Semester 4

GENERIC ELECTIVE: PHYSICAL EDUCATION

POSTURE, ATHLETIC CARE AND FIRST AID

UNIT 3: FIRST AID, ERGOGENIC AIDS AND REHABILITATION

Rehabilitation: Aim and Objective

Rehabilitation is the restoration of optimal form (anatomy) and function (physiology).

The noun rehabilitation comes from the Latin prefix *re-*, meaning "again" and *habitare*, meaning "make fit". It is a process designed to minimize the loss associated with acute injury or chronic disease, to promote recovery, and to maximize functional capacity, fitness and performance.

The process of rehabilitation should start as early as possible after an injury and form a continuum with other therapeutic interventions. It can also start before or immediately after surgery when an injury requires a surgical intervention.

Sport Rehabilitators help people suffering from pain, injury or illness involving the musculoskeletal system. They help people of all ages to maintain their health and fitness, recover from and prevent injury and reduce pain using exercise, movement and manual based therapeutic interventions.

The ultimate aim of the rehabilitation process is to limit the extent of the injury, reduce or reverse the impairment and functional loss, and prevent, correct or eliminate altogether the disability.

According to *Military Rehabilitation and Compensation Act 2004* (MRCA) , *"The aim of rehabilitation is to maximise the potential to restore a person who has an impairment, or an incapacity for service or work, as a result of a service injury or disease to at least the same physical and psychological state, and at least the same social, vocational and educational status, as he or she had before the injury or disease."*

Objectives of Rehabilitation

The rehabilitation of the injured athlete is managed by a multidisciplinary team with a physician functioning as the leader and coordinator of care. The team includes, but is not limited to, sports physicians, physiatrists (rehabilitation medicine practitioners), orthopaedists, physiotherapists, rehabilitation workers, physical educators, coaches, athletic trainers, psychologists, and nutritionists. The rehabilitation team works closely with the athlete and the coach to establish the rehabilitation goals, to discuss the progress resulting from the various interventions, and to establish the time frame for the return of the athletes to training and competition.

Communication is a vital factor. A lack of communication between medical providers, strength and conditioning specialists and team coaches can slow or prevent athletes from returning to peak capability and increase the risk of new injuries and even more devastating re-injuries.

Restoration of an injured person can be done by:

- achieving full physical and psychological recovery.
- improving quality of life through gaining life management skills, a sense of direction for the future and resilience.

- rebuilding social connectedness to family and community.
- finding a new valued role within the community.
- learning to understand and self-manage physical and mental health conditions to the best of the person's ability.
- assisting the person to return to safe and meaningful work at the earliest possible time to minimise further harm to physical and mental health and wellbeing through long term absence from employment.

Ways to incorporate mental training skills into a rehabilitation program.

1. **Incorporating Imagery:** One way to keep athletes "in the game" is to implement an imagery training program during their rehab sessions. Athletes could mentally rehearse sport specific skills, plays, strategies, or a series of plays during a rehab session. The most likely time may be when they are icing at the end of the session. For example, this would be a great time for a basketball player to externally image (e.g., seeing themselves as if they were on TV) themselves successfully completing five times in a row each of the team's offensive plays. The same could be done with specific sport skills (e.g., the athlete visualizes him- or herself successfully shooting ten free throws).

2. **Sport Specific Skill:** "Think outside the box" and modify sport skills to keep the injured athlete participating in their sport. This will dramatically help with their motivation to return, mental preparation for playing the game, and interest and enjoyment of rehabilitation. For example, a basketball player recovering from ACL (Anterior cruciate ligament) reconstruction can easily work on all passing drills, shooting drills (e.g., free throws, 3-point shots), and ball handling drills while seated in a chair. Additionally,

during practice the injured athlete can follow their teammate who plays a similar position providing feedback and mentally engaging in practice drills and skills.

3. **Incorporating Goal Setting:** The injured athlete should be setting goals on a weekly, if not daily, basis for both rehabilitation skills and the modified sport specific skills. A goal is some standard they would like to achieve by a given deadline. For example, a rehabilitation goal may be to keep track of set goals, as well as keep record when the athlete achieves each goal. This will give the athletic trainer a record of all the injured athlete has achieved, thus providing "evidence" of how far they have come during rehabilitation. By setting goals for their sport specific skills, this will help injured athletes focus and perceive these skills and drills as important. Lastly, by providing some rewards or positive feedback for accomplishing these goals we can help injured athletes maintain their motivation during the many months of rehabilitation.

4. **Different therapeutic techniques:** The rehabilitator may use either exercise, physical therapy, manual therapy or a combination of these methods. During this phase, rest and the application of ice are also essential.
   The use of these different therapeutic techniques represents a valid and effective addition to more traditional treatment methods such as the use of drugs. Furthermore, these techniques play a key role in facilitating further work of the care team.

