



Sport Science

R181 – Applying the principles of training: fitness and how it affects skill performance

Performance Objectives

- PO2 Apply knowledge and understanding of Sport Science concepts.
- PO3 Analyse and evaluate knowledge, understanding and performance.
- PO4 Demonstrate and apply sporting skills and processes relevant to Sport Science.





Considerations

Before designing a training programme, the following considerations need to be addressed.

A coach should think about:

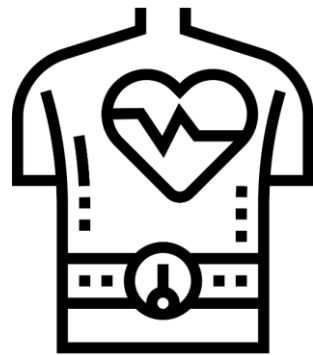
- **Facilities/equipment**
 - **Safety/risk assessments**
 - **Aims/goals/objectives**
 - **Current fitness levels/injuries**
 - **Organisation**
 - **Environment**
 - **Skills to be improved**
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Facilities/equipment

When designing a programme, it is important to know what space and facilities you have to work with.

If an athlete is working on strength, weights (machine or free) or a resistance will need to be used. *i.e. a sled*

If heart rate/pulse is being used to monitor intensity a device will need to be worn.



Safety/risk assessment

When designing safe training programme, coaches should consider the personal profile of an athlete and implement training based on:

- **Weight of athlete**
- **Age**
- **Physical activity levels**
- **Access to facilities**
- **Injuries/health issues**
- **Training preferences**

Lifestyle and physical activity history can be obtained through questionnaires The **Physical Activity Readiness Questionnaire (PAR-Q)** is a common method.



Safety/risk assessment

If an athlete answers yes to any of the medical conditions experienced they should be checked over by a GP prior to starting an exercise programme.



Think. Pair. Share – What type of questions might be included in a PAR-Q?



Have a go at a PAR-Q - [HERE](#)

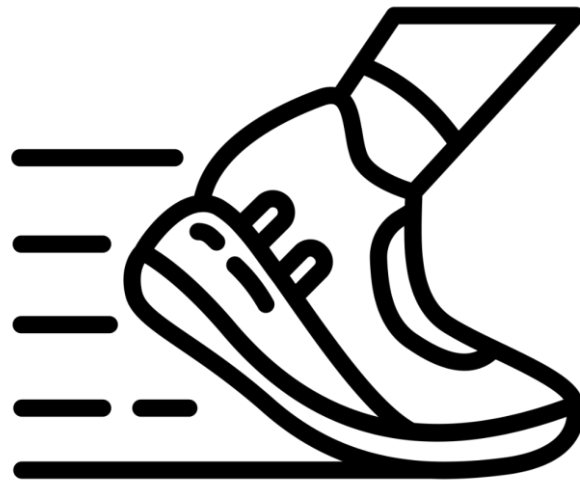


Safety/risk assessment

A **risk assessment** is a document that outlines all the potential risks and are graded, red, yellow and green. The document highlights ways to minimise the risk.

For example:

- The weights area in a gym should be checked for spillages and that everything is in working order.
- When running on a particular surface, the ground should be checked for debris and sufficient footwear worn.



TASK

- You need to create a health and safety poster for a gym.

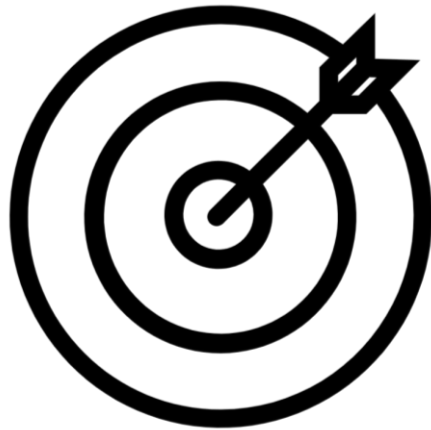
Considerations

- What could you get injured on
- How should equipment be used
- What could happen if equipment is not used properly.



Aims/goals/objectives

The combination of activities should meet the needs, goals, aims and objectives of the subject.



Aims: This is the details of what the performer would like to achieve in their activity of choice.



Objectives: How performers intend to meet their aims addressing the right components of fitness.

