

## Candidate 1

### Developing power and acceleration in football

1A

#### Coach Feedback Questionnaire

Coach Feedback Questionnaire is good as it gives an unbiased overview of my all-round performance. This means that I can get feedback on my performance as a whole and identify the more specific needs for improvements allowing me to choose an area to target in my PDP. It is also appropriate as my coach is a very experienced person so the feedback that they give me will be very reliable and valid due to my coach having a vast amount of knowledge of the sport that they picked up throughout their career in the professional game, while also having a deep insight into my performance. Additionally, a questionnaire is good as it contained open and closed questions which allow my coach to give detailed responses which gave me a broad variety of qualitative and quantitative data to analyse.

#### Video Games Analysis

A video games analysis is good as I can go back and re-watch my performance and slow down the video. This means that if I miss something when watching my performance for the first time then I can go back and analyse it again to really ensure the data collected is 100% accurate. It is also good as it visually shows me my strengths and weaknesses while performing in a competitive environment. This means that it is very easy to realise where I need to improve and provides tangible evidence that cannot be disputed to make my weaknesses clear and obvious.

#### Standard Fitness Testing

Standard Fitness Testing is good as it provides a permanent record. This allows me to refer back and compare my results in the future to see if I have improved. It is also good as I can retest at the midpoint of my PDP and then look at my results, highlighting if there are any needs for a change in my PDP to make it harder or easier to ensure I achieve my goals. Standard Fitness Testing allows me to set realistic goals which will then motivate me to work harder in training and to push myself as far as I can to try and meet these targets in my training.

#### 1v1 Jumping Test

The 1v1 jumping test was useful as it is one on one competition against someone of a very similar height and weight which means that there is no physical advantage, so the results are very accurate specifically to who jump higher, this gives an accurate insight into my performance.

I used the 1v1 Jumping Test because it is flexible and can be changed to replicate different match scenarios, showing me a deeper analysis into how I perform in different game realistic scenarios. This then means I can work on a variety of specific game scenarios in relation to my role in the team to improve my performance.

1B

I asked my coach to fill in a questionnaire regarding my performance and what my strengths and weaknesses are, (appendix 2) where he identified my biggest weakness when performing being my

power when accelerating. This meant that I was often second to the ball on the ground when sprinting from a standing position. At times I can get caught out of position and leave a hole in the team giving the opposition a better chance to create a goal scoring opportunity. My coach also highlighted that I struggle to deal with longer balls in behind. This is due to my lack of acceleration especially when turning back to run at my own goal. My coach then elaborated by saying that this affected his decision making when deciding the team tactics as it is harder to play a high defensive line as I can get caught out in behind. This means that the opposition get more time on the ball in our half due to our team playing deeper, resulting in chances to score.

Video Games Analysis appendix 3 specifies that my CRE is not the problem as I am beaten in a sprint 3 times in the first 15 minutes and 3 in the last 15. This means that no matter how far into the game I am, my success rate when trying to beat an opponent in a sprint is relatively low. This highlights that my power when accelerating is my issue and not my CRE which can leave my team in a vulnerable position when an opponent beats me in a sprint. My video games analysis showed that I am very often slow to get back into position, with it happening 18 times throughout the 90 minutes (appendix 1). This often left my team in a vulnerable position defensively as I am one step behind the attacker and this makes it harder for me to make a challenge to try and win the ball back. This then allowed the opposition to attack our goal as they had a numerical advantage due to me being slow to recover, which, if the opposition takes the opportunity and scores a goal, immediately makes it much harder for my team to win the game and puts preventable pressure on the attacking side of my team. Another discovery I made from my Video Games Analysis(appendix 1) is that I am very inconsistent when challenging in the air against an opponent winning 16 across the 90 minutes and losing 11. This highlights that my power when jumping needs to improve as if I don't win a header while defending an opposition corner, then my team may struggle to get out of our box as the opponent has us penned in or they could steal the ball and score. This would result in my team struggling to win back possession, meaning that we would potentially tire out quicker, due to having to cover more ground while trying to win the ball back, than the opposition, putting them in an advantageous position.

From my standard fitness testing, I got 95kg for a 3 rep max back squat and 105kg for my 1 rep max back squat (appendix 6). When comparing these results to the national norms tables I am below average which confirms my lack of leg power. My results could be this poor due to the fact I have not been able to go to the gym for 6 months as they were closed. However, this lack of power puts me at a big disadvantage when playing against a physical striker as they could push me off them easy and get a shot away. After conducting my standard fitness testing appendix ..., my average result for the 50 metre sprint was 6.73, which is a below average result. This once again reinforces that I really need to improve my power to accelerate faster as if I had better leg power, I would be able to exert more force into the ground to cover more distance in a shorter period of time. This means that if I am in possession of the ball and am being tightly marked then I am not able to sprint away from the opponent to make a pass. This then reduces my passing options dramatically and puts me at a bigger risk of losing the ball for my team.

During the 1v1 heading test I won 7 headers out of 10 against someone the same height as me when jumping off my right leg, whereas I only won 3 out of 10 when jumping off my left side (appendix 5). This clearly indicates a disparity in the strength of my left leg and my right. This means I am not able to jump properly off my left leg, meaning I can only jump off my right leg. The findings that my right leg is stronger than my left is supported by the fact that on the 3 rep max leg press I got 65kg on my

left side and 80kg on my right and on the 1 rep max I got 70kg on my left side and 85kg on my right. This again highlights the alarming difference in strength between my right and left legs. This may be a contributing factor in matches as I cannot predict how and where the ball will go, so not being able to effectively jump off both limits the numbers of successful defensive headers I can make.

In the heading test I also discovered that I am better at defending crosses from a deeper position than from a corner, winning 6 out of 10 from a deeper position and 4 out of 10 from a corner. This could be because I can take longer to judge the flight of the ball and put myself in a position where I am more comfortable jumping off my stronger leg, therefore not requiring me to use my 'weak leg' to get up in the air to make contact with the ball. However, I cannot rely on this in every scenario, and these results show that when defending a corner there is less chance of me winning the header against my opponent. This resulted in the opponent getting a free header and having a golden opportunity to score.

