Training Principles & Methods
In order to maximise performance, all AFL sides aim to develop their fitness to optimal levels. This is achieved through the correct application of fundamental training principles to their training program.

These principles include:
Specificity
Intensity
Duration
Overload
Frequency

Other training principles that will need to be considered include reversibility, maintenance, individuality, diminishing returns and variety.
Specificity will form the foundation of any training program for a player to achieve optimal benefits. It is critical that the correct muscle groups, energy systems and fitness components are targeted to ensure training will improve the physiological requirements of AFL.

- AFL clubs invest significantly into games analysis, including the use of GPS to understand the physiological demands of the game.

- Through the use of games analysis data, a skills drill with an emphasis on running can easily be manipulated to mimic the work to rest ratio of the game, thus ensuring specificity and an appropriate training adaptation.
• There is now more emphasis on interval training within the AFL because it replicates the repeated high intensity efforts required throughout the game. This helps increase lactate tolerance enabling the players to perform more high intensity sprints without the effects of fatigue.

• Plyometrics also form part of a training program to improve explosive jumping and tackling performance.

• Resistance training programs are also required to maintain a balance between muscle groups
**Intensity** refers to the level of exertion applied during the work phase of a training program. It underpins specificity and by applying the appropriate intensity, it ensures that the desired energy system or fitness component is being developed in training.

Methods used to measure intensity during training include:

- Heart rate monitoring
- Rating of perceived exertion (RPE)
- GPS tracking (most common as it measures both intensity and volume of work)

A higher training intensity is used to target fitness components dominated by the anaerobic energy systems, rather than the aerobically powered fitness components.
**Duration** refers to:

- The length of the training program (see periodisation)
- The length of the actual training session, including the length of the work bouts
- The time required for chronic adaptations to occur

- The length of the work bout and the total session length are important to consider given the finite nature of the anaerobic energy systems

- The total length of the training program is also important to consider in terms of fatigue and recovery throughout the season
**Overload** refers to a purposeful increase in training stimulus. This increase in stimulus stresses the physiological system in a positive manner to induce long-term changes.

- When a player becomes accustomed to their new training stimulus adaptations will plateau unless the overload principle is applied.

- It is crucial to monitor training loads as insufficient overload will lead to plateaus, and excessive overload can lead to overtraining.
**Frequency** refers to the amount of training sessions engaged in per week. The optimal frequency of training is determined by factors including training status, available time and the players goals.

- It is generally accepted that a minimum of three training sessions per week is required to bring about improvement in any fitness component. AFL players and other elite athletes need to train more than this to optimise fitness improvements.

- Training volumes and frequency are likely to be higher during the preseason, before shifting towards more skill based training as the season approaches.
Reversibility refers to the effect of a reverse in chronic adaptations as a result of not training. This is often due to injuries, both serious and minor.

It has been shown that VO₂ max can decrease by 8 per cent in as little as 3 weeks if sufficient training is not maintained. This is why it is critical that players continue to engage in some training during their off-season to maintain long term chronic adaptations.
Maintenance refers to the continuity of training to maintain training gains. A minimum of two sessions per week is considered sufficient for maintenance.
Individuality involves the principle of developing a training program that is specific to a player’s needs due to the difference in how they will respond to training.

- Individuals respond different to training due to a variety of reasons including genetics, their training status and their adaptive responses to training.

- Given the importance of specificity, it is also appropriate to manipulate various training methods and principles to playing positions.
**Diminishing returns** refers to the principle of fitness improvements slowing down as an athlete gets closer to their genetic fitness potential.

This principle explains why it is so important for athletes such as AFL players to train so often to stimulate any further small gains in fitness.
**Variety** can serve two purposes in a training program.

I. It can be used to provide a different training stimulus to illicit further chronic adaptations such as changing from a barbell bench press to a dumbbell bench press. In this instance the aim of the training program has not been changed, just the exercise.

II. It can also be used to “freshen up” a training session for players who are becoming bored with training. This could involve running at a beach instead of the usual venue.

Great care needs to be exercised when adding variety to ensure that specificity is still being met. Completing a bike session instead of the usual running may be appropriate for a “one of” session, too many bike sessions will be counterproductive to the principle of specificity.
Periodisation refers to a structured planning in relation to the upcoming season. All AFL teams have a yearly plan for their training. This plan would set out how the club will divide its year up into manageable blocks of time to maximise both training and performance.

Periodisation is usually divided into three time blocks:

- A macro cycle is the 12 month plan (usually divided into a preseason, competition and off-season phase)
- A meso cycle is usually a 4 to 6 week block of time with a more general focus such as improve aerobic power
- A micro cycle is a smaller segment of a meso cycle giving specific detail of the week ahead

Ideally the correct application of periodisation will allow teams to peak at important times throughout the season.
Below is an example of an AFL periodisation plan outlining specific phases within the yearly calendar.
The sole purpose of a training program is to enhance the physiological capabilities of the players. Different fitness components will react favourably to different types of training, known as **training methods**.