Aims/goals/objectives

When setting goals, the **SMART principle** is most effective ways to ensure your aims are focused.

This stands for:

- **Specific**
- **Measurable**
- **Achievable**
- **Realistic**
- **Time-bound**

The following goal is a good example of a SMART target.

“I would like to improve my 100m sprint time by 0.1 seconds in 6-8 weeks. I intend to do this by increasing my training schedule to include more plyometric training in order to improve my start times”



Aims/goals/objectives- TASK

You need to create goals for a specific component of fitness for a 6 week plan.

USE SMART TARGETS

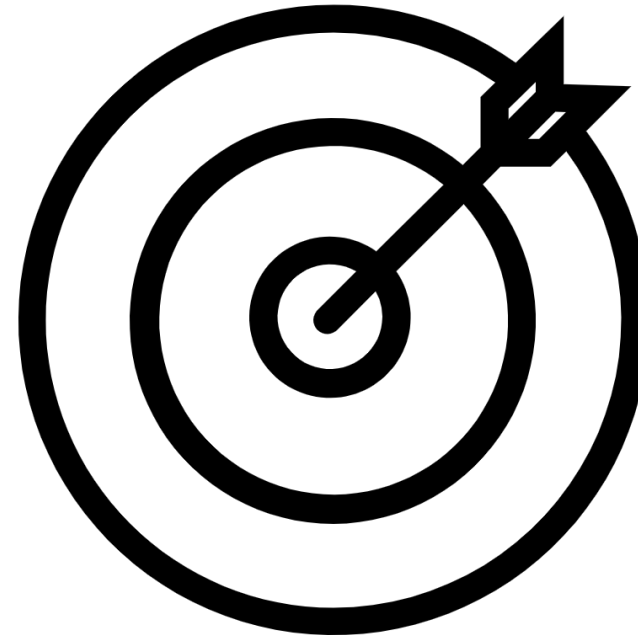
How will you make it specific?

How is improvement measured?

How is it realistic/

How is it achievable?

How is it time bound?



Current fitness levels/injuries

An initial set of fitness tests will highlight the athlete's **current fitness levels** and **areas for development**. If fitness levels are low, the goals should not be set too high. A good level of fitness will mean the frequency and intensity of training can be much higher.

A trainer should be aware of **current or recurring injuries** that the performer has so they can design a suitable warm up and series of activities that does not place strain on that area of the body.



Organisation

It is important that the person leading the session is suitably **organised**.

- They may need to organise the facility to use for training. i.e. bookings
 - Organisation of equipment
 - Ensure the training is varied to avoid boredom
 - Equipment chosen should be appropriate
 - Sufficient rest is incorporated into any schedule
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Environment

By carrying out a **risk assessment**, it is likely that an evaluation of the training environment will take place. Other **pre-training checks** might be:

- Are all areas debris free?
- Has equipment been checked for safe working and sanitised?
- Is a spotter needed?
- Are larger apparatus in working order and calibrated?



Skills to be improved

When designing a programme, it is vital to remember the goal and focus. It is worth considering skill-based fitness work to develop other elements too.

An example might be for a hockey player to improve **cardiovascular endurance/stamina** but to **dribble the ball** during the **continuous running**.



Applying principles of training

Using SPOR and FITT

It is vital a trainer uses these principles when designing and carrying out a programme.

Specificity

A sprinter would likely carry out interval and plyometrics training to ensure speed and power are worked on. The specific target area would be the legs and the muscles in this region.



