Comparing to an Elite Performer

**The positions on court:**

**5.**

**4.**

**6.**

**3.**

**2.**

**1.**

**Attacking Skills- Skill 1 Spiking**

I believe that Lynne Beattie is one of the best outside hitters who plays for the women’s GB team. One of her great strengths is helping her team gain an advantage, by an attacking hit.

*Preparation phase*

**B2**

The spike is an attacking skill, so is primarily used to win points. When the ball is played from position two (the setter) to position four, Lynne takes great care in her preparation. When the ball is being played over from position two, the first part of her preparation is her positioning on court, she quickly moves to the attack line so she has enough room to get a decent run up to add more height to her jump. When Lynne stands at the attack line she is not just facing the net straight but she has angled her body to be facing the net and the setter. This helps her to have a better understanding of where the ball is going to be played, so she gives herself a better opportunity to achieve a successful spike. When Lynne is waiting at the attack line she will be in the ready position as the ball will not always be played to her, this shows she is weary of any decision the setter could make. It could be played to position three instead and therefore Lynne would have to cover the spike in case of it being blocked straight back over. However, when Lynne sees the ball leaving the setter’s hands and has made the judgement it is being played to her, she will make sure she is ready to play a spike. She will hold her run up until the ball peaks. The reason she holds her run up is to assist the timing when making contact with the ball, the cleaner the contact the stronger the hit. She then carries out the footwork: left, right, left, together. On the second foot she brings her arms back and on the third step when she brings her feet together she bends her knees. This enables her to gain power through her legs along with swinging her arms. This power helps generate more height on her jump. Just before she jumps she shifts her weight from heel to toe and swings her arms forward. This helps her to jump up high into the air. The reason she needs a lot of height on her jump is to allow her to hit the ball at a steep angle making it harder for the opposition to defend. When in the air she brings her elbow up and back and opens up the angle of her shoulders, she also spreads her hand out to create a large surface area. This aids her to generate more power in which she can use to hit the ball.

**B1**

I carry out the same procedure as Lynne in the preparation phase; however I am not at the same level as her. In my preparation phase my footwork and run up is the same as hers, as this is the standard footwork that you are taught when learning this skill. However, where I differ to the elite performer on the footwork is the amount of power and strength in my leg muscles. Lynne has much stronger leg muscles due to the amount of training she does per week, the intensity of the sessions and the different facilities she has access to. This allows her to have much more height on the jump compared to mine, helping her generate more power. Also the amount I bend my knees on the third step and swing my arms back has a major impact on my spike. This prevents me from gaining extra height on my jump, which therefore decreases the angle of my spike causing the opposition to have an easier chance at defending the ball. Another issue dependant on the height of the jump and whether or not my arms are back is the power of the ball when hit. The higher the jump the easier it is to get over the ball. This enables the performer to have a stronger hit; therefore because Lynne has a lot more height on her jump the power in which she hits the ball is much greater. Also her timing of movements, coordination of footwork and contact of the ball is more consistent than mine this makes her a stronger performer as she is more reliable. She also has a greater awareness of knowing when to start her run up. Due to greater experience obtained through regular games with her teammate’s means her movements are never rushed and uncontrolled.

*Execution phase*

**B2**

In the execution phase Lynne Beattie is already up high with her arms back. This shows she is ready to make contact with the ball. Lynne is right handed however she will still have both arms up in the air together. She does this because swinging through with both arms generates more power, creating a stronger hit. The speed in which she swings her arms will determine the power of the ball. Having a decent height on the jump will decrease the angle of the spike making it harder to defend. When making contact with the ball she will quickly whip her shoulder forward. Lynne will also snap her wrist as she makes contact with the top of the ball in the centre which enables her to generate top spin on the ball making it harder for the opposing team to defend. Her body position when making contact with the ball is facing the way she wants the ball to go, so normally she is facing straight on. If her body isn’t square to the ball this makes her job harder in positioning where she wants the ball to go on court. When choosing a position to aim for she has a split second to make a final decision. She will often aim to a space on court in-between the players. There is normally a gap top left of the court, just behind position 1 (this shot is known as hitting down the line) so she will often aim there. However, if she has noticed any weaker defenders on the opposing team she will spike the ball to them as this puts pressure on them often causing them to make mistakes and giving Lynne’s team an advantage.

**B1**

In the execution phase the power in which I make contact with the ball is a lot weaker than Lynne’s. Already I have set myself at a disadvantage in gaining power on the ball as I have a smaller jump, but in this phase another factor which will influence the speed and power of the ball is how quickly I swing my arms through. Lynne swings her arms through much quicker than me and has much more strength through her muscles in her upper body; therefore her hit is much harder and more difficult to defend. She also snaps her wrist enabling topspin on the ball whereas I don’t which reduces the power I can generate. Lynne is much taller than me giving her a height advantage which helps her get over the ball more forcing the ball down and making it harder to defend. When I make a decision on where to place the ball on court I am much slower than Lynne, this often results in a rushed performance of the shot therefore having a weaker hit. I normally try and aim straight through position 4 or across court; however I am not as consistent as Lynne making my performance at a weaker level. The reason I am less consistent is because when I spike the ball I concentrate on getting power in the hit whereas for Lynne that is now automatic and therefore she concentrates on her target, making her spike more reliable and consistent than mine. However, my main weakness in the game is the onset of fatigue in my performance. It becomes much more apparent than it does in hers as she will have undergone much more training at a higher level than me and as a result can prolong fatigue. The reason I become fatigue is due to a weaker anaerobic system than hers. My anaerobic system involves all of my short explosive actions such as the spike, so as this begins to run out the onset of fatigue becomes apparent. Due to fatigue my performance standard quickly drops. This will reduce the height of my jump, reduce the power in my arms and slow down my preparation of the skill making me unreliable and less consistent. Also Lynne can handle the pressure of the opposition more than me because in her training she will have undergone many more situations forcing pressure and will have participated in many more matches than me so therefore the situations I may find myself under pressure in Lynne doesn’t. When the pressure gets to me, my performance can dramatically decrease making me an unreliable team player and sometimes forcing me to become subbed off.

*Recovery phase*

**B2**

The recovery phase takes place when Lynne has made contact with the ball and swings her arm past her head and ends by her hips. It also takes place when she lands. When she lands to keep control of her whole body and balance she will often bend her legs, similar to a squatting action. The muscle contractions in the quadriceps will be eccentric. These movements help her to keep control and also make sure she is in the ready position to maybe defend the ball being played straight back over or for her to carry out another spike. When Lynne sees what is happening on the opposing team she will be able to make a clear judgement on what position she will need to get into. If the opposing team are hitting through position two or position three she will need to make sure she is ready for a block. However, if they are hitting through position four she will need to be ready to cover her teammates blocking in case they unsuccessfully block or the opposing team tip the ball. This shows how important it is to successfully recover from her initial spike and quickly get into the ready position as she can’t afford to take her eye of the ball. If she takes her eye of the ball this could then make her reaction slower therefore making her next skill unsuccessful and maybe putting her team at a disadvantage.

**B1**

Compared with Lynne when she makes contact with the ball she will swing her arm right through ending by her hip whereas when I have made contact with the ball I have got into the habit of automatically stopping therefore decreasing the power of my hit. My landing is less controlled when comparing it to Lynne’s as she often bends her legs whereas I don’t. This makes it harder to keep control of my whole body making my next skill harder to move into. Lynne is always ready and on her toes when she has landed from the spike whereas I often lose concentration for a moment causing there to be a space on court because I haven’t drop back to defend the next skill. Therefore, sometimes we can lose the point as it makes my job harder to get to the ball. Another disadvantage of me not recovery quickly from spiking the ball and losing concentration is the speed in which I make the correct judgement on where I need to move on court, if I need to cover a tip or defend a cross court spike.

***C1- Inefficient Energy Systems***

When playing a match the onset of fatigue (slower muscle contractions) starts to occur. The matches can last up to 3 hours depending on the strength of the opposition and the amount of sets the game is played for. When hitting a spike throughout the game the preparation for my run up starts to deteriorate as it becomes slower and weaker. This means that I can’t get into position quickly, I can’t jump as high and therefore I can’t hit the ball powerfully. This is due to my anaerobic systems becoming depleted and the build-up of lactic acid which starts to occur.

The anaerobic energy systems are a vital part of the body’s way of getting energy to resynthesise adenosine triphosphate (ATP). ATP is important for the body as it is the only energy source that cells, including muscle cells, can use. However, we only have limited supplies of ATP within the body and we must therefore constantly resynthesise ATP to ensure that we can carry out the tasks and exercise. The body transfers chemical energy from stored forms of glucose (glycogen) and uses that energy to resynthesise ATP.

