THE EFFECTS OF PRACTICE IN MIND (PIM) TRAINING ON NETBALL STANDING SHOOTING PERFORMANCE

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ABSTRACT

Previous studies found that PIM training program helps athletes to implement psychological practice in sport events. The present study is aimed to investigate the effectiveness of PIM training program on netball shooting performances of state netball players. Twenty highly skilled shooters from top five states in Malaysia competing in the National Youth Netball Championship aged between 17 to 21 years old with 2 to 4 years playing experience participated in this study. After screening of imagery ability, all participants were randomly assigned into two different groups i.e., PIM training program group and control group. All participants in the PIM training group completed 10 imagery practices together with 10 physical practices. Meanwhile, the control group only performed 10 physical practices (standing shooting). Pre, post, and retention standing shooting tests were conducted from an 11 feet distance. A mix between-within subject results revealed that PIM training program helped to improve shooting scores compared to the control group. The finding supports the idea of using PIM training program to improve netball shooting performance. The present study provided guidelines for the netball associations, coaches, and athletes in developing performances. The top netball shooters should not only focus on their skills to be successful but also developing their mental strength.

Keywords: PIM training program, imagery training, physical training, standing shooting

1. Introduction

Generally, some athletes are unable to cope with the performance pressure hence, are less confident to perform the skills at their best in certain conditions. Psychological Skills Training (PST) consists of goal setting, progressive relaxation, meditation, self-talk, hypnosis, and imagery which helps to assist sport participants in the development of psychological skills to achieve peak performance (Ampofo-Boateng, 2009; Mazlan, 2014). Furthermore, imagery training plays an important role in preparing the body and mind to overcome the pressure (Heinrich and Eloff (2011);
Morris, Spittle, and Watt (2005). Additionally, imagery is an experience which is consciously and purposely created by using and combining all the different sensory modalities (e.g., the visual, and kinesthetic) within the mind without external stimuli (Cho, 2009).

Recent study, conducted by Mazlan (2014, 2015, 2016) found that systematic imagery training known as Practice In Mind (PIM) improved golf performances especially in golf putting, self-efficacy, and moods of golfers. PIM Training Program is a six weeks program that combines imagery – physical training to perceive in involving motor imagery to sport setting. PIM training program consists of seven PETTLEP components. The seven components (i.e., Physical, Environment, Timing, Task, Learning, Emotion, Perspective) are derived from functional equivalence between imagery and physical performance of a motor task (Holmes & Collins, 2001). The imagery content in PIM training program also integrated the facilitative imagery direction and stimulus – responses propositions other than motivation, visual and kinesthetic directions. However, the effectiveness of PIM training program obtained and the conclusions drawn cannot be taken to represent all athletes from all sports team.

In netball game, the winner of the match refers to the team who scores more goals than the opposing team. The points are counted when the Goal Shooter (GS) or Goal Attack (GA) of the team makes a shot through a goal ring. Thus, the skill of goal shooting is crucial to the final outcome of every match. During a competition, shooters may suffer from pressure and fatigue to complete an hour of competitive match that involves running, jogging, jumping, passing, catching, guarding, defending, and dodging movements to perform a shooting through a goal ring. Consequently, this fatigue may influence their shooting performance (Steele & Furze, 1994).

In particular, specific imagery interventions or strategies should be provided to enhance shooting accuracy and to develop motivation among the netball shooters (Fowler, 2010). This is because the use of imagery has been established to enhance cognition and motivation, maintain their self-confidence, improve the skill, and using it to stay relaxed and remain focused in the competition (Cumming & Hall, 2002; Fowler, 2010). There is no study that investigates the effects of PIM training particularly on netball shooting respectively. Hence the effectiveness of PIM training requires further research and is needed to develop the motivation and shooting accuracy among the netball players.

2. Methodology

2.1 Sample and data collection method

Twenty highly skilled shooters from top five states in Malaysia competing in the National Youth Netball Championship aged between 17 to 21 years old ($M = 18.80$, $SD = 1.47$) with 2 to 4 years playing experience ($M = 4.00$, $SD = .80$) participated in this study.