## Candidate 2

### Improving my smash in Badminton

2a

The Badminton smash is defined as “**a quick, powerful shot, hit from high up downwards and aimed at the opponent's court**”<sup>1</sup>. Having the ability to carry out an effective smash action in a rally is vital as it's one of the most used actions in badminton.<sup>2</sup> Studies show that “**Smashes are the most common winning shot, especially in men's singles.**”<sup>3</sup> A study done by The Chinese University of Hong Kong shows that the use of a smash was around 78% effective when used.<sup>4</sup>

#### Improving my Smash

##### Repetition Drills

A repetition drill is defined as “**one complete movement of a particular exercise**”<sup>5</sup> which is then repeated multiple times. “**Repetition helps improve speed, increases confidence, and strengthens the connections in the brain**”<sup>6</sup>

Repetition drills are useful when developing a skill/technique action because they make you focus on hitting “**every shuttle correctly and with maximum intent**”.<sup>7</sup> Repetition can boost a players

<sup>1</sup> <https://www.artengo.co.uk/advice/would-you-learn-more-about-smash-a-19144#:~:text=Are%20you%20mad%20about%20badminton%3F&text=The%20smash%20is%20one%20of,aimed%20at%20the%20opponent's%20court.>

<sup>2</sup> <https://www.artengo.co.uk/advice/would-you-learn-more-about-smash-a-19144#:~:text=Are%20you%20mad%20about%20badminton%3F&text=The%20smash%20is%20one%20of,aimed%20at%20the%20opponent's%20court.>

<sup>3</sup> <https://www.badmintonbible.com/tactics/singles/winning-shots/smashes>

<sup>4</sup> Yuen-Ming Tong, Youlian Hong - 'The Playing Pattern of world's Top Single Badminton Players'

<sup>5</sup> <https://www.sharecare.com/health/types-of-exercise-programs/what-is-a-repetition#:~:text=A%20repetition%20can%20be%20defined,a%20given%20amount%20of%20time.>

<sup>6</sup> <http://www.readingbrightstart.org/articles-for-parents/lets-repetition-important-learning/>

<sup>7</sup> <https://www.thebadmintonguide.com/badminton-drills/>

confidence in their shot as it allows connections to be made in the brain, resulting in quicker reactions to the movement around them<sup>8</sup>, **“High quality repetition will help your brain learn patterns”**.<sup>9</sup>

Studies suggest that the goal of repetition is to help you improve your overhead strokes and speed<sup>10</sup> which is useful because speed is one of the key components that make up power.<sup>11</sup> By repeating the skill multiple times the action becomes engraved in your muscles memory making it easier to perform, resulting in increased speed and power generation which makes the skill more efficient when played.<sup>12</sup> The use of Repetition drills should be monitored though as they can easily get boring, opening up space for distractions.<sup>13</sup> **“The drills and practice exercises should be used occasionally to maintain proficiency”**.<sup>14</sup> An article published by Zekan and Ciliga (2002) talks about how when carrying out a Multishuttle (Repetition) drill with the goal of increasing muscular strength, it's most effective when you do 20 forehand smashes, 20 backhand smashes and then take a short rest with the recommendation of repeating the procedure 5-10 times in a session.<sup>15</sup>

### Shadow Practice

Shadow practice is defined as repeating the movements of your chosen skill multiple times without any equipment.<sup>16</sup> Shadow practice is effective as **“the absence of the (shuttle) allows the player to concentrate on getting his technique correct, and what the correct technique feels like.”**<sup>17</sup> To ensure that the technique is being done correctly you can make a partner watch and provide you feedback after every rep.<sup>18</sup> One thing I learned during my Higher PE is that if you use shadow practice coupled with the wrong technique, it can lead to an incorrect process being engraved into your muscle memory which is why it's important to work with a partner or get feedback because both are capable of keeping you constantly carrying out the correct technique and preventing you from obtaining bad habits. In badminton, shadow practice is considered one of the best drills for developing footwork as it also increases your court endurance, speed, anticipation, timing and physical condition.<sup>19</sup> The duration of a shadow practice can last as long as needed with the individual rally times for the practice usually being between 10 seconds - 2 minutes each.<sup>20</sup> By doing the shadow practices regularly, the technique will become easier and your physical ability will improve as well.<sup>21</sup>

<sup>8</sup> [https://www.youthsportpsychology.com/youth\\_sports\\_psychology\\_blog/boosting-sports-kids-confidence-with-repetition-and-practice/#:~:text=Repetition%20in%20Youth%20Sports%20To%20Build%20Confidence&text=%E2%80%9CHigh%20quality%20repetition%20will%20help.learn%20patterns%2C%E2%80%9D%20he%20says.&text=In%20other%20words%2C%20repetition%20can.to%20what's%20happening%20around%20them.](https://www.youthsportpsychology.com/youth_sports_psychology_blog/boosting-sports-kids-confidence-with-repetition-and-practice/#:~:text=Repetition%20in%20Youth%20Sports%20To%20Build%20Confidence&text=%E2%80%9CHigh%20quality%20repetition%20will%20help.learn%20patterns%2C%E2%80%9D%20he%20says.&text=In%20other%20words%2C%20repetition%20can.to%20what's%20happening%20around%20them.)

<sup>9</sup> [https://www.youthsportpsychology.com/youth\\_sports\\_psychology\\_blog/boosting-sports-kids-confidence-with-repetition-and-practice/#:~:text=Repetition%20in%20Youth%20Sports%20To%20Build%20Confidence&text=%E2%80%9CHigh%20quality%20repetition%20will%20help.learn%20patterns%2C%E2%80%9D%20he%20says.&text=In%20other%20words%2C%20repetition%20can.to%20what's%20happening%20around%20them.](https://www.youthsportpsychology.com/youth_sports_psychology_blog/boosting-sports-kids-confidence-with-repetition-and-practice/#:~:text=Repetition%20in%20Youth%20Sports%20To%20Build%20Confidence&text=%E2%80%9CHigh%20quality%20repetition%20will%20help.learn%20patterns%2C%E2%80%9D%20he%20says.&text=In%20other%20words%2C%20repetition%20can.to%20what's%20happening%20around%20them.)