Sport performers such as myself are frequently working at much higher levels of intensity and more ATP is being used to provide energy for muscle contraction. Under these conditions, such as the repetitive action of the spike, it becomes impossible for the body to provide the energy required to resynthesise ATP from the aerobic systems because it can’t work fast enough in breaking down glucose, and other energy systems come into play, such as the anaerobic systems. The more intense the exercise, the more ATP is used to provide energy for muscle fibre contraction, and therefore the more ATP we need to resynthesise. Throughout the game being an outside hitter means that I am constantly repeating the same leg movement and effort in the jump. It’s an explosive skill and a quick action, therefore the body becomes unable to provide the oxygen for the complete breakdown of glucose quickly enough at this stage of the set. In sufficient quantities to ensure that enough energy is available for ATP resynthesise. The muscles have sufficient ATP available for very short bursts of high intensity activity (less than two seconds). For anything longer than that, it is necessary to resynthesise the ATP during the activity to ensure that it can be sustained.

There are two anaerobic systems: The phosphocreatine (PC) energy system or ATP-PC system and the lactate anaerobic energy system.

Phosphocreatine is an energy-rich compound that when broken down releases energy to resynthesise ATP. No oxygen is involved so the process is entirely anaerobic. For every one molecule of PC that is broken down, sufficient energy is released to resynthesize one molecule of ATP. The benefit of the PC system is that energy is released rapidly because very few reactions need to occur and it allows for the rapid resynthesis of ATP that is necessary if the body is undertaking short burst of maximal work, for example the explosive jump at the end of my run up to carry out the spike. However, the disadvantage of the PC system is that stores of phosphocreatine are limited, only sufficient for approximately five to eight seconds of high-intensity or maximal flat- out work. The PC stores are replenished but it can take up to three minutes to fully refuel which isn’t any good when I have to switch from position two (when setter is running through) to position four which is the opposite side of the court and then I have to make sure I am far enough out for my run up to undertake the hit. Therefore, if I want to carry out the explosive jump just after (high-intensity) my body needs to use another anaerobic energy system known as the lactate anaerobic system.

The lactate anaerobic energy system provides energy for ATP resynthesis by partial breaking down glucose without oxygen and producing lactate as a by- product. If the body continues to work hard i.e. the repetition of the spike preparation and the length of the sets, more hydrogen is released as a result of the glycolysis of glucose and the Krebs cycle, enters the electron transport chain (ETC) to be combined with oxygen. At some point (depending on the VO2 max) so much hydrogen enters the ETC that it exceeds the amount of oxygen available. The excess hydrogen ions cannot remain unattached and so combine with the end product of glycolysis, pyruvate to form lactate or lactic acid. The point at which this occurs is known as my lactate threshold. When my body begins to tire and starts to use the anaerobic energy system the drawback with it is the production of lactic acid and its accumulation in the muscle cells and the blood. Conventionally, it is thought that the accumulation of lactic acid affects the muscle contractions and that this is what causes fatigue, which we see in my game as it draws to an end.

Another reason I begin to tire quickly is because of my aerobic system is weaker. If I have a weak aerobic system this leads to a weaker anaerobic system and therefore, because I have a smaller VO2 max O2 is necessary when breaking down lactic acid and restoring PC. The amount of oxygen used by our body is called oxygen consumption. If I had a higher VO2 max I would have more oxygen available and could therefore I will be able to replenish PC stores and help convert lactic acid back into pyruvate. This will help me go on for longer until I reach my lactate threshold and become dependent on anaerobic system. During exercise we need more ATP (energy) so O2 consumption increases until it meets a point of max known as VO2 max. A higher VO2 max means a higher level of aerobic fitness. VO2 max is the body’s ability to get O2 to the lungs, transfer it to the blood, transport it to muscle cells and mitochondria, and use the O2 in energy processes. It is dependent on many factors such as the surface area of alveoli (however this is genetically determined making it impossible to alter), the levels of red blood cell and haemoglobin, the capillary density in the lungs, the efficiency of the heart and circulatory system, the capillary density in muscle cells, the transfer of O2 to mitochondria via myoglobin and the take-up and use of O2 by mitochondria, so improving them will help improve my aerobic system and subsequently my spiking.

***C2- Circuit Training***

The way in which my I am going to improve my anaerobic system along with my lactate threshold is by carrying out a circuit training programme. The reason for using this method of training is because I can focus on specific things which can help benefit my spike. I can work on my upper body and lower body all which involve short sharp exercises to help improve my anaerobic system along with benefiting my strength and power within my spike by making the circuit last a long duration it will also benefit aerobic system.

Improving my aerobic energy system and my lactate threshold will have many effects on my body, such as: cardiac hypertrophy and increased resting stroke volume; a decrease in resting heart rate; an increase in muscle stores of glycogen and triglycerides; an increase in capilliarisation of muscle along with an increased in the number and size of the mitochondria; also a more efficient and effective transport and finally the use of O2 means that fat is used more during exercise and maximal oxygen consumption (V02 max) increases.

If cardiac hypertrophy begins to take place as a result of this training programme, my stroke volume will increase and this will lead to several benefits all linked to this one improvement. Having an increase in stroke volume my body has more oxygen being supplied to the working muscles because each contraction of the heart forces more blood around the body. Therefore, if there is more blood being pumped around, then there is more oxygen being transported. As a result of this effect there will be an increase in my VO2 max. If my VO2 max increase this means I will constantly have more oxygen available to join up with the hydrogen molecules as a by-product of glycolysis and the krebb cycle. If this happens it prevents the pyruvate joining to the hydrogen molecules which would create lactic acid and create muscle soreness.

Lactate threshold training is high intensity endurance performance training. While V02 max may indicate an athlete's genetic potential and natural ability, their lactate threshold can be increased substantially with the right training program. Athletes often use their lactate threshold to determine how to train and what sort of a pace they can maintain during endurance sports. The lactate threshold can be increased greatly with training; such as an interval training programme.

My circuit training regime will consist of me having 5 to 6 stations which last 60 seconds and I will repeat the circuit once or twice a week. After I have carried out a thorough warm-up I would go and begin my circuit. My first station would be press-ups; this will work on my upper body to help improve the power within my spike. However, my main focus would be anaerobic so doing this for 30 seconds will force my anaerobic system to be pushed to its limits. My second station would be sit ups as this will focus on my core muscles but will still influence and aid to an increase in performance of my anaerobic system. My third station would be shuttle runs, improving my overall fitness. My fourth station would be squat jumps, improving my lower body. My fifth station would be burpees and my final station would be step ups. All of the stations will focus on a specific part of my body but carrying them out for 30 seconds each will help improve my anaerobic fitness, because all of these exercises are explosive. Between each station I will give myself a 30 second rest as this will help my body restore my systems before carry out the next station. Within these rest periods of 30 seconds, the activation of the excess post-exercise oxygen consumption (EPOC) will begin. EPOC is the volume of oxygen consumed above resting levels following exercise/during recovery. In this time my energy demand is much lower compared to when I am exercising but my demand for oxygen is still high (oxygen debt). There are two components of EPOC fast alactacid component and slow lactacid component. However, the main one which will have most effect in my 30 seconds of rest will be fast alactacid as this deals with resynthesising my levels of phosphocreatine and the resaturation of myoglobin this will help my body gain more energy to go on and complete further exercises. The slow lactacid component deals with removing latic acid which can help remove the soreness of my muscles and aid me to work harder for longer.

During circuit training, lactic acid is produced and a state of oxygen debt is reached. During the interval (recovery), my heart and lungs are still stimulated as they try to pay back the debt by supplying oxygen to help break down the lactates. The stresses put upon the body cause an adaptation including capillarisation, strengthening of the heart muscles, improved oxygen uptake and improved buffers to lactates. All this leads to improved performance.

Improving my anaerobic energy system will have many positive effects on my spike. I will be able to repeat the explosive action of the spike significantly more without seeing the onset of fatigue occur as quickly as it does now. This will mean that I will be able to get outside quicker ready to carry out the spike and hopefully because I am in the correct position and I can gain an advantage for my team as I would be able to move faster, jump higher and hit the ball harder.

**Skill 2 – Setting to position four for a spike**

I believe that Lucy Wicks is one of the best setters our GB team has ever had. Her technique and accuracy is perfect 99.9% of the time.

*Preparation phase*

**B2**

Lucy Wick has a hard challenge of being the team’s link. The idea of the setter is that the second ball played on her side of the court is always hers no matter where it is, unless she calls for help. She normally would play the ball to position four or position three (outside or middle hitters) so her teammate can spike it, enabling them to have a strong attack. When setting, her physical attributes of speed and strength will help her to quickly move to the ball. This will give her plenty of time to carry out the set enabling the set to be more accurate and reliable. When at the ball she will make sure she has one foot slightly in front of the other and her knees slightly bent. This helps her to have a steady platform with strong balance which she can gain power through her legs from. She will also be facing the way she wants to play the ball. The ball at this stage is coming towards her head and she will receive the ball just in front of her face. She will also raise her hands above her head and create the correct hand position which is second nature to her. She always makes sure that she creates a diamond shape with her thumbs and fingers and spreads her hands and fingers wide ready to receive the ball. The reason for this is because it creates a larger surface area which helps keep control of the ball.

