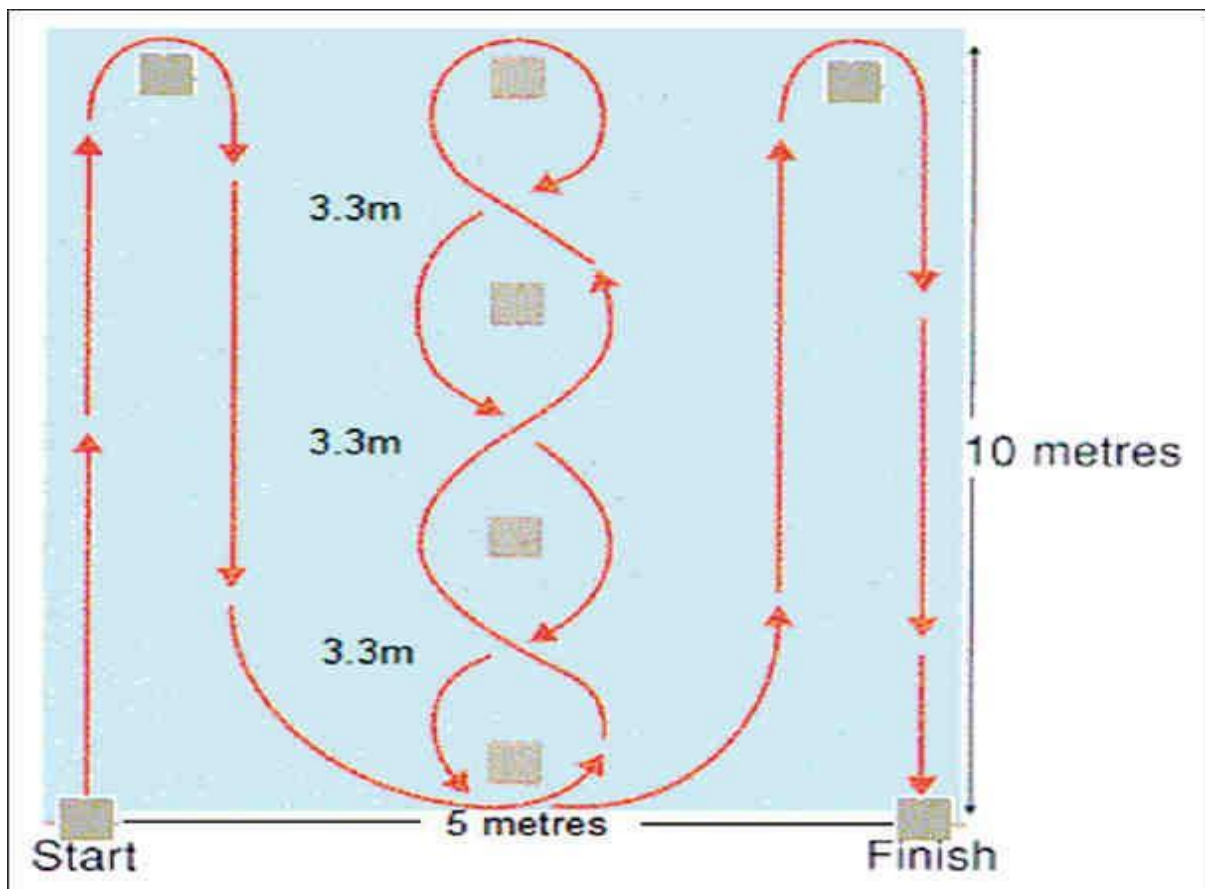


Physical Education

Training Analysis: Component 1- Agility

Agility is defined as the ability to accelerate, decelerate, and change direction quickly while maintaining good body control (www.functionalbasketballcoaching.com 18/09/17). Basketball is an extremely fast game with constant changes of direction, therefore acceleration is an extremely important aspect of continual agility. An individual, or team, who is extremely agile, will excel on fast breaks, defence, and pressing to be able to explode when penetrating to the basket, get into position to take a charge, or to catch up to an opponent after a turnover in a fast break situation (www.functionalbasketballcoaching.com 18/09/17).

