

# Suspension Therapy

# Suspension Therapy:

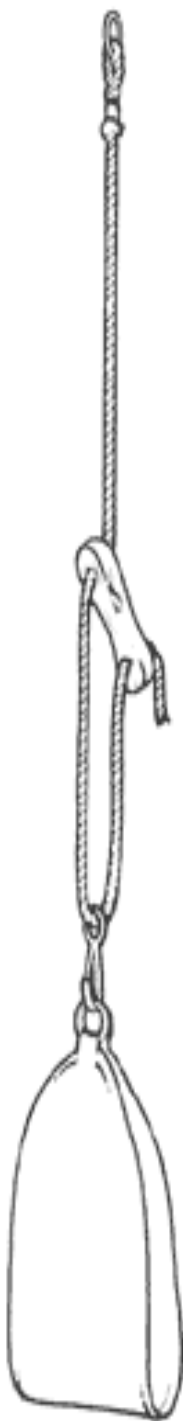
- Treatment or therapeutic exercise given to patients to increase ROM, increase muscle power and support body parts by using ropes and slings.

# Aims:

- Muscle Strengthening
- Neuro-Muscular Co-ordination

# Suspension:

- Suspension is the means whereby parts of the body are supported in slings and elevated by the use of variable length ropes fixed to a point above the body.



- Suspension frees the body from the friction of the material upon which body components may be resting and it permits free movement without resistance when the fixation is suitably arranged relative to the supported part.

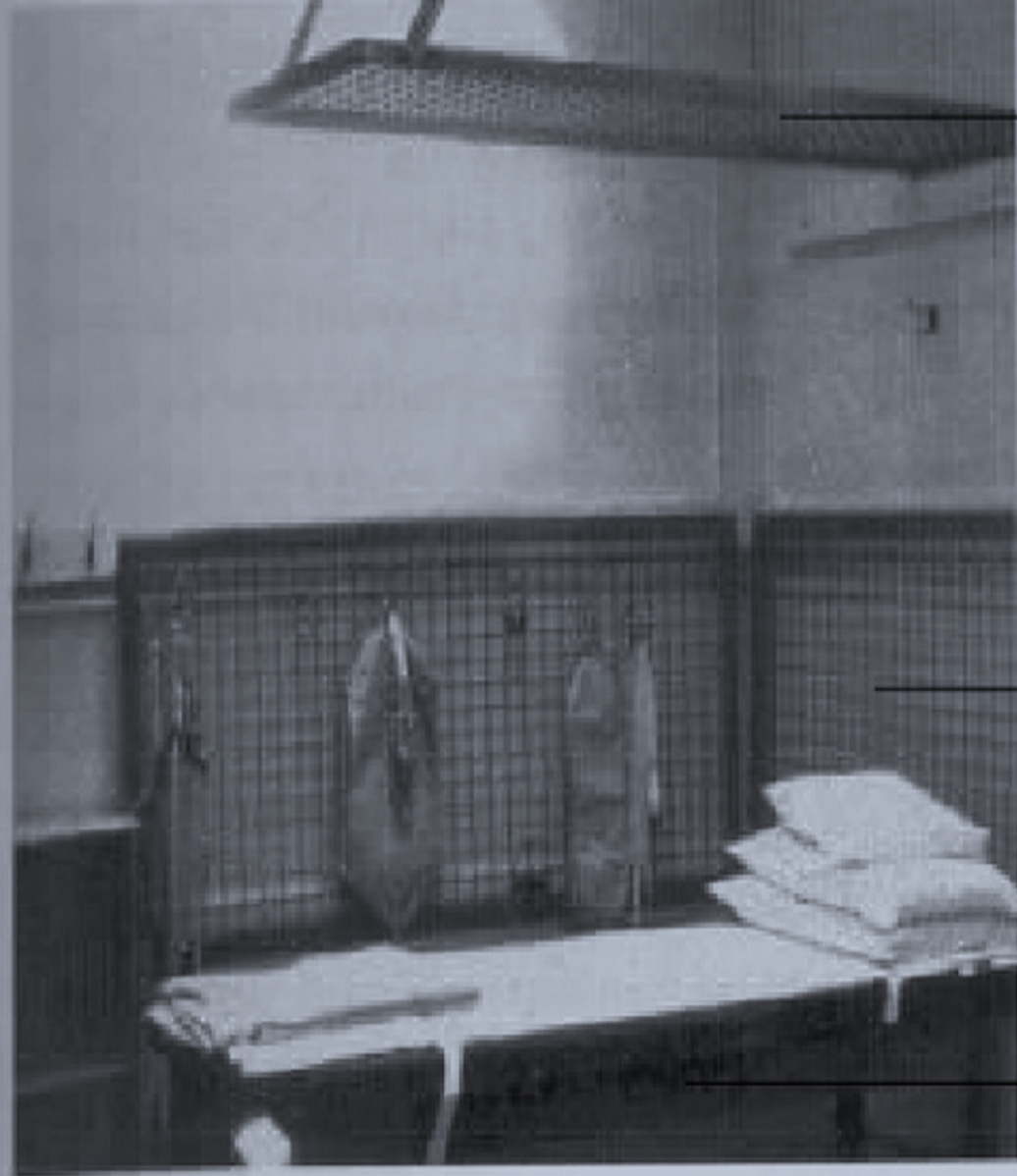
# Fixed Point:

- It is made of stainless steel or plastic coated steel.

In the top and head end side presents the 5cm metal mesh and remaining side kept open.