**B1**

My main weakness when comparing myself to Lucy Wick is speed in which I determine where the ball is being played to and where I need to be on court is somewhat slower than hers as I have weaker reactions. This means that I don’t always manage to get my whole body to face the way I want the ball to go, therefore I have to work harder in getting the ball to go in the specific direction I want. Not being able to always get into the correct starting position results in a huge lack of consistency in my performance of the skill compared to Lucy. For Lucy it is almost second nature and I am still learning as this isn’t my strongest skill because I am an outside hitter and setting isn’t one of my priorities. When I have got to the ball I often forget to have one foot in front of the other unlike Lucy making my platform not as strong as hers. This causes me to sometimes lose balance which can affect the accuracy of my set, because if I don’t receive the ball in front of me I would be leaning back and therefore the power would be lost as I would be concentrating on something else. When preparing my arms and hands I get them into position quickly, however sometimes the surface area of my hands isn’t big enough causing the ball to slip down my hands making my set weaker and affecting the direction and dependability of my set. Also when moving across the court Lucy has a lot more speed as she has stronger leg muscles; which helps her have more time when deciding on where to place the ball on the opposing side and getting into the correct balanced position to help her do so.

*Execution phase*

**B2**

In the execution stage of the skill the power comes predominantly from Lucy’s legs. As she receives the ball in her hands she brings the ball into her chest and bends her legs. The power of the ball comes from the extension of the legs. The power is then transferred from the legs to the arms. When returning to standing she pushes her arms up and out and releases the ball, this helps the power to be transferred enabling her to push the ball to the back of the opposing team’s court. This part of the skill is done very quickly; she will never catch the ball and hold it as this would be a foul; giving the opposing team the advantage. As soon as she has the ball she plays it straight on. She has the ball for a maximum of a second. The umpire in a set will be looking to see if it is a clean touch. This means it can’t slip down your hands forcing the ball to become a two touch; the opposing team will be awarded the point straight away. More often than not the set will be played to a teammate either at position three or four or sometimes or a back court hit, compared to her pushing the ball straight to the opposing team. This helps her to set the ball up in an attacking situation. She is much more dependable when playing a shot to a teammate and therefore much more accurate, as she will be facing across court and then can easily pass it to either position three of four. This is a natural reaction unlike passing straight over the net. The only time this shot is often played is when she can see a major gap on the opposing court or a weakness and can nearly be guaranteed the point.

**B1**

When comparing myself to Lucy’s performance I often set with only my arms as I don’t bend my knee’s enough. This creates a large disadvantage to the accuracy and height of my set. The reason why we need plenty of height on the ball in the set is because it helps to slow the pace down for your team. This creates more time, so they have longer to make their final decisions on the positioning of the ball. When passing the ball straight over the set needs to be flat and fast as this will cause confusion to the opposition as normally they will expect the set to be played to one of Lucy’s teammates and if it’s fast and flat this creates less time making it harder for the opposition to react to. Compared to Lucy my sets are often short and loopy making it easier for the opposition to defend, especially if I am playing the ball straight back over. The reason they are shorter is that I have weaker leg muscles and this is where the power predominantly comes from which would normally force the ball higher and further. As I sometimes have problems in the preparatory phase I struggle with the execution phase especially as I am slow at getting to the ball. This can lead to an awkward body position leaving me unbalanced and struggling to gain power. This then leads to an inaccurate set whereas 99.9% of the time Lucy gets to the ball and has a strong preparatory phase causing her sets to be a lot more accurate and consistent when comparing them to mine.

*Recovery phase*

**B2**

In the recovery phase of this movement she will often bring her arms down to shoulders and turn to the net ready for a block. This will assist her if she needs to jump and block. So she will have her feet shoulder width apart and one foot slightly in front of the other enabling her to have a stable base. She will also be on her toes allowing herself to be ready for her next move. In the recovery of a set it is essential that she is now ready to receive any unexpected shots that may be played straight over. Another reason for why Lucy needs to recover quickly is because she needs to make sure she helps her teammates out by shouting hints to what is going to happen next such as ‘tip’, ‘free ball’ or ‘spike’. Lucy will only ever play back court if her teammates are struggling with the 1st pass and are playing a two setter system. If she does not have to play back court she will never be in the first pass, therefore she can’t afford to take her eye of the ball as she is the ‘eyes’ of her team, helping her teammates out and being a valued team member.

**B1**

Lucy’s transition from bringing her arms down to block is much quicker than mine. She instantly brings her arms down and automatically turns to face the net, whereas I bring my arms down and watch the rest of the play of the ball on my court instead of turning to block straight away. This causes my block to be out of time and maybe delayed. Also Lucy always keeps on her toes ready for the next move whereas I often relax onto my feet because I sometimes think that my job is over. This makes my reaction slower, and creates a disadvantage to me in carrying out the next skill. I also don’t very often shout what I think might be happening such as ‘tip’, ‘free ball’ or ‘spike’ as I am scared of being wrong. This puts more pressure on my team as they are trying to make a judgement on what’s happening and get into the correct position.

***C1- Speed when moving to the ball.***

In a game of volleyball we all have specific roles on court, I normally play outside hitter. This means I need to cover position four and five depending whether I am back court or front at the given time. However, sometimes we have to play out of our comfort zone and therefore as a whole my setting is a main weakness in my game. When setting the ball the reason for this is my lack of speed when moving to the ball. As a result of this it leads to poor body position as I have run out of time making my job harder to carry out the spike. I find that I have to reach forward in an awkward body position rather than having a strong and balanced body position under the ball. This puts me at a disadvantage and because of this my set may be off target and not high enough making my team mate (at position four) work harder for the ball as she would have to reach and push it over instead of being able to spike it.

The definition of speed is the ‘ability to move quickly across the ground or move limbs rapidly to grab or throw.’ Speed is not just how fast you can run, but is dependent on your acceleration (how quickly we can accelerate from a stationary position), maximal speed of movement, and also speed maintenance (minimizing deceleration). Movement speed requires good strength and power, but also too much body-weight and air resistance can act to slow us down. In addition to a high proportion of fast twitch muscle fibers, it is vital to have efficient mechanics of movement to optimize the muscle power for the most economical movement technique. Fast-twitch fibres have relatively poor aerobic endurance. They are better suited for anaerobic activity, as they produce ATP primarily from anaerobic energy pathways. Fast- twitch muscle fibres are well adapted to short, intense bursts of effort. They have a larger diameter than slow-twitch fibres because there are more myosin filaments in them. The myosin is thicker than the type found in slow-twitch fibres and therefore the fast-twitch fibres are able to produce more force than slow twitch fibres. This greater speed of contraction in fast-twitch fibres is helped by having a more complex arrangement of sarcoplasmic reticulum which means that calcium ions can be released and returned to storage more quickly than in slow-twitch fibres. Calcium ions are essential as they allow the myosin to bind to the actin filaments. The filaments are made up of the protein actin along with small amounts of troponin (globular protein) and tropomyosin (thread-like protein, which winds around the surface of the actin). Fast-twitch fibres also possess a different type of myosin- ATPase to slow-twitch fibres that releases energy from ATP quicker than the type found in slow-twitch fibres. When it comes to improving my speed I won’t be able to change the percentage of fast twitch fibres but I can try and improve the performance of them with training. Overall this will improve the performance of my setting as I will be able to get to the ball quicker and therefore my body position will be correct. This means that I will be able to carry out a successful set and aid my team to gain an advantage.

***C2- Improving Speed – Intermittent Training***

Even though it has been proven that our fast-twitch fibres are genetically determined and we can’t change the amount we have of them research into it has shown that specific types of characteristic of the fibres can be changed by training. Therefore I believe to help improve my component of fitness: speed, I will need to carry out intermittent training. Intermittent training involves alternating periods of effort and recovery so that the body is exposed to a greater total workload than it could normally manage during a continuous period of training. Interval training is the name given to intermittent training that is characterised by having periods of intense exercise followed by periods with only a low level of energy expenditure (rest). Interval training is predominantly an anaerobic programme. Interval training bases the training on: intensity of exercise, duration of the exercise, length of recovery and number of repetitions of the exercise- recovery interval. A greater number of intense exercises can be achieved by dividing the session up into blocks of work called sets of work and rest, which in turn have longer rest interval between them.

Interval training relates to volleyball as just like interval training, volleyball has periods of intense work followed by rest. The periods of intense work would be sprinting across court so I can receive the second ball to wherever it is being played to, followed by being on my toes and deciding where to set the ball, back court or front court. However, in this case it would be for setting the ball to position four and therefore the speed at which I get to the ball will determine the strength of the set as I will be underneath the ball and ready to deliver an outside loopy ball.

Interval running will enable me to improve the workload by interspersing heavy bouts of fast running with recovery periods of slower jogging. My training programme will start of reasonably easy and then as time progresses I will continue to build it up. I will do track running and firstly I will run hard (sprint) for thirty seconds and then I will have a period of easy jogging (recovery) for two and a half. I will repeat this four times. As this becomes easier I will increase the amount of repetition up to 5, 6, 7 etc and also increase the time of the sprinting session (up in seconds (5)).