Illinois Agility Test



<https://www.brianmac.co.uk/illinois.htm>

Gender	Excellent	Above Average	Average	Below Average	Poor
Male	<15.2 secs	15.2 - 16.1 secs	16.2 - 18.1 secs	18.2 - 19.3 secs	>19.3 secs
Female	<17.0 secs	17.0 - 17.9 secs	18.0 - 21.7 secs	21.8 - 23.0 secs	>23.0 secs

Attempt 1	Attempt 2	Attempt 3
17.33 seconds	17.9 seconds	16.86 seconds

Validity- If I were to include dribbling a basketball in my attempts this would be more accurate however not using this means i can compare my score to other people's. My average score of 17.36 puts me in the above average category. Agility is very important in basketball and so I should improve upon this to enhance my game. We used stopwatches to provide an accurate time to 2 decimal places however this means that the final time includes human reaction time which may result in a longer time. I also did a practice run through as suggested by the protocol and to make sure I knew what to do which ensured a valid test.

Reliability- I undertook the test indoors on a non-slip surface using cones to mark turning points and a measuring tape to measure the 10m, 5m, and 3.3m differences placing cones down at any place you had to stop or turn. I followed the protocol by starting up with a 10 minute warm up and familiarising myself with the setup. I did the 3 attempts on the same day whilst wearing appropriate footwear and having the same interval in between each attempt to increase the reliability. I received positive, extrinsic feedback which encouraged me to work hard and achieve my best capable result. This contributed to the factors of reliability. However, the more repeats you completed the better you got at the test, improving turning techniques which could lower the end time.

Component 2- Speed

Acceleration is based on the ability to overcome your own body weight and inertia as rapidly as possible (www.bodybuilding.com 21/09/17). Speed is important in basketball as it enables you to make hard drives to pass up the defence. You also need quick reflexes which will help you with steals and rebounds.

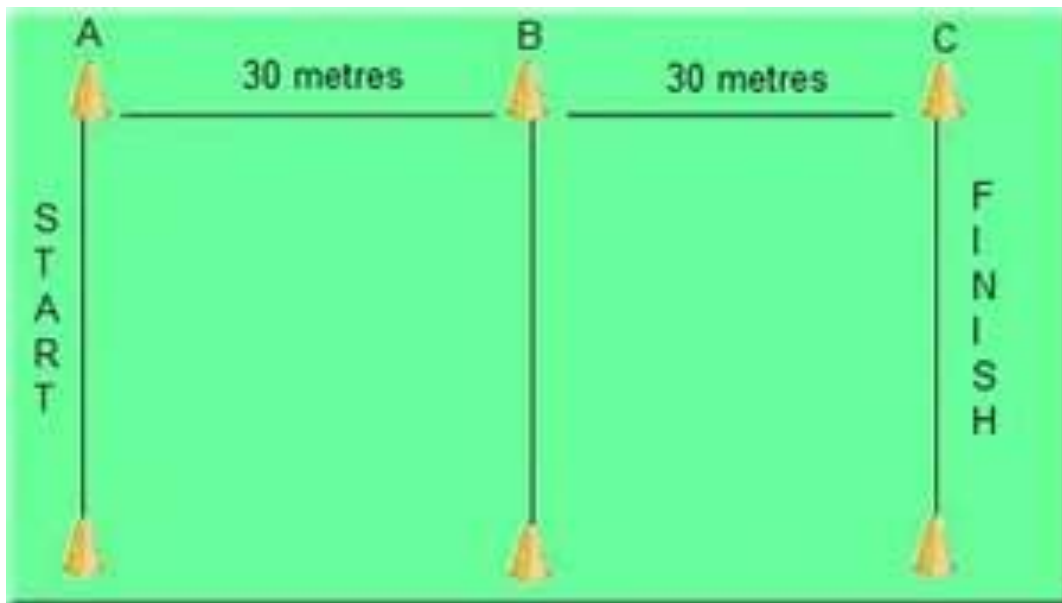
60metre sprint test.

In this sprint test, firstly, we measured out 30 metres and marked it with a cone. We then measured another 30 metres and marked it with another cone resulting in a 60 metre course. The protocol for this was to sprint the whole 60 metres using a stopwatch on a non-slippery surface. This allowed the maximum speed to build up. The stopwatch started once we reached the first 30 metre mark and finished when we reached the final 60 mark.

