IDENTIFY AND JUSTIFY THE KEY COMPONENTS OF FITNESS

Fitness is the ability to cope effectively with the stresses of everyday life; it helps contribute to an overall healthy lifestyle. Fitness is made up of components, which can be divided into health related components, and skill related components. Health related fitness could benefit everyone to a certain degree as each component is contributing towards a healthier body. The components which help to do this are; aerobic capacity, flexibility, strength and body composition. Skill related components are more dedicated to sport performers who try to develop these skills through training. Skill related components include power, speed, reaction time, balance, agility and coordination.

Health related components

Aerobic capacity – This is the maximum amount of oxygen that can be taken in and used by the body during prolonged periods of participation in that activity. In football this is used through out the game as the body is usually always on the move, and so the cardiac and vascular system must be fit enough to cope with the gaseous exchange.

Flexibility – This is the range of movement around a joint and depends on the stretch allowed by the ligaments and tendons surrounding the joint. Being flexible helps increase your performance and limits injury risk as stiffness is decreased around the joint area. In football keepers need to be very flexible in being able to get down low shots and when stretching themselves to make a diving save. Being flexible helps increase speed and so more flexible players generally have the pace to get to a ball in space as there joints allow more movement to extend.

Strength – This is generally a force against a resistance. There are three main types of strength, maximum strength, which is maximum strength your body can exert in a single contraction. Elastic strength is an explosive action like sprinting which a high level of fast twitch fibres are needed as they contract faster than slow oxidative fibres, and finally strength endurance the ability for muscles to keep contracting without getting fatigued. Strength endurance is most used in football; this is the ability of footballers being able to carry on running through out the match without the muscles in the legs becoming tired. Elastic strength is needed in football as well for being able to sprint when needed to in the game, and so having a good production of fast glycolytic fibres will help to do this. Maximum strength is occasionally used in football for when the keeper kicks the ball as hard as he can to get the ball up field.

Body composition – This is the body mass of your body plus fat. Generally the more fit you are the better your body is at losing fat that is not needed, keeping your body composition at what is needed in your sport to help improve performance.

Skill related components

Power – This is the force applied to an object and how much time it took to reach the distance achieved. In football power is used when striking the ball. Power is used a lot in football but in different measures, the word power should not be confused with maximum force.

Speed – This is basically how long it takes you to move part of your body or the whole body over a distance achieved. In football speed is crucial when trying to find space, or get to the ball first.

Reaction time – This is the time taken to react to a stimulus once detected with the first movement made in response to that stimulus. Reaction time is affected by nerve impulses and the speed of muscle contraction. The reaction time depends also on how long it takes to process the information being received. Reaction time is used in football with new stimuli being created suddenly in certain situations.

Balance – This is being able to maintain a steady position or retain balance while in motion (to keep from falling). In Football balance is used when dribbling the ball, as when you are moving at speed and leaning one way or the other your body corrects your balance to your movement created.

Agility – This is the combination of both coordination and speed that helps to change body position at speed. Players running with the ball need to be able to chance direction suddenly while having coordination to do so successfully while at speed so it is used a lot of the time in football.

Coordination – This involves putting the correct motor programmes in the right order so you can effectively produce efficient movement intended. In football this is being able to take the ball and run with it while at speed and timing tackles so coordination is used a lot in interpreting correct movement.

The key components required for football and in my position which is upfront are:

- Speed
- Reaction time
- Coordination
- Power
- Agility
- Aerobic capacity

Speed is a very important part of the game to me and in football in general. This is used widely in the game when taking on players with the ball or when trying to run onto a through ball. An example is when I ball is played over the top my reaction to the ball over the top (interpreting stimulus) triggers my fast glycolytic fibres to release energy to my working muscles for my to change speed suddenly to catch up with the ball before the defenders does.
Reaction time is again very important for my game because as a striker I want to be the first to react in the box when a cross comes in or to pick up a rebound. When a keeper has to react to a shot and get down to make a save, and if a shot is saved or comes back out in open play defenders and attacking players must react to the second stimulus created. As soon as I see the ball has come back out I react to this and start to move to the ball this is called the reaction time. This happens because nerve pulses are sent around the body to make me react to the situation and the speed of muscles

contracting; to help me get there fast before the defender does to score from the follow up.
Coordination is effectively using the neuromuscular system, which is the electrical stimulus from the brain to the muscles via nerves. This helps the body effectively move correctly to the situation it is faced with. An example is when a ball is coming towards you at speed you interpret the information as the ball is coming towards you to coordinate your body to stop the ball and then pass.
Power is used all the time in football but off different forces. Depending on where you want the ball to go will determine how much power you will need to generate to the ball. An example is if you are in your own half and want to pass a 50-yard ball up field to your team mate, you will follow through the ball hard to generate more power for the ball to get 50 yards. If you are looking to pass the ball 10 yards you will not be looking to follow through the ball hard, but instead be giving the ball a gentle push so it has less power as it travels along the pitch. Force is created by direction applied to it, the position of the application of the force and by the size of the lever. The lever is the draw back of the leg and then the follow through, the longer the level the greater the change in momentum.
Agility is used in football to twist and turn in sudden directions usually to either beat a player when dribbling or making movement in the box before a cross. Attacking players normally uses it; a defender will not usually try and beat an attacking player when they have the ball in case they get caught out. An example is when you are running down the line and have just one man to beat to get space you will be dropping your shoulder both left and right and could be doing step overs. To do this you must have good coordination as you are looking up as well as doing these skills so your body must be well coordinated while being able to do all this at speed to beat your man.