When I have finished the training programme I would hope to have improved and cause an increase in the responsiveness of my muscles fibres enabling faster reactions. Another aspect which will improve as a result of this training programme will be the thickness of my myosin will increase making them stronger. Also when exercising type IIb fibres will be converted into type IIa this is important because type 11a is what deals with strength and speed exercises.

Improving my component of fitness; speed, will have many positive effects on my set. As I will be able to quickly get to the ball and set myself up, which means I will have a better chance at being able to push the ball outside if we are attacking through fourth. It will also give me longer to assess where I think it is best to play it to in order for our next attacking move to be successful.

**Defending Skill – Skill 1 - Digging a powerful serve**

I believe that Rachel Newton is one of the best defensive back court players the women’s GB team has ever had. One of her great strengths is defending a powerful serve, keeping the ball on court and also placing it in an appropriate position for the setter to receive the ball.

*Preparation phase*

**B2**

When Rachel Newton is on court before the ball is even in play she keeps her weight balanced and is always on her toes so she can quickly move to the ball. She is a middle, which means she defends back court position six and hits when front court through position three. When she is defending she is at position six. This means she is covering all the balls which are played deep, therefore she needs to be a strong and confident player so she can take control of the back court. As soon as the ball is played over from a service she is ready to play a defensive shot. Automatically she bends her knees and remains in a low stance (the ready position). This position is easier for her to move quickly in getting behind the ball to receive it. When defending a serve she is much lower than normal as this enables her to create a steady platform as the ball will be driven with great force towards her. Rachel has quick reactions and the ability to read the opponents movements to establish where the ball is going. So when she knows the ball is heading towards her she bends at the waist to put her shoulders over her knees and keeps her arms out to the side just wider than her knees. This gives her chance to determine if the ball is being played to the side of her and she doesn’t have time to get to it or if the ball is being played in front of her. Her goal is to dig the ball with both arms, so once she has seen where the ball is heading; she brings her arms together and connects her hands which creates a flat platform. The platform she has formed is waist height, this helps her to play the ball high and forward with good control. When creating her platform she makes a fist with her left hand and puts the knuckles into the right. Now Rachel is ready to make contact with the ball, her knees are bent, her feet our wide apart and she has a strong platform with her arms. Another action Rachel undertakes when she knows where the ball is going to be played is making sure she gets behind the ball as the ball won’t be coming directly towards her every time. If she is behind the ball she will have much more control opposed to if she was taking it out to the side of her.

**B1**

Rachel is always one step ahead of me as she is always in the ready position therefore this automatically makes her job easier and more efficient as she is able to quickly move to the ball whereas I am quite flat footed on court. This makes my reaction that bit slower than hers. As soon as I see the ball being served, I bend my knees however unlike Rachel I am still quite upright making it harder to get behind the ball and play it up as my platform and body position doesn’t always support it; as it is not waist high. I also have slower reactions because I find it hard to always ’read’ the opponent, determine where the ball is heading and make sure I get my body behind the ball. This leads to a slower speed of movement making my skill rushed often causing it to be an inaccurate dig. However, my main weakness within this is my self-efficacy. I often find myself when it comes to digging feeling the pressure especially when it’s the first ball off the point. Unlike Rachel, I don’t have the same training advantages as her and I often find myself hiding away at training as if I feel unconfident when digging. This will have a major effect on my game. Rachel at training would often be forced to take part in situations where should would feel uncomfortable to help her overcome it. As a result at being unconfident and having low self-efficacy towards this skill means I often shy into getting myself behind the ball, this often leads me to carry out an unsuccessful dig.

*Execution phase*

**B2**

By this stage Rachel has already made the judgment on her positioning on court and is now ready to receive the ball. When she is receiving a hard flat serve all she does is bend her knees and keep her platform flat, she won’t need to straighten her knees out and swing her arms up because the ball has enough power from the serve to be played straight up. She will receive the ball on her lower arms as this will give her more control as she will be able to get her whole body behind it. Whereas if she receives it on her upper arms it puts her body in an awkward position making it harder to play the ball upwards accurately. She is aiming for the ball to be high and loopy so her teammates have plenty of time to get into position. When the ball is coming this hard all she does is make sure she is behind it so it can’t go off in any direction which would make it hard for her teammates to use the ball.

**B1**

The execution phase relies heavily on the preparation phase. If I manage to get behind the ball I can deliverer an accurate shot similarly to Rachel. However, if I have made the wrong judgement of the opposition, this means I will be now in the incorrect position on court. This means I will have to raise my arms to receive the ball or swing my arms out to the side because I would not have time to get my body behind the ball, forcing the ball to go off in any given direction.

When comparing myself to Rachel when she is receiving a hard flat serve, she is low to the ground and lets it hit off the platform she has created with her hands whereas I move up and into the ball. This can force the ball to go off in an unanticipated direction making it harder for my team because when I swing my arms it doesn’t guarantee that I make contact with the ball in the correct place. I could clip it on the side and that forces it to go in an unsuspected direction, putting my team at a disadvantage if my team couldn’t help recover the point.

*Recovery phase*

**B2**

In the recovery stage of the dig all Rachel will do is break her platform with her arms but she will keep them out to the side of her and stay on her toes so she can quickly move into any position on court. Rachel is a middle and will be playing back court at this time, so it is vital that she makes sure she keeps in the ready position and stays on her toes because just after she has played a successful dig to the setter. The setter could play it straight back for a back court hit. This means she needs to be aware constantly of what is going on around her in her team. The setter could even play it to position three so it is essential that she is ready to cover that spike in case it gets blocked and is played straight back over. Rachel jobs just after she has digged it will be looking for any gaps to cover as long as the setter hasn’t shouted ‘back court’ and she is clear of a back court spike.

**B1**

In the recovery phase of the dig I often automatically come upright unlike Rachel as she stays in the ready position and keeps low, this makes my next reaction slower for whatever skill or movement I have to carry out next. I often automatically wait for a back court hit even if the setter hasn’t shouted ‘back court’ therefore if I have to cover a spike through position three I am not always there. This creates a gap and then when I realise what has happened I have to dive for the ball, sometimes only just getting the ball up therefore forcing my team to work harder.

**C1- the Cause- Self-efficacy**

For this particular skill my weaknesses is my self-efficacy. Self-efficacy is how we feel in a certain situation and this is closely related to self-confidence. Self- confidence is a person’s belief in their ability to achieve success. Overall when I am on court I have good levels of confidence in carrying out the different skills. However, for this particular skill (defending back court by digging) I lack in self- efficacy. This means that if you look at a situation and believe you can achieve the goal, you would be seen as having high self-confidence/self-efficacy. Whereas, if you are like me and believe you can’t do it this is likely to have a negative effect when carrying out this skill highlighting a lack in self-efficacy.

When comparing this skill to my other skill weaknesses this is the one I tend to lack the most self-efficacy and belief in myself. I often find myself when defending back court to lack in self-efficacy, as I find that there is a lot of pressure because if you don’t carry out a successful dig the next two touches on your team can be drastically affected. Especially, when we are receiving a serve it is the first skill of the set and if I don’t deliver a successful pass this could automatically mean we lose the point.

According to Bandura, a performer’s confidence, or self-efficacy, is based on four primary sources of information. The first one being performance accomplishments this is looking at our previous successes to the task. Secondly, vicarious experience which involves watching others of similar standard successfully performs a skill. Thirdly, verbal persuasion this is encouragement from significant others such as my coach or team mates or an elite performer all of these significant others could have a major impact on my performance in either a positive or negative way. Finally emotional arousal, this is how we interpret our own emotions it can be done in either a positively or negatively and therefore whichever way we interpret it would have an effect on my performance of the skill.

The most important factor which affects my confidence is my previous performance accomplishments. I notice that if in my training I have achieved what I have wanted to achieve and I have had repeated success this naturally leads me to have positive expectations of further success. Therefore, this leads to higher motivation and enhanced self-belief. I often find this with my serving and spiking. However, when it comes to digging I often find that the pressure gets too much for me and I start to lack in confidence and self-efficacy which leads to an unsuccessful performance. I can often find myself in a downward performance spiral, the ‘snowball effect’. This is when I believe and find myself thinking that success is not possible.

**C2- the corrective measure- strategies to increase self-efficacy**

Confidence is improved and encourage by good preparation, a sense of optimism and planning. On the other hand, negative thinking can weaken my performance and limit my progress.

To increase my self- efficacy I could use the following strategies should be included as part of my preparation. According to Bandura’s model of factors affecting self-efficacy it is important that I focus on improving my performance accomplishments, my vicarious experience, verbal persuasion and my levels of emotional arousal.

I need to ensure that I achieve performance accomplishments through manipulation of the environment; this is something that my coach can help me with by creating drills which make me think but are achievable to help generate my self-efficacy, that hopefully I can transfer my positive thinking (‘I can do it’) over into a match which will help my confidence and positively improve my consistency with my skill.