Attempt 1	Attempt 2	Attempt 3
5.57	5.32	5.4

Rating	Male	Female
Excellent	< 4.80	< 5.30

Good	4.80 - 5.09	5.30 - 5.59
Average	5.10 - 5.29	5.60 - 5.89
Fair	5.30 - 5.60	5.90 - 6.20
Poor	> 5.60	> 6.20



Validity- This test can be used for almost any sport as lots of sport require some type of sprint however I could include dribbling a basketball. But if I did so, I would not be able to compare my times to others. My average score of 5.43 seconds places me in the 'Good' category according to Brian Mac. Being able to sprint in basketball is very important as it can be the difference between a basket being scored or a basket being stopped. I can improve upon this by doing sprints regularly with 100% maximum effort. My first score is lower than the rest because I did not complete a practise run and so jogged the first 30 metres instead of sprinting resulting in an invalid score. I then sprinted for the full 60 metres the 2nd and 3rd time.

Reliability- I undertook this sprint test 3 times with the same clothing, day and on the same surface. This reduces the chance of any unfair advantages being given to one time and not the other. I warmed up for 10 minutes beforehand as instructed by the protocol and took an even one-minute rest between each attempt. However, i had to use a stopwatch to measure my time which was controlled by another classmate. This could result in an unrealistic time if the stopwatch started too early or too late therefore increasing human error. I also repeated the test 3 times to improve the reliability but did not do a practice run and was not aware of the full protocol which also resulted in a lower average score.

Component 3- Power

Power is essential in basketball, most specifically the ability to jump higher and run faster (www.bodybuilding.com 26/09/17). This is needed in particular when you are in around the post with bigger players and have to push past to score. Power can be improved by increasing force, distance and minimising time however you do have to consider that your genetic makeup can influence your ability to jump higher and run faster.

Vertical jump test



Gender	Excellent	Above average	Average	Below average	Poor
Male	>65cm	50 - 65cm	40 - 49cm	30 - 39cm	<30cm
Female	>58cm	47 - 58cm	36 - 46cm	26 - 35cm	<26cm

Attempt 1	Attempt 2	Attempt 3
40cm	41cm	41cm

Validity- This test can be used for many sports however is very useful for basketball. It gives an accurate representation for how high you can jump and how to improve your height. I warmed up to allow several attempts with suitable rest periods in between each try. My average score was 41cm which is in the lower end of the average category according to 'Brian Mac'. The 'protocols' are easy to follow and the test was not affected by external factors e.g. weather.

Reliability- When jumping, a piece of chalk was used to measure the highest point of the jump. This was accurate as it measured the highest possible peak that was reached and so enabled me to measure with a measuring tape accurately therefore making it reliable.

Understanding the protocol helped with performing the test correctly on the same day in the same conditions.

893/900 total

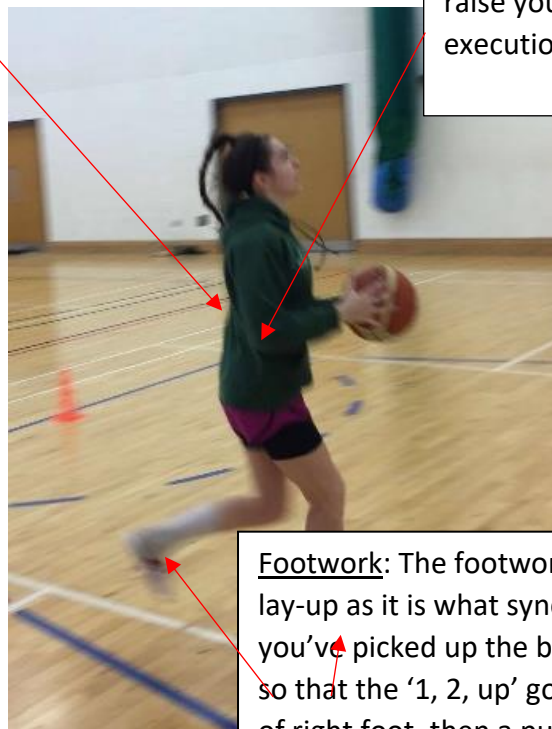
<https://functionalbasketballcoaching.com/agility-basketball/>
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<https://www.bodybuilding.com/fun/peak31.htm>
<https://www.brianmac.co.uk/sgtjump.htm>

TECHNICAL ANALYSIS: Analysis of the technical detail for each of the three phases and result using annotated images of the performer and comparison between student and a higher-level performer for the three phases using appropriately annotated images.