- Most AFL fitness training will involve running, resistance training, core work, and flexibility training.

- Running training can also be defined as either interval or continuous sessions, which will have different focus aims to improve both aerobic power and/or anaerobic capacity.
**Continuous training** is aimed at improving aerobic Power and local muscular endurance. It involves work periods of at least 20 minutes conducted in the aerobic training zone of 70 to 85% of a person’s maximum heart rate.

- Provided the work is continuous it can involve activities including running, cycling or swimming. However, given the importance of specificity the vast majority of continuous training in AFL would involve running.

- This type of training is heavily utilised in the early parts of a preseason aiming to develop some aerobic conditioning before higher intensity running is engaged.
**Fartlek training** is a natural progression from continuous training. This involves interspersing periods of higher intensity (i.e. sprints) throughout a continuous run. It helps to prepare players for more higher intensity interval training.
**Interval training** involves periods of work interspersed with periods of rest and is often expressed in terms of a ‘work to rest ratio’. The advantage of interval training is that the rest enables either partial or full recovery before the next work period to ensure quality (particularly with intensity) can be maintained.

- Interval training can be utilised to develop aerobic power, anaerobic capacity and speed. This will be determined by the length of the work period, the intensity and the rest given between each work period.

- Depending on the aim of the interval training session the rest period may be either a passive recovery or an active recovery such as jogging at a lower intensity.
Typically, long intervals with jog recoveries are used to develop aerobic power. The intensity will be in the aerobic training zone of 70 – 85% of maximum heart rate but will more likely be at the higher end of the intensity zone.

An example of a long interval session would be 5 x 1km repeats, with the 1k’s completed in 3 minutes followed by a jog recovery for 90 seconds. This would be a 2:1 work to rest ratio.
Intermediate interval training is aimed at developing anaerobic capacity (commonly referred to as lactate tolerance). Intermediate intervals requires a higher work intensity than long interval training, as the aim is to engage the anaerobic glycolysis energy system. In a practical sense this will enable players to sustain repeated sprint efforts.

A typical training session would involve 300 meter repeats in 40 seconds with 80 seconds rest; or a W:R of 1:2.
**Short interval training** is aimed at developing speed. More rest is given to enable full, or near full recovery of PC, to ensure that maximal intensity can be maintained. A W:R of 1:6 is typical of this type of session.

Running speed can also be developed through the development of either stride length or stride frequency.

- Developing stride length can be achieved through running with weighted resistance such as pulling a sled or parachute.

- While stride frequency can be improved via ladder, or small hurdle training.
A large part of an AFL player’s training regime is devoted to **resistance training**. Usually in the form of weight training, it can be utilised to specifically develop muscular strength and power. This will assist players to tackle and bump more forcefully, help improve jumping and kicking distances, and is also beneficial for LME, speed & agility development.

*With the large amounts of running involved in AFL, clubs are cautious about developing too much muscle bulk which can have a negative effect on a players running ability. This is a challenge for the fitness staff who must balance the development of strength and power along with both aerobic power and anaerobic capacity.*
## Resistance Training

<table>
<thead>
<tr>
<th>Desired Outcome</th>
<th>Repetition maximum</th>
<th>Repetition range</th>
<th>Sets</th>
<th>Repetition speed</th>
<th>Rest periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscular strength</td>
<td>80-100%</td>
<td>1-12 (emphasis on 1-6)</td>
<td>3-6</td>
<td>1-2 seconds concentric &amp; 1-2 seconds eccentric</td>
<td>2-3 minutes b/w sets</td>
</tr>
<tr>
<td>Muscular Power</td>
<td>30-60%</td>
<td>3-6</td>
<td>3-6</td>
<td>As fast as possible</td>
<td>2-3 minutes b/w sets</td>
</tr>
<tr>
<td>LME</td>
<td>40-60%</td>
<td>15-25</td>
<td>3-6</td>
<td>Slow to moderate</td>
<td>1 minute b/w sets</td>
</tr>
</tbody>
</table>

There is an abundance of literature on resistance training programs and the benefits it provides. The table presented above are guidelines adapted from the American College of Sports Medicine (2010) for advanced athletes such as AFL players.
The shift in developing a player’s **core strength** has been significant over the past decade. Improving core strength enables a player to maintain better balance while being tackled. Core strength also improves running efficiency helps the transfer of power between the upper and lower body.

*Core strength can be developed through specific exercises such as “planking” or through Swiss Ball work. Pilates is another effective training method that will develop core strength.*
**Flexibility training** is another important component of an AFL players training regime.

Improved flexibility will:

- Reduce the likelihood of injury
- Reduce the impact of DOMS
- Improve posture
- Help develop strength and power

*Dynamic stretching should be performed prior to a game or training session. This involves moving the muscle through its range of motion with controlled momentum such as gently swinging the leg upwards, as this more closely resembles the actions the player will be engaged in.*

*After training or a game it is important for players to engage in some form of static stretching. This elongates the muscles resting length.*