<sup>10</sup> <https://www.burbankbadminton.org/badminton-drills-to-include-in-your-training/>

<sup>11</sup> <https://shuttlesmash.com/power-in-badminton/>

<sup>12</sup> <https://blogs.glowscotland.org.uk/ea/AuchinleckAcademyPE/higher-nab-revision-methods-of-practice/>

<sup>13</sup> <https://www.grassrootscoaching.com/football-coaching-repetition-without-being-repetitious/>

<sup>14</sup> <https://classroom.synonym.com/remediation-strategies-students-5421219.html>

<sup>15</sup> Lidija Petrinović Zekan, Dubravka Ciliga - 'Multishuttle Training in Badminton' - 2002

<sup>16</sup> <https://www.bbc.co.uk/bitesize/guides/z6qfmfr/revision/6>

<sup>17</sup>

[https://www.researchgate.net/publication/332709197\\_The\\_Effectiveness\\_of\\_Shadow\\_Practice\\_in\\_Learning\\_the\\_Table\\_Tennis\\_Backhand\\_Drive](https://www.researchgate.net/publication/332709197_The_Effectiveness_of_Shadow_Practice_in_Learning_the_Table_Tennis_Backhand_Drive)

<sup>18</sup> <https://www.bbc.co.uk/bitesize/guides/z6qfmfr/revision/6>

<sup>19</sup> <https://www.tacticalbadmintonclub.com/2015/07/08/shadow-badminton/>

<sup>20</sup> <https://badmintonandy.com/shadow-badminton-all-you-need-to-know/>

<sup>21</sup> <https://www.tacticalbadmintonclub.com/2015/07/08/shadow-badminton/>

### Conditioned Games

**“A conditioned game is simply where you take the rules of the game and alter them to encourage players to act in a certain way.”**<sup>22</sup> Conditioned games are useful as they increase the intensity of the training, allowing players to enhance their focused mindsight which will aid them in a live game.<sup>23</sup> Specifically in badminton, conditioned games implement a rule or rules to encourage the player to make use of a particular shot.<sup>24</sup> By using conditioned games in a training session you are practicing the skill in the context of a real game and you can see how it links with your movement and timing. The game itself can be edited to your whatever skill you need to develop.<sup>25</sup> The transfer between conditioned games and real games is smooth allowing improvements to be easily implemented.<sup>26</sup> The only downside to conditioned games is that a partner is required and for the game to be considered effective practice, it needs to be a partner of similar skill level.<sup>27</sup> Due to the fact that all aspects of a conditioned game can be altered to fit the needs of the skill you are trying to develop, a conditioned game can be molded into any training session with duration and intensity up to the coach/player.<sup>28</sup>

### Improving my strength

#### Free Weights

The main attributes that make up an effective smash are Speed and Strength, these two are then fused together in order to generate power which is required when attempting an effective smash action and both are required.<sup>29</sup> One approach that can be used to improve strength is free weights. Research suggests that free weight **“include any weight you can pick up and move around, such as dumbbells, barbells and kettlebells.”**<sup>30</sup> Free weights are really effective in strength development as they correct any strength imbalances and require more control over movement which leads to more development.<sup>31</sup> It has been suggested that **“we can create much more specificity of training by using free weights”**<sup>32</sup> allowing a workout to be more accurate when targeting muscles to develop. However, free weights also have their own risk in the form of too much weight, incorrectly secured weights and the use of bad techniques<sup>33</sup>, all of which can lead to injury such as strains, pulled muscles and breaks which will delay training programmes. It is recommended that beginners to weightlifting

<sup>22</sup> <https://peandsportsassessment.wordpress.com/2017/02/12/conditioned-games-for-pe-p1/>

<sup>23</sup> <https://sportingfutures.wordpress.com/2014/07/09/using-conditioned-games/>

<sup>24</sup> <https://blogs.kincorth.aberdeen.sch.uk/national5/methods-of-practice/physical/skill-level/conditioned-games/#:~:text=%E2%80%A2,badminton%20to%20encourage%20drop%20shots.>

<sup>25</sup> <https://peandsportsassessment.wordpress.com/2017/02/12/conditioned-games-for-pe-p1/>

<sup>26</sup> <https://peandsportsassessment.wordpress.com/2017/02/12/conditioned-games-for-pe-p1/>

<sup>27</sup> <https://peandsportsassessment.wordpress.com/2017/02/12/conditioned-games-for-pe-p1/>

<sup>28</sup> [http://nickhillcoaching.com/?page\\_id=60](http://nickhillcoaching.com/?page_id=60)

<sup>29</sup> <https://shuttlesmash.com/power-in-badminton/>

<sup>30</sup> <https://www.healthline.com/health/fitness-exercise/free-weight-exercises#overview>

<sup>31</sup> <https://marcpro.com/blog/free-weights-vs-machines/>

<sup>32</sup> [https://www.verywellfit.com/how-to-use-free-weights-](https://www.verywellfit.com/how-to-use-free-weights-3119448#:~:text=We%20can%20create%20much%20more,of%20injury%20while%20lifting%20weights.)

[3119448#:~:text=We%20can%20create%20much%20more,of%20injury%20while%20lifting%20weights.](https://www.verywellfit.com/how-to-use-free-weights-3119448#:~:text=We%20can%20create%20much%20more,of%20injury%20while%20lifting%20weights.)