Aerobic capacity is the maximum amount of oxygen that can be taken in and used by the body during prolonged periods of participation in that activity. In football this is used through out the game as the body is usually always on the move, and so the cardiac and vascular system must be fit enough to cope with the gaseous exchange of oxygen to the muscles being used in the body. If there is a decrease in supply of oxygen to muscles, fatigue will set in and the player will not be effective as the games Progresses.

PERSONAL WARM UP

A correct and thorough warm up is needed for football to prepare the body both physically and mentally for the exertion to come. Warm up helps the body in a some of the ways it helps are as follows: by raising the pulse it helps to increase cardiac output and rate of ventilation to get blood being pushed around the body at a larger and faster rate to get oxygen to the muscles more, for them to function properly. It helps increase cellular respiration that increases the availability of energy to be used. The nerve pulses send more signals to help improve contraction speed of muscles which help increase reaction time as talked about earlier. Warm up increases muscle temperature as well which helps allow greater stretch in muscles to increase flexibility, reducing the risk of injury.

The warm up contains 3 phases. Phase one involves a whole body activity such as a gently jog to raise the pulse. Phase 2 is following this activity with a stretch session that is to concentrate on the joints and muscles that will be most active during the game. And the final phase is performing skill practices to rehearse movement patterns that transfer to the game.
The warm up should be done to get your heart working at training rate 75%, this is worked out by maximum heart rate – heart rate of age – resting heart rate.
Maximum heart rate 220 – age (17) – resting heart rate (70) = 133 beats per minute.
This is so the warm up is at an intensity that gets the body muscles and organs ready for the match.

WARM UP

The first thing that will help to do this is for a steady/gentle jog around the football pitch. At the end of one lap it ids time to do the first set of stretches. At this stage you will be stretching the calf muscles, quadriceps, groin, lower back, and triceps. Then you will rotate ankles doing circle shapes with your hips finishing with your neck, to increase movement at joints. After that is done jog across the pitch lifting the knees up, and kicking your bum can be used to get muscles working in the legs and jumping side-to-side to make sure flexibility at the joints is increased. Once jogged across the pitch there and back, then stretch the muscles a second time. Work from the neck down, firstly rolling the neck, then moving onto arms then back, to leg muscles which are the most important for football, unless you are the keeper with arm muscles having to be concentrated on as much as the legs. The calf muscle, quads, hamstring and groin are all very important to be stretched off in the second set of stretches.

- **Calf muscles helps generate shooting power**
- **Quad muscles add extra running and shooting power**
- **Hamstrings give you speed of the mark**
- **Groin must be strong for twisting and turning**

So this in mind it is very important to make sure the muscles are stretched and are warmed up properly. Stretches should last for at least 8 seconds and for best effect the stretches should be repeated more than once. The final part of the warm up is to get up to more match pace by sprinting. This is done by all the players getting on a line then being told to jog and when they get half way across the pitch to sprint to end. Remember not to pull up straight away though as even with muscles stretched there is still a possibility of muscles being pulled so rather than risk an injury before the match ease down. This should be done 4 or 5 times to get everyone ready for kick off.

The warm up increases the elasticity of the arterial walls; this helps the arteries to withstand greater fluctuations in blood pressure. The number of capillaries at the lungs and skeletal muscle increases, helping to improve the rate of gaseous exchange.

The warm up increases the number of electrical impulses emitted from the central nervous system. These electrical impulses begins at the brain and is transmitted to the muscles contracting via the spinal cord and by nerve cells call motor neurones. So the more electrical impulses sent out the faster the muscle will contract.

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For any sports performer a good vascual system is crucial if the performer is to perform to their best of their abilities. The vascual system delivers oxygen and food supplies to the working muscles and to remove waste products such as carbon dioxide. The blood carries vital ingredients needed for the muscles to work and the blood vessels form a closed circulatory network, allowing distribution of blood to all cells. Join a warm up or during exercise the distribution of blood around the body changes and up to 85 percent of total cardiac out put goes to the working muscles.

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The warm up increases the elasticity of the arterial walls therefore helping the arteries to withstand greater fluctuations in blood pressure. The number of capillaries at the lungs and skeletal muscle increases, helping to improve the rate of gaseous exchange. After the blood goes out of the capillaries it moves in to the venules. The venules them decease in number and turn in to veins meaning that more blood can be carried back to the heart ready for more blood to bepumped back to working muscles again.