

St Ninian's High School

Physical Education



Higher

Physical Factor

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Introduction

Within Physical Education we study **four factors** which impact on performance in sport. These factors are:

Mental Factors: The way your mind affects how you perform.

Emotional Factors: The way your feelings affect how you perform.

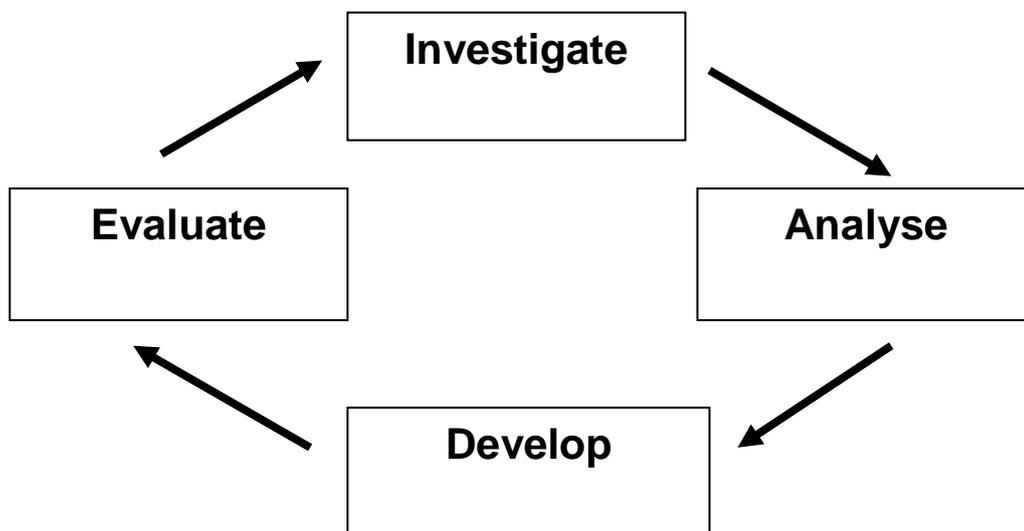
Social Factors: The way your interactions with others affect how you perform.

Physical Factors: The way your fitness, skill level and tactical ability affect how you perform.

For each factor we will:

1. Investigate the impact this factor can have on your performance
2. Analyse where your strengths and areas for development lie
3. Plan and carryout strategies to develop your performance
4. Review your performance by monitoring and evaluating any improvements made

This process of performance development is known as the 'Cycle of Analysis'. If there is an effective learning structure then there should be no learning plateaux. As we continually repeat the cycle, performance should show a gradual and continued improvement. The cycle is the means by which top level performers throughout the world improve their sporting performances. It is the way in which you will improve your sporting performance in PE.



For each of the four factors there is specific knowledge and skills that you need to acquire. This is summarised in the table below:

1.	Factors Explained	<p>You must develop an understanding of what the factor means. Including an overview of key features. This includes being able to:</p> <ul style="list-style-type: none"> • Describe and explain a selection of the feature • Evaluate the positive and negative impact of a selection of features
2.	Methods of gathering information	<p>You must develop an understanding of various methods of gathering information on performance level. This includes being able to:</p> <ul style="list-style-type: none"> • Describe and explain each method (exactly how it is carried out and why is an appropriate method to use) • Evaluate the method (focusing on benefits and limitations) • Identify and evaluate individual (or team) strengths and areas for development
3.	Approaches to developing performance	<p>You must develop an understanding of various approaches to developing performance. This includes being able to:</p> <ul style="list-style-type: none"> • Describe and explain each method (exactly how it is carried out and why is an appropriate method to use) • Evaluate the approach (Focusing on benefits and limitations) • Have a theoretical knowledge about developing the approach over time (E.g. principles of effective practice or principles of training etc)
4.	Monitoring and evaluation	<p>You must develop an understanding of how and why we monitor and evaluate considering various different methods. This includes being able to:</p> <ul style="list-style-type: none"> • Describe and explain each method • Evaluate each approach used • Evaluate the personal (or team) progress made • Justify and explain future development needs

Physical Factors

This booklet focuses on the PHYSICAL FACTORS which affect performance. Physical factors can be separated into 3 key areas: fitness, skills and tactics. The table below shows the 3 different areas and the sub factors and features that can be considered within each.