<sup>33</sup> <https://cultureofsafety.thesilverlining.com/fitness/free-weight-area-safety/#:~:text=Free%20Weight%20Injuries&text=The%20major%20causes%20of%20injuries,another%20individual%20with%20the%20weights.>

should use weights about 2-3 times a week with intermediate lifters doing 3-4. Rest/cardio should also be used to split up weightlifting sessions.<sup>34</sup>

### Fixed Weights

**“Fixed weights utilise machines to lift the weight and often have a pulley system.”**<sup>35</sup> Fixed weights have a variety of advantages. To start they can isolate the muscle you are trying to develop.<sup>36</sup> Most machines will also have an image displaying the exercise you're doing and the correct technique to go with it, making it easier for good form/technique to be used.<sup>37</sup> It is also common knowledge that fixed weights are much safer than free weights due to the lack of stress they put on the body and because you naturally use the correct technique, this also means you can lift heavier without help from others such as a spotter.<sup>38</sup> Although fixed weights are safer than free weights,<sup>39</sup> **“Free weights activate more muscles than machines and therefore are better for building muscle in the long-run.”**<sup>40</sup> The amount of training sessions a week are practically the same as free weights. Research highlights **“Sweet Spot of strength training somewhere between 2-3 times per week.”**<sup>41</sup> The rest days in between sessions would allow time for recovery, meaning you will be working at maximum capacity during your next session.<sup>42</sup>

### Contrast Loading

Contrast loading is a type of **“resistance training that alternates the use of heavy and light load exercises in order to improve muscular power.”**<sup>43</sup> Contrast training results in increased muscle gain for the movement parts of your body, allowing you to increase the speed of your lifts and develop the capability of lifting heavier weights.<sup>44</sup> Research suggests that this method will **“build a lot of muscle mass.”**<sup>45</sup> **In addition it is suggested that it will allow the performer to get “used to handling bigger weights which will translate into maximum strength gains.”**<sup>46</sup> Due to the fact that the weights you use are heavy, you should be doing about 4-5 sets consisting of 2-4 reps.<sup>47</sup> A limitation of using contrast loading is that it takes a while to condition the body for the amount of stress it will be under.<sup>48</sup>

<sup>34</sup> <https://www.healthline.com/health/how-often-should-you-work-out#:~:text=You%20need%20to%20be%20hitting,needed%20to%20maximize%20muscle%20growth.>

<sup>35</sup> <https://www.pdpe.net/factors-affecting-performance/how-does-training-affect-performance/types-of-training-and-training-methods/strength-training#:~:text=Fixed%20weights%20utilise%20machines%20to,often%20have%20a%20pulley%20system.&text=This%20method%20of%20strength%20training,use%20of%20the%20smaller%20muscles.>

<sup>36</sup> <https://www.michaelulloa.com/single-post/2019/05/28/fixed-weights-vs-free-weights>

<sup>37</sup> <https://www.fitness19.com/free-weights-vs-machines/>

<sup>38</sup> <https://simplygym.co.uk/pros-cons-free-weights-vs-machines/>

<sup>39</sup> <https://www.sundried.com/blogs/training/free-weights-vs-resistance-machines#:~:text=In%20general%2C%20free%20weights%20activate,you%20to%20continue%20training%20safely.>

<sup>40</sup> <https://www.sundried.com/blogs/training/free-weights-vs-resistance-machines>

<sup>41</sup> <https://www.builtlean.com/days-per-week-lift-weights/>

<sup>42</sup> <https://www.womenshealthmag.com/uk/fitness/a705624/when-to-take-a-rest-day/>

<sup>43</sup> <https://www.sharecare.com/health/resistance-training/what-is-contrast-training#:~:text=Contrast%20training%20refers%20to%20a,or%20velocity%20with%20your%20exercises.>

<sup>44</sup> <https://www.t-nation.com/training/tip-do-load-contrast-training-for-growth>

<sup>45</sup> <https://www.t-nation.com/training/tip-do-load-contrast-training-for-growth>

<sup>46</sup> <https://www.t-nation.com/training/tip-do-load-contrast-training-for-growth>

<sup>47</sup> <https://www.stack.com/a/contrast-training-101-why-every-athlete-should-know-this-technique>

<sup>48</sup> <https://www.stack.com/a/contrast-training-101-why-every-athlete-should-know-this-technique>

## Section 2b

It appears that repetition drills are very effective when developing a skill due to how it implements it into your muscle memory.<sup>49</sup> With this in mind, I will be using repetition drills at least once a week in my training sessions (more if possible) in order to ensure that the skill is developed as much as possible. By completing this approach on a regular basis (combining both regular and backhand smashes), I hope that the correct technique becomes engraved in my muscle memory and more of a habit when carrying out the skill in-game.

The evidence I collected on shadow practice states that it allows players to put all their focus into the technique of the shot without worrying about the shuttle.<sup>50</sup> It's also seen as a really effective technique for developing footwork because of how it affects your overall movement on the court. Because of this I will be incorporating shadow practice into my training sessions in order to improve both my smash technique and my footwork on the court. Hopefully my identified footwork issues will develop as a result and I will be able to be side on to the shuttle and recover better after attempting a smash. By consistently working with a partner, I will get regular feedback which will increase the likelihood of errors being identified and corrected.

From the data I acquired on condition games they seem like the perfect approach to develop any kind of skill in badminton based on how you change all aspects of it to fit your needs.<sup>51</sup> Any improvements or changes made can be practiced in condition games, ready to be used in the familiar setting of real games as the transition between the two is a smooth one.<sup>52</sup> Because of how easy condition games are to set up and the flexibility they provide in terms of what you are trying to develop, using them in training sessions would be a huge benefit whilst also allowing me to make use of new improvements to my smash technique in game like scenarios. However I will need to find a partner of similar skill level to play against in order to maximise progress.

The evidence I collected on free weights states that they are really effective to use when trying to build muscle mass which is why I want to use the method.<sup>53</sup> By increasing muscle mass, I am also increasing the amount of strength available for me to apply to OH shots in badminton. So this should in turn increase the depth that I can get on my clears. The use of free weights can also correct imbalances in the body,<sup>54</sup> which I require as results proved there is a discrepancy between my upper and lower body strength. Correcting this imbalance would allow me to be more controlled with the weight transfer across my body, allowing me to create more angles of attack during a game. Research suggests that the effects of free weights will be maximised if they are used 2-3 times a week.<sup>55</sup> I will use free weights twice a week around my training sessions with repetition, shadow and conditioned drills, in order to give myself the potential to make the gains in my strength.

