



PRINCIPLES OF INJURY PREVENTION & MANAGEMENT

INFORMATION SHEET FOR PLAYERS

OVERVIEW

Some players are designed for sports; they have the talent, the mechanics and luck not to get injured. Others get injured regularly, or simply do not have the required mechanics that allow their bodies to withstand the forces applied in playing Gaelic Football or Hurling (Murphy & Blake, 2012). The challenge is to ensure that all players are prepared to the best of their abilities and that they engage in our games where the risks have been considered and controlled as far as possible.

There are basically two types of injuries: acute injuries and overuse injuries. **Acute injuries** are usually the result of a single, traumatic event. Examples include wrist fractures, ankle sprains, shoulder dislocations, and hamstring strains. Although there is no clear consensus on the definition of overuse injury, it is generally recognised that overuse injuries are subtle and usually occur over time. They are the result of repetitive micro-traumas to the tendons, bones and joints. **Overuse injuries** can affect muscles, ligaments, tendons, bones, and growth plates. Common examples include tennis elbow, swimmer's shoulder, runner's knee, Achilles tendinitis and shin splints.

From monitoring injury in Gaelic games as past 7 years, we know that:

- 2 out of every 3 players on a team will get injured at least once in a season
- Over 1/3 of players will have more than one injury per season
- Up to 1/4 of injuries will be a recurrence of an old injury

- Over half of injuries will be during a match whilst over 1/3 are sustained during training
- Lower limb injuries remain the most prevalent (Football - 76.3%, Hurling – 69%)
- 50-60% of injuries occur in the second half of play

RISK FACTORS

EXTRINSIC	INTRINSIC
Exposure	Physical characteristics
<ul style="list-style-type: none"> • Type of sport • Exposure time • Position in the team 	<ul style="list-style-type: none"> • Age • Gender • Body composition (e.g. body weight)
<ul style="list-style-type: none"> • Level of competition 	<ul style="list-style-type: none"> • Health (e.g. previous injuries)
Training	<ul style="list-style-type: none"> • Physical fitness
<ul style="list-style-type: none"> • Type • Amount 	<ul style="list-style-type: none"> • Anatomy abnormalities • Motor abilities and sports-specific skills
<ul style="list-style-type: none"> • Frequency • Intensity 	Psychological profile
Environment	<ul style="list-style-type: none"> • Motivation • Risk taking • Stress coping
<ul style="list-style-type: none"> • Type of playing surface • Indoor v Outdoor • Weather conditions • Time of season • Human factors (coaching, referees, rules, team mates, opponents) 	
Equipment	
<ul style="list-style-type: none"> • Protective equipment (e.g. helmet, mouthguards) • Playing equipment (e.g. footwear, clothing) 	

WARM-UP, COOL-DOWN, STRETCH

WARM-UP

The purpose of the warm-up is to prepare you for the training to follow. During the warm-up, body temperature is raised, which is one of the main factors in facilitating performance. The elevation of body temperature warms up and stretches muscles, tendons, ligaments, and other tissues, which prevents or reduces ligament sprains and tendon and muscle strains.

GAA 15

In 2011, the Medical, Scientific and Welfare Committee of the GAA in conjunction with a working group comprising of Dr. Pat O'Neill, Prof. Niall Moyna, Dr. Pat Duggan, Dr. Kieran Moran, John C. Murphy, Dr. Catherine Blake developed the GAA 15, a standardised injury prevention programme aimed at reducing the number of injuries sustained by GAA players. The GAA 15 is based on programmes incorporated internationally by FIFA (the 11+) (FMARC) and by the Santa Monica Orthopaedic and Sports Medicine Research Foundation (PEP) in soccer. The effectiveness of the FIFA 11+ was proven in a scientific study which found that teams that performed the 11+ at least twice a week had 30-50% less injured players.

As a result of the findings from injury surveillance in Gaelic games over a six year period and expert opinion, the GAA 15 was devised with the defining feature being the gluteal activation which is considered important for preventing injury in GAA players. An 8 week pilot of the programme in UCD by Edwenia O'Malley found clinically important improvements in dynamic balance and jump landing technique in GAA players.

The GAA 15 should be performed, as a standard warm-up, at the start of each training session at least twice a week and takes 15 minutes to complete. Prior to

matches only the running exercises (Parts A & C) should or may be performed.

