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Psychological Skill Training Implementation to Improve Football Referee Decision-Making Skills

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Abstract

This study aimed to determine the impact of psychological skill training (PST) on football referee decision-making skills. The samples of the study were 12 referees with national football licenses. The samples joined the psychology skill training (PST) program for 12 meetings. The psychology skill training (PST) program carried out in this study included goal setting, self-talk, imagery, and relaxation. To find out the improvement of football referees' decision-making skills, the decision-making model of Samuel, Tenenbaum, & Galily (2020) was used. The study results showed that psychology skill training (PST) improved football referee decision-making skills (72%). Thus, the PST model significantly influences football referees' decision-making skills. Therefore, it concludes that the psychology skill training (PST) model can be used as a solution for improving the decision-making skill of football referees.

INTRODUCTION

Mental A referee's mistake in making decisions has enormous consequences; the consequence does affect not only the result of the match but also the economic, social, and political perspectives of the club, the national team, the audience, and the players (Guillén & Jiménez, 2001). A referee's responsibility is a heavy burden borne by the referee before, during, and after leading the match. This condition will affect their self-confidence and increase their tension and anxiety (Rainey, 1995). The decline in mental factors might result in various mistakes, such as making wrong decisions and lacking communication with other referees while leading the match (Titlebaum et al., 2009). Stress, for referees, is a factor that must be avoided because the pressure on the referee will affect their concentration, mentality, and focus during holding the duty, which might result in a wrong decision (Bara & Guillén, 2004).

Football referees must prepare themselves to deal with various problems occurring in a match, one of which is dealing with the boisterous crowds present on the field. Psychologically, a referee must prepare himself to face the situation because the situation will affect the decisions taken by the referee (Nevill et al., 2002). Furthermore, apart from the audience in the stadium, there are other factors affecting the performance of football referees, including pressure from players, coaches, media, government, and federations (Mascarenhas et al., 2006).

The Indonesian Football League is one of the leagues with the largest audience in Asia, with a high regional fanaticism which potentially leads to violence in the field (Saputra et al., 2020). A study of more than 38,000 matches from 58 competitions over 14 years, using the number of spectators attending the match as a measure of social pressure on referees, showed that some referees felt that the presence of spectators on the field, especially in a large number, had a beneficial effect for the home team (Page & Page, 2010). Therefore, the number of developing issues, such as referees can be bribed and can regulate match results, becomes one of the main problems in football, not only in the Indonesian league but also in the world football league, that requires a solution. One of the cases is the case that occurred in the Italian league in 2004/2005, known as the Calciopoli case, which involved all elements of the

game, including club administrators, federations, and also referees, so that the Italian Prosecutor's Office investigated 41 people and examined 19 matches in the Serie A (Distaso et al., 2012).

In addition to these factors, other factors influence a referee's decision, such as pressure or aggression raised by players or officials on the field (Folkesson et al., 2002). Incidents of threats and aggression will affect concentration, performance, motivation, and anxiety before, during, and after the game. To anticipate every situation occurring on the field, a referee needs experience. A referee's experience is necessary and influential as an experienced referee will know where the ball is going when playing, how to carry out effective game management, and how to communicate with players. It was reported in a study that, to become an expert in a field, one must engage in a certain amount of practice (10 years or 10,000 hours) (Baker et al., 2013). To be an expert and skilled in refereeing, referees must practice both on the field and outside the field, study and read the law of the games, practice physically, and prepare themselves in all situations both physically and psychologically. The training process using the media will greatly help referees improve their performance on the field (Nurcahya et al., 2021). In other words, a referee must always train the psychological aspects (such as overcoming stress, mental, and aggression), physiology aspects (such as moving for 10 km in a match), and professional aspects (such as making accurate decisions and controlling the game) (Surujlal & Nguyen, 2011).

