How is injury rehabilitation managed?

- **Rehabilitation procedures**

  Examine and justify rehabilitation procedures used for a range of specific injuries, eg hamstring tear, shoulder dislocation

  The objective of rehabilitation is for the athlete to return to play or activity as soon as is safely possible. Returning too soon could lead to permanent damage. Athletes recover from injury at different rates, and returning to physical activity is determined by how soon the injury recovers, not by how many days or weeks have passed since the injury occurred. It also depends on how serious the injury is. For example, if reconstructive surgery was required, obviously there will be a longer recovery period.

  - **Progressive mobilisation**

    After the initial RICER treatment of an injury the aim is to get the injured site moving as soon as possible, without pain, and to prevent the joint from stiffening up. It is important for the athlete to commence rehabilitation with gentle range of motion exercises, and then progress to stretching and strengthening exercises. This should be a gradual process and pain should be an indicator to the limits of movement.

  - **Graduated exercise (stretching, conditioning, total body fitness)**

    As the injury is healing, scar tissue will form and it is important that it is symmetrically mobilised to cope with the directions of stress placed on the joints.

    After the first 72 hours most of the initial swelling will have subsided and gentle active rehabilitation techniques can begin. The most effective treatment at this stage is the use of heat and massage; however, including light, gentle, static and passive stretching (PNF) exercises straight after heat and massage treatment will help to speed up the recovery process dramatically.

    During recovery, the athlete can continue a total body fitness program to maintain fitness levels, providing that the recovery program is not compromised. Riding an exercise bike in the recovery of an ankle injury (as it is less weight bearing) promotes cardiovascular endurance throughout the recovery process. Physical and mental considerations should be also be included in the program, which should be designed by health professional such as a physiotherapist.

  - **Training**

    A well-structured training program should progressively increase the demands on the athlete’s injured tissue. Training should be varied, catering for the extent of the injury and to maintain
motivation and interest. Both team and individual skills covering the athlete’s sport need to be gradually built up to pre-injury levels, being aware of any signs of pain or discomfort that can aggravate the injury.

An athlete should only commence competitive and contact training under the guidance of a health professional. They should be able to complete a full competitive training session, without pain, before returning to play.

- use of heat and cold

Ice (RICER regime) is used to effectively manage swelling in an acute injury (Table 1.2). For the first 72 hours, applying ice to the injured site is very important, just as important as avoiding contact with heat on the injured area. Heat helps to promote blood flow, and in the initial 72 hours heat will further increase bleeding and swelling. However, after these initial stages, heat can be used to effectively manage swelling and other symptoms.

After 72 hours, applying a heat pack on the swollen area will help increase the overall blood flow to remove waste products with each cycle around the body—therefore removing the swelling and improving the availability of fresh blood. Fresh blood brings fresh nutrients that will improve the quality of the athlete’s rehabilitation and decrease scar tissue formation (as mentioned above).

Heat is also effective in helping decrease the intensity of muscle spasm and tightness that is generally associated with more chronic long-term injuries. Applying a heat pack can improve blood flow and muscle fibre flexibility, decrease tension and lead to an overall reduction in pain levels. Sufferers of chronic back and neck pain will often find applying a heat pack to the affected area allows greater freedom of movement and reduces aching.

Other heat therapy methods include massage, hydrotherapy, contrast baths, ultrasound, short wave and microwave machines.

- return to play
- research and evaluate skill and other physical tests that could be used to indicate readiness to return to play
- critically examine policies and procedures that regulate the timing of return to play, considering questions such as:
  - why aren’t such policies applied to all sports?
  - who should have ultimate responsibility for deciding if an athlete returns to competition?
  - should athletes be allowed to use painkillers in order to compete when injured?