To watch videos and access the coaching instruction guide visit - learning.gaa.ie/coach

COOL-DOWN

A cool-down brings the body back to its normal functions. During a cool-down of 20 minutes, athletes perform activities that facilitate faster regeneration and recovery from strains of training. Players should not leave for showers immediately after the last exercise. As a result of training, especially intensive training, athletes build up high amounts of lactic acid and their muscles are exhausted, tense, and rigid. To overcome this fatigue and speed up the recovery process, they should perform stretching exercises. The removal of lactic acid is necessary if the effect of fatigue is to be eliminated.

STRETCHING

Stretching is a simple and effective activity that helps to enhance athletic performance, decrease the likelihood of sports injury and minimise muscle soreness. As a result of this, a reduction in general muscle tension is achieved and range of movement is increased. By increasing range of movement we are increasing the distance our limbs can move before damage occurs to the muscles and other soft tissues. The benefits of an extended range of movement includes increased comfort, a greater ability to move freely, and a lessening of the susceptibility to soft tissue injuries like muscle and tendon strains and ligament sprains.

PHYSICAL CONDITIONING

Appropriate physical conditioning decreases the risk of injury, the severity of an injury should it occur, and help prevent re-injury. Optimal physical conditioning requires adequate muscular strength and balance, power,

endurance, neuromuscular control, joint flexibility, cardiovascular endurance and good body composition.

TYPE	DESCRIPTION	EXERCISES
Strength	Players can apply force against resistance	Body weight strength training Resistance training using stretch bands, free weights or machines
Speed	Enables players to move the body or parts of the body rapidly	Short bursts of speed integrated into normal training session
Power	Players can combine speed and strength to produce explosive force	Hill sprints Squat jumps
Flexibility	Provides a greater range of pain-free motion	Stretches in warm-up, cool-down and stretch
Endurance	Allows players to repeat the same action or exercise continuously without getting too tired.	Circuit training Long runs or jogs
Balance	Reduces the risk of tripping, falling or landing in an awkward position. It also reduces the risk of a player overbalancing on uneven surfaces.	Balancing on one leg with eyes closed

REST AND RECOVERY

When recovery from training and games is improved, players are able to train sooner with better quality than when either no or inappropriate practices are completed. The ultimate goal of recovery for players is to restore their bodies and minds back to pre-activity levels in the shortest possible time.

During hard training, the majority of athletes will become fatigued and performances will actually drop. Whilst this

experience is a normal part of training, allowing adequate time for recovery enables the body to prepare for the next bout of training. This cycle of training and recovery called periodization of training allows players to keep improving over time.

Eliminating or reducing these recovery sessions leads to players failing to recover from hard training.

Prolonged fatigue lasting two weeks or more, despite adequate rest, is not normal. It is important to use recovery strategies after training to benefit maximally from all the hard training you are doing.

Infections and injuries are generally inescapable if players repeatedly train or play before their bodies have recovered properly from the previous training session or game. As fitness levels continue to decrease with each successive workout, the risk of injury increases. A point is eventually reached where injury becomes inevitable, forcing players to stop training.

Recovery involves:

- ✦ Replacing fluids and energy
- ✦ Reducing muscle damage
- ✦ Reducing psychological symptoms of fatigue, such as anxiousness and irritability

HYDRATION

Adequate recovery begins long before the players leave the playing area or gym — it starts during the session. By trying to maintain proper hydration during training or games, players can reduce the amount of dehydration they will experience. Dehydration is the loss of fluids and other electrolytes from the body and it occurs through sweating and exhaling.

The only way to prevent dehydration is proper hydration. Replacing the energy used during exercise and the fluids and electrolytes lost through sweating is important within the first 2 hours after completing training or a game.

Knowing how much fluid is lost will provide a good indication of the level of fluid intake required by each player. There are a number of different ways of assessing a player's hydration status; however a simple method is to weigh a player before and after training and games. The weight difference is the amount of fluid lost from the body through sweating. Ensure that the player is wearing as little clothing as possible each time you weigh him. Remember for each 1Kg of weight lost, 1.5 litres of fluids must be consumed. Water is fine for most people after exercise, as long as it is accompanied by a meal or snacks to provide for carbohydrate and electrolytes used during exercise. However, if a player does not feel like eating solid foods in the hours after exercise, it is important to drink fluids containing other nutrients such as a sports drink, milk drink or smoothies.