During the initial meeting, all participants were assigned to complete the MIQ questionnaire which is the imagery ability screening before they begin with the imagery intervention (Mazlan, 2014, 2015, 2016). The participants in this study have scores of 16 and above in the imagery ability and they were assigned into two different groups namely the PIM training group (combined imagery – physical training) and control group (only physical practice). They were also reminded not to receive any other imagery training or participate in any netball competitions during the intervention program. All the participants were required to perform a pre-test by doing 10 netball standing shots from an 11-feet distance. The shooting test was performed on a netball court to obtain the similar environment as the actual tournament. Following the pre-test, the intervention was introduced to the participants.
During the intervention, all participants were instructed to complete the practices three times a week during the 6-week intervention programme. The PIM training group sessions took place on three alternate days. Each participant in this group received the script developed by the researcher. They were asked to make some changes on the script in each of the sessions based on their own skill to shoot. They listened to their personal imagery script from a voice recorder. They were instructed to imagine themselves performing 10 shots through the net, with a short rest in between and continue with physical practice by performing the actual 10 shots at an 11-feet distance from the goal post in the shooting area. Overall, the present study covered 20 minutes for the whole session including physical practice where approximately 10 minutes was taken for 10 imagery practice. On the other hand, the participants in the control group performed 10 netball shooting tasks at an actual netball court for 3 times a week in a 6-weeks program. They recorded all the practice sessions throughout the six weeks in a training program diary.

After completing eighteen intervention sessions, a post-test was conducted to both groups. During post-test, all the participants performed a shooting test involving 10 times of shooting from an 11-feet distance. The shooting task was performed on the actual netball court. After 6 weeks from the post-test, the retention test was conducted to all the participants. During retention time, the researcher only asked the shooters to continue using the PIM training program during the 6 weeks so the training program used during this period depended much more on the shooters themselves. During retention-test, all the participants also performed a shooting test involving 10 times of standing shot from an 11 feet distance.

2.2 Instrumentation

PIM Training Program Intervention Script Guides: Participants used a written PIM training program intervention script developed by the researcher. The script had been approved by Universiti Teknologi MARA Sports Psychology Lecturer (PhD), and Professional State Netball Coaches. The written script are related to facilitative imagery and the Bioinformational Theory (i.e., stimulus and response propositions) by Lang (1977). Stimulus and response propositions are effectively used in this study particularly when the emotion elements are involved during the performance (Mazlan, 2014, 2015, 2016; Ramsey, Gumming, Edwards, Williams, & Brunning, 2010). The script also included sections exploring all functions of imagery (i.e., cognitive and motivational functions), imagery ability (i.e., visual and kinesthetic) and imagery perspective (i.e., internal). The script explored the functions of the seven PETTLEP of imagery model by Holmes and Collins (2001). This is consistent with previous studies conducted by Mazlan (2014, 2015, 2016). The script is as follows:

_I stand in the middle of this place and look all around...I see the spectators, my teammates, my coach, and the opponents (stimulus proposition)... After escaping from the defenders I managed to get the ball and at that moment I looked toward the goalpost. I take my position beginning with a confident posture, I stood calmly and feeling excited to perform my best to make a clean shot (facilitative direction). My muscles are loosen and relaxed, like flexible springs. I breathed easily, feeling my lungs filled with water energizing (response proposition). In that kind of situation, standing shot will be performed. I stood on both feet and felt balanced and in control while holding the ball over of my head. I felt my biceps and triceps muscles warm and elastic (response proposition). Then, I bent my knee...took a deep breath...I felt the anger flowing down out of my arms, feel the hot emotions bursting out of my fingers and... I released the ball into the ring (stimulus proposition)... Nice shot! Superb shot! (facilitative direction). Yes those are the words I want to hear from the spectators, my teammates, and my coach and finally it sounded....._
Shooting Task Performance and Scoring: The participants had performed traditional or standing shooting task performance. The participants had completed 10 imagery practices and continued with 10 physical practices on the actual netball court. Specifically, 10 shots for each task were taken directly in front of the netball goal post at an 11-feet (3.5metre) distance.

Each attempt for that shooting task was recorded using the following scoring system (Complete miss=0 points, Hitting the ring and not going through the net =1 points, Hitting the ring and going through the net =2 points, and Clean net=3 points). The reliability of this score according to Spearman’s rank-order correlation coefficient of 1.00. (Pates, Karageorghis, Fryer, & Maynard, 2003). Thus, each participant was awarded a total score out of the maximum of 30 points.

3. Finding & Discussion

Table 1: Standing Shooting Scores for PIM Group and Control Group across Three Time Periods.

