

Optimising Training and Preventing Injury

Preventing Injuries

Training Intensities

The intensity of training can be altered in order to train different components of fitness. The calculations needed to work out the intensity of exercise required are provided below:

Calculations

Anaerobic/Aerobic

Anaerobic and aerobic training thresholds are determined by your heart rate during exercise and indicate which energy systems you are using.

Max heart rate:
220 – age (years)



Training zone:
Aerobic: 60–80% of max heart rate
Anaerobic: 80–90% of max heart rate



One Repetition Max

$$1 \text{ RM} = \text{Weight} \left(1 + \frac{\text{Repetitions}}{30} \right)$$

Strength / power training:

- Performed with weights greater than 70% of 1 RM
- Low number of repetitions

Muscular endurance:

- Performed with weights less than 70% of 1 RM
- High number of repetitions

Revision Success Tip!

Remember! You will need to be able to apply these seasons to different sports.



There are a number of steps which can be taken in order to reduce the risk of an individual injuring themselves during physical activity. These are outlined below:

- Wear safe clothing/footwear
- Wear bracing, if required
- Maintain hydration
- Perform stretches prior to physical activity, but do not overstretch or bounce
- Use the correct technique
- Ensure adequate rest is taken
- Warm up before stretching the muscles
- Avoid overtraining
- The training should be appropriate for what you are intending to train, e.g. the correct intensity for aerobic/anaerobic training



Training Seasons

There are three distinct phases of a season and each phase involves different types of training. The differences between each season are outlined below.

Season	What Happens
Pre-season	During pre-season training, athletes develop their general fitness levels as well as sport-specific fitness levels in order to ensure that they are fit for the season.
Competition	During the competition season, the athlete trains in order to keep their fitness at the level they achieved during pre-season training, and they practise skills which are required when competing in their sport.
Post-season	Immediately after the season ends, the athlete will rest in order to recover from the previous season. They will then take part in some undemanding aerobic training in order to ensure that they maintain a baseline level of fitness .

High-altitude Training

High altitude training is used by endurance athletes and involves training for several weeks at high altitude (approximately 2400m above sea level) in order to experience physical adaptations.

How it is carried out:

- Athletes carry out their normal aerobic training at high altitude.
- Due to the lack of oxygen, the oxygen-carrying capacity of the blood is reduced at high altitude.
- Therefore, more red blood cells are produced in order to provide the muscles with oxygen.

Limitations

- The benefits of high-altitude training are not long-lasting.
- Altitude sickness can be experienced, which makes it hard for athletes to complete their normal levels of training.
- If training cannot be completed due to sickness, fitness can be lost.

Benefits

- This method can be useful for any athlete who works aerobically
- Improves cardiovascular endurance at sea level

