

## **The Effects of Practice in Mind (PIM) Training on Performance Strategies used by Professional University Football Players**

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### **ABSTRACT**

Practice in Mind (PIM) Training is a combination of imagery and physical training program which consists of seven PTTLEP components (i.e. Physical, Environment, Timing, Task, Learning, Emotion, Perspective). The imagery content in PIM training program also integrates the facilitative imagery direction and stimulus – response propositions other than motivation, visual and kinesthetic directions. This study was conducted to determine the effects of PIM training on strategies used by the professional university football players during practice and competition condition. The experimental design was used and participants consisted of 21 players aged 19 to 30 years ( $M=22.95$ ,  $SD= 2.79$ ), with different years of experience. All represented UiTM FC football club and took part in the Malaysia premier league 2015. They were engaged in twelve days imagery – physical practices. All players completed the Test of Performance Strategies Questionnaires two days after the first game and six weeks after the first assessment. The results showed that the problem – solving strategies like imagery and relaxation increased after twelve days of PIM training during practices condition. Additionally, during competition condition, players showed some increment in using imagery, goal setting, self-talk and activation method.

The present study recommends using PIM training or for the whole league season. The need of team psychologist to train and help coaches to improve skills performance and psychological states of the players needs further investigation.

*Keywords:* Competition, football players, performance strategies, PIM training, practice

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## INTRODUCTION

The effectiveness of imagery training for individuals and team sports has been reported in previous studies (Malouff et al., 2008; Munroe-Chandler et al., 2008; Ramsey et al., 2010). In imagery training, a number of factors such as facilitative and debilitating imagery directions may influence individual performance. Other effective tools for imagery training in sports include modality and imagery perspectives (Farahat et al., 2004; Morris et al., 2005; Vealey & Greenleaf, 2006; Weinberg & Gould, 2003), and visual and kinesthetic, which were noted to be the most important sensory modalities (Farahat et al., 2004). In order to make athletes use imagery effectively, they have to combine all the perspectives and modalities that allow them to gain much information about a movement experience (Morris et al., 2005).

One study found that a systematic imagery training program known as Practice In Mind (PIM) had improved the performances of golfers in terms of golf putting (Mazlan, 2014, 2015), self-efficacy (Mazlan, 2016a), and moods (Mazlan, 2016b). PIM-training is a six-week imagery-physical training program that consists of seven PTTLEP components: physical, environment, timing, task, learning, emotion, and perspective. The components were derived from the functional similarity between imagery and physical performance of a motor task (Holmes & Collins, 2001). The imagery content in the PIM training program also integrates facilitative imagery

direction and stimulus-response propositions other than motivation, visual, and kinesthetic directions. Previous researchers found that PIM training had helped to improve shooting performance among netball players (Nur Asmidar & Mazlan, 2016; Nur Asmidar et al., 2016) and kick performance among rugby players (Fared et al., 2016). The training also helped to increase the rugby players' self confidence and reduced their anxiety level (Fared et al., 2016).

Different match location and different performance are other issues raised by sports researchers. As previous researcher found team sports used different psychological strategies during competition condition (Ismail, 2019). For example, football is an open sport with challenges that vary in different conditions (Arvinen-Barrow et al., 2007; Coelho et al., 2007). Therefore, different types of cognitive and motivational imagery are needed by soccer players depending on their situational circumstances and mental abilities (Williams et al., 2003). Soccer is also a sport that requires intense training and competitive structure, implying thus that a psychological work for the sport must adapt to the particular circumstances of a soccer team or club (Dasil, 2006).