<sup>49</sup> <http://www.readingbrightstart.org/articles-for-parents/lets-repetition-important-learning/>

<sup>50</sup>

[https://www.researchgate.net/publication/332709197\\_The\\_Effectiveness\\_of\\_Shadow\\_Practice\\_in\\_Learning\\_the\\_Table\\_Tennis\\_Backhand\\_Drive](https://www.researchgate.net/publication/332709197_The_Effectiveness_of_Shadow_Practice_in_Learning_the_Table_Tennis_Backhand_Drive)

<sup>51</sup> <https://peandsportsassessment.wordpress.com/2017/02/12/conditioned-games-for-pe-p1/>

<sup>52</sup> <https://peandsportsassessment.wordpress.com/2017/02/12/conditioned-games-for-pe-p1/>

<sup>53</sup> <https://marcpro.com/blog/free-weights-vs-machines/>

<sup>54</sup> <https://marcpro.com/blog/free-weights-vs-machines/>

<sup>55</sup> <https://www.healthline.com/health/how-often-should-you-work-out#:~:text=You%20need%20to%20be%20hitting,needed%20to%20maximize%20muscle%20growth.>

Research suggests that fixed weights can teach you the correct technique for weightlifting and poses less risk of injury compared to free weights.<sup>56</sup> However, you can gain more muscle mass with free weights.<sup>57</sup> Due to this I have decided to use a combination of both in order to minimise the risk of injury, but hopefully make the most progress possible during my PDP.

The information I gathered about contrast loading shows that it's an incredibly effective method of gaining muscle mass and conditioning your body for bigger, heavier weights.<sup>58</sup> The only negative about contrast loading is that to work effectively without injury, your body needs to be conditioned with lifting heavy weights and so I will only integrate contrast loading into my sessions after a few weeks of using fixed and free weights to ensure my body is properly prepared and conditioned for the strain the method puts you under. By delaying the methods implementation until I feel properly prepared, I am hopefully avoiding what could potentially be a serious injury that would halt all my progress entirely.

### Section 2c

A long term Target is to increase my percentage of successful smashes in a game from (45%) to (60%), this will mean that more of my smashes will make it over the net and to my opponent. The direct nature of the smash will allow me to take a more aggressive stance in my gameplay, putting more pressure on my opponent and ultimately winning more points.

A short term target is to be able to learn and carry out the proper footwork and positioning for an effective smash within the first 2 weeks of my PDP. These improvements to my footwork will allow me to traverse the court with ease and be in the correct position to then focus on developing the actual skill of the smash.

Another short term target is to increase the amount of weight I can shoulder press by 5kg after 2 weeks of my training programme. This will mean that the increased strength in my shoulders, coupled with the speed of my swing, will generate a more powerful smash which will be harder for my opponent to block resulting in me hopefully winning more points. By the end of my PDP, I would like my shoulder press ability to have increased by 10kg in total as the increased strength would continue to increase the effectiveness of my smash, increase the likelihood of it being a winning shot and meaning I can play a decent smash from further back on the court with it containing the same power level as normal.

Another target is to increase the amount I can bench press by 10kg after 4 weeks of my training programme. This, along with the increased strength in my shoulders, will allow me to hit shots across all areas of the court meaning my opponent will have to traverse back and forth in order to return the shots which will tire them out. This will result in points being scored easier as my opponent will be too tired to return them.

Another short term target is to be ready and prepared for the use of contrast training in my workout after 4 weeks of my training program. This will allow me to effectively and safely make use of the

<sup>56</sup> <https://simplygym.co.uk/pros-cons-free-weights-vs-machines/>

<sup>57</sup> <https://www.sundried.com/blogs/training/free-weights-vs-resistance-machines>

<sup>58</sup> <https://www.t-nation.com/training/tip-do-load-contrast-training-for-growth>



technique which is known for producing large amounts of strength gains without the chance of picking up an injury.

## Candidate 3

### Developing my drop shot in squash

Section 3)

To develop the technique of my drop shots in squash I carried out a 6 week development plan. This involved me doing 3 sessions per week using approaches such as repetition drills, visualisation and pressure drills. During my PDP I had to adapt my sessions. For example, at the end of week 2 I found that I was getting bored and finding the repetition drills too easy so I decided to gradually add more pressure (see appendix K).

#### Appendix K (extract)

Date	Session Plan	Adaptations	Comments
13/11/20	<p><i>Warm Up – 5 minutes of continuous running from front to the back of the court , heel kicks, jogging and high knees.</i></p> <p><i>5 minutes of dynamic stretching.</i></p> <p><i>5 sets of 3 minute ghosting playing the drop shot with the correct technique and with the correct grip. One minute break in between each set.</i></p> <p><i>5 minutes of figure of eights and drives to warm up the ball</i></p> <p><i>10 minutes of my partner playing a high boast then I play a straight drop. 5 minutes on backhand and forehand.</i></p> <p><i>10 minutes of my partner playing a high soft ball and then I straight drop the ball. 5 minutes on backhand and forehand.</i></p>	<p>I have decided to adapt my training programme as I am getting bored of repetition drills</p> <p>I have decided to start applying more pressure to my session as I feel this would motivate me more.</p>	<p>The training is feeling too repetitive and I feel as if I should start to add more pressure to the drills so that I stay motivated and don't lose focus</p> <p>But the session was easy and I felt my drops were landing pretty close to the sidewall.</p>

	<i>10 minutes cool down of light jog and static stretching</i>		
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4a)

From my performance wheel (see appendix H) I can see that my accuracy has improved from a 4/10 to an 8/10 after my PDP. During games, the accuracy of my drops is much greater creating more pressure for my opposition meaning they have to move off of the 'T' position allowing me to push forward, take control and finish the rally with a volley.

From my video games analysis (see appendix I) I can see that my confidence when playing drop shots has grown as I am now playing more dropshots in the match (now 62, previously 37). This shows my confidence playing the shot has grown which means I now have a wider shot repertoire which makes me less predictable to my opposition and means that it is harder for them to anticipate where I'm going to play shots.

The analysis also showed the drop shots that were going in the tin went from 13.5% to 3.2% at the end of my PDP. This is backed up by data I collected from my scatter graph as the drop shots going into the tin went from 20% to 5% (see appendix J). This means that the overall unforced errors coming from my drops have reduced which resulted in me giving away less free points to my opponent.