- Storage

- Storage of slings and ropes can otherwise be on a wall frame of suitable hooks or on a mobile trolley as in Hooks that have a large and small curve are used.



mesh

Fixed point

plinth

Fig. 8.2 A mesh arrangement to cover a large area and allow many variations in 'fixed points'.

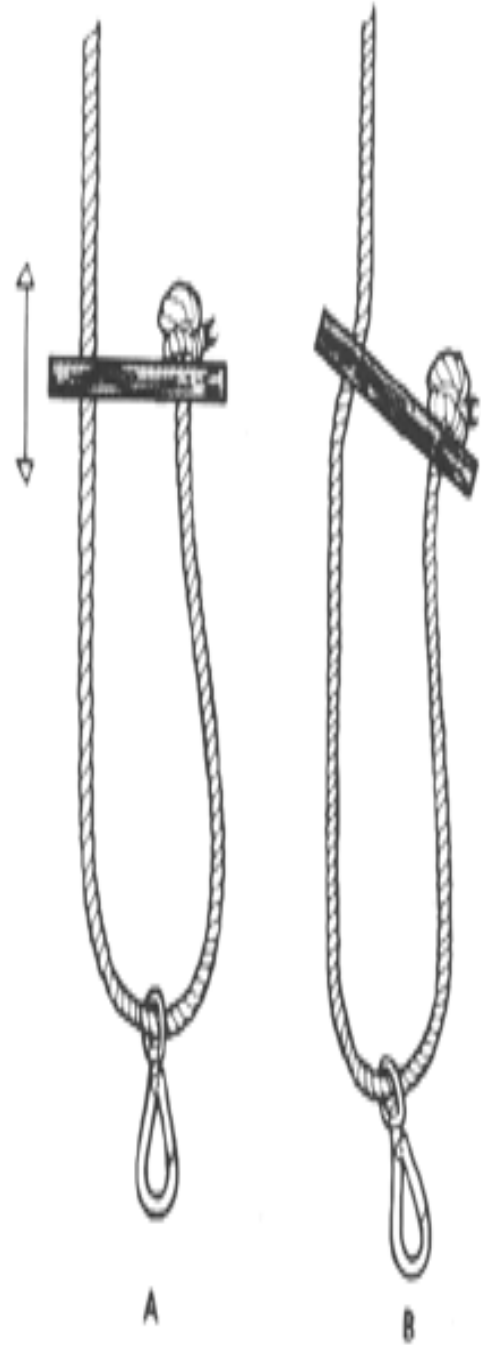
# Supporting Ropes:

- There are following three types of supporting ropes:
  - Single Rope
  - Double Rope
  - Pulley Rope



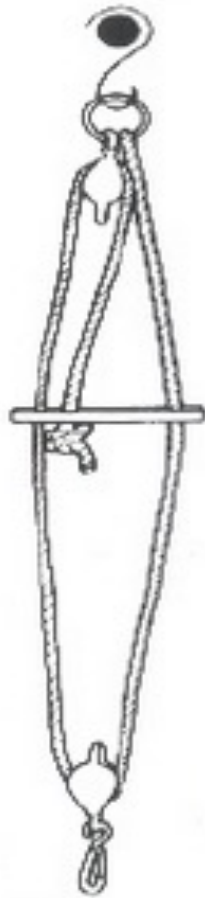
# Single Rope:

- Has a ring fixed at one end by which it is hung up.
- The other end of the rope then passes through one end of the wooden cleat through the ring of a dog clip and through the other end of the cleat and then knotted.
- The cleat is for altering the length of the rope and should be held horizontally for movement and pulled oblique when supporting. The rope then 'holds' on the cleat by frictional resistance.



## Double Rope:

- Consist of two pulleys at upper and lower attachments.
- This device gives a mechanical advantage of two as two pulleys are used. The rope is shortened by pushing the cleat down, allowing the lifter to move with gravity at the same time as it offers a mechanical advantage of two.
- Such a rope is used to suspend the heavy parts of the body – the pelvis, thorax or heavy thighs when these are to be supported together.



# Pulley Rope:

- This has a dog clip attached at one end of the rope which then passes over the wheel of the pulley.
- The rope then passes through the cleat and a second dog clip.

- It is used for three-dimensional movements of a limb, i.e. abduction or adduction with flexion or extension and medial or lateral rotation (combined, oblique, rotatory movements).