From the description of the problem, the researcher's main concern was the individual factor of the referee related to how a referee deal with stress, mental pressure, and aggression that he would face when leading the match. For example, in making the right decision, a referee must have mental toughness (Slack et al., 2013). On the other hand, if a referee fails to cope with stress while leading the match, the referee will experience fatigue and mistakes in decision making (Voight, 2009). For this reason, it is necessary to have mental skill training that the referee can use in preparing themselves for the match.

According to the experience of one of the authors, when he was active as a referee, football referees in Indonesia carried out routine exercises limited to performing physical exercises and understanding the rules of the game. Physical exercises were carried out to im-

prove endurance, speed, and coordination, while understanding the game's rules was conducted by doing game simulation exercises or watching video games. Meanwhile, psychological training was rarely conducted, and even the referee did not understand the importance of psychological training. Being a referee in a football match requires physical and mental aspects (Guillén & Jiménez, 2001). A mistake in making a decision will result in loss of confidence and increase anxiety and stress; thus, the referee must be able to overcome these problems through psychological training. The constellation was the concern of the author. Therefore, the authors were interested in conducting research related to psychological exercises to improve football referees' decision-making skills.

In this study, the authors applied a psychological skill training program (PST) as a program combining various naturally occurring PST techniques or methods conceptualized in various ways by different researchers. The basic assumption is that psychological skills can be learned and trained like other skills to reflect the development and or learning process that increases competence. The PST method or technique used was the PST technique developed by Weinberg & Gould (Weinberg & Daniel, 2019), consisting of 5 (five) forms of exercise, namely goal-setting, arousal regulation, imagery, self-confidence, and concentration. PST is a combination of a method designed individually to meet the needs of psychological skills (Gill, 2000). PST is a process related to developing daily routine activities and abilities in relation to exercise and sports settings (Weinberg & Daniel, 2019). PST positively contributes to improving performance in sports (Burton & Raedeke, 2009), helps people cope with competitive stress, increases self-confidence and performance in school, and trains life skills (Vealey, 2012). PST has strong empirical support showing its effectiveness in improving performance using psychological interventions; it is found that 85% of the 45 studies proved effective in increasing positive performance (Williams & Krane, 2021).

Psychological training aims to deal with inner complications and fears related to the competition to be faced and determine the mental qualities needed for future ability improvement (Vealey, 2012). Psychological training for football referees is important to improve mental competition, confidence, taking difficult decisions, ability to control themselves in the game, and

integrity in decision making (Samuel et al., 2020). Referees who do not have psychological abilities tend to avoid making difficult decisions, do not move in an ideal position, and do not focus on the match (Moran, 2004). In addition, referees will be easily influenced by the intimidation of players, coaches, and even boisterous spectators, which ultimately provides more benefits for the host (Hepler & Chase, 2008). Therefore, psychological training is crucial to consider and use by football referees to improve their skills on the field.

Many studies on referees lead to psychological training. For example, previous research had shown that football referees who underwent the PST program using 2 (two) methods, namely goal setting, and mental imagery, showed an increase in their performance when leading matches (Mathers and Brodie, 2014). Another research showed that referees who took part in psychological training had a strong resilience and confidence when making a decision (Slack et al., 2013). These studies lead to how psychological training can improve the mentality of referees, increase their self-confidence, help them deal with stress, and prepare themselves to face pressure on the field. Therefore, researchers often conduct mental training models to help referees improve their performance in the field. However, the PST model to improve performance is mostly for athletes; only a few referees use this model. This study aims to investigate the implementation of the PST model toward football referee decision-making skills.

METHODS

This study uses an experimental research method using One-Group Pre-test Post-test Design (Fraenkel et al., 2012).

Participants

The participants involved in this research were 12 football referees aged 25-35 years holding a national license and had led matches at the national level with a minimum of 5-10 years of service at the National level. The details can be seen in Table 1.