Right handed lay-up

Stage 1: Preparation

Posture: After receiving a pass/picking up your dribble you should have a flat stomach and back because **this ensures your balance when starting the layup process**. You should have the ball in both hands to **protect it from any defenders**.



Elbow: Your elbow should be kept in towards your body. This helps **ensure control over the ball** and helps with **direction** when you raise your elbow to your eyebrow in the execution.

Footwork: The footwork is the most important part of the lay-up as it is what sync the movements together. When you've picked up the ball, you should be on your right foot so that the '1, 2, up' goes smoothly. The '1, 2, up' consists of right foot, then a push off of your left **foot to be able to reach a height which is comfortable for you to shoot**. For the preparation, the footwork is very important as it make sure **you are balanced and can follow through with your movement**.

Stage 2: Execution

Aim: You should aim for the top corner of the backboard and hit the ball lightly so it drops into the **net softly**. You should flick your wrist so that you **create rotation** on the ball which also allows it to go into the net softly.

Hand: Your left hand should act as a guard to the ball. This **protects the ball from defenders** so that it makes it harder for them to intercept your shot.

Posture: Your posture should be even straighter than the preparation as this **controls your balance** and creates height to achieve maximum height.

Arms: Your right arm should extend fully, with your elbow reaching your eyebrow, **to allow the maximum height**.

Footwork: The right leg and right arm should elevate at the same time when pushing off of your left leg. This action **provides power** and allows you to extend your body to get as high as possible to shoot the lay-up.



Stage 3: Recovery

Arms: Your arms should return back by your side so you can be ready to **rebound** and **put it back up** or to pass it in from the base line.



View: You should always keep your eyes on the rim/backboard to **enable yourself to predict whether the ball is going to go in or bounce back out**. This habit can **speed up your reaction** time in rebounding so that the game can be continued on quickly.

Footwork: Landing on both feet would be more desirable however landing on one foot is fine also after executing your layup. This **decreases the risk of an ankle injury**.

Knee: There should be a slight bend in the knee when landed on the ground **to absorb the impact** from the jump. This also allows you to **carry on into a run** to get back on defence.

Strengths and weaknesses with areas for development.

Strengths

I am consistent in always performing the correct footwork so that I am always balanced when shooting the layup.

My eyes are always looking at the basket, which ensures focus on where to put the ball.

Similar to the athlete, I have my left hand up to protect it from defenders.

Weaknesses

The athlete is able to reach a higher height in the execution phase and therefore this is something I should work on.

I should improve on landing on both feet to decrease risk of injury.

I could increase the speed of the skill so that it increases intensity and can also help reach a higher height

Improvements of the skill

To improve on the height capability, I should build upon my strength so that this can improve my power. This should enable me to reach a bigger height so I can get closer to the basket to make it easier for myself when shooting a layup.

To improve landing on both feet, I should practice jumping up on one leg and landing on two feet continuously to retain it in my brain so that I remember to put it into the skill. This can then be adopted into the layup when playing a match which should overall reduce risk of ankle injury.

To increase intensity for myself, I should practice anaerobic activity such as 100m sprints. This will increase my speed so that I can get on the defender in fast breaks quickly. If I also increase my fitness, it can give me more stamina so I can play better in my games. Increasing speed on fast breaks offensively, it means it can also increase the height I jump at as it increases power.

Preparation



Comparing these photos, the athlete is up in the air about to shoot however I am only on my first step however our form is still similar in the fact both our eyes are set on the net to make sure you are focused on the target. Both hands are on the ball to hold on to it tightly to reduce risk of it being intercepted. Our legs are both bent at the knee so that when we land it absorbs the impact of landed from a height.