PHYSICAL		
FITNESS	SKILLS	TACTICS
<p><u>Physical Fitness</u></p> <p>CRE Muscular Endurance Speed (Speed Endurance) Flexibility Strength Power</p> <p><u>Skill Related Fitness</u></p> <p>Coordination Agility Reaction Time Balance Core Stability</p>	<p><u>Technical Qualities</u></p> <p>Timing Rhythm Consistency</p> <p><u>Special Qualities</u></p> <p>Imagination Creativity Flair Adjustment</p> <p><u>Quality of Performance</u></p> <p>Control Fluency Effort Accuracy Touch</p>	<p><u>Performance Considerations</u></p> <p>Personal S+W Role Demands Team S+W Opposition Previous History Environmental Conditions</p> <p><u>Principles of Play</u></p> <p>Width Depth Mobility Delay Penetration Support Communication Tempo</p>

Within this booklet and your course we will focus mainly on the following 2 sub factors: **fitness and skills**.

Impact of Fitness on Performance

When focusing on performance development it is vital to have an awareness of the key demands of your activity and also the specific demands for you. You should be able to name and explain these demands and have an awareness of the positive and negative impacts on performance each can have. When considering the fitness demands of an activity there are 2 different types of fitness to consider:

1. Physical fitness
2. Skill related fitness

1. Physical Fitness

Features of Physical Fitness	Definition	Impact on Performance
Cardio Respiratory Endurance (CRE)	<i>"The ability of the heart and lungs to supply the working muscles with oxygen for a prolonged period of time."</i>	Poor CRE will result in the performer becoming breathless more quickly and unable to keep up with play or maintain a high skill level. Decision making may also be affected and longer rest periods will be needed to aid recovery.
Speed	<i>"The body's ability to perform an action in a short time."</i>	Speed is required in football when trying to beat an opponent to a 50/50 ball, to lose a defender, to get into space, to support an attack, to dribble round an opponent or to chase back and close down an attack. If you lack speed then you will be unable to maintain possession of the ball, win it back, or take on your opposite player effectively.
Flexibility	<i>"The range of movement across a joint."</i>	Static Flexibility is required in activities like gymnastics where you have to hold your body still during various balances. For example, a good range of movement is needed across the hips to be able to perform the splits well.

		Dynamic flexibility in the hips is also very important to a goal kicker in Rugby.
Muscular Endurance	<i>“The ability of a muscle or group of muscles to work continuously for extended periods of time without tiring.”</i>	If the muscles tire, due to poor muscular endurance, then the performer will be unable to make effective use of the muscles. For example, muscular endurance in the upper body is required when swimming for an extended period of time as you must be able to consistently use your arms to pull through the water for the duration of the race.
Strength	<i>“The maximum force a muscle or group of muscles can exert at any one time.”</i>	Performing a scrum in Rugby would be an example of where Static Strength is required. Rugby Players are required to use Static Strength to stop the opposition from pushing the scrum and gaining an advantage. Dynamic Strength would be required when swimming short distances.
Power	<i>“The combination of speed and strength.”</i>	Lots of sports require power, for example shooting in football requires power, as does driving in golf and smashing in badminton and tennis. Power is also one of the main physical aspects of fitness that is required for an effective long jump take-off.

2. Skill Related Fitness

Features of Skill Related Fitness	Definition	Impact on Performance
Co-ordination	<i>“The ability to control your body movements smoothly and fluently.”</i>	Coordination is particularly important when performing a complex skill or when performing a skill/action at speed. Performing the correct technique for the hurdles requires lots of coordination.
Reaction Time	<i>“The interval of time it takes for a performer to choose a response to a stimulus and then perform the selected movements.”</i>	A skilled performer has a quick reaction time by reacting to a stimulus, selecting response and moving sharply. This quick reaction time can be decisive between winning or losing in an activity.
Agility	<i>“The ability to change the position of the body quickly, precisely and with control. This uses a combination of speed and flexibility.”</i>	Agility helps when competing in activities that require you to change direction quickly whilst keeping balanced and in control. It is helpful when participating in racket sports such as squash, tennis and badminton, and also in team games like rugby, basketball, volleyball, hockey and football.
Balance	<i>“The ability to retain the centre of gravity above the base of support. This can occur when stationary (static balance) or moving (dynamic balance).”</i>	Static balance is the ability to maintain control of position whilst remaining stationary – for example, balancing on one leg or holding a headstand in gymnastics. Dynamic balance is the ability to maintain balance and control of the body whilst moving.

Impact of Skills on Performance

Skills can be broken down into Technical Qualities, Special Qualities and Quality of Performance

Technical Qualities

Feature	Definition	Impact on Performance
Timing	<i>“The ability to execute a skill/movement at exactly the right time and with the right degree of emphasis.”</i>	Timing of executing a skill/movement is often dictated by external influences. For example, in dance the timing of movements should be in time with the beat/tempo of the music. In football, you may need to time when to play a pass depending on when your team-mate makes their run.
Rhythm	<i>“The expression of timing during the performance of a skill/movement.”</i>	Rhythm is related to how we coordinate our body during the performance of a skill/movement. For example, in athletics when completing a hurdling distance, the athlete must maintain a rhythmic speed to ensure they can coordinate the correct take off foot, number of steps between hurdles and stride length to complete it in the fastest time.
Consistency	<i>“The ability to perform skills/movements correctly over and over again.”</i>	Accuracy and Consistency are key for an effective performance. For example, a setter in volleyball always being able to set the ball at an appropriate height and place for their team mate to perform a more powerful spike and therefore put the other team under more pressure.