- indicators of readiness for return to play (pain free, degree of mobility)

Before an athlete with a Grade II torn ankle ligament, can return to play, the following guidelines should be applied to the injured site:

- Pain-free and full range of motion. The injured ankle should have full movement and flexibility with little or no discomfort.
• Return of strength. The injured ankle should be about equal to the opposite side before returning to full activity (90–95%).
• Minimal pain or swelling. Some mild discomfort, stiffness and/or swelling during or after exercise is to be expected during the initial return to activity. This responds well to ice therapy.
• Functional retraining. The athlete should be able to perform the specific motions and actions required for sport effectively before returning to activity. For example, retraining an ankle injury in football should involve the ability to run, stop, change directions, jump and strike the ball.
• Mental confidence in ability to do exercise. The athlete must feel that the injured ankle is ready to perform at the level required for particular activity.

– monitoring progress (pre- and post-test)

The athlete’s progress during rehabilitation should be continually monitored. The severity of the injury will depend on the intensity of the process, and clinical tests may need to be administered to ensure that progression is undertaken at an optimal rate. Pre- and post-testing is promoted to gauge the progress of the injury.

A severe ankle injury test will initially involve measuring the range of movement at the joint, its strength and mobility without pain.

Progress should be monitored during all training sessions. Prior to returning to competition sport, the athlete should be put through a series of tests that involve sport-specific movements associated with the sport. Response elements for strength, power, endurance and proprioception (the joint’s awareness of its position) should be analysed during these testing performances.

– psychological readiness

In many ways confidence is the opposite of anxiety. The longer the athlete is away from training and competition, the more likely the loss of confidence in their ability to get back on top of their physical fitness and mental game. During this time, the athlete and coaching staff would benefit from assistance by a sports psychologist to work with them to identify specific aspects of the sport that the athlete has lost confidence in. This information will be included in a progressive program of performance simulations, training tests and other assessments to evaluate the strength and durability of the rehabilitated body injury and the readiness of the athlete. This evidence will help restore the athlete’s confidence, or otherwise identify areas that still warrant attention.

– specific warm-up procedures

Specific warm-up programs are often developed by the sports coach, trainer or other health professional in collaboration with the athlete to achieve maximum recovery and minimise further or re-injury. Consideration to the injury site may include a longer, and more specific stretch and warm-up routine to ensure adequate blood flow and increased flexibility.
return to play policies and procedures

The decision to return to activity and playing sport after an injury depends on the type of injury and its severity. For adult athletes, the decision is often made in consultation with the team sports coach, trainer, or medical practitioner. For children and young adults, return to active sport is a decision made by their parents.

Recommended procedures for returning to play include:
- Establishing a chain of command regarding decisions to return an injured athlete to training or competition.
- Communicating the return-to-play process to athlete, family, certified trainers, coaches, administrators and other healthcare providers.
- Establishing a system for documentation.
- Establishing protocols to release information regarding an athlete’s ability to return to training or competition following an injury.

It is essential that return-to-play polices address the:
- safety of the athlete
- potential risk to the safety of other participants
- functional capabilities of the athlete
- functional requirements of the athlete’s sport
- federal, state, local, school and governing body regulations related to returning an injured athlete to training or competition.

When is the right time to return to play? In high profile competitive sport, elite athletes on lucrative contracts or with major competitions ahead, may experience certain pressures to compete. Large amounts of money are spent to get the athlete back to competition level, as the athlete may feature heavily in the team coach’s game plan.

Deep-seated pressure on the athlete could be a fear of losing their position on the team, or striving for a particular external reward, and this could lead to using painkillers or other drugs to continue playing. This is a dangerous issue if the athlete is inexperienced and disregards medical advice in their urgent quest to participate in their chosen sport.

In children and young adults, parents and inexperienced coaches or trainers can cause additional injury by applying undue pressure to the athlete to play if they have not fully recovered from their injury.