Execution



The professional athlete here is able to reach a higher height than I am, as they are able to jump further because they are stronger and therefore have more power to jump higher. This enables them to reach the net and therefore make an easier basket. The athlete and I both have our right leg up which is key when performing a layup. Both of our elbows are reaching toward our eyebrow that is also important to allow maximum height. Our left hand is also intact protecting the ball from defenders that is also a main principal in carrying out the layup.

Recovery



During the recovery, the professional athlete and I are very similar. Both of our heads are looking up with our eyes looking at the ball whether it will go in or not. Both have landed on one leg with the knee slightly bent to absorb the landing impact. Our arms are both down by our sides and we are ready to rebound the ball. This is important to ensure minimal injury and to guarantee readiness to play on.

Component of Performance selected based on outcome of Performance Analysis

For my PDP I am going to focus on localised muscular endurance.

Local muscular endurance means the ability of one muscle or group of muscles to sustain repeated contractions against submaximal resistance for a certain period of time. A submaximal resistance is anything under your one-rep maximum for an exercise. This will include dribbling the ball, jumping for rebounds, and running at a high intensity constantly.

To improve muscular endurance, I should train active muscle groups for six to 10 exercises at two to three sets per exercise in a session. The intensity of each set should be 67 percent or less of your one-rep max for that exercise, and I should perform 12 or more repetitions in each set. The rest periods should be no greater than 30 seconds in between sets. This mode of training will increase my muscular endurance for my arms, core and legs.

Strength endurance must be developed in order to stay physical throughout an entire basketball game. Strength endurance is most important for power forwards and centres who need to rebound and box out throughout an entire game.

Analysis and justification of SMARTER principles.

Using SMART targets will enable me to have a clear focus on achieving the end result.

S – Specific; My targets need to be specific to the actual weakness and the conditions under which it is used in performance. For my position as a wing, this would mean improving my muscular endurance in my arms for repeating the same movements; dribbling the ball.

M – Measurable; I need to be able to compare my targets throughout, especially my comparing to the finished level, and so measuring and testing myself frequently will do this. For this I will keep a record after all tests done on the dates completed, so that i can look back and see any change whether it is positive or negative.

A – Achievable; My target must be obtainable therefore mustn't be too easy or too difficult. It should maintain constant improvement for the relevant fitness components, such as improving my muscular endurance in my core and legs in my circumstance.

R – Recorded; I should be taking note of my scores in a format that will allow for accurate performance development monitoring. This should be in an accessible place such as a document on my computer so it won't be misplaced or forgotten about.

T – Time; In order to see a change whether it be positive or negative, a length of time should be set. In this case, mine will be 8 weeks in which I will complete 2 extra sessions on top of my basketball training.

PARQ

PARQ tests can be used in a meaning of self-screening to find out more about your physical ability. Once I answer the PARQ test shown below, I am able to perform my basketball session safely.

Has your doctor ever said that you have a heart condition and that you should only perform physical activity recommended by the doctor? YES **NO**

Do you feel pain in your chest when you perform physical activity? YES **NO**

In the past month, have you had chest pain when you were not performing any physical activity? YES **NO**

Do you lose your balance because of dizziness or do you ever lose consciousness? YES **NO**

Do you have a bone or joint problem that could be made worse by a change in physical activity? YES **NO**

Is your doctor currently prescribing any medication for your blood pressure or for a heart condition? YES **NO**

Do you know of any other reason why you should not engage in physical activity? YES **NO**

As I have answered 'NO' for the questions above, this means I am safe to begin my basketball training sessions.

Application and use of the Principles and Methods of training

Specificity- creating a training programme that is tailored specifically to your sporting or athletic goals. For this I am going to focus on my upper body strength and will test this with a press up test. This is important as a basketball player as you must have the endurance to continue to dribble the ball and the strength and endurance to shoot from a far range.

Progression- consistently looking to better your results and improving every time you go out on the court. For this I must progress over a period of time which in this case, will be 8 weeks. I will include exercises such as sit ups/press-ups and to progress this I will increase my reps per set after every few weeks, e.g. increasing 10 to 15 repetitions.

Overload- As your body adapts to the demands of your training, you must apply the principle of overload in order to progress. This means pushing your body outside of your comfort zone to a limit that will force it to adapt. In order to achieve overload, I will increase reps every few sessions e.g. 10 to 15, and decrease my rest time in between sets e.g. from 1 minute to 40 seconds.