Table 1. Description of The Referee Characteristics

Group	Sex	Age (mean)	Experience as National Referee (mean)
PST	Male	29.92±3.4	5.5±42.9

Instrument

The instrument used to measure the football referee's ability to make decisions was the referee decision-making instrument developed by (Samuel et al., 2020), as shown in Table 2. In carrying out the decision-making test, it took the following steps. First, the research sample performed the task as a referee in a football match. Second, the match length was 2 x 30 minutes; third, a recording was made using three cameras during the match, including the primary Sony HXR-MC2500 T camera and 2 (two) auxiliary cameras with two (two) cameras, the Sony FDR-AX40 type. When the recording was completed, the next step was conducting a video analysis to assess the recording results carried out by 3 (three) instructors owning a referee appraiser license with a national license.

Table 2. Instrument of Football Referee Decision Making

Dimension	Indicators
Position	<ul style="list-style-type: none"> • Movement System • Position Anticipation
View	<ul style="list-style-type: none"> • Focus on the Event • View Ratio
Anticipation	Pressure
Decision	Correct Decision
Defend the Decision/ Change the Decision	Defend the Decision Made
Implementation of the Decision	<ul style="list-style-type: none"> • Signal • Protocol Implementation

Procedure

PST is systematic learning and practice to improve the positive performance effect by up to 85% (Williams & Krane, 2021). An effective PST will show the strengths and weaknesses of a referee concerning their psychological skills related to their performance on the field. The PST program in this study was carried out for 6 (six) weeks, involving 12 meetings. The psychological needs of the samples are closely related to the strengths and weaknesses felt by the samples, especially when making a decision in the field. Each sample will have different advantages and disadvantages, especially in psychological skills (Cox, 2012). Based on the argu-

ments, the authors developed a program to improve a referee's psychological skills by applying various psychological methods, strategies, and techniques. The psychological skill method used by the writers included goal setting, self-talk, imagery, and relaxation.

The PST program was conducted for 45 - 60 minutes per session, involving two meetings for six weeks. Sessions one to three included the goal-setting program. Session four contained relaxation exercises. Sessions five to seven provided a self-talk exercise program followed by relaxation exercises at the eighth meeting. Meanwhile, in the ninth to eleventh sessions, imagery exercises were conducted. In the twelfth meeting, relaxation exercises were provided. Relaxation exercises were given after the change of each training session. A more detailed procedure is presented in Table 3.

Table 3. Program and Material of PST Method (sessions)

	Material
1	<ul style="list-style-type: none"> • Explanation of PST • Goal Setting (Inspiration of Successful Person)
2	• Goal Setting (Self Identification)
3	• Goal Setting (SMART)
4	<ul style="list-style-type: none"> • Relaxation Training • Respiration • Muscle Relaxation
5	• Self Talk Training (Motivational Mechanism, Listening, Learning, and Thinking)
6	• Self Talk Training (Motivational Mechanism, Listening, Learning, and Thinking)
7	• Self Talk Training (Motivational Mechanism, Listening, Learning, and Thinking)
8	<ul style="list-style-type: none"> • Relaxation Training • Respiration • Muscle Relaxation
9	<ul style="list-style-type: none"> • Imagery Training • Imagining the condition right before leading a match
10	<ul style="list-style-type: none"> • Imagery Training • Imagining the condition when leading a match (moving, running, stepping sideways, and stepping back) • Imagining a condition when making an important decision
11	<ul style="list-style-type: none"> • Imagery Training • Imagine a condition when leading a match and receiving an excessive protest.
12	<ul style="list-style-type: none"> • Relaxation Training • Respiration • Muscle Relaxation

Data Analysis

The data generated of this study were analyzed using experimental research techniques to test how PST could influence football referee decision-making skills. For processing data analysis, the t-test was used as a calculation to determine the correlation. In addition, to facilitate data analysis of this study, the author used the SPSS 21 for the windows program.

RESULT

The followings are data from research on football referee decision-making conducted by researchers taken from football referee decision-making instruments through the administration of video analysis by referee appraisers. The data obtained from the study results included the mean score, standard deviation, and gain of the PST group based on the referee decision-making indicators shown in Table 4.