Applying principles of training

Progression and Overload

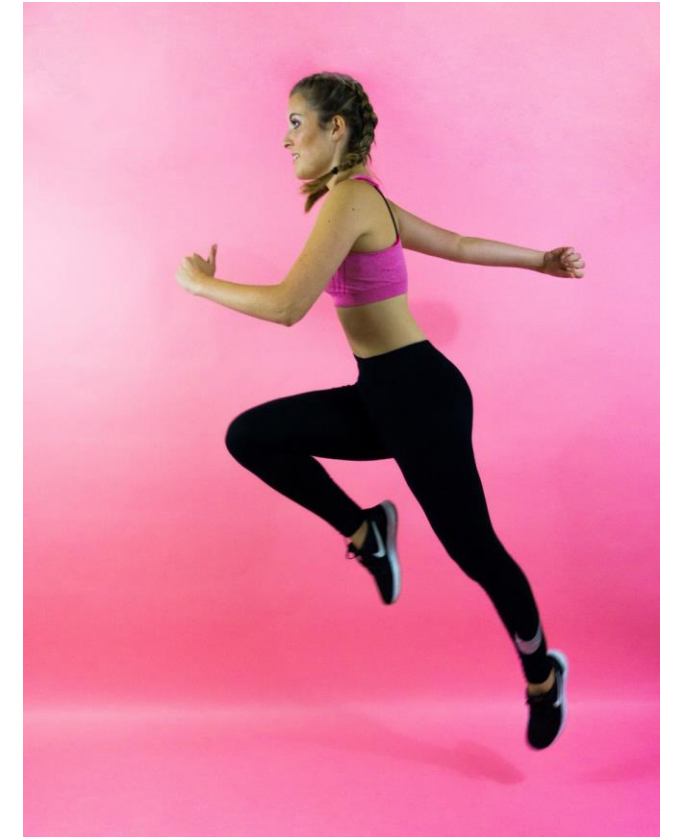
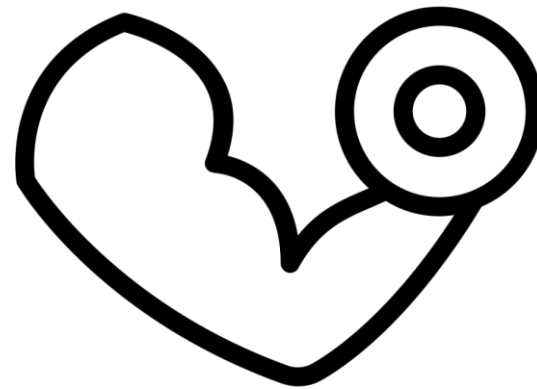
An athlete will progress when the body adapts and it becomes easier. This could involve running at a higher intensity and or for longer.

Frequency – As training gets easier, they will increase the number of sessions per week.

Intensity - They will use heart rate as a guide for intensity.

Time – If an athlete has trained for 30 minutes it can be increased to 40 and then 50mins.

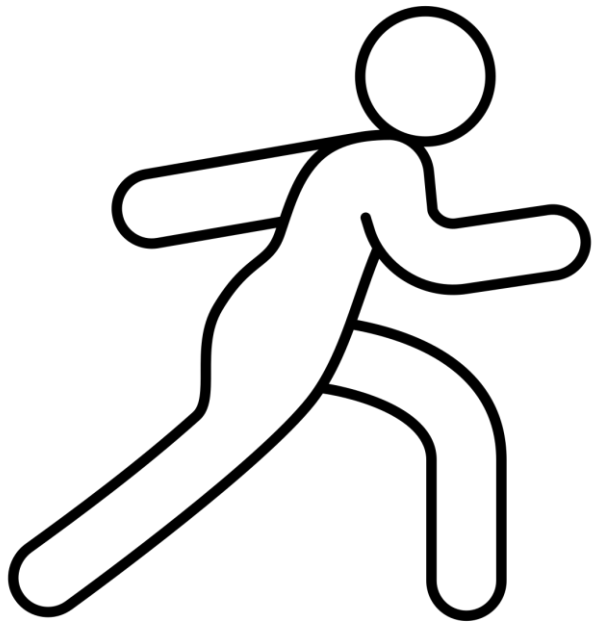
Type – The athlete will likely continue to use the type of training best suited to the event, however circuit and weight training may also be used to vary the programme.



Applying principles of training

Reversibility

Any athlete training full time will work 5-6 times a week to prevent reversibility and allow for sufficient recovery.



Applying principles of training

Overload application

Understanding **target heart rate zones** and **exercise intensity** will help the individual to get the most out of training.

An estimate of **maximum heart rate** is calculated as **220-age**.

To improve fitness from regular exercise you must push your heart rate above a certain level, known as the **training thresholds**.



Application of components of fitness to skill performance- Task

Task:

Your coach has asked you to produce a six-week fitness training programme to improve your performance for **one** selected sporting activity.

The tasks for this will be based on you planning and developing a fitness training programme for your selected sporting activity. It will include completing a risk assessment.