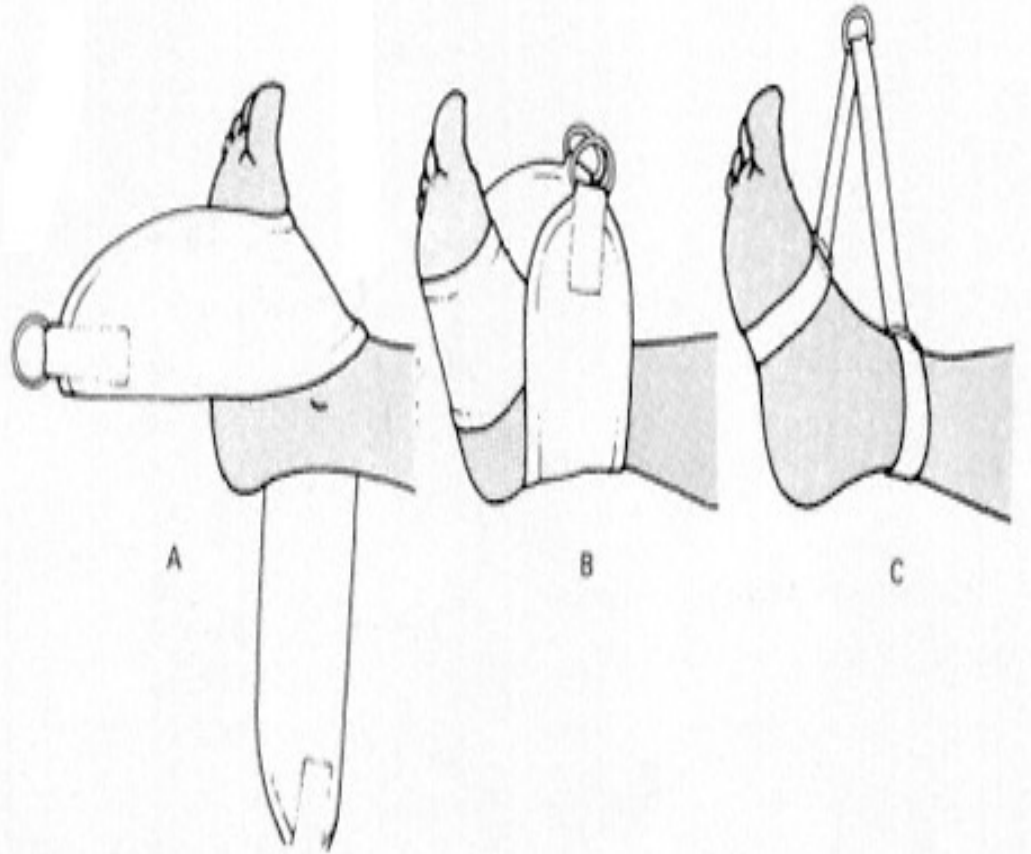
# Slings:

- There are following four types of slings:
- Single Sling
- Double Sling
- Three Ring Sling
- Head Sling



# Single slings:

- Single slings are made of canvas bound with soft webbing and with a D ring at each end. They measure 68 cm long by 17 cm wide.
- Used for elbow and knee.
- Folded to support wrist and ankle.



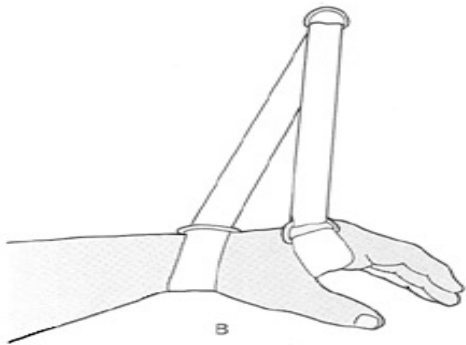
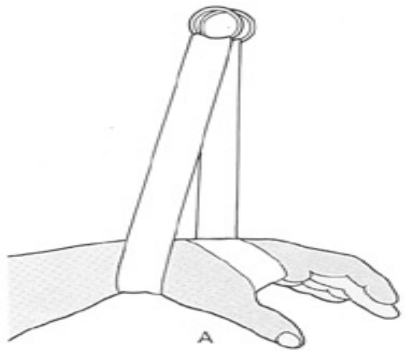
# Double sling:

- Broad slings with D-rings at each end.
- Used to support pelvis, thorax or thigh together, specially when the knees are kept together.
- 68cm long and 29cm width.



# Three Ring Sling:

- 75cm length 3-4cm width.
- Consist of 3 D rings. 2 at the end of the sling and 1 in the middle kept moving.
- Used for wrist and ankle region.



D



# Head Sling:

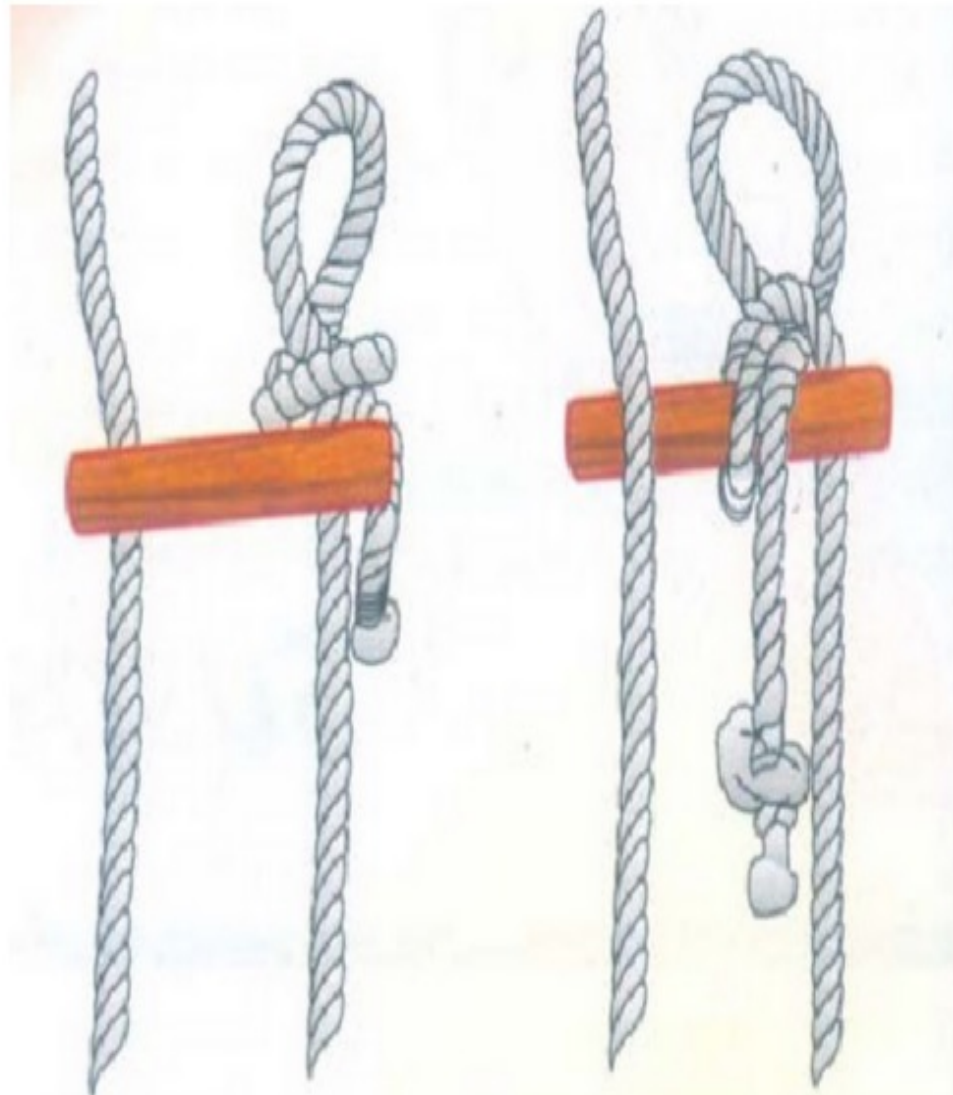
- This is a short, split sling with its two halves stitched together at an angle to create a central slit.
- This allows the head to rest supported at the back under the lower and upper part of the skull.