Table 4. Description of Referee Decision Making Data Per Indicator

Indicators	PST Group				Gain
	Pre-test		Post-test		
	r	Sd	r	Sd	
Position	79.77	12.63	93.1	4.12	13.33
View	89.91	6.73	92.84	4.57	2.93
Anticipation	91.85	8.33	98.49	2.44	6.64
Decision	88.13	6.16	94.91	3.35	6.78
Defending/ Changing Decisions	99.3	1.32	99.74	0.9	0.44
Decision Implementation	95.86	2.72	99.61	1.35	3.75

Table 5. Description of Referee Decision Making Data

Instrument	PST Group				Gain
	Pre-test		Post-test		
	r	Sd	R	Sd	
Decision Making	91.52	3.99	96.60	1.35	5.38

Table 4 describes each decision-making indicator's mean score and standard deviation based on the PST model. Of the six indicators, defending the decision indicator gained a very good score from the PST model, where the mean score of the pre-test was 99.30, and the score of the post-test was 99.74. Meanwhile, the lowest score was gained by the position indicator of the PST model; the mean score of the pre-test was 79.77, while

the post-test score was 93.1. Meanwhile, the position indicator gained the highest gain value for the PST model with a score of 13.33.

After describing the data based on the indicators, the researchers described the overall decision-making data in Table 5. In addition, Table 5 shows that the PST group's mean scores for the referee decision-making were 91.52 for the pre-test mean score and 96.60 for the post-test mean score, with a gain value of 5.38.

Table 6. Correlation among The Decision Making Scores

Model	R	R Square
Decision Making	.848 ^a	.720

Table 6 explains that the magnitude of the correlation value among the decision-making scores was 0.848, stating that PST had a high correlation to football referee decision-making. Meanwhile, from the resulting score, the influence of PST on football referee decision making had a value of 72%, suggesting that PST had a high influence on a referee decision making and the rest was influenced by other factors.

Table 7. Football Referee Decision Making

Model	Sum of Squares	Df	Mean Square	F	Sig.
1					
Regression	28.771	1	28.771	25.664	.000 ^b
Residual	11.211	10	1.121		
Total	39.982	11			

Table 8. Decision Making Scores

Model	Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig.
	B	Std. Error			
Decision Making	.406	.080	.848	5.066	.000

In Table 7, it is presented that there was a significant effect of PST on football referee decision making with a calculated F value = 25,664 and a significance level of 0.000 < 0.05. In other words, the PST model had a significant influence on football referee decision-making.

Table 8 shows that the constant value obtained was 59,668, while the decision-making value was 0.406. It indicates that each improvement of the PST model on football referee decision-making was scored 0.406. From the results shown in Table 10, it can also be interpreted that PST has a significant influence on a referee's decision-making with a t-test value of 5.066

and a significance value of $0.000 < 0.05$; thus, the hypothesis is accepted.

DISCUSSION

The Football referees' decision-making skills in this study included six indicators: positions, views, anticipations, decisions, defending/changing decisions, and the implementation of decisions (Samuel et al., 2020). The sequence of decision-making for football referees is interconnected. It becomes a single unit, which starts from the position (how a referee positions himself in the field), the view (how a referee sees an event in the field from his point of view), anticipations (how a referee anticipates every event occurring in the field), decisions (related to the law of the games), defending/changing decisions which sometimes occurs when the referee is under pressure, and the implementation of the decision (the procedure of the decision made is following the law of the game) (IFAB, 2020).

In leading a match, football referees are greatly influenced by other factors, such as their understanding of the game rules, game management, personality, communication, physical condition, and experience (Plessner, & MacMahon, 2014; Nurcahya et al., 2021). Therefore, all of these components are included in the assessment indicators as the reference for the researchers.