Special Qualities

Feature	Definition	Impact on Performance
Imagination	<i>“When you are creative with your skill set during activities.”</i>	Imagination is required when performing in subjective activities. These are activities which are based on how the performance looks. They can also be described as aesthetic activities and the result depends on the opinion of the judges. Some examples of subjective activities are Gymnastics, Dancing, Diving, and Synchronised swimming.
Creativity	<i>“The ability to perform unusually, innovatively and uniquely.”</i>	Some athletes are naturally gifted with skill and ideas and are willing to try different things in their sport which are seen to be creative. Others need to gradually learn and practice “alternative” skills in order to be more confident with them in a challenging situation.
Flair	<i>“The ability to instinctively perform uniquely or with style.”</i>	Having good flair can allow you to deceive an opponent as the skill you execute will be unexpected. No flair may result in your performance becoming predictable making it easy for an opponent to be able to read what you are about to do before you execute the skill.

Impact of Tactics on Performance

Tactics can be broken down into two areas; performance considerations and principles of play.

Performance Considerations	Definition
Personal Strengths and Weaknesses	For instance, it is important to consider the strengths and weaknesses of our own team. When implementing a structure/strategy you must attempt to play to your teams strengths and avoid or work around your weaknesses.
Role Demands	Each player will be suited to a certain role within a team in relation to their strengths.
Team/Opposition Strengths and Weaknesses	Considering the strengths and weaknesses of the opposition is also essential when selecting S/S. For example, if we as a team identified the opposition were unfit, then fast breaking would be effective because this would increase the tempo of the game and tire them out further.
Environmental Conditions	When performing you may have to consider the environment that you find yourself within. For example; the weather, the playing surface, the equipment, the spectators etc.

Principles of Play	Applying the Principle
Width	Place players across the width of the pitch, this will cause the opponents defenders to space out and therefore create more space to attack.
Depth	Place players behind the attackers, therefore if no forward movement is possible, play can be passed backward to the supporting players. This will provide cover and possibly create a new scoring opportunity.
Mobility	This is movement on and off the ball it is the ability to change direction at pace move into space. An attack that is static is easy to defend, therefore players on and off the ball need to constantly be moving and changing direction to get free from the defenders, create space, offer support options and try to penetrate the defence.

Penetration	This is the ability to break through and or get in behind a defence. This achieved by: players taking on the defenders and beating them in 1v1 situations though overload situations (2v1 for example) are best, fast counter attacks to catch the defence off guard, runs off the ball to get in behind the defence and passes played over the top of the defence for players to move onto.
Communication	This is required to make players aware of the attacking tactic; aware of support options, when and where they are in space etc. It can be verbal (a shout) or a visual (a hand signal).

Appropriateness of Methods of Gathering Information

It is vital to carefully consider what method is best to use to gather information. It is also important to be able to justify your choice. Things to consider are:

- Specificity of method to activity you are testing for
- Specificity of method to your personal development needs
- Specificity of method to aspect of fitness you are testing
- The validity and reliability of method: Why do you feel this is a valid method to use? How do you know the results are reliable?
- The ease of carrying out the method
- What you can do with results

Methods of Gathering Information

Once you have identified the fitness demands of a specific activity it is then important to gather information on your level of fitness in order to identify strengths and development needs. Within 'Fitness' there are 2 methods that can be used to gather information:

- **Standardised fitness tests (out-with the activity)**
- **Match analysis schedules (within the activity)**

Standardised Fitness Tests

These tests are tests which are completed for specific aspects of fitness. They have set protocol to ensure that they are carried out in exactly the same way every time they are completed. These tests are not specific to a sport and can often be carried out by individuals out with the sporting environment. Normative data exists for most standardised tests and this allows individuals to compare their fitness to other individuals all over the world. You can find numerous standardised tests by searching online. It is important to have normative data information on any test you find as this allows you to compare yourself with others. One good website is: www.brianmac.co.uk although there will be many others.