NUTRITION

Protein and carbohydrate are essential nutrients for recovery. The meal or snacks consumed after training or games should contain a source of each. A snack such as a chicken and salad roll (white bread) is a good option.

Fruit, dried fruit/almonds and museli bars are other alternative snacks after training or a game. The meal eaten in the hours after exercise can make a big difference to recovery, and should contain a source of protein (such as chicken, turkey, tuna or lean beef) and carbohydrate (such as potatoes, pasta, rice or noodles), but not too much fat.

Good examples include:

- ♦ Beef and vegetable stir-fry with rice or noodles
- ♦ Pasta with chicken or lean meat tomato sauce, add vegetables or serve with salad
- ♦ Chicken and vegetable risotto
- ♦ Grilled chicken with vegetables
- ♦ Home-made pizza (low-fat cheese and lean ham)

- ♦ Soup with pasta/noodles/rice and meat/chicken/legume
- ♦ Don't forget to have a large drink with this meal, and sip fluids regularly during the hours after training and games. Fruit should always be available to players to snack on.

Complete recovery is not achieved in just a few hours after the game; it can often take more than 24 hours. Adequate fluid and food intake is important over the next couple of days to ensure optimal recovery and preparation for the next game ahead!

TIPS

- ♦ Sipping 125 — 250ml of water or a sports drink every 15 — 20 minutes can keep fluid levels topped up during activity.
- ♦ During the cool down and stretching, water, sports drinks and fruit should be available to players to begin this process.
- ♦ Drinking 500ml of a sports drink immediately after training or a game will help replace lost fluids and also replenish used energy stores.
- ♦ A sports drink containing a source of vitamin C, vitamin E or protein is useful to repair muscle damage.
- ♦ If the sports drink does not contain protein eating a small snack, such as a chicken or turkey sandwich at this time will also be useful.
- ♦ Energy drinks such as Red Bull and Monster X will not help to keep players hydrated as they contain large amounts of caffeine which is a diuretic therefore contributes to further dehydration.

COOL DOWN

All training and games should finish with a proper cool down taking place over 10 — 20 minutes. Progressively lower intensity to help speed the removal of lactic acid

from the muscles and blood. Stretching exercises are an important aspect of all cool downs.

REDUCING MUSCLE DAMAGE

Muscle damage occurs naturally in each training session and game. Often the damage is microscopic, with the effects not being felt for up to 48 hours (often called Delayed Onset Muscle Soreness, or DOMS). Cooling the muscles after exercise is a good way to reduce muscular damage and soreness, with there being a number of different options for coaches to consider:

CONTRAST RECOVERY (HOT/COLD)

This involves submersion or covering the body in hot (must be bearable to the individual) water, followed by the same with cold water (with a temperature of approximately 15°C if possible). The guidelines for this are two minutes hot, followed by 30 seconds cold. This is repeated two-four times (as necessary).

COLD IMMERSION

This is similar to above except it is just cold immersion. The guidelines for this form of training are 30 seconds – 1 minute immersion, followed by 1 minute out of water (towel dry). Repeat this three times.

ICE MASSAGE

This form involves ‘rubbing’ the muscle groups which have been trained, with ice. This can either be done with ice in a plastic bag, or a cooling bag. The guidelines for this are one minute on one minute off, for a total of four minutes on each area/limb. Make sure that you keep the ice moving over your skin, do not keep the ice stationary for any period of time as ice can burn! If you have any circulatory or sensory (e.g. paraesthesia) problems please check with your doctor.

Extreme care must be taken when using these, as some players may be very sensitive to extreme changes in

temperature and may find the experience of going from a warm environment in the training area or dressing room into a cold shower or ice bath painful, or may go into shock. Always check how a player responds to cold before use. Careful monitoring of players at this time is advised. It is always advisable to consult a doctor before introducing such regimes into the post training or game practice.

REDUCING PSYCHOLOGICAL SYMPTOMS OF FATIGUE

Many players complain of being mentally fatigued after training or games, or show symptoms of anxiety or irritability in the hours and days after a particularly tough training session or game. It should be noted that getting adequate sleep is a major part of ensuring recovery. Some players require more than others, but players should be encouraged to report if they have difficulty sleeping. Ensuring that players are properly recovered before undertaking the next training session or taking part in the next game requires careful monitoring. Providing players with a training log and incorporating adequate hydration monitoring, will help to ensure that players are properly recovered. The training log will also help to identify early warning signs of under recovery.