# Wooden Cleat:

- It is made of wood and is used for altering of the rope.
- It has two or three holes for the rope passage. The rope itself hold the cleat by friction resistance.

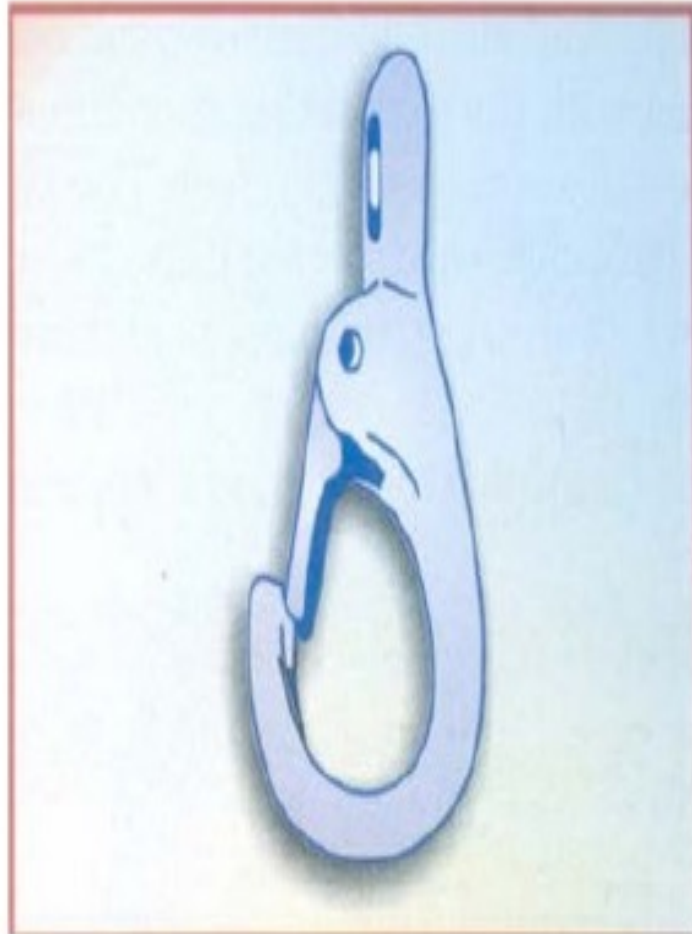


A. Without tying the wooden cleat

B. Knotting with the wooden cleat

# Dog clip/ S Hook:

- Used to attach the supporting rope with mesh.
- To attach the sling with supporting rope.



# Storage Trolley:

- Storage of slings and ropes on wall frame is done with S shaped hooks.



# Advantages:

- It reduces the burden of therapist.
- Easy to lift the limbs.
- Active movement can be performed easily with minimum friction.