Sport psychologists have seen psychological skills trainings having positive influence on football players (Thelwel et al., 2006). In one study, Mazlan and Mustaza (2014) identified possible differences in the use of performance strategies by UiTM FC football players during the 2014 Malaysia premier league season. The researchers found that compared to the

midfielders and strikers, the defenders and goal keepers used goal setting strategies more often during practice condition. In competition, the midfielders and strikers used emotional control strategy more often than did the defenders and goal keepers. The study thus recommended the necessity of psychological skills training to equalize all the performance strategies for each position, whether in practice or in competition. However, little is known in regard to which psychological skills training is suitable to improve the psychological states of players. How imagery may help soccer players to use different performance strategies still needs to be investigated. Therefore, this study was attempted to identify the effectiveness of PIM training on the performance strategies used by football players during practice and competition conditions.

## MATERIALS AND METHODS

### Participants

Twenty-one football players aged 19 to 30 years ( $M = 22.95$ ,  $SD = 2.79$ ) participated in this study with varying years of playing experiences. All of the players represented UiTM FC football club and took part in the Malaysia premier league 2015.

### Measure

The approval to conduct the study was obtained from the Ethics Committee of the Faculty of Sports Science, Universiti Teknologi MARA. All the players involved in this study had moderate imagery ability

(visual and kinesthetic) as measured by Movement Imagery Questionnaire-Revised, Hall and Martin (1997). Initial meeting was conducted with the coaches to discuss the tactical and technical aspects of each position of the sport. Subsequently, specific task imagery scripts (goal keeper, defender, midfielder, and striker) were developed based on the coaches' decisions.

The participants completed the Test of Performance Strategies (TOPS) questionnaire two days prior to the first game and six weeks after the first assessment during the competition season of 2015. The questionnaire consisted of two scales—practice and competition—with a 64-item self-report instrument (Thomas et al., 1999). The practice subscales are self-talk (maintaining a positive internal dialogue), emotional control (controlling emotions under pressure), automaticity (performing with little conscious effort, automatically), goal-setting (setting personal, specific goals), imagery (visualizing sport performance), activation (maintaining an optimal level of arousal), relaxation (practicing to remain calm under pressure), and attentional control (focusing attention effectively). Similar subscales were determined for the competition condition except for attentional control, which was replaced with negative thinking (thoughts of failure). A Cronbach alpha coefficient of 0.89 was recorded, and finally, descriptive statistic and paired *t*-test were performed to compare the different performance strategies used by the players after the training program.

## Procedure

An experimental study was conducted to identify the effects of the PIM training program on the performance strategies used by the football players during practice and competition conditions. The football players were only engaged in twelve days of imagery (physical practices) (Mazlan, 2014, 2015, 2016a, 2016b). All the players completed the Test of Performance Strategies (TOPS) two days after the first game (first assessment) and six weeks after the first assessment. During the initial meeting, the participant underwent an imagery ability test on Movement Imagery Questionnaire-Revised (Hall & Martin, 1997; MIQ-R) to evaluate their kinesthetic and visual imagery ability before they engaged with the imagery program (Mazlan, 2014, 2015, 2016a, 2016b). All the players scored 16 and above and had suitable levels of movement imagery ability (Mazlan, 2015, 2016a, 2016b). Next, all the players completed twelve days of the PIM training program individually. They were asked to perform 10 imagery practices and 10 physical practices as per procedure in PIM training program (Mazlan, 2014, 2015, 2016a, 2016b). Overall, the imagery practices covered 5 minutes for each player including the physical practices.

**PIM Training Intervention.** During the introduction phase, the researchers explained the objective of the training program and its application in specific task (to score goal for striker position) of football players. The PIM training was conducted two days after

the first game (first assessment). The players first completed the sessions with their coaches to recall all the tactical possessions as a goal keeper, defender, midfielder, and striker. The coaches provided the researchers with specific possession situations during an actual football match. The players were asked to recheck their own imagery script by applying all senses to experience a perfect tactical and technical performance, consistent with the PETTTLEP components in the PIM training program (Mazlan, 2014, 2015, 2016a, 2016b). The specific task imagery script included motivational and cognitive elements of imagery functions providing to each player's position tasks. Each player was encouraged to reread and modify his own imagery script with careful monitoring by coaches. The content of imagery also must include all the seven components of PETTTLEP imagery and facilitative imagery direction together with stimulus-responses propositions imagery (Mazlan, 2014, 2015, 2016a, 2016b). All the players were asked to take a deep breath and relax and practice 10 imagery practices (without ball) at the field, and they were taught to visualize a real match based on the script content during the practical phase. They were advised to select their best teammate for passing and receiving during attacking and defending other than visualizing the selected opponent players. They were also asked to perform the actual physical practices (with ball) as suggested in the PIM training program (Mazlan, 2014, 2015, 2016a, 2016b).