TIP

- Players should aim for at least 8 hours of quality sleep per night.

SCREENING

Functional Movement Screening (FMS) incorporates a series of movement tests to identify physical problems, prevent sports injuries and predict potential for playing success. The **GAA and CPSEM FMS Protocol** assess functional movement deficits through squat mechanics, lower limb control, movement patterns and plyometrics, dynamic stability and upper body control.

Where possible, screening should be carried out by a Chartered Physiotherapist with knowledge of Gaelic Games and experience in the management of musculoskeletal problems. Screening should preferably be carried out before a player's season starts and also at the end of the year. This will enable appropriate measures to be agreed upon to prevent injury and enhance performance.

FAIR PLAY

As Gaelic football and hurling are contact sports, play can become reckless and dangerous therefore the risk of injury is reduced. Players should:

- ◆ Understand the Rules of Play
- ◆ Play fair within the rules
- ◆ Respect the decisions of referee's by not challenging them
- ◆ Respect their team-mates and opponents

To GAA's Official Guide contain the Rules of the Association and can be access by visiting <http://www.gaa.ie/about-the-gaa/publications-and-resources/>

PROTECTIVE EQUIPMENT

Protective equipment is there to protect players from injury and should be used as per the Rules of the Association whilst participating in Gaelic games.

MOUTHGUARDS

The use of a properly fitted mouthguard is the best available protective device for reducing the incidence and severity of sports-related dental. Numerous studies have shown that the overall injury risk is close to twice as high when a mouthguard is not worn, relative to when mouthguards are used during athletic activity. The types of dental injuries that can occur without the use of a

mouthguard are chipped or broken teeth, fractured crowns or bridgework, lip and cheek injuries, root damage to the teeth, fractured jaws. Mouthguards are mandatory for players in all age grades, in all Gaelic football practice sessions and games.

For more information, visit:

<http://www.gaa.ie/medical-and-player-welfare/mouthguards/>

HELMETS

Research has shown that the wearing of helmets drastically reduce head injury rates. In all Hurling Games and Hurling Practice Sessions it shall be mandatory for, and the responsibility of, each individual player to wear a helmet with a facial guard that meets the standard set out in IS:355 or other replacement standard as determined by the National Safety Authority of Ireland (NSAI). Such helmets shall not be modified from their original manufactured state in any circumstances. A Referee shall not allow a helmet to be worn in a football game.

MANAGEMENT

RICE

The RICE principle can be helpful in treating many sports-related injuries:

R - REST

You should rest the injured area for 24-48 hours. Crutches may be needed to take the weight off an injured knee or ankle. Make sure that you know how to use the crutches properly. Use them on the uninjured side to relieve pressure from the injured side. Support a strained elbow or shoulder with a sling.

I - ICE

Apply an ice pack (e.g. pack of frozen peas or a bag filled with crushed ice wrapped in a towel) as soon as the injury occurs. Repeat up to three times a day. To avoid

frostbite do not apply the ice pack for longer than 20 minutes.

C - COMPRESSION

Wrap the affected area in an elastic bandage tightly - but not so tight as to cause compromise of the blood supply to the affected area.

E - ELEVATION

To reduce swelling, elevate the affected area above the level of the heart.

It is important to SEEK HELP EARLY! If the pain or swelling has not gone down significantly within 48 hours, you should seek treatment. If you are worried about your injury you should consult with your local GP immediately.

THINGS TO AVOID

Massage – this can increase bleeding and swelling and be avoided within 72 hours of an injury

Running – do not resume exercise within 72 hours of your injury unless your medical professional says it's ok to

Heat – this increases bleeding at the injury site. Avoid hot baths, showers, saunas, heat packs etc...

Alcohol - this can increase bleeding and swelling and delays healing. It can also mask pain.

RETURN TO PLAY

If the RICE treatment is done correctly, the pain and swelling should decrease and pain free movements should return. Some gentle movement at the right time is important for healing and recovery. When you start exercising again, keep all movements within the limits of pain and never force any movement.

If the pain or swelling returns, consult with your local GP. Before you return to play, you need to make sure you can do the specific tasks your sports require, such as

jumping, throwing or kicking. Once you are able to perform these skills to the same level as before the injury, you are ready to return to play. Don not return to play until you are recovered from your injury as returning too soon can make your injury worse and delay recovery.

For more information, visit learning.gaa.ie/player