# Types:

- Axial Suspension
- Vertical Suspension

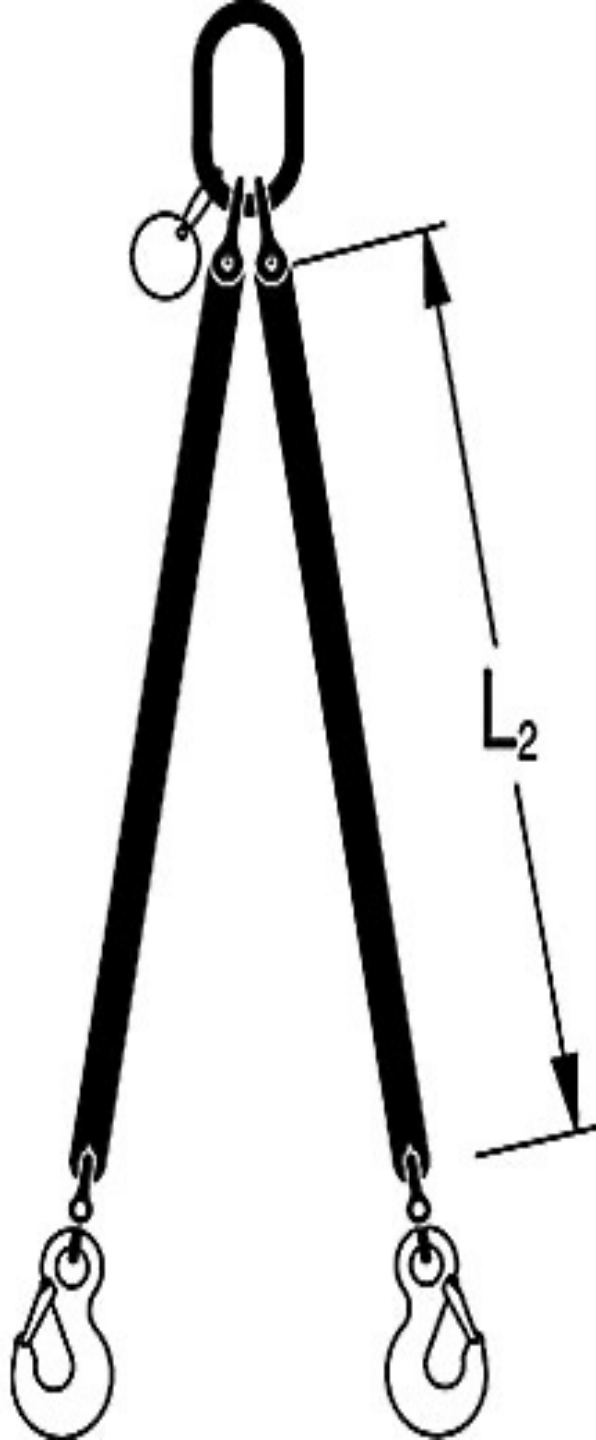


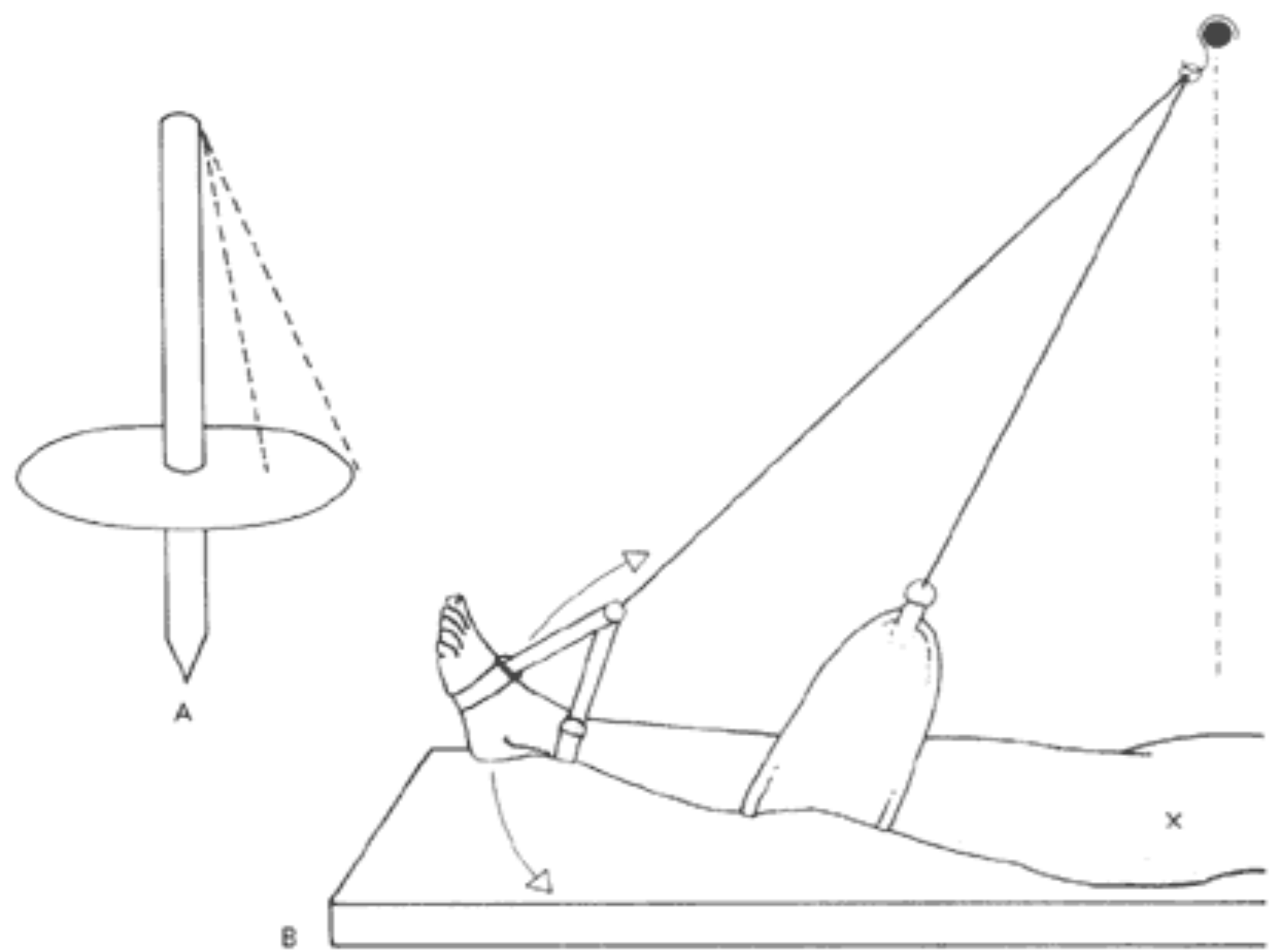
# Axial suspension:

- It is the most common type
- Joint is taken as point of suspension
- Gravity eliminated
- Limb is supported by the slings above the joint
- Limb will move to both sides parallel to floor

# Mechanism of movement:

- A limb supported by a rope, suspended from a point vertically above the joint to be moved.
- Movement will form an arc as segment of the base of a cone.
- When such fixation is set up the movement of the limb will be on a flat plane level with the floor. In this way pure angular movements are obtained.







