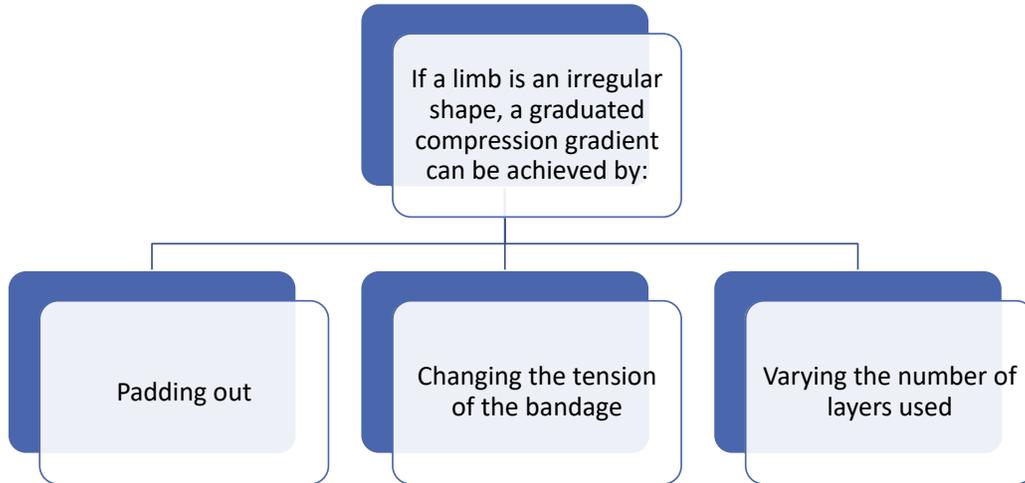
- pressure gradient steadily decreases from distal to proximal end of limb
- this prevents pooling of fluid

https://www.health.qld.gov.au/__data/assets/pdf_file/0027/146646/guideline-lymph.pdf

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Tailoring Bandaging



https://www.health.qld.gov.au/__data/assets/pdf_file/0027/146646/guideline-lymph.pdf

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Short Stretch Bandage Supplies



Skin protection

Stockinette – absorbs moisture, protects limb (1.5 x limb length)

Tubigrip – not suitable – already firm



Padding

Cotton fluffy, foam, foam bandage liners



Fibrosis

Channel foam sheets, chip bags, swell spots, fibrosis pads



Toes and Fingers

Conforming bandages for toes – 1 x 2.5 cm

Fingers – 1 x 5 cm + 1 x 2.5 cm



Bandages

Short stretch bandages (1 x 6 cm, 2 x 8 cm, 2 x 10 cm) for larger limb you may decide 12 cm is better



Incidentals

Tape, scissors, tape measure, Chinagraph pencil, limb measurement sheet

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3M Coban Bandage Supplies



When applied to limb, resulting bandage creates inelastic sleeve with ideal stiffness to support muscular movements of patient

These intermittent muscle contraction/relaxation forces are proven to move lymphatic flow to reduce oedema

Consists of two layers: comfort foam and cohesive

Light and thin to wear, less slippage, latex-free

<https://www.3m.com.au>

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Typical Coban Products for Upper Limb



1 roll of 2.5 cm Compression Layer (2) – for fingers



1 roll of 10 cm Comfort Foam Layer (1)



1 roll of 10 cm Compression Layer (2)

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Typical Coban Products for Lower Limb

Toe Boot Technique:

- 1 x 5 cm Comfort Foam Layer (1)
- 1 x 5 cm Compression Layer (2)

Typical Leg Bandage:

- 1 x 10 cm Comfort Foam Layer (1)
- 1 x 10 cm Compression Layer (2) foot to knee
- 1 x 15 cm Comfort Foam Layer (1)
- 1 x 15 cm Compression Layer (2) knee to thigh

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Considerations when Bandaging

Does the client need a driver?

Suggest client shower before appointment

Wear clothing that is easy to don and doff

If never had before, consider ADLs, lifestyle

Bandage early in the morning, you have all day to check on client

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Bandaging

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Purchasing Bandaging Products

BSN (Essity)

Independence Australia

Medical & Surgical

3M

Who is your supplier?

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