From my video games analysis (see appendix I) my winning drop shots went from 21.6% to 30.6% at the end of my PDP. This shows that my drop shots are being played with better accuracy and precision. This resulted in me gaining more points from playing drop shots and in this game, resulted in building a lead on my opponent by playing more attacking play. From the video games analysis (see appendix I) the drop shots that were putting my opponent under pressure went from 29.7% to 37.1% at the end of my PDP. This is backed up from the scatter graph as on the forehand the good quality drops went from 30% to 60% and on my backhand it went from 20% to 55%. This resulted in my opponent being put under pressure more often when I play this shot and having to move to chase the ball as it is tighter to the wall. This has allowed me to move them round the court more, tire them out and force a mistake.

4b)

In my PDP I used a total of 4 approaches: shadow practice, repetition drills, pressure drills and conditioned games. By having 4 different approaches for development it meant that I had a variety in my training and meant that while training I didn't get bored which meant I was able to keep motivated therefore I didn't skip sessions and tended to work harder.

Under the current restrictions with coronavirus my training programme worked out well as I was able to access all facilities. This means that my initial plan of going 3 times a week for 6 weeks was able to go ahead without any disturbances. This meant that there were no breaks within my PDP due to COVID which meant the consistency was still there as I could still attend each session helping me to make steady progress.

The training diary was very beneficial within my programme. Within this I was able to track my overall progress that I had made and I was able to overload session to make it suit my sessions. By having this it also helped me know when to overload my sessions so that I avoided plateau.

Both shadow practice and repetition drills were a good approach for gradual build up. By doing these drills I was able to focus on using the correct technique and making sure that the swing is going to the right height for the shot. This helped me develop my muscle memory of the shot and it made it more natural when moving onto other drills.

However, in my PDP I had planned to have a coach present at some of my sessions to monitor my progress and point out flaws within my technique. Due to the coronavirus I was unable to have a coach present at any of my sessions so this meant that my development might've been slower than it could have been. This made it harder for me to know if I was following through enough when playing the drop and I didn't know if I was making the correct changes to my technique so that it would improve.

I think I moved onto pressure drills to soon. From my training diary I could see that when I started to overload my sessions during pressure drills I found that I wasn't consistently playing the drop shot with the correct technique. This meant that when moving into conditioned games I kept going back to my old technique instead of using the more improved technique due to too much pressure.

4c)i)

A personal weakness of mine is explosive power, as identified in my final performance wheel ( appendix H) where I scored 4/10. My initial split step off the T is not powerful enough. This reduces both the distance I move and the speed on this first step and results in me arriving to the ball later. This limits the shots I can play and results in me playing a weaker shot allowing my opponent to take control of the rally and play aggressively.

Another personal weakness within my game is core stability, as identified in my final performance wheel (appendix H) where I scored 5/10. This impacts my game as when I move into play a shot I am often bent over instead of staying up right, this reduces the quality of my technique meaning I do not transfer all of my power into the ball, this results in me not hitting a good enough length.

4c)ii)

Poor explosive power impacts my anger during squash as throughout the game I am slower to move off the T, which therefore means I am slower to reach the ball. As the game goes on and this keeps happening I begin to get more angry. This results in me arguing with the referee and giving away conduct strokes meaning the opposition gains points.

Poor explosive power impacts my concentration as I am so focused on moving off the T to make the ball, I lose concentration. This results in me losing focus on my opponent's positioning and therefore not targeting space. This has, on a number of occasions, led me to playing the ball straight into their racket face which means that they have the opportunity to then volley the ball or move me round the court to force a mistake.

Poor core stability impacts my decision making when in a game as I often change my mind when playing a shot due to me not being in the correct upright position. When in a game I decide to play a boast instead of a drive and this is due to me thinking I won't get enough length on the ball. This results in my opponent being able to maintain a high T position because I didn't move them behind me before playing an attacking shot, this means that will look to play an attacking volley.

Poor core stability impacts my social roles/responsibilities within a game of doubles due to when I am relied on to kill the ball in a good opportunity, I am unable to do so. My opponent relies on me to finish the rally when given the opportunity. By me being unable to have a strong core and stay in the upright position it results in me playing a weaker shot which then leads to the opposition being able to kill the ball.

## Candidate 4

### Developing backhand in table tennis

**Note: This candidate evidence consists of extracts from each stage of a project in order to demonstrate the development of a theme.**

1a

Video is reliable because you can pause and rewind the video, re-watching it multiple times so that you do not miss anything. This allows you to gather results that are 100 % accurate. A model performer comparison is good because it gives you a mental image of a perfect backhand. This allows you to compare your technique to theirs allowing you to identify what you need to change to improve your performance.

1b

From my video games analysis, I found that I lose the majority of points from my BH and the success rate of all my BH shots are a lot lower (33%) compared to my FH success rates (82%) (**appendix 2**). This means that I am reluctant to use my BH in games because of this inconsistency. This causes hesitancy and indecision and costs me the chance of staying in rallies for longer, or winning the crucial points when it matters.

My MP comparison (appendix 3) highlighted that in my preparation my knees were not bent and I was not positioned correctly at the table, meaning I was unable to push up with my

legs and make contact with the ball in front of my body, resulting in less power in my shots and presenting opponent with opportunities to attack.

There is a connection between the errors in technique identified in the MP comparison and the low success rate evident in the video. Failing to brush the back of the ball or use a 'frisbee' like motion in the action phase led to inaccuracy in my BH, resulting in the ball hitting the net or going off the table.

2a

Research says that including backhand drives into your game play when playing table tennis is a crucial move as it is considered **“one of the most important ‘weapons’ to win.”**<sup>59</sup>

Tennis-Uni.com agrees with this by saying **“backhand...is one of the most important basic strokes in the game. To win...matches, a strong backhand is essential.”**<sup>60</sup>

Research suggests that, if a player's backhand is not powerful or consistent, they are likely to lose a lot of points in that area.<sup>61</sup> Essentialtennis.com agrees saying **“A weak backhand can put you at a severe disadvantage against your opponent.”**<sup>62</sup>

Research states that Repetition is one of the most effective training methods for any athlete.<sup>63</sup> Clinch Academy.com (2014) agrees by saying **“repetition is a key factor to mastering any movement or technique.”**<sup>64</sup> According to Active.com **“if you repeat certain training sets, athletes can improve their motor skills, develop intuitive understanding of their body and track their performance more efficiently.”**<sup>65</sup>