# Uses:

- Relaxation
- Increase blood circulation
- Increase venous and lymphatic drainage

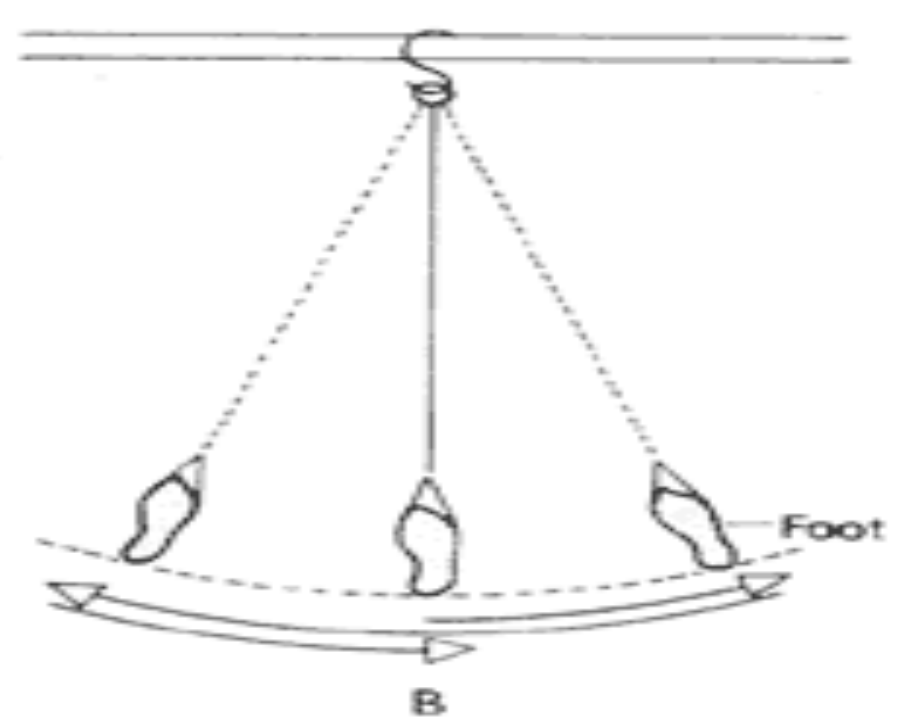
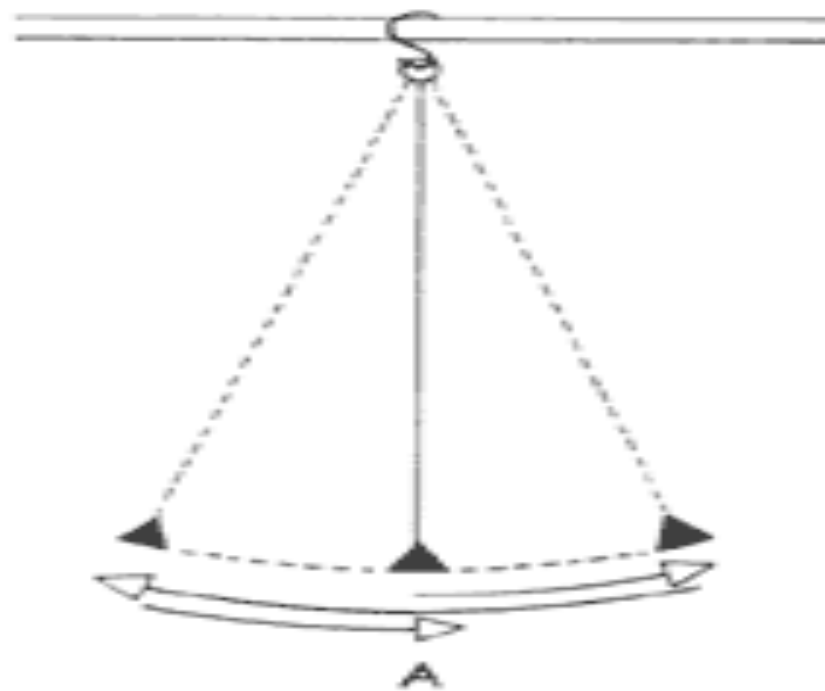
# Vertical suspension:

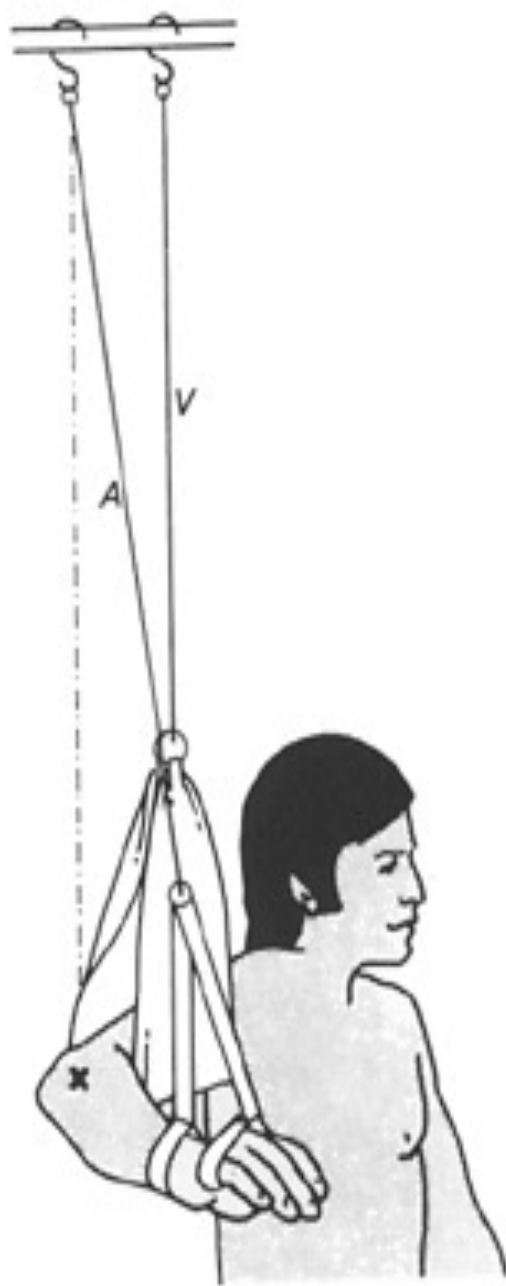
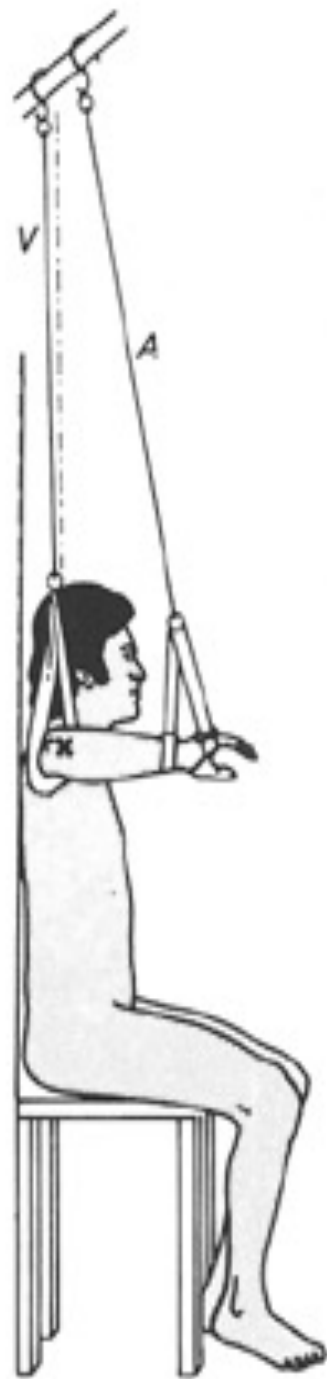
- COG of the body part or the body is taken as point of suspension.
- Used to provide support to the body parts of the patient.

# Mechanism of movement:

- In using vertical fixation the rope is fixed so that it hangs vertically above the centre of gravity of the part to be suspended.
- Vertical suspension is used for support as it tends to limit the movement of the part to a small-range pendular movement on each side of the central resting point







# Uses:

- Relaxation
- Prevent pressure sore



Hook is placed above the joint under treatment.



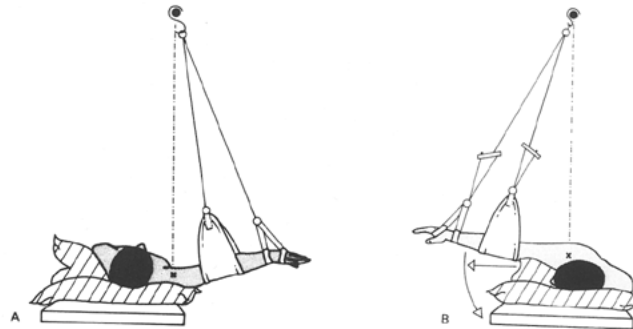
Hook is placed above the COG of the limb under treatment.