## RESULTS

Descriptive statistics for performance strategies during practices and conditions are presented in Table 1 and Table 2. A paired sample *t*-test was conducted to evaluate the effects of the PIM training on the performance strategies used by the players during practice and competition conditions. Statistically significant increase was noted in the imagery method scores from first assessment ( $M = 13.85$ ,  $SD = 1.79$ ) to second assessment during practice condition [ $M = 15.55$ ,  $SD = 2.14$ ,  $t(19) = 3.15$ ,  $p < 0.05$  (two-tailed)]. The mean increase in imagery scores was 1.70 with a 95% confidence interval ranging from 0.73 to 2.83. The eta squared statistics (0.33) indicated a large effect size. The relaxation method scores also increased from first assessment ( $M = 12.05$ ,  $SD = 2.42$ ) to second assessment [ $M = 16.75$ ,  $SD = 1.80$ ,  $t(19) = 5.94$ ,  $p < 0.001$  (two-tailed)]. The mean increase in relaxation scores was 4.70 with a 95% confidence interval ranging from 3.04 to 6.36. The eta squared statistics (0.63) indicated a large effect size.

During competition, the activation method scores increased from first assessment ( $M = 14.40$ ,  $SD = 1.88$ ) to second assessment [ $M = 17.25$ ,  $SD = 1.74$ ,  $t(19) = 5.71$ ,  $p < 0.001$  (two-tailed)]. The mean increase in activation method scores was 2.85 with a 95% confidence interval ranging from 1.81 to 3.89. The eta squared statistics (0.61) indicated a large effect size. The self-talk method scores increased from first assessment ( $M = 13.00$ ,  $SD = 2.66$ ) to second assessment [ $M = 15.65$ ,  $SD = 1.81$ ,  $t(19) = -2.90$ ,  $p < 0.05$  (two-tailed)]. The mean increase in self-talk method scores was -2.65 with a 95% confidence interval ranging from -4.56 to -0.74. The eta squared statistics (0.72) indicated a large effect size. Meanwhile, the imagery method scores increased from the first assessment ( $M = 15.45$ ,  $SD = 2.37$ ) to the second assessment [ $M = 14.00$ ,  $SD = 1.95$ ,  $t(19) = -2.29$ ,  $p < 0.05$  (two-tailed)]. The mean increase in imagery method scores was 1.45 with a 95% confidence interval ranging from 0.12 to 2.78. The eta squared statistics (0.35) indicated a large effect size. Finally, the self-

Table 1  
*Comparison of performance strategies used by the football players during practices after 12 days of PIM training program*

Measure	First assessment		Second assessment		<i>t</i>	<i>p</i>
	M	SD	M	SD		
Activation	13.85	1.73	13.65	2.25	0.317	0.755
Attentional control	13.05	2.35	12.60	1.57	0.604	0.553
Automaticity	13.05	1.96	12.20	1.32	1.704	0.105
Emotional control	11.75	2.61	12.95	2.72	-1.32	0.202
Goal setting	13.15	1.98	12.90	1.68	0.412	0.685
Imagery	13.85	1.79	15.55	2.14	3.157	<0.05
Relaxation	12.05	2.42	16.75	1.80	5.936	<0.001
Self-talk	15.75	1.41	16.00	1.41	-1.75	0.096

talk method scores increased from the first assessment ( $M = 18.20$ ,  $SD = 1.23$ ) to the second assessment [ $M = 15.75$ ,  $SD = 2.17$ ,  $t(19) = 3.69$ ,  $p < 0.05$  (two-tailed)]. The mean increase in imagery method scores was 2.45 with a 95% confidence interval ranging from 1.06 to 3.84. The eta squared statistics (0.40) indicated a large effect size.