Examples of Standardised Tests for physical fitness:

1. **CRE**
 - 12 minute Cooper run
 - Multi Stage Fitness Test
2. **Muscular Endurance** - 60 Second Press Up Test
3. **Speed** – 35 metre sprint test
4. **Flexibility** – Sit and reach test
5. **Strength** – 1 Rep Max (1RM) test
6. **Power** – Standing broad jump and vertical jump test

Examples of skill related fitness tests

1. **Coordination** – Alternate hand wall toss
2. **Agility** – Illinois Agility Test, T-Test
3. **Reaction Time** - Ruler drop test
4. **Balance** – Stork balance test

Match Analysis Schedules

Match analysis schedules are a means of assessing performance within a game situation and then making judgements based on the results. Statistical analysis is used more and more within competitive sport to analyse performance and identify strengths and weaknesses. See two examples below:



MATCH STATISTICS	
Portugal	Netherlands
2	1
42	58
22	13
8	5
14	6
0	0
2	1
7	5
4	1
1	2
0	0
17	12
11	17

Schedules can also be used to assess fitness and two examples can be seen over the next 2 pages. The first schedule analyses skill level over the course of a game and allows you to determine whether there is a deterioration with skill as the game progresses. If there is a deterioration this could indicate low levels of cardio-respiratory endurance or could also indicate issues with 'Mental Factors' e.g. concentration. When using this schedule, every time a player performs a particular skill the observer must determine whether it was effective or ineffective and put a tick in the appropriate box for the appropriate time.

The second schedule analyses speed of movement over time. If there is a decrease in fast paced movement as the game progresses and an increase

in slow paced movement then this again could indicate an issue with cardio-respiratory endurance.

Skills – Methods of Gathering Information

Once you have identified the skill demands of a specific activity it is then important to gather information on your level of skill in order to identify strengths and development needs. Within 'Skills' there are 3 methods that can be used to gather information:

1. **Consideration of quality** – This analyses overall performance within an activity with particular focus on the technical qualities, special qualities and quality of performance. This schedule DOES NOT focus on one particular skill.
2. **Movement analysis** – This analyses the preparation, action and recovery of a skill. This method can be used to focus on specific strengths and weaknesses within the skill.
3. **Video Analysis** – This can be used to record performers in a game situation. The information can then be looked back at and compared.
4. **Knowledge of results** – This analyses the outcome of a skill. It can also be used to analyse placement of a shot (e.g. Badminton).

Goal Setting

Once you have gathered information on your strengths/weaknesses it is vital to identify key developmental needs which you feel will have the biggest impact on improving your overall performance within your chosen activity. When striving to improve your level of performance it is important to set yourself goals. Goal setting is a mental training technique that can be used to increase an individual's commitment towards achieving a personal goal. Having a short or long term goal can encourage an individual to work harder, to be more focused on the task and to overcome setbacks more easily. Goals can be long term (e.g. over a period of 1 year), or they can be short term (e.g. over a period of 6 weeks). Setting short term-goals will assist you to reach long-term goals. When goals are achieved it gives you confidence to continue improving. These goals can be specific to fitness test results or to actual performance within the activity.

When setting goals it is vital that these goals are SMART goals. This means:

- S – Specific
- M – Measurable
- A – Achievable
- R – Realistic
- T – Time Bound

By setting SMART short term goals, this should assist you to reach your long term goals.

Goal setting links to MENTAL FACTORS and will be discussed more in the Mental Factors Booklet.



Periodisation of Training

It is vital that games players maintain a high level of fitness throughout their season. However, at certain times of the season e.g. league deciders or cup finals, players will want to be at the peak of their fitness. Training needs to be structured to ensure that this happens and this is known as periodisation. Periodisation is the long-term planning that coaches put in place to ensure players reach peak performance when it matters. In some sports it can cover a number of years i.e. in preparation for an Olympic Games but generally in hockey or football it will cover one year. A periodised training year can be broken down into 3 main phases of training:

- 1. Preparation Phase**
- 2. Competition Phase**
- 3. Transition Phase**

1. Preparation Phase

This is when footballers or hockey players undertake pre-season training and will progress into the start of the season. It generally runs from June until August. It involves a general conditioning programme to improve the main aspect of the game, cardio-respiratory endurance. Fitness work at this stage will be specific to your role in the game (midfielder). Skill related fitness is also involved here such as practicing skills or playing conditioned games.

2. Competitive Phase

During the competition period you maintain your physical and skill related fitness. Your aim is to ensure that you can benefit from your pre-season training during full performance. Within the competitive period there may be particular competitions of special importance to you for example Scottish Cup Final. You will want to peak for these competitions. In peaking for a special performance you fine-tune your preparation with a special event or competition in mind. Part of your preparation will involve 'tapering down' your training prior to competition in order to avoid any training fatigue. Following your special event or competition you will need a brief recovery time before continuing with your training.

3. Transition Phase

Following the competitive season you need a period of 'active rest'. This period marks the divide between the end of one season and the start of a new preparation period for a new season. During this period it is important there is a definite break from the competitive activity, however, it is important to retain a level of general fitness during this time.