Some injuries, regardless of ethical issues, require following documented procedures before returning to participation. If concussion occurs, the Sport Concussion Assessment Tool (SCAT) as given in Figure 4.6 should be used to assess the player and seek medical advice. The test includes a memory, cognitive and neurologic screening test. A head injury is far too serious to apply any pressure to the athlete to return to participation.
**SCAT2**

Sport Concussion Assessment Tool 2

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### Symptom Evaluation

**How do you feel?**

You should score yourself on the following symptoms, based on how you feel now:

<table>
<thead>
<tr>
<th>Symptom</th>
<th>none</th>
<th>mild</th>
<th>moderate</th>
<th>severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>&quot;Pressure in head&quot;</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Neck Pain</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Nausea or vomiting</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Dizziness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Blurred vision</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Balance problems</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sensitivity to light</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sensitivity to noise</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling slowed down</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Feeling like “in a fog”</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>&quot;Don’t feel right”</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Difficulty concentrating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Difficulty remembering</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Fatigue or low energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Confusion</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Trouble falling asleep (if applicable)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>More emotional</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Irritability</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sadness</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Nervous or Anxious</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total number of symptoms (Maximum possible 22):**

\[
\text{Symptom severity score} = \sum \text{scores} = 22 \times 6 = 132
\]

**Do the symptoms get worse with physical activity?**

- **Y** - Yes
- **N** - No

**Do the symptoms get worse with mental activity?**

- **Y** - Yes
- **N** - No

**Overall rating**

If you know the athlete well prior to the injury, how different is the athlete acting compared to his / her usual self? Please circle one response.

- **no different**
- **very different**
- **unsure**

---

**Example**

<table>
<thead>
<tr>
<th>Name</th>
<th>Sport/team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date/time of injury</td>
<td>Date/time of assessment</td>
</tr>
<tr>
<td>Age</td>
<td>Gender</td>
</tr>
<tr>
<td>Years of education completed</td>
<td>Examiner</td>
</tr>
</tbody>
</table>

---

**What is the SCAT2?**

This tool represents a standardized method of evaluating injured athletes for concussion and can be used in athletes aged from 10 years and older. It supersedes the original SCAT published in 2005. This tool also enables the calculation of the Standardized Assessment of Concussion (SAC) score and the Maddocks questions for sideline concussion assessment.

**Instructions for using the SCAT2**

The SCAT2 is designed for the use of medical and health professionals. Preseason baseline testing with the SCAT2 can be helpful for interpreting post-injury test scores. Words in italics throughout the SCAT2 are the instructions given to the athlete by the tester.

This tool may be freely copied for distribution to individuals, teams, groups and organizations.

**What is a concussion?**

A concussion is a disturbance in brain function caused by a direct or indirect force to the head. It results in a variety of non-specific symptoms (like those listed below) and often does not involve loss of consciousness. Concussion should be suspected in the presence of any one or more of the following:

- Symptoms (such as headache), or
- Physical signs (such as unsteadiness), or
- Impaired brain function (e.g. confusion) or
- Abnormal behaviour.

**Any athlete with a suspected concussion should be REMOVED FROM PLAY, medically assessed, monitored for deterioration (i.e., should not be left alone) and should not drive a motor vehicle.**
Activity 1 (Page 257, 258)
As the administrative committee of a newly formed rugby league club, design a return-to-play policy for the athletes. Consider who will be responsible for deciding when an athlete returns to play and what types of medication and preventative treatments will be used.

Activity 2 (Page 258)
A netball player has a Grade II sprain of the ankle. Develop an injury management and rehabilitation program for their return to play, ensuring that they will be able to maintain total body fitness during rehabilitation.

Activity 3 (Page 258)
Debate the statement: ‘An elite, professional athlete should not be rushed back to play’.

Review Questions

1. **Justify** the importance of a professionally designed rehabilitation program for an athlete.
2. **Evaluate** the necessity for skills tests for an athlete to return to play.
3. **Identify** the safety considerations required when using cold and heat treatments on injured sites.
4. **Discuss** the importance of psychological readiness in an elite athlete returning to competition.
5. **Explain** the benefits of pre- and post-tests in rehabilitation.

OPTION SUMMARY