Table 2  
*Comparison of performance strategies used by the football players during competitions after 12 days of PIM training program*

Measure	First assessment		Second assessment		<i>t</i>	<i>p</i>
	M	SD	M	SD		
Activation	14.40	1.87	17.25	1.74	5.714	<0.001
Negative talk	12.45	.99	12.75	1.25	-0.767	0.453
Automaticity	10.35	2.56	9.75	1.74	0.739	0.469
Emotional control	11.10	3.01	11.70	2.29	-0.632	0.535
Goal setting	15.75	2.17	18.20	1.82	3.696	<0.05
Imagery	14.00	1.95	15.45	2.37	2.286	<0.05
Relaxation	14.25	1.94	13.50	1.73	1.617	0.122
Self-talk	13.00	2.65	15.65	1.81	-2.903	<0.05

## DISCUSSION

The findings in this study showed that during practice, the use of imagery and relaxation strategies was increased from the first assessment to the second assessment. However, other performance strategies also need to be considered as important strategies that can be used by the football players. Meanwhile, during competition, the players used imagery, activation, self-talk, and goal setting, the use of these problem-solving methods increased after 12 days of training. This finding may explain the football study that found there were some positions on the pitch which showed differences in the performance strategies used during the league season.

## CONCLUSION

The main purpose of this study was to identify the advantage of using the PIM training or imagery-physical practices on performance strategies (mental skills) used by the football players during practice and competition conditions.

The present study supports the effectiveness of using the imagery script with stimulus and response propositions when emotion elements are involved during performance (Ramsey et al., 2010), for example, the effectiveness of facilitative imagery direction together with stimulus and response propositions scripts in the PIM training program (Lang, 1979). As shown in the study, the players also practiced in similar environments like playing in an actual match (voices from the crowds and teammates), which may have caused them



to feel like they were playing in an actual condition. As found in previous studies, when athletes similarly performed as in an actual environment with their own technique helped to improve performance and psychological variables of athletes (Gregg & Hall, 2006; Mazlan, 2015, 2016a, 2016b).

It was also interesting to note that the effectiveness of the PIM training supported the previous sport studies, where it could be practical for team sports athletes (Nur Asmidar & Mazlan, 2016, Nur Asmidar et al., 2016; Fared et al., 2016). In particular, the imagery scripts of football players on the field helped to increase the use of problem-solving strategies (self-talk, imagery, goal setting, and activation) by the players.

This study, however, opens up a number of potential studies. For example, the present study used a 12 days period to measure the players' performance after the intervention training. Therefore, there is a possibility that the study might have missed some players' input because some of the players may have played in only a few matches. Therefore, future studies should measure players' performance throughout the league matches. Since previous researcher found team sports used difference psychological strategies during competition condition (Ismail, 2019). The present study also used small sample sizes without including randomly sampled participants. As contended by Baumgartner and Hensley (2005), any study that involved only one group would

have many definite weaknesses. The present study seems to reduce the generalizability of the results. Hence, experimental research designs that involve the comparison of two groups are recommended for future research because such studies offer better control (Baumgartner & Hensley, 2005). It is also possible that the players' specific position (striker vs. defender) and strategies used when competing at home or away match may have had effects on psychological states. Future research thus should examine this issue particularly to investigate the effects of PIM training on football performances. In addition, specific skills including penalty kick and goal save performance can also be considered as performance measurements of football players.

In conclusion, this finding suggests that the PIM training program was used effectively by the football players to increase their psychological performance strategies. However, the present results may differ from other studies due to the difference in sample, study design, number of matches, and duration of the intervention. Future studies thus should focus on those mentioned above in order to ascertain the effectiveness of the PIM training on football players' psychological states and skills performance.

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