



PRINCIPLES OF TRAINING

INFORMATION SHEET FOR PLAYERS

TRAINING PRINCIPLES

The principles of training promote a steady and specific increase in physical ability by specifically adapting a training regime to the needs of a sport, and most importantly, to the individual needs of each player. A training programme to improve performance should obey the following principles of training:

SPECIFICITY

The specificity principle asserts that the best way to develop physical fitness is to train the energy systems and muscles as closely as possible to the way that they are used in a particular sport. The principle implies that to become better at a particular exercise or skill, they must be performed. To have good stamina, stamina runs must be performed and not short sprints. Training must also be specific to individual abilities such as tolerance to training stress and recoverability.

OVERLOAD

Whilst training loads must be increased gradually, they must also allow the body to adapt to avoid injury. Varying the type, volume, and intensity of training load allows the body an opportunity to over-compensate and recover. Loading should continue to increase gradually as adaptation occurs. When more is demanded, within reason, the body adapts to the increased demand.

ADAPTION

Adaption refers to the body's ability to adjust to increased or decreased physical demands. Repeatedly practicing a skill or activity makes it second nature and easier to perform. This principle explains why beginning exercisers are often sore after starting a new routine, but after doing the same exercise for a period, they have little, if any, muscle soreness. In addition, adaptation makes an athlete very efficient and allows him to expend less energy doing the same movements.

Adaptions to the demands of training occur gradually, over long periods of time and trying to accelerate this process may lead to injury, illness or overtraining.

PROGRESSION

To steadily improve fitness levels, physical demands to overload an athlete's system must continually increase. If the training demand is increased too quickly, players will be unable to adapt and may break down. If the demand is not adequate, they will not reach optimal fitness levels.

REVERSIBILITY

When player stops training, their gains will disappear quicker than they were gained. The rate of decline for athletes will depend on the length of training before detraining, the specific muscle group and other factors. Maintaining a moderately high level of fitness year-round is easier than detraining at the end of the season and then retraining at the beginning of the next.

VARIATION

After training for several hard days, players should train lightly to give their bodies a chance to recover. Training cycles should be used over the course of the year to vary the intensity and volume of training to help achieve peak levels of fitness for competition. This principle also implies that exercises and activities should be changed regularly so that players do not overstress a certain part of the body. Mixing up activities also maintains interest in training.

PERIODISATION AND RECOVERY

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.

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.

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

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.

METHODS OF TRAINING

Both aerobic and anaerobic exercises are needed for the development of physical fitness.

Aerobic exercise is any activity using large muscle groups and maintained continuously with rhythmic pattern i.e. sustaining a full game, cycling or swimming. Aerobic means ‘with air or oxygen’. Any aerobic activity should leave players able to carry on a short conversation. Aerobic training trains an athlete’s lungs to process more air with less effort and heart to pump more blood with fewer beats. This increases cardiovascular efficiency and endurance.

Anaerobic means ‘without air or oxygen.’ Anaerobic exercise uses muscles at high intensity and a high rate of work for a short period of time. Anaerobic exercise helps us increase our muscle strength and stay ready for the next bursts of speed i.e. weight training, sprinting, or any rapid burst of speed. Think of short and fast when you think of anaerobic.

Anaerobic exercise cannot last long because oxygen is not used for energy and lactic acid is produced. Lactic acid contributes to muscle fatigue and must be burned up by the body during a recovery period before another bout of exercise can be attempted.

SPECIFIC TRAINING METHODS

Specific training methods can be used to improve each fitness factor:

Type	Method	Used for
Circuit training	Performing a series of exercises in a special order	Can be designed to improve speed, agility, coordination, balance and muscular endurance
Continuous training	Working for a continuous period without rest	Cardiovascular fitness
Cross training	Using another sport or activity to improve fitness	A GAA midfielder may use power training to improve his jump
Fartlek training	Varying your speed and type of terrain over which you run	Aerobic and anaerobic fitness
Interval training	Alternating between periods of hard exercise and rest.	Speed and muscular endurance
Weight training	Using weights to provide resistance to muscles.	Can be designed to improve muscular strength, muscular endurance and power
Altitude training	Aerobic training high above sea level where oxygen levels are lower.	Aerobic fitness

STAGES OF A TRAINING SESSION

WARM-UP

The purpose of the warm-up is to prepare players 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.

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

MAIN PART

The type of training performed on any given day depends on the phase of training as well as its objectives. Any sports require technical and tactical training, maximum speed, speed-endurance, and aerobic endurance, all of which use different energy systems.

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.

CONCLUSION

GAA players are pushed routinely to the limits of their physical abilities. Training is an integral part of a player's success and in most cases, training will enhance a player's performance, however, if the body is stretched too far, performance will almost always decrease. It is important for not only coaches, but players to be familiar with the basic principles and processes of training so they can evaluate training programmes and determine their adequacy in maintaining health and preventing injury.

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