Another way I could improve my self-efficacy is by goal setting effectively. When goal setting your follow the idea of SMARTER. This stands for Specific, measurable, achievable, realistic, time bound, To ensure that I would be able to achieve an improvement in my levels of self-efficacy I need to guarantee that my goals are realistic, thereby maximising the likelihood of success. The goals would emphasis my own targets, rather than being set for my team. I could set a goal for each training session for example, to carry out 10 successful digs in a game situation. I think is a reasonably target but I would still need to work hard which would motivate me to succeed.

Another important factor which I need to improve is my vicarious experiences as this is a key factor which will affect my levels of self-efficacy. Improving this should help me improve my confidence and therefore self-efficacy of this certain skill should improve. Research has suggested that if performs see other performers who are at a similar ability to themselves achieve success this can help us gain confidence. A way for me achieving this could be if I watch videos or other performers who are at the same level of ability as me and see them being successful. Hopefully this would encourage me to go on and achieve success in this skill.

Another factor within Bandura’s model affecting self-efficacy I need to improve is the use of verbal persuasion. This often comes from the coach either by reinforcement or extrinsic motivation. Extrinsic motivation is known to produce short-term improvements, but only if the performance targets set by the coach are achievable. When talking to my coach he said a way we could motivate me and raise my levels of self-efficacy could be by setting mini goals within training sessions and if these are achieved I can be one of the starting six at training. This will hopefully help motivate me and make me want to achieve, therefore, improving my self-confidence.

However if I want to improve verbal persuasion by myself I could use cognitive techniques to gain control of my mind. One way of achieving this would be through the use of self-talk. This is where I could say positive things to help motivate me and achieve my goals (‘I can do this’ – ‘ I will succeed’). I would use this when I am about to play a match and every time the ball is going to be played over meaning I will need to defending back court. This will hopefully calm me down and motivate me therefore improving my confidence to succeed.

Finally the last factor I will need to improve from Bandura’s model is emotional arousal; however, this is the least influential factor affecting which will affect my confidence. To improve this I could use imagery and/or visualisation, either as a means of perfecting performance or as a means of perfecting preparation for performance. Imagery is creating mental images to escape the immediate effects of stress. You use this as a relaxation technique; you picture something that you think is safe and peaceful which will help keep me calm in order for me to carry out the different skills. Visualisation is the process of creating a mental image of what you want to happen or feel.

**Defending skills- Skill 2 Blocking through position 4**

I believe that Rachel Newton is one of the best front court middle blocker players the women’s GB team has ever had. One of her great strengths is her absolute precision in her timing in her jump to create a powerful and strong block which her opposing team find difficult to pick up.

*Preparation phase*

**B2**

When Rachel is preparing to block a ball being spiked through position 4 one of the main aspects of her preparation is the footwork. As she is a middle she will be starting at position three but if she sees the ball being spiked through position four this means she has to use the correct footwork to get out to the correct position (four) and make a good judgement on her timing. If she sees the setter on the opposing team play a reverse set, she knows that the ball will be spiked through position four. This means she will start her footwork. The footwork is used closely along the net making it easy for her to jump straight up instead of forward, as otherwise that would make her lose precious time. When moving to position four the footwork is a large step with her left foot, then crosses the right foot over, then another large step with her left foot before quickly bringing her right foot together as she bends her knees and swings her arms back. This enables her to jump up high and block the ball. The lower she bends her knees the higher the jump will be. This creates a larger surface area and is more intimidating as she has her arms and upper body able to block the ball, this encourages the block to be perceived as bigger, stronger and harder to defend. She will also jump straight up rather than forward to avoid touching the net and giving the opposing team a chance to gain an advantage.

**B1**

In the preparation phase of the block I struggle to always get to the correct position on court when the hit is coming through the outside as my stride is shorter than Rachel’s, she can get outside in three large steps whereas I can’t. Another disadvantage that I have is that I am slower at anticipating a reverse set. This can sometimes slightly put my timing out when carrying out the block. As I don’t always get completely all the way to the outside with the steps often on the jump I have to jump sideways. This takes some of the height off my jump making it even harder to block as my surface area is decreased. I also don’t bend my legs and swing my arms back as much as Rachel and this is where most of her power comes from to assist her jump.

*Execution phase*

**B2**

In the execution phase Rachel is closely watching the opposing hitter. When she sees her jump up and brings her arm back to hit the ball, she knows she must now jump to block so that she has perfect timing. As she jumps up she throws her arms straight up into the air; which creates a large surface area. When in the air with her arms straight, she also spreads her hands wide and holds them rigid because if the ball is hit hard into the block her fingers could bend back or it could send the ball off in any direction. Ideally she wants the ball to hit her hands so she can angle the direction of the block. Rachel always gets plenty of height on her jump this means when she jumps to block she can angle her hands downwards to push the ball straight onto the opposing teams defending players making it extremely hard for them to defend.

**B1**

In execution phase just like Rachel as soon as I jump I throw my arms straight up into the air, which helps create a bigger surface area. However, where I differ from Rachel is I don’t spread my fingers as wide and don’t keep them as rigid. This reduces my surface area and because they are not always rigid the ball can knock them apart and go through them. Another reason why the ball may slip through my hands and make it an unsuccessful block is the fact that when I jump I don’t always have my arms close together. This reduces the surface area giving the ball a gap to go through and forcing the block not to work. Another disadvantage to my block is the timing, because I have a smaller jump compared to Rachel, I am up in the air for a much shorter time causing me to sometimes miss the block. Whereas because Rachel has a higher jump this gives her more of an advantage as she has got a larger chance of blocking the ball. One of the main reasons why my block starts to deteriorate as the games starts to go on is because the onset of fatigue starts to become apparent and the power in my jump becomes less.

*Recovery phase*

**B2**

In the recovery phase Rachel will bend her knee’s to soften her landing and bring her arms down. When landed she will stay on her toes and keep her arms up ready for opponents defending her block, if they don’t play the ball straight back over she will then immediately turn into her half of the court to see where the ball is in play. She will wait until she sees the ball going into the setter before she makes a judgement on her next position on court. Often she will move to the attack line and then attack the ball through position three.

**B1**

In the recovery phase just like Rachel I will bend my knee’s to soften my landing and bring my arms down to my side. Unlike Rachel as soon as she has landed she will stay on her toes and will immediately turn to see where the ball is on her side of the court. As the game progresses the onset of fatigue starts to appear and my legs begin to tire, therefore when I land, I land flat footed this delays my reaction and then can sometimes put me at a disadvantage.

**C1- My weakness is lack of power in legs.**

When carry out blocking, the action is very repetitive and strenuous. Often over time I begin to tire as I constantly have to be aware of where the ball is being played to, is it going to come through the middle or outside? When I have identified where the ball is being played through it is my job to make sure I get into the correct position. Therefore, if I was playing at position four and the block was coming through the middle (position three) I would need to use the correct footwork, followed by a squatting action to aid the power of the vertical jump into block. As the match progresses I often tire quickly due to my component of fitness, power being significantly weaker than the rest. Power is strength and speed combined. Having a lack of power causes my block to become weaker because my jump becomes poorer. This prevents me from getting up high to block the ball which means often my block is unsuccessful because my surface area is not big enough.

Power is produced my speed and strength combined. The definition of speed is the ‘ability to move quickly across the ground or move limbs rapidly to grab or throw.’ Speed is generated by the rate at which the sarcoplasmic reticulum and myosin ATPase work within our muscle fibres. The sarcoplasmic reticulum forms the system of channels that spread out over the myofibrils and acts as a store of calcium ions that when released, start a muscle contraction.

The other factor which power is produced by comes from strength. The definition of strength is the *‘*the ability to carry out work against a resistance*.’* and when exploring strength the main focus is on my fast twitch fibres. There are three types of strength: static which is the ability to hold or carry a large weight, dynamic strength which is overcoming a force, multiple times or for multiple reps and finally explosive strength which is the speed of the contraction and can overcome a force at great speed. However, explosive strength is my main focus when looking at fast twitch fibres. Fast twitch fibres work best and have been adapted for short, intense bursts of effort. They have a larger diameter than slow twitch fibres because there are many more myosin filaments and the myosin is thicker. As a result of this fast-twitch fibres are able to produce more force than slow-twitch fibres as they have more muscle fibres per unit.

All the motor neurones which lead to skeletal muscles have branches, each of which ends with a muscle fibre. Where the motor neurone meets a muscle fibre, this is known as the neuromuscular junction. Nerve impulses traveling down a single motor neurone will activate a contraction in all of the muscle fibres within that motor unit. This minimum unit of contraction is called a motor neurone. A motor unit is a motor neurone and all of its muscle fibres. Each muscle fibre within a motor unit will contract or it will not, it will never only contract partially. This is known as the all or nothing law.

Although the response of a motor unit is all or nothing, the strength of the response of the entire muscle is determined by the number of motor units which are activated. This is known as spatial summation.