RECOVERY (ICE BATH, CONTRAST BATH, HOT FERMENTATION)

Recovery is the process by which physiological and psychological function is restored to the athlete following training or competition. Recovery is particularly important for athletes who

compete in sports which occur regularly (e.g. weekly). In these sports, recovery is necessary to help minimize fatigue and maximize recovery between competitions. As a result of the high demands of elite sport and the constant desire to gain an "edge" over the opposition, effective recovery strategies have become a high priority in sporting teams and organizations in recent years.

- **Ice Baths**

The use of ice baths (also referred to as Cold Water Immersion) has become an increasingly popular recovery strategy in recent years – particularly in sports such as football, cricket, cycling and athletics. Ice baths can assist with sports recovery as well as help reduce pain and inflammation following injury.

Benefits

- Improve blood circulation to help remove waste products from the muscles
- Reduce inflammation
- Improve muscle activation
- Reduce DOMS (delayed onset muscle soreness)
- Improve next day training ability
- Allow optimum fuel recovery
- Psychological benefits –improve well being / relaxation
- Overall improved muscle function

The temperature of ice should not be freezing. Around 10 - 15C/50 - 60F is usually recommended. Ideally one would immerse whole body, and be standing if possible, for up to a maximum of 15 minutes.

Ice baths can be useful up to 48 hours after training or racing. Ice baths have been found to have the biggest effect following particularly damaging training sessions. So, for example high intensity sessions, weights or plyometric sessions.

It is suggested to use ice baths sparingly, usually in the time before a race when short-term recovery is more important than long-term training adaptations.

- **Contrast Bathing**

The theory behind the use of contrast baths in physical therapy is that the rapid change from warm to cold helps to quickly open up and close the tiny capillaries (blood vessels) in the body. Warmth causes these small arteries to open, which cold causes them to close. This rapid opening and closing of blood vessels near the site of your injury creates a pumping action that's thought to help decrease swelling and inflammation around injuries. Decreasing the swelling and inflammation helps alleviate pain and improve mobility.

It is probably less popular than ice baths. Due to the potential negative effects of long-term ice bath use, contrast bathing is generally advised as a more regular recovery aid.

To perform a contrast bath, you need two whirlpool tubs. One tub should be filled with warm water, and one tub with cold. The warm tub should be between 98-110 degrees Fahrenheit, and the cold tub should be 50-60 degrees Fahrenheit. Once both tubs are the correct temperature, you'll be instructed to place your injured body part in the warm whirlpool, where it should stay for 3-4 minutes. You may be asked to perform gentle motion exercises during that time. One should always finish with cold water, and aim to use this technique immediately after training or racing. Contrast baths carry no risk when performed correctly.

The main risks that can be possible are:

- Burns from water that is too hot
- Skin damage from water that is too cold[2]

Ensuring that the water you use for contrast baths is the correct temperature is the best way to mitigate these risks.

BENEFITS:

Injuries that benefit from contrast bath treatments are those that cause swelling and pain around soft tissue and the joints of the body.

- Decreased pain
- Decreased swelling
- Controlled inflammation

- Improved mobility
- blood flow is improved and
- waste products are flushed more rapidly from the muscles.

- **HOT FERMENTATION**

A quaint old term for the application of hot packs or the substance so applied. To "foment" means, literally, to warm or heat up. For centuries, heat has been used as a simple yet effective way to manage the pain and joint or muscular stiffness. Deep and penetrating heat not only relieves the pain but also enhances recovery process.

By increasing tissue elasticity, heat reduces the resting muscle tension and helps to relax those nasty painful knots. The deep heating effect increases the blood flow to the painful area, bringing more nutrients to the injured area while flushing out the injured debris. This helps to quicken the healing rate.

Heat applied directly to a local area, like with heating packs, should not be used for more than 20 minutes at a time. If one experience increased swelling, the treatment should be stopped immediately.

Benefits

1. Heat therapy dilates the blood vessels of the muscles. This process increases the flow of oxygen and nutrients to the muscles, helping to heal the damaged tissue.
2. Heat stimulates the sensory receptors in the skin, which means that applying heat will decrease transmissions of pain signals to the brain and partially relieve the discomfort.
3. Heat application facilitates stretching the soft tissues around the injured part, including muscles, connective tissue, and adhesions.

4. Consequently, with heat therapy, there will be a decrease in stiffness as well as injury, with an increase in flexibility and overall feeling of comfort. Flexibility is very important for a healthy back.
5. Compared to most therapies, heat therapy is quite inexpensive.
6. It relieves soreness. Soreness can come from over-exertion or just from a simple workout if the area being exercised has not been worked in a while. Heat therapy can relieve this pain and soreness forcing the muscles to relax. This is also why heat therapy can stop muscle spasms as well.
7. Stress and tension throughout the body go hand in hand. Heat can help relieve the tension in these muscles. Heat therapy is a great way to ease stress by relaxing the body.
8. Heat therapy is commonly used to treat discomforts such as stiff neck, muscle tension and spasm, muscle strains, sprains (about 48 hours after the injury) and more.