Recovery- is essential in order to keep applying the principles of progression and overload. If you do not allow your body sufficient time to recover, it won't be able to adapt and grow stronger. This means having dedicated rest days in order for your body to recover. I will be using recovery techniques on my rest days such as foam rolling to reduce lactic acid build up and drinking hypotonic drinks to help fuel the body will also aid in your body adapting, repairing and recovering.

Tedium- This is important so that you don't get bored and lose motivation. I will be switching up the training sessions from upper body exercises to core exercises in order to vary up my sessions every week.

Methods of training

One method of training I will be using is circuit training. Circuit training utilizes a group of strength exercises that are completed one after another. Each exercise is performed for a specified number of repetitions or for a set time before moving on to the next exercise. I will be using circuit training for my core sessions with activities such as plank and sit ups. Circuit training will also assist my press up and plank session in order to help me overload and progress further.

A second method of training I will be using is resistance exercises. This is said to improve endurance by helping a player's stamina and increasing their ability to compete at peak performance throughout an entire game (www.myosource.com 10/10/18). The resistance band will be placed at my knees during squats and side lunges to ensure my knees and legs stay in one place so that my muscles are worked harder. This will help improve my game as it'll increase the stamina in my legs which will be useful for my defensive position.

Coaches Comment

"Cara informed me of her PDP and asked which methods of training would be most suitable. I suggested circuit training as this is a method she is familiar with as it is used in our training sessions. Resistance training is also something Cara would be familiar with through her BNI strength and conditioning sessions, in which resistance bands would be used often. This would enable Cara to make her PDP sport specific as she would be familiar with the methods of training used."

Borg Scale

This is a Borg scale. It is a way of measuring physical activity intensity levels and will be what I refer to during my coursework and session plans

RPE Scale (Rate of Perceived Exertion)	
1	Very Light Activity (anything other than complete rest)
2-3	Light activity (feels like you can maintain for hours, easy to breath and carry on a conversation)
4-5	Moderate Activity (feel like you can exercise for long periods of time, able to talk and hold short conversations)
6-7	Vigorous Activity (on the verge of becoming uncomfortable, short of breath, can speak a sentence)
8-9	Very Hard Activity (difficult to maintain exercise intensity, hard to speak more than a single word)
10	Max Effort (feels impossible to continue, completely out of breath, unable to talk)

FITT principle

Frequency	2 days a week
Intensity	7-8 RPE scale
Time	30 minutes each session
Type	Circuit training to improve core and arm strength.

Selection of Relevant fitness tests to monitor progress

Press up test

'Plyo push ups' build explosive hands and a powerful upper body. It is an effective way to build upper body strength in one exercise (www.sportsrec.com 10/10/18). To measure my muscular strength, a fitness test I am going to do will be the press up test. This will assess the strength endurance of my upper body muscles. To take this test I will require a non-slip surface and an assistant. During this test I will perform the modified press up.



I will then compare my results with the table below, using the aged 17-19 category.

Table: Push Up Test norms for WOMEN

Age	17-19	20-29	30-39	40-49	50-59	60-65
Excellent	> 35	> 36	> 37	> 31	> 25	> 23
Good	27-35	30-36	30-37	25-31	21-25	19-23
Above Average	21-27	23-29	22-30	18-24	15-20	13-18
Average	11-20	12-22	10-21	8-17	7-14	5-12
Below average	6-10	7-11	5-9	4-7	3-6	2-4
Poor	2-5	2-6	1-4	1-3	1-2	1
Very Poor	0-1	0-1	0	0	0	0

On my first attempt, I completed this test in the 8-9 category of the Borg scale and scored 18. This is a high average and so my goal for this is to get into the above average in the next coming weeks. I will do this by regularly completing sets of press ups and other activities to improve my upper body strength.

4 weeks into my fitness programme I tested my press up test for a second time, completing it in the 8-9 category of the Borg scale. I scored 22 which is in the above average category. This showed that my frequent training was effective as my press up scores were improving.

My final test for press ups I scored 26. This again improved from the previous score and so proved my frequent training was effective.