Within each of the 3 phases, training is sub divided into the following:

1. **Micro cycle:** This is an individual training session or 1 week of training.
2. **Meso cycle:** This is a training programme carried out over a number of weeks (4 – 8 weeks).
3. **Macro cycle:** This is a long-term training programme, which would run over the course of one year.

Principles of Effective Practice

Setting Clear Objectives

It is essential that clear objectives are set so that it is known what is to be achieved by the training programme. These objectives must be specific to the activity and the individual while also being realistic and achievable in the time scale involved. Finally they must be measurable so that it is clear whether the training has been successful or not. We can apply the SMART principles to goal setting for skill development too.

Consideration of Strengths and Weaknesses

When creating a training programme the performer's strengths and weaknesses must be considered so that maximum improvement can be made. Weaknesses should form the major area to be concentrated on while at the same time not allowing areas of strength to regress.

Achievable Progressive Stages

By having achievable progressive stages it gives the performer both short term and long term goals to be accomplished. The performer can experience success at each stage and this will help motivate them to continue improving. If there are no progressive stages the task may be overwhelming for the performer and so there is a greater chance of them giving up.

Effect of Boredom and Fatigue

When learning skills, and developing techniques, it is important to vary your practice so that the performer does not suffer from boredom or fatigue. Ensure that your practices are meaningful to your current performance level and progress when you are ready to do more demanding practices. This will ensure that your performance does not suffer from the adverse effects of boredom and fatigue.

Intensity of Practice

Make sure you are working at a suitably demanding level at all times. Apply the principle of progression to all your practices. High quality practice is for a short time is better than repetitive, low quality practice over a long time.

Work/Rest Ratio

In all forms of training you need to calculate the ratio of work relative to rest. Working out this ratio is one of the key issues in making skill training specific to your needs. The ratio varies according to:

- Your previous experience in the activity
- Your level of practical ability
- The complexity of the skill involved
- The physical demands involved in the practice

Always consider the training intervals of work/rest when planning your practices.

Principles of Training

The following factors or principles of training must be considered when designing a sports specific training programme:

Principle of Training	Definition
Specificity	Firstly it is vital that the method of training relates to the aspect of fitness you are trying to improve. Secondly the method of training must be activity specific. You must tailor the training to match the actions used within the game. Football involves a lot of running therefore this must be included in your training. Going swimming or cycling may have an effect on general cardio-respiratory endurance but research has shown that there is very little transfer of improvement to the specific cardio-respiratory endurance required in football. Thirdly as mentioned above training must be specific to individual needs and capabilities.
Progressive Overload	In order to improve your level of performance over time training must become progressively more difficult. You can make it more difficult by overloading on any of three variables: Frequency, Intensity or Duration. Overload is not applied to every training session but is applied after a period of time once adaptation has occurred i.e. once your level of performance has improved to meet the demands of training.
Frequency	This is how often you train e.g. 3 times a week.
Intensity	This is how hard you train e.g. the speed you are running at or the training zone you are working in. It can also relate to the work: rest ratio.
Duration	This is how long you train for per session e.g. 30 minutes.
Reversibility	If a performer stops training then their fitness levels will begin to drop, possibly to a lower level than the level they started with. It is vital then that training is an on-going process in order to maintain if not improve fitness levels.

Physical - Methods of Training

Once you have identified your goals you must then create a plan of action to develop and improve performance. This will normally involve creating a programme of work to improve a specific aspect of physical or skill related fitness over time. It is then vital to select the appropriate approach to performance development by ensuring that the method of training selected is the correct method to develop and improve a specific fitness element. A variety of methods of training are highlighted below. Again, you can do your own research using the library or the internet to identify other appropriate and engaging methods of training.

Physical Fitness

1. CRE – Fartlek training, continuous training, interval training

Continuous Training

This form of training is very straightforward. It involves running continuously at a set pace for a set time. This can be done inside or outside on any chosen terrain. In order to improve levels of cardio respiratory endurance a player must ensure that they are working within their training zone for 20 to 30 minutes three to four times a week. Training zone is related to heart rate. Working within the zone of 70 – 85% of your maximum heart rate for 20 to 30 minutes improves your cardio respiratory endurance.