My table tennis coach, Martin Rumsey (August 2020) stated that **“When trying to improve backhand, doing at least 15 minutes of repetition at the start of each training session can improve shot consistency and accuracy”**. He also stated that **“repetition drills must be performed with correct technique to ensure progress”** (appendix 1). Research agrees with this by saying **“consistency of strokes will only be achieved by continued practice. Spend at least 15 minutes on each of the following drills... backhand to backhand (repetition)...backhand and forehand to backhand (repetition).”**<sup>66</sup>

2b

I now understand that a consistent backhand is a crucial “weapon” for a player<sup>67</sup> and if I don't have a strong and consistent backhand, I could risk having a serious disadvantage

<sup>59</sup> <https://pingsunday.com/table-tennis-backhand-techniques-full-guide/>

<sup>60</sup> <https://tennis-uni.com/en/tennis-backhand/> (Accessed 20/07/2020)

<sup>61</sup> <https://serveandvolleytennis.com/the-backhand-in-tennis-why-is-the-backhand-important/>

<sup>62</sup> <https://www.essentialtennis.com/weak-backhand-solution/#:~:text=A%20weak%20backhand%20can%20put%20you%20at%20a,find%20yourself%20in%20this%20situation%20all%20too%20often%21> (accessed 20/07/2020)

<sup>63</sup> <https://www.active.com/triathlon/articles/why-repetition-leads-to-success?page=1> (accessed 21/07/2020)

<sup>64</sup> <http://www.clinchacademy.com/training-blog/2014/5/5/the-importance-of-repetition>

<sup>65</sup> <https://www.active.com/triathlon/articles/why-repetition-leads-to-success#:~:text=With%20repetitions%2C%20athletes%20don't,in%20each%20sport%20every%20week.> (accessed, 21/07/2020)

<sup>66</sup> <https://www.allabouttabletennis.com/table-tennis-tips.html#:~:text=Table%20tennis%20tips%20-%20basic%20practice%20drills%20Consistency,forget%20to%20do%20your%20warm%20up%20exercises%20first%21>

By Martin Hughes (date accessed 7 September 2020)

<sup>67</sup> <https://pingsunday.com/table-tennis-backhand-techniques-full-guide/>

during games which could be detrimental to my success.<sup>68</sup> Therefore, in my training I am going to include specific drills to practice the consistency and technique of my backhand. By doing this I will be able to strengthen the technique of my backhand allowing my backhand to become a reliable shot that I can use in games to continue a rally or win a point without fear that I might hit the ball into the net or off the table.

Research from many different sources has suggested that to improve shot consistency and accuracy I should do 15 minutes of repetition at the start of every training session.<sup>69</sup>

Therefore, I am going to take this advice and include 15 minutes of different repetition drills into the start of every training session. By doing repetition for this long, I will be able to practice the movement of backhand repeatedly, and specifically work on my backhand technique so that it comes more naturally in a game. I can then play the ball deep into the corners of the table so that my opponent struggles to return them, winning me more points.

2c

My first goal is to correct my technique. I will improve my position at the table by learning to bend my knees more and stand square so that I can meet the ball earlier and rise up to create the top spin required to keep the ball on the table, even when I am hitting it hard.

Another goal is to increase the number of backhand shots I can do in a repetition rally from 23 consecutive backhands to 40 consecutive backhands within 4 weeks. This target is appropriate to me because an increase in the number of backhands I can do during a rally, will demonstrate an increase in the consistency of my backhand giving me the confidence to continue with my training regime as I have proof that it is working.

3a

I carried out an eight-week training programme (**appendix 11**) to improve the technique of my backhand and movement. I used coach feedback, repetition drills, movement drills, shadow practice and ladder drills in each training session. I also created a session plan (**appendix 7**) and I kept a training log (**appendix 11**) of what I did every session so that I could easily track progress. If I found a session too easy or difficult I adapted it to make it more suitable for me to ensure progress was being made. I also wrote a training diary (**appendix 12**) which allowed me to track how I was feeling, both before and after each session and monitor how I was developing.

4a

After re-testing my video games analysis (**appendix 13**), the success rate of my backhand increased by 44% over the 8-week period. This means that the overall success rate is now 77% with my backhand being much more consistent. This has benefited me in games because I can now rely more on my BH and am more confident when playing it. I am able to consistently play it with pace into the corners, forcing my opponents to be defensive which opens up the opportunity for me to attack.

My technique is now more like the model performer as I effectively move into a square on stance behind the ball. This gives me more time to make decisions about the angle I play the

<sup>68</sup> <https://www.essentialtennis.com/weak-backhand-solution/#:~:text=A%20weak%20backhand%20can%20put%20you%20at%20a,find%20yourself%20in%20this%20situation%20all%20too%20often%21> (accessed 20/07/2020)

<sup>69</sup> Table tennis coach, Martin Rumsey (August 2020)

shot (down the line or across the table) use a powerful 'frisbee action', make better contact with the ball and therefore less errors.

4b

Something that was extremely beneficial within my PDP, was my weekly sessions with a table tennis coach. Within each session I received invaluable feedback, which meant that I was able to find out specific areas of weakness and fix errors in my performance there and then. This allowed me to continuously make small changes to my BH technique until it became more like a model performer.

Additionally, training with such an experienced coach allowed me to practice specific drills that I would not have been able to carry out with an average table tennis player. From the coach I received quality feeds and accurate shots, which meant that I could properly carry out the drills and maintain a high level of performance throughout.

4ci

After reviewing my end of PDP model performance comparison, I can see that my recovery phase is still an issue. I over swing on the follow through of my BH. I would like to finish my swing at shoulder height so that I can more quickly transition to the next shot.

4cii

By continuing to improve my backhand technique it will become more consistent and accurate meaning that there will be less errors in my gameplay. This would then help me become less angry during games as I am less likely to hit the ball into the net or off the table, resulting in less frustration which would usually cause me to make silly mistakes and give away points in the following rallies.