**C2- Improving my component of fitness, Power.**

To improvemy levels of power in order to help me carry out a successful block without tiring easily throughout the match, I could carry out a plyometric circuit. This is a type of training which is designed to improve power. Plyometric exercises involve bounding, jumping or hopping to make muscle groups work eccentrically before a powerful concentric contraction. This training type is designed to produce fast, powerful movements. It involves high intensity, explosive muscular contractions which engage the stretch reflex. This is a protective mechanism that prohibits over stretching of muscle fibres. Any tendency to over stretch is detected by specialised receptors in muscles called muscle spindles. When these are suddenly activated, a nerve impulse is sent to the spinal chord which results in the immediate contraction of the muscles being over stretched. There are two types of isotonic muscle contractions, eccentric and concentric. Eccentric contractions occur when the muscle lengthens as it develops tension. These contractions occur during a downwards movement, because the muscle controls descent against the force of gravity. When the muscles shorten while contracting, this involves concentric contractions which occur during upward movements. A plyometric contraction involves an initial rapid eccentric movement, followed by an explosive concentric contraction which will contract more forcefully and more rapidly, for example squatting down to get power for my jump followed by an immediate vertical jump (blocking).

This works as a form of power training because, when a quick stretch is detected in the muscles, an involuntary, protective stretch reflex occurs to prevent over stretching and injury. The stretch reflex increases the activity in the muscle undergoing the stretch or eccentric muscle action, allowing it to act much more forcefully. The result is a powerful braking effect and the potential for a powerful concentric muscle action. If the concentric muscle action does not occur immediately after the pre-stretch, the potential energy produced by the stretch reflex response is lost.

All plyometric movements involve three phases: the first phase is the pre-stretch or eccentric muscle action, when elastic energy is generated and stored, the second phase is the short time between the end of the pre-stretch and the start of the concentric muscle action; this brief period where you change from stretching to contracting the muscle and is known as the amortisation phase. The shorter this phase the more powerful the subsequent muscle contraction will be. The final phase is the actual muscle contraction. This sequence of three phases is called the stretch- shortening cycle. By utilising the stretch-shorting cycle, movements can be made more powerful and explosive. Plyometric training is simply a set of drills designed to stimulate the stretch reflex and corresponding additional forceful contraction over and over again.

When selecting my own plyometric exercises to help me improve my power, I need to focus on my lower body as that is where I need the power to come from in order for me not to tire after the repetitive action of the block. The power comes from my legs, so in order for me to improve this, I need to work on them.

I would create a short circuit involving three stages which I would carry out twice. Each station would be 1 minute long, with a 30 second rest between them, where I would constantly walk to reduce the onset of muscle soreness.

I could do drop jumping. This exercise involves me dropping (not jumping) to the ground from a raised platform or box, and then immediately jumping up. The drop down gives the pre-stretch to the leg muscles (eccentric phase) and the vigorous drive upwards the secondary concentric contraction phase. The exercise will be more effective the shorter the time the feet are in contact with the ground. The loading in this exercise is governed by the height of the drop that should be in the region of 30 to 110 cm. The two key factors in drop jumping are a minimal contact time with the ground and the height achieved in the drive upwards. When planning this exercise I need to start off jumping from a height of 30cm and slowly increase this over time, as my lower body becomes accustomed to this. On landing I need to stay on the balls of my feet. If my heels come into contact with the ground then the drop height needs to be reduced. I will start at a drop height of 30cm and I can then increase the drop height by 5cm over time.

Another exercise I will do to improve the power in my lower body is a squat followed by a verticle jump and then the final exercise could be a box/bench jump. This is where you jump from the ground to the bench and then back down again. You repeat this action until the allotted time is up.

I would do a plyometric circuit once a week to allow time for my muscles to recover and prevent injury as after a plyometric circuit you should feel sore.

Improving my power will have a major impact on the overall performance of my block as I will be able to jump higher. The strength comes from my legs and improving this component will mean I will be able to withstand the repetition of the skill and the constant jumping therefore I will be able to jump high enough for longer and meet the needs of my team.

**Strategy/Tactics – Skill 1 – Serving a Powerful Deep Ball**

I believe that Rachel Newton is one of the best defensive back court players the women’s GB team has ever had. She also is one of the team’s strongest servers. One of her great strengths is her preparation and decision making on where to place her serve along with the power of her serve.

*Preparation Phase*

**B2**

Even before Rachel has got onto court she will almost certainly be watching games and studying videos with her coach to gain a better knowledge of what tactics she can use. She will be figuring out who are their best passers and those that struggle to pass and when she identifies their weaknesses she will often try to exploit them so her team can take an advantage. She will also look for gaps on court where she can place the ball making the opposition have to work for it.

When starting her serve she will be about four large steps behind the line so she has room for her footwork; this will generate power which can be transferred into the ball. She will start with her left foot and hip slightly ahead of her right. She will point her front foot forward and her back foot slightly pointing to the right to help her keep balance. She places the ball in the palm of her left hand and places her right hand on top of the ball, this helps her to feel more confident as she won’t feel like she is about to drop the ball making her feel like she is in control. She then holds her arms out towards the court with a slight bend in her elbows for comfort. She does this so when she throws the ball straight up it will be about a meter in front of her so that when she does her footwork the ball is in the right place to make contact with it. She also has her left shoulder slightly in front of her right, just like her feet. The reason for this is to help aid the follow through of her arms when making contact with the ball; this creates extra power when carrying out the serve. She then draws her right elbow straight. This is done to open up the angle of her shoulders, which will help assist the power of the ball. She tosses the ball in the air by lowering her left hand slightly and pushing the ball up into the air about six feet above her head. The ball comes off the palm of her hand with no spin as she has pushed it up rather than thrown it. She doesn’t want the ball to spin because it makes it easier to keep control. When the ball is tossed up she will take her steps this will help her to generate power in the hit as she bends her knees and moves through the steps quickly.

**B1**

Just like Rachel right from the start of the game I will be watching the opposition trying to find the weaknesses of their team and often what we as a team fail to identify our coach will be sure to tell us. However, we don’t have the same resources, time and money as Rachel so I don’t have time to watch previous games and study videos in great detail. This means I can only start to make judgement as the game progresses but sometimes it can be too late. When serving; I take four large steps similar to Rachel; these steps help build-up power to make contact with the ball. What puts me at a disadvantage to Rachel is the ball toss. When you throw the ball up it should be just in front of you and if you let it land on the floor it should land just next to your front foot. When I throw the ball up, I normally throw it too far in front of me forcing me to stretch for the ball. This affects my technique and reduces my power and speed of how quickly I can whip my arm through and make contact with the ball. Another weakness with the toss of the ball is depending on how high I throw it sometimes I don’t throw it high enough forcing me to rush the steps and in the end producing a weaker serve. My main weakness which is apparent throughout all of the stages of this skill is my levels of anxiety. I often find it hard to control my anxiety and the more nervous I become the weaker the preparation stage is. If I mess this stage of the skill up it will create a downhill spiral on the rest of the skill, forcing the power to be weaker and contact with the ball to be off target.

*Execution phase*

**B2**

When she has tossed the ball into the air and carried out her footwork she is now ready to make contact with the ball. She will make sure she is facing the net directly, so she has a clean view of where she wants to place the ball. She will keep her eye on the ball and strike it just above and in front of her head with the palm of her hand. Serving with the palm of your hand gives you more control over the ball. She has control on where she wants the ball to go so she can choose top spin, float, and to serve short or deep. Rachel is going to make contact with the ball in the centre and whipping her arm through so she can achieve a deep serve. When making contact her fingers are close together so she doesn’t lose power, she keeps her hand and wrist stiff and then strikes the middle of the ball solidly, she does this to deliver a powerful and accurate serve. The difference between when she is spiking the ball is that she doesn’t need to contact the ball at the top of her reach and swing down. She needs the ball to travel 30 feet forward just to get to the net and then to hit the back line, it needs to travel about 60 feet, so therefore when she contacts the ball she needs to put enough power behind it to get it up an over the net but inside the lines.

**B1**

In the execution phase I have already carried out my footwork and I am now ready to make contact with the ball. The difference with my technique compared to Rachel is that I don’t whip my arm through fast enough and this reduces the power that my ball has, sometimes forcing my ball to only just make it over the net or sometimes just short of the net, therefore, unlike Rachel, my consistency is lacking. I also stop swinging my arm through and consequently this makes my swing slower, making my ball have less speed. If my preparation isn’t good, for example the ball is thrown up incorrectly i.e. not enough height on the ball, this will force my serve to be rushed often leading to an unsuccessful serve. Another factor which I may need to consider if the preparation hasn’t been carried out effectively and I have thrown the ball too far in front of me forcing me to reach for the ball, is the amount of power I will be able to deliver in the serve. If I am reaching for the ball I am not going to be able to bring my arm through as fast as usual because I am stretching out and only just clipping the ball making my serve only just make the net or not at all.

Another factor that I may need to consider is where I make contact with the ball, if I don’t manage to make contact with the ball in the centre and I make contact with the ball just to the left of the ball or to the right; it may go off in an unexpected direction and therefore could go out, making my team lose the point. If my anxiety levels have affected my preparation phase the likelihood is it will have an effect on this stage too as I struggle to control my levels of anxiety and I find it hard to calm myself down. This means the overall execution of this skill will be weaker and less consistent as I won’t be able to meet the demands of the skill.

