

INTRODUCTION TO SPORTS THERAPY

Practical – Vibrations, Dermal Lifting, Scar Tissue Adhesions and Frictions

Learning Outcomes

- Identify the stages of the acute inflammatory /healing process
- Understand the use of sports massage during the healing process
- Theoretically apply Frictions
- Apply Dermal lifting to reduce scars and scar tissue adhesions
- Apply vibrational techniques

Inflammatory Process

- Inflammation:
 - The body's mechanism to remove damaged tissue, which is essential for tissue healing (Denegar, Saliba and Saliba, 2006)
- Cardinal signs of inflammation:
 - Pain (Dolor)
 - Loss of function (Functio laesa)
 - Heat (Calor)
 - Redness (Rubor)
 - Swelling (Tumor)
 - Indicate an injury has occurred and the body has begun healing

Inflammation

- Occurs in response to:
 - Injury
 - Infections, autoimmune conditions, illnesses, exposure to chemical and particulate irritants
- Occurs in vascularised tissue in response to tissue injury
- Avascularised or poorly vascularised tissue will not heal (e.g. inner margins of meniscus in knee)

Phases of Healing

- Three phases
 - Not distinct, separate processes: overlap



Acute

Repair

Maturation

Acute Inflammatory Phase

- Limit blood loss
- Remove debris
- Allow growth of new capillaries to transport materials for tissue repair
- Begins within seconds and lasts up to several days depending on severity

Acute Inflammatory Phase

- Limiting blood loss
 - ICE?
 - Capillaries, arterioles and venules
 - Within seconds of trauma, platelets adhere to the site of damage in blood vessels initiating a clotting/plugging response
 - Vasoconstriction to damaged cells
- Vasodilation
- Increased capillary membrane permeability
- Phagocytosis
- Growth of new capillaries

Acute Inflammatory Phase

- Initiated and controlled by 180 chemical mediators
 - Released from cells
 - Activated plasma proteins (Merrick, 2003)
- Stimulate free nerve endings (Pain + LoF)
 - Resulting in muscle spasm
 - Resulting in more pain (pain-spasm cycle)
 - Results in more loss of function
- Open capillary beds (vasodilation)
 - Increase in blood = redness and warmth
 - Decrease blood flow rate = haemoconcentration (WBC)
 - Increased cell permeability
 - Protein leave damaged cells, attract water = swelling

Repair Inflammatory Phase

- Implies growth of new tissue
- Three types of tissue
 - Labile cells: excellent regenerative capacity
 - E.g. epidermis, bone marrow, cells lining respiratory, GI,
- Genitourinary tracts
 - Stable cells: less regenerative capacity
 - E.g. liver, pancreas, kidney cells, also fibroblasts, osteocytes, endothelial cells and chondrocytes, Skeletal muscle limited regenerative capacity ?
- Permanent cells: no regenerative capacity
 - E.g. cells of CNS, lenses of the eye, cardiac muscle.
 - Large areas: scar tissue (collagen)
 - Small areas (DOMS): satellite cells mature into myofibrils thus restoring functional muscle tissue

Maturation Phase

- As ligaments and tendons heal:
 - Type III collagen is replaced with stronger Type I collagen
 - Fibre alignment improves
 - Links between fibres become stronger
- In bones
 - New tissues mature
 - Mineral content increases