## **Candidate 5**

### **Developing confidence in back-handspring series in cheerleading**

**Note: This candidate evidence consists of extracts from each stage of a project in order to demonstrate the development of a theme.**

#### **1a) Investigation**

##### **Performance Wheel**

I undertook a performance wheel on my mental performance allowing a rating scale to be used to get feedback on my strengths and weaknesses. (Appendix 6) This information was based on my own opinions, so it won't be used in isolation due to possible bias. However, it provides a general overview of performance helping highlight development areas and useful starting points for further investigation.

## **Psychological Performance Inventory (PPI)**

I used a PPI because it gave me quantitative data and a statistical figure for the seven different areas of the mental performance. (Appendix 5) Sports Psychologist John Mathers recommends the PPI for starting to identify areas for improvement in mental performance.<sup>70</sup> This test is accurate as the questions are easy to understand so I could provide the correct answer without misunderstanding. Receiving a statistic for each of the mental performance areas allows me to identify a clear result and gives me highly specific areas for development.

### **1b) Analysis of Information**

#### **Performance Wheel (Appendix 6)**

The Performance Wheel highlighted confidence is my biggest weakness scoring 5/10 as I second guess my ability and become anxious thinking about what could go wrong and what could happen if I don't have enough power. This stems from my deep fear of failure as I don't want to fall or injure myself or let my team down. It plays a huge part in me not using back handsprings in my routines.

#### **PPI (Appendix 5)**

My PPI results confirmed that confidence is my weakest factor scoring 20/30. My confidence score is low because I am hard on myself as I analyse every detail and become annoyed at any errors and struggle to look at any positives. As a result I find it difficult to eliminate errors as I can't imagine a successful outcome

### **2a) Review sources**

#### **Developing Confidence:**

Dr. Ivan Joseph stated that without the skill of self-confidence, an athlete is useless. This means that if they lose sight or belief in the target, all athletic abilities are reduced<sup>71</sup>. Repetition is the best way to build confidence as making the skill second nature ensures an athlete has self-belief.<sup>72</sup>

Sports Resilience said that meditation and imagery can be used to mentally rehearse before an event and can be used in a pre-performance routine.<sup>73</sup> Imagery can help an athlete to visualise a successful performance to increase the likelihood of success.<sup>74</sup> This can be done by breaking down skills and visualising each action which to help overcome mental blocks build confidence as each section can be completed individually.<sup>75</sup>

<sup>70</sup> John Mathers (2020) Mental Skills for Sports Performance Lecture

<sup>71</sup> <https://www.cheerfittraining.com/5-tips-to-help-your-cheerleader-build-confidence/>

<sup>72</sup> <https://www.youtube.com/watch?v=w-HYZv6HzAs&t=414s>

<sup>73</sup> <https://sportresilience.com/pre-performance-routines/>

<sup>74</sup> <https://www.peakendurancesport.com/endurance-psychology/coping-with-emotions/sports-psychology-self-confidence-sport-make-ego-work/>

<sup>75</sup> <https://www.cheerfittraining.com/5-tips-to-help-your-cheerleader-build-confidence/>



## **2b) Analysis findings to create PDP**

Skill repetition will help to build my confidence as the skill will become second nature and I will gain belief in my ability to complete the skill successfully. During my training sessions I have found myself avoiding practising the skill due to my fear of failure and not wanting to embarrass myself if it goes wrong. To overcome this, I will practise the back handspring repeatedly as high quality repetition is crucial to building trust and developing confidence<sup>76</sup>.

Meditation and imagery techniques will be used to mentally rehearse to help me to visualise each action, to help overcome my mental blocks when completing a back handspring<sup>77</sup>. The aim is for the techniques to reduce stress and have a calming effect pre-competition and promote a positive mind set. I will also need to find time to complete this at competitions, as I propose visualising the routine and meditating just before the competition<sup>78</sup>.

## **2c) PDP Targets**

By the end of my training programme, I want to be able to complete a backflip series with no hesitation in competition. To do this I will use repetition and visualisation. If I become more confident and learn to not fear failure, I will be maintain the momentum required to complete the series and potentially add on extra flips resulting in progression through to more advanced levels of competition.

Another goal is to increase my self-confidence and improve my PPI result from 20 to 25 using imagery, positive goal setting and meditation. Completing flips in practice will mean that I am more confident to complete the backflip in competition as I have been through all the motions and have mentally prepared myself to do it so my team can rely on me to complete the flip.

## **3) PDP Record**

I completed a 6-week training programme (Appendix 8) using a training diary to record my feelings, thoughts about the session and my improvements (Appendix 9).

**Note: The candidate choose to focus on a different aspect within the PDP**

## **4a) Analysis of PDP**

I saw an increase in my Performance Wheel score as it went from 5-9 in the confidence section (Appendix 6). This is an increase of 4, which benefits my performance as I have gained self-belief. This allows me to push myself to practice and perform the skill in every session as I am psyching myself out less. Once we return to competitions my coach can now add me into different sections of the routine with harder variations of the skill.

My retesting also showed that my PPI Confidence score has improved from 20 to 28. (Appendix 5). This 40% improvement has helped to reduce hesitation in my back handspring series. I now lose less power as I go confidently into the next flip without any doubt. This has increased my willingness to complete the back handspring which has had a positive effect in other areas of my performance as I am motivated and enthusiastic, leading to a greater commitment to the routine.

<sup>76</sup> <https://www.youtube.com/watch?v=w-HYZv6HzAs&t=414s>

<sup>77</sup> <https://www.cheerfittraining.com/5-tips-to-help-your-cheerleader-build-confidence/>

<sup>78</sup> <https://www.youtube.com/watch?v=w-HYZv6HzAs&t=414s>

**4b) Evaluate the process of carrying out the Personal Development Plan**

During my development plan I enjoyed the meditation and imagery sessions (Appendix 8). This gave me variation in my training, keeping motivation levels high. These sessions made me relaxed, helped me to de-stress and forget worries. As I am someone who worries and can think negatively it helped me to eliminate my worries and try to become more positive. I continued to improve as I enjoyed the sessions and found them beneficial.

Practicing the back handspring at the start of every session was an important factor in my PDP. This gave me the time to make small improvements to my technique without worrying about failure. The more success I achieved, the better I felt and the more confident I became.

**4c) Future Development Needs**

**Note: This candidate chose to focus on a new development need**