



Keywords

Word	Definition
Acute Injury	A sudden injury caused by an impact or traumatic event, with the sudden onset of pain.
Chronic Injury	Usually caused by overuse, onset of pain occurs overtime and pain is felt after exercise.
Fracture	A crack or break in a bone. A closed fracture is a clean break that does not penetrate the skin, an open fracture penetrates the skin and are more serious. Other fractures include: hairline, buckle, spiral
Dislocation	Occurs at joints where the ends of bones are forced out of position.
Strain	Known as a pulled muscle. Muscle fibres are stretched too far and tear.
Sprain	Sprain occurs to ligaments at joints, where ligaments stretch too far and tear.
Achilles tendonitis	Tendonitis is pain and inflammation of a tendon, caused by overuse or inappropriate preparation/training load/recovery methods/footwear
Stress Fracture	Tiny cracks to weight-baring bones as a result of and increased training intensity and subsequent fatigued muscles that are unable to absorb the forces, which are transferred to the bones.
Lateral Epicondylitis	Known as tennis-elbow. Muscles and tendons become swollen and inflamed as a result of overuse and tiny tears occur on the outside of the elbow.

Key skills

Injury Prevention Methods

SCREENING – helps identify those at risk of complications from exercise (Cardiac Risk in the Young)

Can identify past or current injuries; identify muscle imbalances, assess joint mobility and postural weaknesses to prevent future injuries. Used to inform prehabilitation and rehabilitation programmes.

TAPING AND BRACING – kinesiology tape provides stability to muscles and joints and is flexible. Bracing is often more rigid with hinges which supports the joint.

FLEXIBILITY TRAINING – PNF is a form of flexibility training designed to increase range of movement of the muscles and around joints, reducing the risk of injury.

PROTECTIVE EQUIPMENT – specific to the governing body rules reduces the risk of injury. Shin pads, gum shields, helmets, specialised footwear are examples of protective equipment.

WARM-UP AND COOL-DOWNS – mentally and physically prepares the body for the activity. See Preparation and Training Methods for more info.

Importance of Sleep and Nutrition for Recovery

SLEEP – Deep, 3rd stage sleep improves muscle recovery by redirecting blood away from the brain to the muscles, increasing oxygen and nutrient delivery. If sleep is short, this repair time is reduced and recovery is limited.

NUTRITION – Muscle glycogen stores need to be replenished in the golden recovery window immediately after exercise (first 20mins). Muscles are most receptive to glycogen uptake at this time. This is enhanced further if the meal is carbohydrate: protein ratio 4:1. Protein repairs damaged tissue.

Injury Rehabilitation

STRENGTH TRAINING – uses varying degrees of resistance to rebuild strength in the weakened or injured muscle. The method of strength training will depend on the stage of recovery:

Therabands; Body Weight; Machine Weights; Free Weights



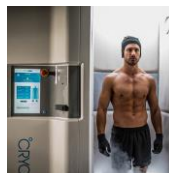
PROPRIOCEPTIVE TRAINING – Involves hopping, jumping and balancing exercises to help restore lost proprioception as a result of injury. This type of training teaches the injured joint control and position.



HYDROTHERAPY – the use of warm water (35-37 degrees) to improve blood circulation, relieve pain and relax muscles. Submerging the body, reduces the load on the joints whilst improving range of movement.



CRYOTHERAPY – Whole-body cryotherapy uses a cryogenic chamber and liquid nitrogen to reach temperatures below -100degrees. Reduces pain, swelling and inflammation. Causes vasoconstriction, on leaving the chamber fresh oxygenated blood floods the affected area.



HYPERBARIC CHAMBERS – 2-3x greater pressure than at sea level, accompanied by 100% oxygen increases the body's ability to uptake oxygen. The oxygen speeds up healing by stimulating the body's white blood cell activity and helps to reduce swelling.



Recovery Methods from Exercise



COLD THERAPY AND ICE BATHS – Decreases pain and swelling. Vasoconstriction occurs, flushing lactic acid away from the muscles. Vasodilation occurs on exit and flushes the muscles with fresh oxygenated blood. DOMS is reduced.

MASSAGE AND FOAM ROLLING – increases blood flow, more oxygen and nutrients pass to the muscle to repair damage. Removes lactic acid; stretches soft tissue to relieve tension and breaks down scar tissue to improve mobility..



COMPRESSION GARMENTS – used to remove blood lactate and reduce inflammation by increasing the pressure in the vascular system aiding venous return. Reduces DOMS.

COOL DOWN – light aerobic work followed by static stretching. Prevents blood pooling. Maintains skeletal muscle pump to maintain venous return to remove waste products.



Box 6: Pathway

Previous knowledge: Cardiovascular system; Neuromuscular system; Nutrition; Preparation and Training Methods

Future links: Technology in Sport.

Careers: Strength and Conditioning coach, Physiotherapist.

Box 7: Cross curricular links