*Recovery phase*

**B2**

In the recovery phase when she has made contact with the ball, she will keep swinging her arm through past her hip for greater power and then she will immediately run to her back court position ready to defend. She will automatically get into the ready position, so she can dig the ball if it is coming below her head or set the ball if it is played above her. She will be on her toes, knees bent and arms out wide so that she is ready to defend the ball that may be played straight back over or after the opposing team have played their three touches.

**B1**

In the recovery phase where my performance differs from Rachel is when I have made contact with the ball I often stop bringing my arm through. This automatically reduces the power at which the ball will travel and will reduce the accuracy of the shot. As soon as I have made contact with the ball I will immediately run to my back court position ready to defend just like Rachel.

**C1 – Increased levels of Anxiety**

When playing volleyball a reason for my inconsistent serving is due to my increased levels of anxiety. One of the reasons I become anxious is due to the pressure from the spectators and team mates as I feel I need to be reliable and get the serve in as my team will have worked hard to win the point.

Anxiety is the negative aspect of experiencing stress. Anxiety is when I begin to worry and in result that unpleasant feeling I experience because of the fear of the possibility of failing and not delivery the powerful serve that everyone would expect.

Anxiety can be categorised into two types’ state anxiety and trait anxiety. Trait anxiety is a motive or acquired behavioural disposition that predisposes an individual to perceive a wide range of objectively non-dangerous circumstances as threatening and to respond to these with state anxiety reactions disproportionate in intensity and magnitude of the objective danger. I believe I have a high level of trait anxiety as I tend to panic when it comes to take the serve in an important game, especially if it is a match point.

State anxiety is the emotional reaction I have to a situation that I experience as threatening. This state is characterised as subjective, consciously perceived feelings of apprehension and tension, accompanied by or associated with activation or arousal of the autonomic nervous system. I notice that throughout the match my levels of state anxiety change from moment to moment. My state anxiety is at its peak just before I am about to serve. When I am preparing myself, getting into position and choosing where it is best to serve the ball due to weaknesses of the opposition. I can feel my heart rate quickly starting to increase and I get the feeling of butterflies in my stomach especially whilst waiting for the whistle to go so I can serve the ball. At this stage the sports hall is completely silent making me feel like there is even more pressure on me to succeed as everyone is watching. If I don’t manage to control it I often buckle under the pressure. This will often lead me to possibly serve out because I have made contact with the ball in the wrong place or I have not hit it with enough power. This could be due to the fact I threw it up in the wrong position and therefore I had to rush the footwork. These consequences happen regularly for me throughout the game especially if it is an important game such as national finals and U18’s matches. I fail to control my levels of anxiety, however it doesn’t tend to happen in a local league match as I don’t experience the same about of pressure which would increase my levels of state anxiety.

Then there are two ways of displaying anxiety: cognitively and somatically. Cognitive anxiety is the thoughts, nervousness, apprehension or worry that I have about the lack of ability to complete a task successfully. When preparing to take a serve in volleyball I become very nervous and often have negative thoughts such as ‘I can’t do it’, ‘it’s a man’s height net’ and ‘I can’t serve it that far’ all of these thoughts play a contributing factor into how reliable the delivery of my serve is. I am more likely to have negative thoughts when serving if I have not been playing at my best throughout the match so far, leading to the thoughts of never being able to serve it in. The more negative my thoughts are, the more likely I am going to serve the ball out.

Somatic anxiety are the physiological responses to a situation where I feel that I may be unable to cope; symptoms include increased heart rate, sweaty palms, muscle tension and feelings of nausea. Depending on the circumstances of the match, this will have an impact on my level of somatic anxiety. If I am playing an important match then I begin to get nervous in the warm up and when I am waiting for the initial whistle to go to start the match. I often get sweaty palms and I can feel my heart rate quickly increase. However, as the match continues I begin to settle down and so do my anxiety levels but when it becomes near to set points my heart rate starts to increase again and the reliability of my serve deteriorates, as I don’t feel that I have control over my levels of anxiety.

**C2 – Different method of control my somatic and cognitive anxiety.**

There are many ways in controlling my somatic and cognitive anxiety. For cognitive there is Imagery, visualisation, attentional control (cue utilisation), thought stopping and self-talk. For somatic there is Bio- feedback, breathing control, centering and progressive muscular relaxation. However the ones that I am going to explore and use are for reducing cognitive anxiety is thought stopping and then for somatic anxiety breathing control.

Thought stopping can be used to block an unwanted thought before it escalates or disrupts performance. The technique can help to create a sharp refocus of attention, keeping me engrossed in the task at hand. Thought stopping is conditioning the mind to think of alternatives to the anxiety-causing the negative thoughts which for me would be the pressure of getting the serve in and waiting for the whistle to blow. It is a relaxation technique and uses a simple physical or mental ‘action’ (e.g. clenching a fist, or imagining a picture of sign) as a means of switching my attention into a controlled mental state and hence reducing cognitive anxiety. So when I start to have negative thoughts such as ‘I can’t serve it over’ and ‘I can’t do it’ I need to think of something distinctive and memorable for example a large red stop sign. When I have thought of the image or action of what I am going to use to prevent the negative thoughts I will need to practice it. I am going to imagine a large stop sign, so now every time I begin to think negatively I need to picture it. I have to hold this image for a few seconds this gives me time to divert my attention from those negative thoughts and then as soon as I have finished I should be ready to serve the ball. Thought stopping involves conditioning, in that I condition my mind to think of a large red stop sign instead of the negative thought; as the conditioned image fades so does the attention on the anxiety-causing stimuli.

My somatic technique is breathing control. This is using a diaphragmatic breathing as a means of focusing relaxation. Breathing control focuses on an aspect of physiology to distract the mind from the anxiety- inducing situation. It is a common feature of several techniques, as it causes a relaxation response. The first step I will need to undertake is learning to breathe deeply. Deep breathing is also called ‘diaphragmatic breathing’. When I breathe deeply, the air coming in through my nose fully fills my lungs, and the lower belly rises. When first practised, deep breathing seems unnatural, one reason for this is that body image is a negative impact on respiration in our culture. A flat stomach is considered attractive, so people tend to hold in their stomach muscles. This interferes with deep breathing and gradually makes shallow ‘chest breathing’ seem normal, which increases tension and anxiety. Shallow breathing limits the diaphragm’s range of motion. The lowest part of the lungs doesn’t get a full share of oxygenated air. This can make us feel short of breath and anxious, which is what I experience when playing volleyball. Deep abdominal breathing encourages full oxygen exchange: that is, the beneficial trade of incoming oxygen for outgoing carbon dioxide. Not surprisingly, it can slow the heart rate and lower or stabilise our blood pressure. Breathing control will also help my concentration on slow, deep breathing and help me to disengage from distracting thoughts and sensations. It is especially helpful if you tend to hold your stomach in. When practicing this I will need to find a quiet, comfortable place to sit or lie down. Firstly I will take a normal breath. Then I will try and take a deep breath; by breathing in slowly through my nose, allowing my chest and lower belly to rise as you fill my lungs. Let my abdomen expand fully. Then breathe out slowly though my mouth. Once I have learnt the steps of deep breathing I will need to practice it so that whenever in a game I feel the pressure mounting and my anxiety levels increase I can use this technique to calm myself down, resulting

**Strategy/Tactics – Skill 2 – Tipping the ball over the net**

I believe that Lynne Beattie is one of the best outside hitters who plays for the women’s GB team. One of her great strengths is helping her team gain an advantage, with a carefully placed attacking hit.

*Preparation phase*

**B2**

As soon as the ball has been played over into Lynne’s half of the court she will already be looking at the opposing team and looking for weaknesses and gaps. As the ball has been passed into the setter, Lynne makes her way to the attack line ready to carry out the tip. A tip is the exact same procedure as a spike. It has the same run up and the replica arm action to disguise what you are doing but at the last minute you change the way you make contact with the ball in order to trick your opposition. The ball will hopefully just drop over the net and with any luck gain an advantage. Lynne makes the decision on whether or not to play a tip as soon as the ball leaves position two (setter). She will watch what the opposing team’s defence formation is and if she sees no one is covering their blocker she will just tip it over them. When Lynne sees the ball leave the setters hands, she waits for it to peak before she carries out the footwork, left, right, left together. On the final step she bends her knees and swings her aims back both of these help create more power enabling her to get more height on her jump. When in the air she brings her elbow up and back and opens up the angle of her shoulders, she also spreads her hand out which creates a large surface area, all these things are to make the opposition think she is going to spike the ball like a normal procedure.

**B1**

My main weakness for this skill is my decision making skills as there are so many possibilities and stimuli’s I need to take into account. When carry out this skill my main decision is whether or not I am going to spike the ball or tip the ball. I am never 100% which one is the best to do until it is too late. One of the reasons for this is because I don’t have much to compare it too and I am not 100% what I am looking for when I am going to tip. Therefore because of this delay, this can have major effect on the skill as a whole.