In order to accurately calculate maximum heart rate a fitness test should be carried out which pushes you to your maximum effort (for example the 20 metre shuttle run). For simplicity, however, the following calculation is often used:

$$220 - \text{Age} = \text{Maximum Heart Rate}$$

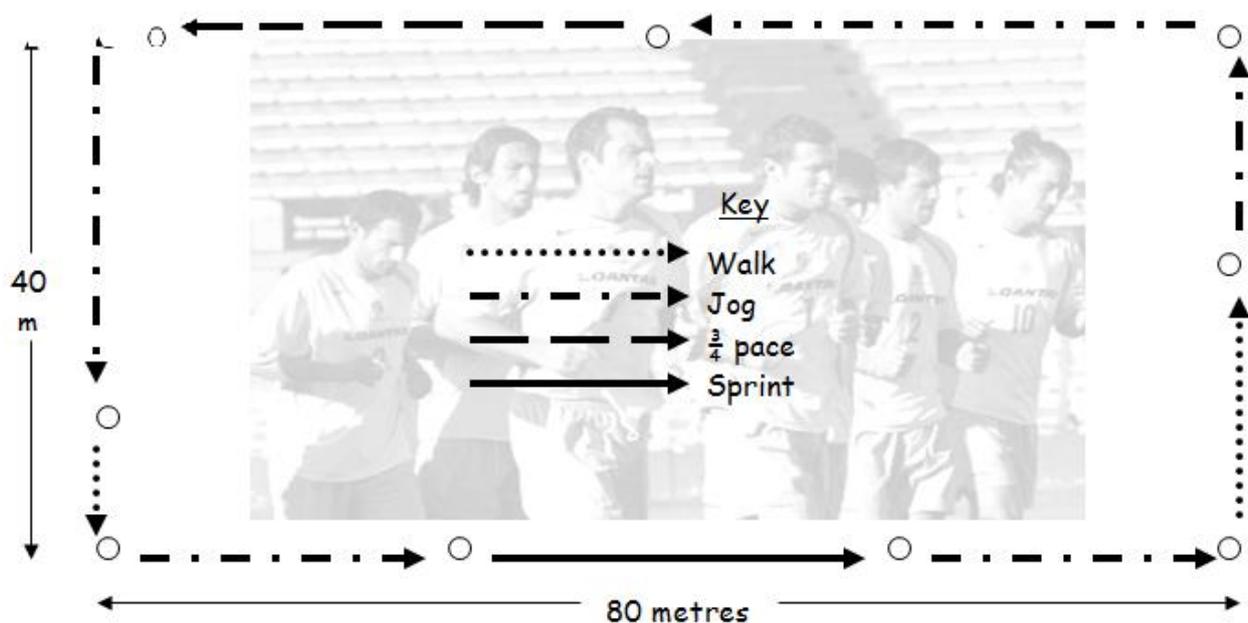
So for a 16 year old, the correct training zone to improve cardio respiratory endurance is:

$$\begin{aligned} 220 - 16 &= 204 \text{ beats per minute (bpm)} \\ 70\% \text{ of } 204 &= 142.8 \text{ bpm} & 85\% \text{ of } 184 &= \\ & & & 173.4\text{bpm} \end{aligned}$$

Heart rate can then be monitored using a Polar Heart Rate Monitor. If during training, heart rate is lower than 142.8bpm then the player must increase the intensity of the run by speeding up. If heart rate is higher than 173.4bpm, then the player must lower the intensity of the run by slowing down.

Fartlek Training

Fartlek is Swedish for 'speed play'. It involves training at a variety of paces or over varied terrain and can take a variety of different forms. Fartlek allows the player to run whatever distance and speed they wish, varying the intensity, and occasionally running at high intensity levels. This type of training stresses both the aerobic and anaerobic energy pathways. For games players, sessions should not just use running, but also jogging and walking to fit in with the demands of the sport. After all, no football or hockey player actually runs for the whole duration of a game, the pace is varied. A typical fartlek session is shown below:



Fartlek training works both the aerobic and the anaerobic system. During the high intensity efforts the anaerobic system uses the energy stored in the muscles (glycogen) for short bursts of activity. Anaerobic metabolism works without oxygen, the by-product is lactic acid, which is responsible for the burning sensation that we feel in the muscles. During high intensity periods, lactic acid builds and the player enters oxygen debt. During the recovery phases the heart and lungs work together to 'pay back' this oxygen debt and break down the lactic acid. It is in this phase that the aerobic system is in control, using oxygen to convert stored carbohydrates into energy.

2. Muscular Endurance

Circuit Training

Circuits involves doing a variety of specific and related exercises such as press ups, tricep dips, squats, step ups, skipping, crunches and sit ups. Each of these exercises work different muscle groups and should be repeated for a minimum of 20-30 repetitions or for a period of 45-60 seconds. A structure for circuits could be to select 8 exercises and repeat each exercise twice for 45 seconds each with a 30 second period of recovery between each work period.

