

Principles of Hand Therapy

Hand Therapy is the management of upper limb conditions and injuries using therapeutic modalities such as exercise, splinting and wound management. It is commonly a generic role as it combines the skills of both Occupational Therapists and Physiotherapists.

1. Oedema Management

Oedema is a natural part of tissue healing and often affects the whole hand. However, ongoing oedema can delay healing, increase risk of infection and reduce range of motion. If oedema remains for longer than 2 to 3 weeks, it prolongs the inflammatory phase of healing and becomes chronic fibrotic oedema.

Elevation is vital and can started from day 1 post injury or surgery. High elevation at heart level reduces arterial blood pressure and increases venous return. Gravity increases lymphatic drainage.

Compression with bandage, gloves or tubigrip increases capillary volume and venous return reducing oedema. Compression is contraindicated in the presence of infection. When applying compression start distal to proximal and leave tips free to monitor colour and capillary refill.

Cooling temperatures such as use of ice packs or contrast bathing between hot/cold water. Combined with making a fist intermittent vasodilation (hot) and vasoconstriction (cold) produces a pumping action and increases lymphatic drainage.

Massage such as retrograde massage which is performed distal to proximal facilitates flow of exudate. Manual edema mobilisation (MEM) is a global upper limb massage stimulating lymphatics is in contrast performed proximal to distal.

Active exercises produce a pumping action and increase blood flow, facilitating venous return. It encourages tendon excursion through the odema and maintains joint mobility.

Kinesiotaping in a fan pattern gently lifts the skin in the affected area, creating negative pressure that allows excess fluid to drain through the lymphatic vessels.

2. Scar management

During wound healing fibroblasts infiltrate the wound, synthesize and secrete collagen. Myofibroblasts are what make up scar tissue, they have contractile properties and are not as elastic as normal tissue. Scar can form within healed skin, wound, tendon or soft tissue. Collagen responds to stress and change in orientation, bulk and form. Complications of scars include adhesions, contractures, hypersensitivity, pain and inflammation.

Massage performed frequently in a firm circular motion across a healed scar facilitates reorientation of collagen into elongated and parallel patterns.

Splinting/casting for contracted scars and restricted range of motion. Applying a low load, gentle stretch over prolonged period encourages realignment of collagen fibres.

Active and Passive Range of Motion facilitates remoulding of scar by applying controlled stress internally. Early movement reduces risks of adhesions as it allows excursion of tendons and maintains joints to reduce risk of contractures.

3. Splinting

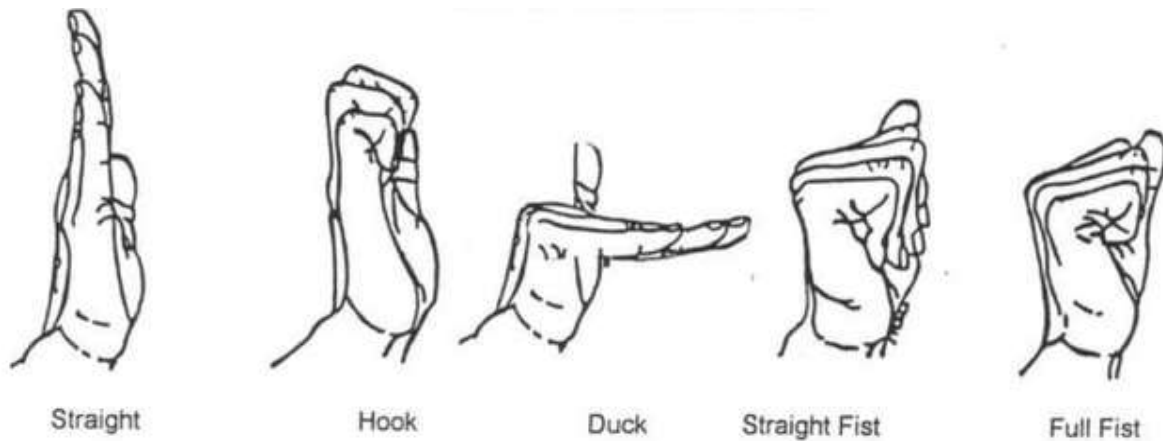
Splints come in a variety of forms and shapes. They can be off the shelf or moulded and made specifically for the patient's needs. When splinting it is important to understand the function and purpose of the splint.

- Pain Relief – Acute or Chronic i.e. OA/RA Carpal tunnel
- Support/Position During Function i.e. nerve palsy
- Protection/Immobilisation i.e. post open reduction internal fixation
- Prevention/Correction of Deformity i.e. RA
- Oedema Control i.e. RA,OA
- Maintenance/Restoration of ROM i.e. tendon repair
- Scar Remodeling i.e. burns

4. Exercises

Exercises are used to increase range of motion, strengthen weak muscles, lengthen short muscles, increase endurance, improve coordination, glide nerves/tendons and restore function.

Exercises can be passive, active assisted, active or resisted. Frequency and repetitions of exercises are dependent on the reason for selecting the exercise.



5. Functional Rehabilitation

The ultimate goal for therapy is for patients to regain independent function required for everyday life. Therapy is a two way process, as therapists we must encourage, reassure and educate our patients on their healing, limits and prognosis. However, patients must also perform tasks themselves and comply with regimes.

Functional activities and work orientated rehabilitation allows patients to focus on a task rather than a particular movement.

Explore with patients their role, interests and any activities that motivate them. Set goals relating to these activities. Making therapy and rehabilitation purposeful and meaningful to the patient will increase their compliance. There are no limits to what can be used to engage and improve patient’s recovery. Grade tasks by increasing weight, size of object, grip hold and repetitions. Here are two examples

Therapy	Task	Grading
Fine Dexterity	Awarri	Alter size and weight of pieces
Strengthening/Resistance	Pounding Cassava, Kneading Cassava Bread, Preparing Fufu	Time, quantity, density of paste/dough