In the preparation phase just like Lynne I am making a decision on whether or not to tip the ball over the net when the ball is being played into the setter. I automatically make my way to the attack line ready for what looks to be an aggressive spike. I carry the same footwork out as Lynne but where I differ is the power and strength I get from my legs. This puts me at a disadvantage as it makes the height of my jump smaller therefore increasing the angle of the tip. It forces it to become loopy which makes it easier to defend as they can see that to tip it I push it up rather than down. Lynne’s quicker preparation phase will give her more time to make a decision about whether to spike or tip. I also differ from Lynne as after I have made the decision that I will be tipping the ball, I make it really obvious making it easier for the opposition to read my body language and identify that I am about to play a tip. The reason for this is because when I am in the air I don’t bring my arm up until the last minute and just catch it with my fingers, this would make it look like either a lazy or unsuccessful spike, helping them to readjust their formation enabling them to be able to cover the ball. This would help them to move forward and play an aggressive shot.

*Execution phase*

**B2**

In the execution phaseLynne Beattie is already up high with her arms back so she is ready to make contact with the ball, just like what she would do for a spike. Lynne has already made the decision to tip the ball. When making contact with the ball at the last second of swinging her arm through, she will cup her hand and just with her finger tips, tip the ball over the blocker so it lands about half a meter behind them where no one is covering. The reason she leaves this quite late in the delivery of the skill is because if she changes the speed of her run up and then the speed at which she brings her arm through too early, it will become really obvious what she is about to do. The opposing team will be able to quickly adjust and try and pick up the ball.

**B1**

In the execution phase just like Lynne I am already up in the air with my arms back ready to make contact with the ball and I have already made a decision to change my spike to a tip. Where I differ from Lynne is how late I leave it to change my hand position for the tip. Often I change it too early, this can make it quite predictable over time encouraging the opposition to know where my ball is going and helping them defend my ball successfully. Another aspect of the tip where I differ to Lynne is how I make contact with the ball; I cup my hand just like Lynne but instead of just playing over the blocker I make it much more loopy as I believe it to be safer, as I think if it is too short it will go straight into the blocker making us lose the point. This makes it easier to see that it’s a tip and gives them more time to receive the ball especially if they haven’t already identified what it was going to be.

*Recovery phase*

**B2**

The recovery phase takes place when Lynne lands. When she lands to keep control of her whole body and balance she will often bend her legs. These movements help her to keep control and also make sure she is in the ready position to maybe defend the ball being played straight back over or for her to carry out a spike. When she has landed and she can see that the ball is still in play. Therefore, she has to make sure she is ready to defend a hit through position four or cover through position three this means she needs to be in the ready position and can’t afford to take her eye of the ball.

**B1**

In the recovery phase unlike Lynne when I land I don’t always bend my knees as much therefore this means I don’t always keep control of my body so when I move to my next position it is often can be uncontrolled and can mean I am not always ready to receive the ball or take the next shot. Another fault which I have is that sometimes I take my eye off the ball and therefore I don’t see what is going on. This will force me to be in the wrong place and creates a large gap where I was meant to be often causing either my teammates to work harder and if they don’t manage to get there we can lose the point.

**C1- Poor Decision Making – the cause**

For this skill my main weakness is my decision making skills. When trying to identify the different stimuli that come in from our sense organs, we use memory. This stage is known as detection. The next stage of this process is information processing and this is what helps us make a decision on how we respond to the information which we have taken from our environment. The next stage is response selection. This begins when the stimulus identification stage provides the information from our different stimuli. Then the response selection stage has the task of deciding what movement we need to do after observing what is going on around us. This is where the choice of what movement we do is made available from our long term memory store.

Output

Response programming

Response selection

Stimulus

identification

Input

In that process we need to pick out and focus on the parts of our display that are relevant to my performance of the specific skill. This is known as selective attention. If my decision making process gets overloaded because there are too many stimuli to think about e.g. where is the ball being played on court?, is it being played to me?, or do I need to cover?, am I going to spike or tip?, etc. I need to be able to filter all of that information, so I can identify what is relevant and this is where my selective attention comes in. My level of knowledge and related cues and my ability to detect them early influence the time I will spend making a decision. One of the reasons this is a weaker skill is because I am trying to take in too much information at once and so this means that my decision making when changing from a spike to a tip is slow.

During perception and when the identification of the stimuli occurs. This has three main elements known as detection, comparison and recognition (DCR). Together this makes the DCR process. The process involves detecting the stimulus by the sense organs from my environment (detection), comparing those specific stimuli to the information stored in my memory (comparison) and finally recognising corresponding stimuli in the memory (recognition) and then carrying out an appropriate response based on feedback from my previous experiences.

As previously mentioned, the Comparison and Recognition stages of the DCR progress need previous experiences to be effective, it is therefore obvious that Memory plays a major part in decision making speed. Memory is mainly regarded as storage, where we hold our information with a set of processes that act on what is in the stores. The three main stores are short-term sensory stores, short-term memory and long-term memory store. The short-term sensory store has a large capacity but it is a temporary store for all of the information coming in from my environment e.g. team mates, ball, the court, net, opposing team, and referee. All of the information that I take in from the environment will automatically go into my sensory store before it goes through the process of selective attention. When the relevant information is found after going through selective attention it will be encoded (storing the information) into the short-term memory. The short-term memory is also known as the ‘working memory’. Only the information we have paid attention to will move into this memory store. Therefore, it is important when carrying out my skill that my attention is maintained whilst performing the skill e.g. keeping my eye on the ball. If the information is paid attention to it will go into the long- term memory. However, where this becomes my weakness is I don’t have many past experiences of this skill stored in my memory; therefore, this will affect my performance of this skill.

My decision making time can be improved by practice, and this can be speeded up through the help of my coach, as he can help identify the relevant ‘cues'. In this skill my action depends on how fast my decision making process is. The time I spend making my decision is called my reaction time. Reaction time is measured from the point in time from when the stimulus is given to the point in time where my response begins. My reaction time is genetically determined. However, it can also be affected by my uncertainty of the skill e.g. a lack of knowledge. Response time is reaction time added together with movement time. Movement time is the time taken from the start of the response of the movement to the end of the movement and response time is the time taken between the stimulus and the reaction.

Movement Time

Reaction Time

Response Time

Another factor affecting my decision making skills is my anticipation which increases my reaction time as I am unable to anticipate always where the ball is going to be played to on court. Whereas someone who is more advanced will always appear to have more time when they are preparing for an attack as they have already realised the ball is coming to them. This is because they use their past experiences to anticipate what is going to happen and processes information before it is going to happen – saving time. Spatial anticipation is when a performer programmes a pattern of movements prior to the movement being needed. Temporal anticipation is when the performer predicts what is about to happen. Anticipation will give me more time to complete a skill along with all the different factors which go along side decision making.

**C2- Corrective Measure- Decision making**

There are many ways to improve my decision making skills. One way of improving my decision making would be by refining my selective attention and this would then lead on to decrease in my reaction time. The reason we have selective attention is so that we can selectively use and find the most appropriate stimuli and avoid overloading; if I can improve this it will hopefully make my performance much better. The decision making process can be made more efficient if tasks can be dealt with one at a time, without clogging up the ‘system’. I can improve my selective attention through practice. Experience of where the ball will be played and the formation of the opposing team will have me pick out the appropriate cues from the display e.g. are the opposing team defending through position four or are they expecting the tip. My coach and teammates can help me by making the cues more obvious, for example if the setter is going to play the ball to me she calls my name. The more the cues stand out, the more it will attract my attention and hopefully have an improving effect on my selective attention. Likewise if the cue is more distinct and unusual the more likely I am going to pick it out and focus on it e.g. by shouting for the ball or the ball being played with at training is bright and colourful. This will help as it will contrast with the background making it easier to focus on and identify. My coach can therefore help my selective attention by highlighting important cues, so that I am not focused on unimportant factors. I will be able to identify cues quicker if I am expecting those cues. Also I could get my coach to create different distractions to help refine by selective attention therefore when I come to match situation I have experience different stimuli which I know to filter.

Another way in which I can improve my decision making skills is by gaining more experience. This can be done by mental rehearsal. After I have carried out a training session I can run this specific skill and timing of when to use it over in my head to hopefully encode it into the long term memory. This will help me in my game because when it comes to the DCR process I will be able to have past experiences to compare it to, which overall will help speed up the process and enable me to perform this skill more successfully.

Improving my anticipation will improve my selective attention and will decrease my decision making time by making my reaction time quicker. My coach can help me further by directing me to the correct cues but also encourage me to ignore distracting stimuli e.g. the crowd. As my skill level increases, outside interferences to my decision making will be ignored. These accomplishments can be achieved through physical practice. For example, keep practicing my run up, technique and placement on court along with mental rehearsal i.e. going through the process of tipping, in my head. The more alert, motivated and aroused I am the better my selective attention will be, helping my reactions to deciding whether to tip or spike to increase.