3. Speed – Sprints, interval training

Interval Training

Interval training involves periods of high intensity sprinting interspersed with periods of complete rest or active recovery (slow jog). It can be used to develop speed, speed endurance or cardio-respiratory endurance depending on how it is designed and the format it may take. For the purposes of this course interval training used to improve speed and speed endurance will be described. For this reason the rest periods will not include active recovery.

Interval Training is based on work:rest ratios. To improve speed it is vital that short, but highly intense, work periods are interspersed with longer rest periods. A 1:4 ratio is normally advised for improving speed. This form of training relies mainly on anaerobic pathways for energy provision. An example of an interval training session is shown in the table below:

REPETITION S	DISTANCE	TIME	RECOVERY
4	40m	8 secs	32 secs
5	30m	6 secs	24 secs
6	20m	4 secs	16 secs

4. Strength – Resistance training, free weights, kettle bells

Resistance Training

Resistance training involves selecting a variety of specific and related resistance exercises e.g. lat pull down, chest press, bicep curl, tricep extension, leg extension, leg curl and leg press. When working to improve strength you should be completing 2-4 sets of 8-12 reps on each. In terms of weight used, the last 2-3 reps should be quite difficult.

6. Power

Plyometric training

Plyometric training is a training approach designed to increase muscular power and explosiveness. It is based around having muscles exert maximum force in as short a time as possible, with the goal of increasing both speed and power. Examples of plyometric exercises are box jumps, plyo lunges and hurdle bounds. These can be made more difficult by increasing height/speed.

Skill Related Fitness

There are overlaps with skill related aspects of fitness and various methods of training which may assist to improve more than one aspect. It is important to consider the design of each method to ensure a focus on the aspect of skill related fitness you want to develop. Some examples of methods of training are: Speed, Agility and Quickness training (SAQ), core stability training and reaction speed drills.

Speed, Agility and Quickness (SAQ) Training

This method of training can be set up in various ways and involves making use of cones, ladders, hurdles etc to engage an athlete in varied movements which may be used within the activity. Here is an example of a circuit designed for football training. Intensity of effort should be as close to 100% as possible. Longer rests between circuits or stations should be considered to ensure this. Actual work periods should be no longer than 2-3 minutes.

Core Stability Training

This is a method of training which strengthens core muscles. This can lead to an improvement in balance along with a number of other physiological benefits. The diagrams below show some different core stability exercises. There are many more available on the internet. Again it is important that the methods selected are specific for the activity in which you are trying to improve.

Reaction speed drills

This method of training involves training reaction time in a variety of different situations. This is so that an individual works on reaction times in contexts appropriate to their chosen activity. See below for some examples:

Skills - Methods of Practice

Once you have identified your skill goals you must then create a plan of action to develop and improve performance. This will normally involve creating a programme of work to improve a specific skill over time. It is then vital to select the appropriate approach to performance development by ensuring that the method of training selected is the correct method to develop and improve a specific skill for a person with your level of ability. A variety of methods of training are highlighted below. Some common methods of practice are:

- Shadow drills
- Repetition practices (feeder drills)
- Whole part whole
- Gradual build up
- Conditioned games

Shadow Practice

Shadow practice for overhead clear in badminton

This method of practice can be used when initially learning a skill or technique.

- I started from central base and practiced moving from central base to the rear court.
- I performed all of the subroutines of the overhead clear by turning my body and preparing to play an overhead clear until each aspect of the technique involved in the preparation, action and recovery phases was being performed accurately.
- My partner watched and helped me try to match the criteria of good technique.
- I did this for 3 sets of 20 repetitions
- The environment was closed and self-paced
- As there was no shuttle I could concentrate totally on my body movements and racquet action. This allowed me to focus fully on the movement pattern of the skill and begin to understand how the technique feels.

Repetition Practice

This method of practice can be used when initially learning a skill but can also be used by more experienced performers

Simple example: short passing in football

- I worked with a partner passing the football backwards and forwards over a set area. I ensured that my preparation action and recovery were correct each time.
- I did this for 3 sets of 20 passes on my left foot and 3 sets of 20 passes on my right foot.
- The environment was fairly closed in that the target remained stationary and the practice was self-paced.
- This enabled me to focus solely on my technique.
- As my technique improved I could start increasing the distance and also introducing passing on the move and passing to a moving partner.

More challenging example: combination rally in badminton

- I worked with a partner hitting the shuttle backwards and forwards using the following shot combination: high serve then overhead clear, drop shot, underarm clear, overhead clear, drop shot, underarm clear....continued.
- It was important to return to base position after each shot.
- We did this for 3 sets of 2 minutes work.
- This practice was more open in nature and paced by the pace of the rally.

Gradual Build Up

Lay up in basketball

This method of practice is a good way of learning and developing a more complex skill. It involves breaking the skill down and building it up gradually.