Sports Massage and Stages of Healing

stretch, 'strain-counter-strain' to name but a few, also utilise the

visual's particular symptoms and circumstances must be ascer-

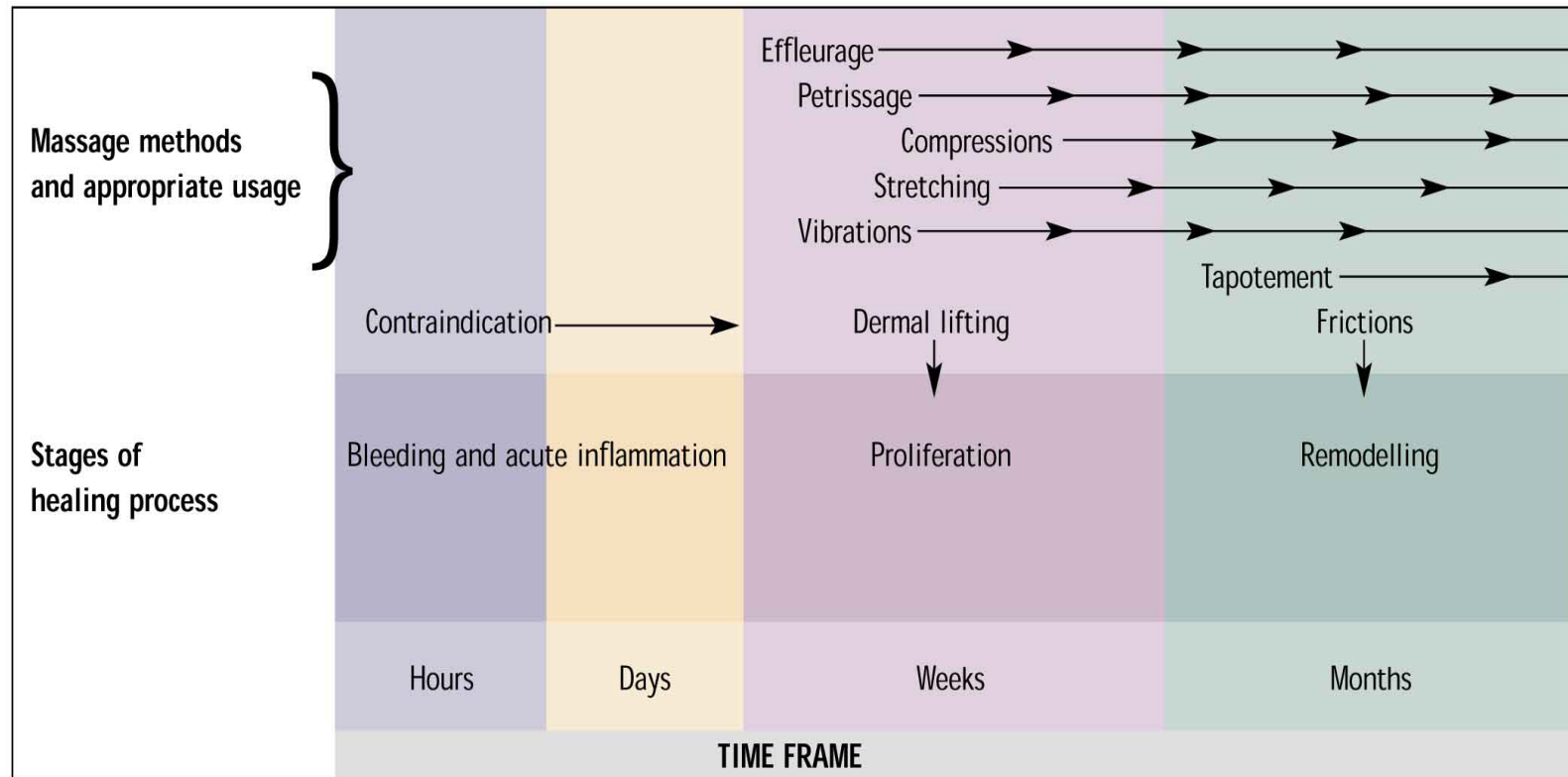


Table 1: Use of sports massage methods at different stages of healing

Frictions

- Cross fibre rubbing over a muscle, tendon or ligament
- Usually applied in the same direction
- Applied with thumbs, fingers & knuckles

Frictions

- General effects
 - Trauma to soft tissue
 - Reduction of scar tissue (Adaptation)
 - Trauma to blood vessels
- Aim to
 - Break the cross bonds of collagen
 - Force new collagen to be laid down
 - Manipulate it to lie flat in the same direction as original structure

Frictions

- Only applied to scar tissue that is 21days old+
- Apply to smallest area possible
- 1 direction only
- Maximum of 30secs at any 1 time
- No more than 3 x 30secs on any 1 area
- Advise patient you are re-damaging the area = very painful
- Area must be on a stretch
- Area must be pinned down
- All slack must be taken up

Friction Rules

- Medial collateral ligament
 - Side lie, bottom knee bent, palpate lig and begin cross fibre friction
- Medial Achilles tendon
 - Side lie, stretch in to dorsiflexion, clear slack with left hand and friction with right
- Acromio-clavicular ligament
 - Client sitting
- Semi-membranosus tendon
 - Lies under semi-mem on medial thigh

Myofascial Frictional Techniques

- Same principles as working with ligamentous and tendinous tissue
- Horizontal to fibres
- Short techniques applied until a change is felt of the underlying tone.
- Maintain the technique for another 30secs and review tissue tone.
- Further Reading (Clinical Sports Medicine, Brukner and Khan)

Self-Frictional Techniques

- Common Sites
 - Gluteus Medius
 - Piriformis
 - Tensor Fascia Latae
 - Plantar Fascia
 - Upper Trapezius/ Levator Scapulae

Dermal Lifting

- The lifting of the skin and dermal layers away from muscle and skeletal structures
- Effects
 - Reduces adhesions between the skin and the underlying soft tissues
 - Reduction of subcutaneous lipids
 - Erythema of the skin

Dermal Lifting

- Collagen from scar tissue stick to muscle and skin
- May constrain normal free movement
- Reduced subcutaneous lipids
- Increased blood flow putting lipids back into circulation for use (?)

DermaL Lifting Techniques

- Skin Rolling
- Skin Shaking

Vibrations

- Shaking a relaxed muscle or muscle group of a limb usually by its distal tendon
- Effects
 - Reduction in tone in healthy tissue
 - Relaxing and calming the client
 - Mesmeric: encourages clients vulnerability to suggestion

Vibrations

- Techniques
 - Body rocking
 - Arms
 - Legs