Rehabilitation and Treatments of Sports Injuries

by

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Principles of Rehabilitation

- Prevention is better than cure
- Needs a whole body approach and is aimed towards the individual
- Aim is to return to sport with full function. There is constant pressure to facilitate the safe return to competition / activity in the shortest time possible
- Effective planning
- Commences immediately following injury and post return to activity
- Must integrate a range of therapeutic activities
- Stages – initial, intermediate, advanced and return to sport
- Look for and correct any found biomechanical abnormalities

Principles of Rehabilitation / Treatments

- Musculoskeletal injuries can have immediate and significant detrimental effects on function
- Must integrate a range of therapeutic activities
- Soft tissue response, muscle conditioning, flexibility, neuromuscular control and functional exercises
- Psychology target
- Return to sport skills
- Maintenance is often required to prevent reoccurrence

Proprioception

- Sensorimotor controls all activities and enables an individual to maintain a position (neuromuscular)
- Is a sensory feedback mechanism for balance and control
- Body reacts to incoming information and the feedback mechanism adjusts balance and movement control
- When proprioception is poor, so will be biomechanical control
- There is a real need to restore early proprioceptive input to the injured area
- Is not stressful to healing tissue
- Exercises varies to achieve aims

Rehabilitation

- Motor control stability training, addresses altered patterns of muscle recruitment and seeks to improve fine tune muscle coordination and improve the efficiency of movement
- Example – trained using slow sustained contractions at low loads
- Strength training – in relation to functional performance
- ROM enhancement - small limitations can have a profound effect – best use static stretching exercises
- Fitness / endurance

Treatments

- Clients should benefit from the appropriate element of the available treatments
- The most important time of acute STI is the first 24 – 48 hours
- RICE
- PRICE
- MICE
- Immobilization first and early mobilization
- Protected mobilization
- Continuous passive motion mobilization and exercise therapy
- Heat used on longer term injuries can be helpful in selected conditions, but NOT on new injuries

Soft Tissue Massage / Therapy

- Sports massage therapy involves manipulation of soft tissue
- Designed to assist in correcting problems and imbalances in soft tissue, that are caused from repetitive and strenuous physical activity / trauma
- Very underestimated to the general sports person
- Aims to enhance performance, aid recovery and prevent injury
- Sports massage practitioners need qualification
- Can self massage

Soft Tissue Techniques

- Palpation
- Stroking (effleurage)
- Kneading (petrissage)
- Squeezing
- Friction
- Rocking and shaking
- Percussion (tapotement)
- Neuromuscular technique (NMT)
- Muscle energy technique (MET)
- Soft tissue release (STR) – trigger points
- Connective tissue manipulation (CTM) – myofacial techniques

Effects of Sports Massage Techniques

- Stretches soft tissue
- Relieves muscle tension
- Improves flexibility
- Reduces muscle spasm
- Improves formation of scar tissue, adhesions and fibrous tissue, created by scar tissue
- Reduces swelling
- Relieves pain
- Increases general / micro blood circulation and lymph flow
- Increases oxygen and nutrients to soft tissue
- Helps tissue flexibility and interstitial permeability
- Removes waste products
- Stimulates the nervous system
- Relieves tension / anxiety

Soft Tissue Therapy Contraindications

- Acute soft tissue inflammation (within 48 hours)
- Wounds / recent surgery
- # / dislocations and joint injuries
- DVT / Varicose veins
- Infectious skin conditions
- Skin, tumours and other cancers
- Bleeding disorders
- Myositis ossificans
- Caution in diabetics
- Caution in pregnant women
- Cardiovascular type conditions

Diagnostic Musculoskeletal Ultrasound Scan

- Imaging tendons, ligaments, muscles and other soft tissue e.g. achilles, patella, rotator cuff tendons, muscles thigh / calf, hamatoma formation, calcification, localizing foreign bodies
- Real and short time, biofeedback advantage
- Has less graphic images than other methods though
- Larger structures good but not deep tissues
- MRI scan alternative

Ultrasound Therapy / Electro Muscle Stimulation

- Can help to speed up the repair process of soft tissue
- Therapeutic U/S of 1MHz = 1 million cycles per second
- Power in Watts
- Continuous (chronic) or pulsed (acute or close to bone) as it reduces heat
- Effects – heat and oscillation of particles

Therapeutic uses :-

- Helps absorption of intercellular tissue fluid
- Increased blood supply
- Analgesia effects
- Softens fibrous tissue
- Other types – Tens, interferential stimulation, and low level laser

Corticosteroids Injection Therapy

- Treatment of some musculoskeletal disorders, usually given with a local anaesthetic
- Suppresses inflammation
- Breaks up inflammation damage – repair – damage cycle (bridge)
- Kenalog / adcortyl corticosteroid are normally used
- Lidocaine local anaesthetic normally used
- Most feared complication is joint sepsis

Taping / Strapping

- Used for prevention, treatment, rehab and proprioception
- The application of tape to injured soft tissue / joints provides support and protection
- Minimizes pain and swelling in the acute stage
- Tape should reinforce the normal supportive structures in their relaxed position
- Should protect the injured tissues from further damage
- Functional fascial taping
- Only has limited use during active sport, as it loses support quickly

Other Treatments

- Glucosamine (500 mg +)
- Used in the body to form new connective molecules (help repair)
- It stimulates growth of cartilage and hydrates tendons and ligaments (protection)
- Chondroitin (300 mg +)
- Keeps cartilage filled with fluid, nourishing and hydrating it
- A combination of both will help restore synovial fluid and all the other effects
- May take 2 months for benefits to be felt
- May reduce muscle soreness
- Topical analgesics usually acts as a skin counter-irritant
- Topical anti - inflammatory agents

Develop Active Lumbar Stability

- 3 overlapping stages
- Phase 1 (muscle re-education)
- Voluntary control over stabilizing muscle (deep abdominals, gluteals, intersegmental muscle spine and multifidus
- kneeling (four point) / prone lying abdo hollowing exercise
- Phase 2 (building core stability control)
- Heelside (hollowing), plank (bridge) - lateral and prone
- Phase 3 (reduced attention) impose spine alignment and muscle stabilise to realign
- Resistance training in gym, balance board and swiss gym ball

Types of Muscle Contraction

- Isometric – muscle works without movement happening i.e. muscle does not change length (stretching exercises)
- Isotonic – muscle force is constant but muscle length changes. Commonly used by strength exercises (WT machine / free weights)
- Isokinetic muscle contraction at a constant speed over the full ROM (special machines)
- Eccentric - muscle is stretched as it tries to resist a force pulling the bones of attachment away from each other. Lengthening while contracting
- Concentric - muscle shortens to move the attachments closer (contracts to move a weight)

Stretching

- Tight muscles can cause problems, while poor flexibility is associated with increased injury risk
- Muscles work in pairs, so it effects more than 1 muscle
- Logical to increase and maintain flexibility
- Frequent daily stretches will help lengthen muscles
- Held for 15 – 30 seconds & repeated 3 – 5 times

- Static stretching - hold a position, that is the farthest point and hold. Using prior to running type exercise, is now questioned, if it increases injury risk.
- Dynamic stretch, simulates the muscles for the activity you are warming up for
- Stretching post exercise is very important

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