In basketball when learning the lay-up it could involve doing the following practices. Each would be repeated until they could be done correctly before moving on to the next practice

1. Stand under the basket slightly to the right or left and practice the release of the ball. From the right this would involve a left footed hop up with a high

right knee as you release the ball towards the basket aiming for the top right corner of the small back box (vice versa from left hand side). Repeat.

2. Take one big step away from the basket and then practice taking a 1 step approach (left step, hop on left foot). Release the ball as in practice 1.

3. Take two big steps away from the basket and then practice taking a 2 step approach (right step, left step, hop on left foot). Release the ball as in practice 1.

4. Take a dribbling approach before gathering and taking a 2 step approach to the basket for a lay-up.

Conditioned Games

This method of practice involves modifying an aspect of a game to focus on a skill. It can involve modifying player numbers, area, rules etc.

Example 1: If focusing on improving passing in football you can add a condition where there must be 5 passes before you can take a shot.

Example 2: If focusing on lay ups in basketball there could be a condition where you can only shoot using lay ups or a condition that gives you double points when scoring from a lay-up.

Example 3: If focusing on the overhead clear in badminton there could be a condition that means the game must begin with a high serve then an overhead clear or you could be awarded double points for winning a rally with an overhead clear.

Physical Factor – Monitoring/Recording Progress and Evaluating Success

Any approach to developing performance takes time to have a positive effect. It is important to monitor and record progress as time progresses for a variety of reasons:

- It enables teams/individuals to identify which areas of performance need most attention.
- It enables teams/individuals to identify if the approaches are effective and improvements are being made.
- It provides evidence to inform decisions about adapting/modifying or changing a performance development plan.
- It provides motivation to continue to adhere to the approaches and to continuing giving 100%.
- It provides a permanent record of progress which can be referred back to at any time in the future.
- It allows you to identify when performance goals have been reached.

Monitoring

The monitoring process is about using appropriate methods to compare data with initial benchmarks showing any improvements that have been achieved. This will be completed periodically in line with targets

Recording

The recording process is about using appropriate methods to keep track of improvements and make adjustments immediately

A variety of methods can be used to monitor and record. For example:

- Diary
- Coach feedback
- Questionnaire
- Self-evaluation
- Audience reaction
- Team feedback

Recording Performance Development

Recording Performance	Process	Reasons/ Justifications
Team/Individual Video diary	<p>Follows set questions that can be written out on the board or given prior to discussion</p> <p>These help to structure the diary feedback</p> <p>Timings can vary but generally will last a few mins</p> <p>Important to provide an environment where they feel they can talk freely</p>	<p>Easy and quick to administer</p> <p>The use of video allows accuracy during transcription</p> <p>Method is designed for investigating the factor</p> <p>Immediate</p> <p>Permanent record used to compare and monitor development</p> <p>Set questions used each time allow for easy comparison</p>
Written training Diary	<p>Any internal feedback provided – feeling tired, ill etc</p> <p>Any external feedback given – test scores, verbal comments from partner coach etc</p> <p>Achievement of target goals</p> <p>Session by session account showing how you are progressing</p>	<p>Easy and quick to administer</p> <p>Immediate</p> <p>Permanent record used to compare and monitor development</p> <p>Allows you to adapt/change training based on how you are progressing</p>

Monitoring Performance Development

What monitoring methods could we use? – Pre/Post results from data collection

1. Retest - Team Sport Questionnaire

- Easy to compare results and identify improvements
- More reliable and valid by using the same test protocol to make direct comparisons
- Simple to administer
- Methods specific to factor
- Protocol provides accurate and valid data

Evaluating the Performance Development Plan

Evaluation takes place after the development plan has been completed and is a comparison between your performance before the plan and after the training is completed.



Evaluating	Steps to Evaluating	Purpose of Evaluating
	<p>Identify the level of performance prior to the start of the development plan.</p> <p>Re-test using the same initial data collection methods.</p> <p>Make a comparison between the levels of performance.</p> <ul style="list-style-type: none"> • Are improvements evident? • If so, what effect have these improvements had on overall performance? • Where do the future development needs now lie? 	<p>In order to continue to develop performance we must understand how much improvement we have made.</p> <p>Evaluating our development plan allows us to see specifically where progress was made or halted.</p> <p>By successfully monitoring our development plan we are able to adapt our future plan to include only the most effective training approaches</p>

Evaluating our Monitoring Methods

It is also important to evaluate the methods we used to monitor performance development. In order to evaluate monitoring methods we must look at the advantages and disadvantages of our chosen methods:

- Does the monitoring tool record what you want it to?
- Is it easy/difficult to use?
- How much information are you getting from the method?
- Can the test conditions be kept the same each time monitoring takes place?
- Can the data be interpreted easily?