Wall sit test

A second muscular endurance test I will partake in will be a leg strength test. This will be based on a wall squat. To undertake this test, I will lean against a wall in a squatting position and lift one leg and hold for as long as I can. I will then repeat this with the other leg. I'll then compare my result with the female category below.

Gender	Excellent	Above Average	Average	Below Average	Poor
Male	>102 secs	102 - 76 secs	75 - 58 secs	57 - 30 secs	<30 secs
Female	>60 secs	60 - 46 secs	45 - 36 secs	35 - 20 secs	<20 secs



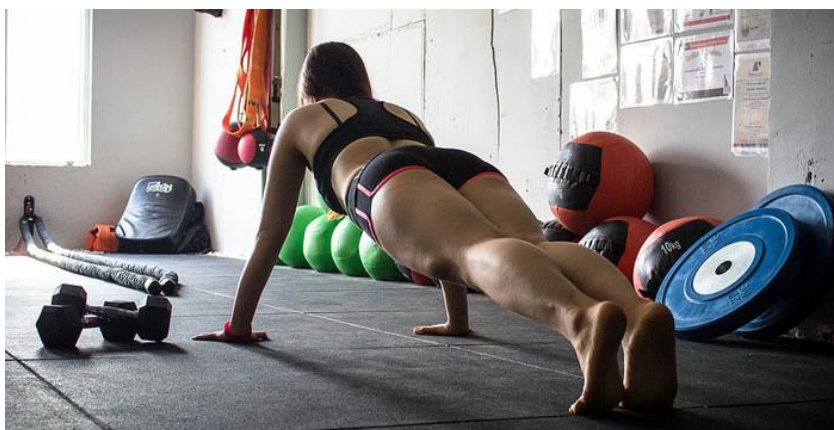
I completed this test at an 8-9 category on the Borg Scale. My score on each leg was 25 seconds which puts me into the 'Below Average' category. I found that focusing all my weight on one leg proved rather difficult. Leg strength is very important in basketball as you have to hold your defensive position for long periods at a time, and so I felt that this would be an effective component of fitness to improve upon. My goal will be to further improve this by 10 seconds by the end of my programme, which is 8 weeks long. This will be done by frequent training 2 times a week, involving squats and wall sits.

My second attempt at the leg strength testing I scored 30 seconds which is an improvement of 5 seconds. I was very happy with this result as I felt myself able to hold the position for longer which proved my training was effective.

My last testing, I was motivated to make the average category and so was able to reach 36 seconds which effective training. I am very pleased with this component as it is an important strength to have in basketball, and I feel my game has improved because I can play better defence due to my improved leg strength.

Plank test

A third test I will partake in will be a plank test. This will measure the control and endurance of my back/core and how well I stabilize the muscles used. The aim of this test is to hold an elevated position for as long as possible. During this, I will maintain a plank position for as long as I can, and retest this twice within the 8-week duration of my development programme. I will also compare my score to the table below.



Excellent	>6 minutes
Very Good	4-6 minutes
Above Average	2-4 minutes
Average	1-2 minutes
Below Average	30-60 seconds
Poor	15-30 seconds
Very Poor	< 15 seconds

Within my first test I scored 30 seconds. This was in the poor/below average category. I felt as though this was as long as I could hold it for and decided to set a goal to reach a minute by the end of my testing.

The second testing I reached 45 seconds which is an improvement of 15 seconds. This was a stable result in the below average category.

My third and final testing I reached 65 seconds which is in the average category. I felt myself push in the last testing in order to reach my goal. This was achieved through my session plans and improving my core stability strength.

Critical evaluation as to the effectiveness of the programme in achieving its aim.

My aim was to improve my localised muscular endurance, specifically in my legs, arms and core. I decided to focus my development plan on this because as a basketball player, having great leg strength is important to be able to play defence effectively and to ensure I can play at a high intensity. Having strong leg muscles translates into explosiveness and allows me to stop and change direction quickly (www.livestrong.com 12/12/18). Having a strong core contributes positively as a basketball player because this helps increase my endurance and stamina for game situations that can last for up to and over an hour. With an increase in arm strength, I will be less prone to my arms becoming weak after repeated dribbling movements and shooting of the ball.