<table>
<thead>
<tr>
<th>Time period</th>
<th>PIM Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>M</td>
</tr>
<tr>
<td>Pre-Test</td>
<td>10</td>
<td>13.80</td>
</tr>
<tr>
<td>Post-Test</td>
<td>10</td>
<td>21.70</td>
</tr>
<tr>
<td>6-week Retention Test</td>
<td>10</td>
<td>21.60</td>
</tr>
</tbody>
</table>

Table 2: Effects of PIM Training Program on Standing Shot

<table>
<thead>
<tr>
<th>Effect</th>
<th>Wilks’ Lambda</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>time</td>
<td>34</td>
<td>16.40</td>
<td>.000</td>
<td>.67</td>
</tr>
<tr>
<td>time * group</td>
<td>22</td>
<td>31.00</td>
<td>.000</td>
<td>.79</td>
</tr>
</tbody>
</table>

A pre, post and retention tests were conducted to compare the shooting performance from the 11-feet distance scores for PIM training program group (imagery - physical practice) and control group (only physical practice). A mix between-within subjects analysis of variance (ANOVA) showed that there was a significant main effect obtained according to Wilks’ Lambda=.34, F (2, 17) = 16.40, p = .000, partial eta squared = .67, with PIM group showing an increase in scores across the three time periods. There was also an interaction effect found between group of intervention training and time Wilks’ Lambda = 22, F (2, 17) =31.00, p=.000, partial eta squared=.79. This showed that there were significant changes in standing shot scores across pre and post-tests using PIM Training Program. The main effect comparing the two types of intervention was significant, F (1, 18) = 61.22, p = .000,
partial eta squared = .77, suggesting there was a difference in the effectiveness between PIM group and the control group.

The results of this study strongly support the effectiveness of PIM training program on netball shooting performance. The results presented a superior improvement from pre-test to post-test in the PIM training group. The results of the retention tests indicated that a performance effect can be maintained although there was a slight decrease in the mean scores. An unforeseen finding was found when PIM training program was able to produce superior improvement of standing shot performance after completing 6 weeks training. Continually, it is assumed that the PIM training program is to be an effective imagery training for improving shooters’ performance. Additionally, this study also described that the effectiveness of PIM training may be because it considers the players’ emotions and kinesthetic feeling of the situation.

The finding was consistent with previous studies by Mazlan (2014, 2015) which demonstrated that the PIM training program improves golf putting performance compared to the traditional imagery group and control group. Similar finding was also highlighted by Mazlan (2016) who reported that the PIM group improved golf putting performance and encouraged positive mood and were able to control negative mood better compared to the traditional imagery group and control group. This finding is interesting since it is consistent with Fowler (2010) who concluded that imagery used is able to help the elite netball shooters to increase the shooting accuracy. Fowler (2010) also described that the elite netball shooters had more respect on the importance of imagery training because they desire to win and to boost their feeling towards incredible achievement.

The present study strongly suggests that PIM training is important in training the players mentally in order to improve the physical practice particularly. A combination of physical practice and imagery practice may produce more incredible impact than only physical practice in the same time period. Imagery does not act as a substitute for physical practice but it is a way to train the mind in line with the physical training. By combining the imagery practice with the real physical movement, athletes can accelerate and improve the process of learning a skill. This supports the finding by Steele and Furze (1994) which suggested that the physical and mental demands of participating in a competitive netball match may lead to changes in the spatial and temporal aspects of shooting. Therefore, the present study strongly suggests that imagery practice in PIM training program which is combined with physical practice plays a main role to improve the netball shooting skill.

Furthermore, the advantages of the PIM training group in improving the players’ shooting skill compared to the control group, may be related to the presence of the seven components of PETTLEP imagery. Additionally, the effectiveness of imagery script with facilitative direction and stimulus – responses proposition in PIM training program yields incredible effect on the netball shooting performance. As also supported by Mazlan (2014, 2015, 2016) the facilitative imagery gives an advantage to the performance of golf putting skills, self-efficacy, and mood of the golfers. In netball sport, in order to improve the benefit of using imagery within the netball population, it needs to be systematically practiced. The results support the idea of using systematic imagery training program (PIM training) to produce the most effective imagery intervention in order to develop confidence and accuracy demand among netball shooters.

4. Conclusion and Future Recommendation

This study provides guidelines for the netball associations, coaches, and athletes in developing the performance in Malaysia. The netball association must be aware about the current findings to
develop and enhance the netball shooter’s performance in order to compete at the international level. Hence, the Malaysian netball coaches and players should be educated with the importance of imagery training such as PIM training program and should not focus only on their skills to be successful but also their psychological training. However, to further explore this issue, more research is required by directly comparing the effects of PIM training program in novice and experienced participants on the same task as well as for jumping shooting performance.

Acknowledgement

The author would like to thank Faculty of Sports Science and Recreation, Universiti Teknologi Mara, 40450 Selangor, Dr. Mazlan Ismail, the coaches, and players for their encouragement and support in the project.
References