# Suspension for the Upper Extremity:

- Shoulder Joint:
- Flexion and Extension

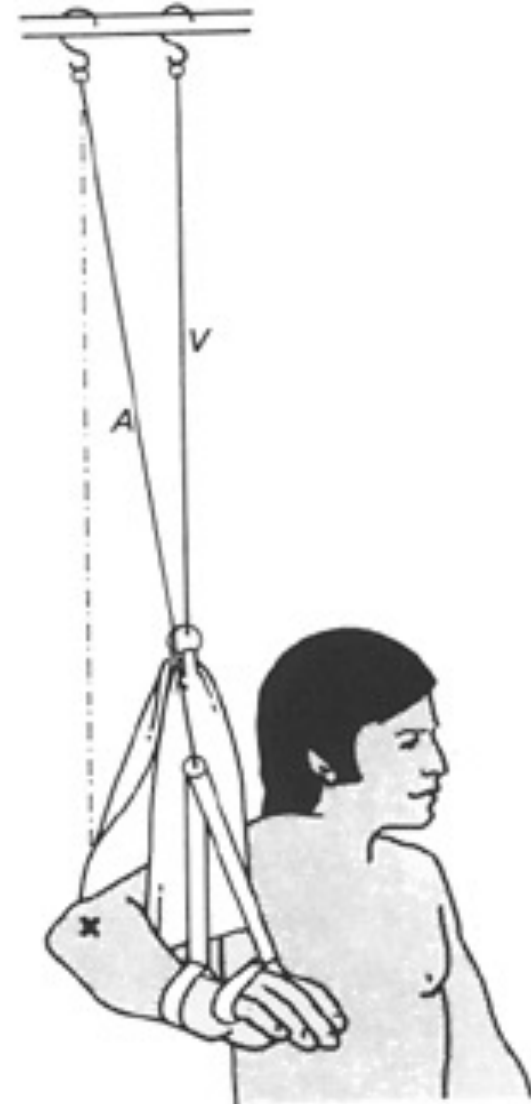


# Abduction and Adduction:



# Elbow Joint:

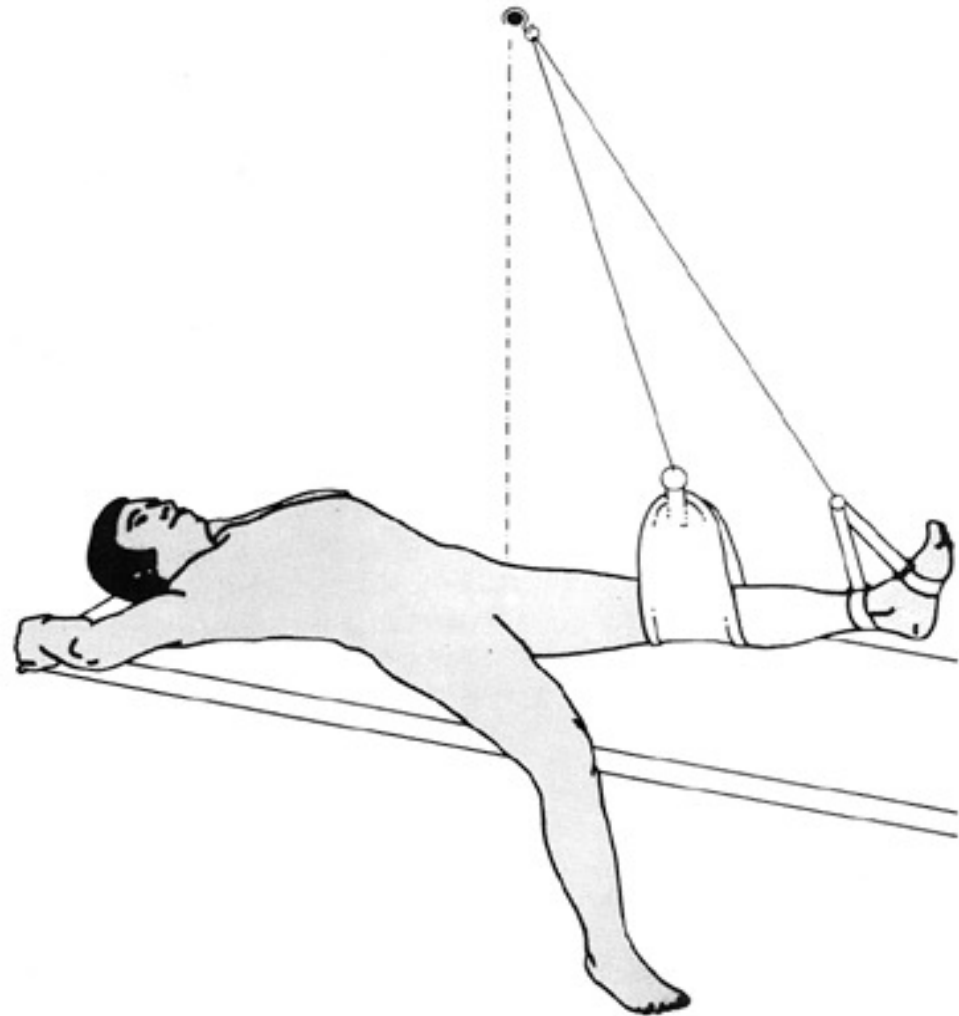
- Flexion and Extension:



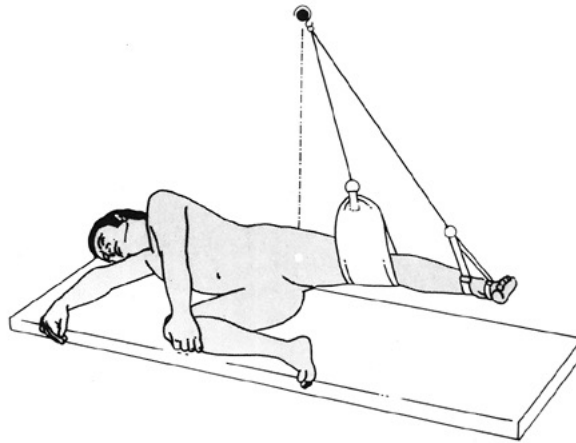


# Suspension for the Lower Extremity:

- The Hip:
- Abduction and Adduction:

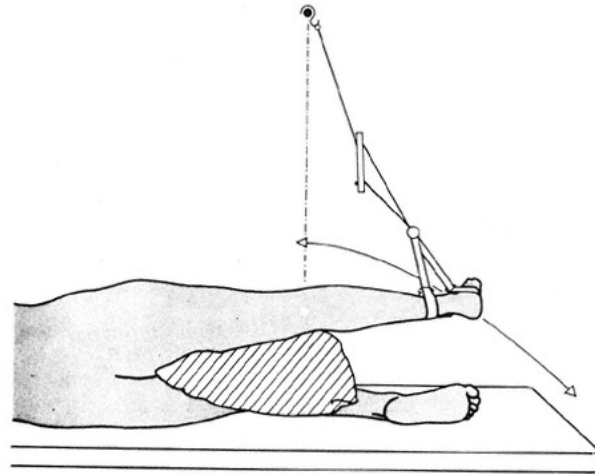


# Hip Flexion and Extension:



# The Knee

Flexion and Extension:



# The Ankle:

- It is rarely necessary to use suspension as in this case it is easier to perform supported movements by using a polished board.