My training process will include 2 additional sessions to my basketball training. In these 2 additional sessions, one will focus on core strength with exercises such as sit ups and planks, whilst the second session will consist of leg and arm strength exercises such as press ups and resistance band squats. I will do these exercises in my home on two separate days as this allows rest days so that I fully recover from any DOMS I may experience, therefore completing my exercises efficiently and effectively.

Reasons for changes in test scores

My testing took place 3 times throughout the duration of my personal development plan; week 1, week 4, and at the end of week 8. I completed these tests using the same protocol, warming up for the suggested 10 minutes the protocol mentioned, wearing the same clothes and on the same surface (mat). This ensured fairness in my results as if I were to complete one test on a slippery floor, and another on a dry floor, this would affect my results because my grip would decrease on a slippery floor and therefore I wouldn't achieve a fair result. Because of the similarity in each of my testing, I feel as though this is a positive point.

The exercises performed in my session plans I decided not to adjust as I felt as though it would be unfair to change exercises half way through my programme, however I improved after 4 weeks and this therefore proved my exercises were still effective.

I could improve my testing process by testing more often and making adjustments to my programme as this would've ensured the most effective way to improve my core, leg and arm strength. I also found my sessions to be quite repetitive, therefore tedious and so if I were to change something about my future development plan I would choose a range of exercises and mix up each session so that it wasn't the same two sessions each time- such as an endurance session like rowing, as this helps contribute to leg, arm and core strength positively.

Development Plan Results

	Week 1 test	Week 4 test	Week 8 test
Press up test	18	22	26
One-leg wall sit squat	25	30	36
Plank	25	30	40

My results reflect positively on my aim to improve. I had an aim to progress muscular endurance in my arms to improve the repeated movements of dribbling the ball in basketball. My objective was by completing arm strength tests such as the press up tests and press up to planks I included in my session plans. My test scores demonstrate this component improved by 8 press ups within the 8 weeks.

I wanted to maintain constant improvement for improving my muscular endurance in my core and legs. This was done by completing a wall sit test to improve my leg strength, and a plank test to further progress my core stability. I improved this by relevant circuit training, twice a week.

I also wanted to measure and test myself frequently, which I completed every 4 weeks whilst taking note of my scores in a format that will allow for accurate performance development monitoring. I also set a time to complete this improvement by, which was 8 weeks. Therefore, this demonstrates that my results support my initial aims and objectives.

My fitness levels improved throughout my development plan as I was training my muscles as frequently as up to 4 times a week, which is more than I usually would. This enabled me to progress my strength and stability in the given muscle groups. My test results in the relevant fitness tests also support the idea that I have become stronger. I have also felt myself abler to cope with high levels of demand in my legs - especially in a defensive position during basketball match situations.

Due to the high demand of exercise my body was under, I am able to hold defensive positions longer, and I'm able to dribble the ball more efficiently due to the increase in arm strength. This therefore has enabled me to work harder for longer in a basketball game, which requires high intensity levels both aerobically and anaerobically. This has led to my muscle fibres becoming stronger, and I have developed my slow twitch fibres which enables me to produce continuous actions for an extended period of time. Alongside this, my heart muscles have become stronger due to the aerobic endurance conducted and therefore can pump blood more effectively which in turn has increased my cardiac output and stroke volume.

My development plan has improved me psychologically. My mood has boosted positively due to my improved self-esteem and body image. Being in full time education, employed, and partaking in regular exercise through basketball often leaves me feeling tired after a day's work, however after partaking in planned physical activity has given me increased levels of energy, and I feel able to cope with

stress more as I have been taking part in exercise 4 times a week (www.appliedsportpsych.org 12/12/18).

Coaches Comment

“Cara informed me of her PDP and I guided her into selecting her chosen components; core, leg strength and arm strength as these are key components of fitness in basketball. I have noticed a significant difference in her endurance during games, especially during defence, in which she held a much more effective position. This would be due to the plank and wall sit testing she did. I assisted Cara by including planks and squats into our weekly training sessions, which not only benefitted her, but also benefitted the whole team. I recommend to Cara to continue to perform these exercises as they will help improve her basketball game.” – Scottie Summersgill, level 1 coach at Andersonstown Tigers Basketball Club.

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