The first stage of the football referee decision-making process is position. The position of the football referee is the first key influencing the next step. A football referee should find an ideal position by following the game. As football is a dynamic game, a referee should always move to find an ideal position before deciding on an incident happening on the field. Football referees make diagonal movements covering the playing field from one side of the goal to the other because assistant referees assist them on each side; hence the diagonal movement is an essential division for referees to find the ideal position; while for assistant referees, the ideal position is in line with the penultimate defender (IFAB, 2020). In this study, the referee position gained 79.77 at the pre-test and 93.10 at the post-test for the PST model, with a gain of 13.33 percent, which was the highest increase of all indicators. When the pre-test was carried out, the referee was often not in his position; this was due to the absence of a match because

Covid-19 caused all competitions to be stopped, as well as the physical condition of the referee (Castillo et al., 2016). However, after the training process, the referee experienced a significant improvement in their position on the field.

When the referee has a good position on the field, the referee must visually pay attention to the incident. In this study, the referee view on the playing field for the PST model obtained an initial test score of 89.91 and a final test score of 92.84 with a gain of 4.57. It indicates that a referee's view in the field significantly influences decision-making. A clear view of the field is influential in convincing the referee to determine the decision taken; with this strategy, the referee will be faster in recognizing events (Ghasemi et al., 2009).

The next step is anticipations. In this study, the PST model had a gain of 6.64. The PST model experienced a high improvement because the referee had to predict the situation on the field, whether a violation would occur, the ball went out, and other events relevant to the law of the games. Anticipation in decision making is related to Long Term Memory (LTM), where experiences will have an important factor in decision making (Spitz et al., 2016). In the process, anticipations will recall past events so that the referee can understand what will happen in the field (Liu & Tenenbaum, 2018).

The next is the decision taken by the referee regarding the incident on the field. After being in a good position to have an ideal point of view, followed by anticipation of events in the field, the next step is to make a decision, whether the incident is a violation or not, whether the incident is a ball out of the field or not, and other events that must be taken into account according to the law of the game. In this study, the decision taken by the referee from the PST model gained an increase of 6.78. Of course, it depends on many factors, such as understanding the game's rules, game management, personality, communication, physical condition, and experience (Plessner & MacMahon, 2014).

After making a decision based on the law of the games, the referee will defend or change the decision that has been taken. The PST model obtained an increase of 0.44. The increase was a small improvement because the error rate made by referees on the field was also very small. When the referee decides on an incident and gives a signal regarding the events occurring

in the field, the decision is not final because it can change when the referee gets information or feedback from the assistant referee, either by raising the flag or through a communication device (Samuel et al., 2020). Furthermore, the players who put pressure on the referee by protesting or arguing with the referee (Lex et al., 2015) or the audience puts pressure by giving a tone of ridicule or physical contact when they enter the field (Beltrán-Esteve & Picazo-Tadeo, 2017) can be the factors influencing the referee decision, whether to change or stay with the decision; thus the calm and the psychologically skilled referee is helpful in this case.

The last stage of decision-making indicators is the implementation of decisions. The implementation of decisions is closely related to the signals taken by the referee in making clear decisions (whistles and arm signals). Therefore, the signal should not be confusing, and the application of the protocols taken should be in accordance with the procedures set out in the law of the games. The results of the PST model had an increase of 3.75.

After examining each research indicator, the next step was to look at the effect of the PST model on improving football referee decision-making skills. It is because the level of pressure on referees in a football match in Indonesia is high, which causes a high level of anxiety and stress on referees. Therefore, mental training using the PST model becomes one of the solutions in helping referees improve decisions taken in the field, particularly a decisive decisions.

A referee must prepare himself before taking charge of a match, both physically and psychologically. Physical activity is a necessity for football referees because they are required to move dynamically during the game, overcome stress and pressure from all elements of the match, including players, spectators, and team officials, and be professional in making decisions and controlling the game (Surujlal & Nguyen, 2011). The factor causing the high stress experienced by football referees is the fear of making a decision, especially the wrong decision (Solomon et al., 2011). Therefore, a football referee must be physically and mentally prepared before, during, and after the match. The results of this study ensure that the PST method contributes to football referees making decisions while leading the game.

The demand that affects the performance of foot-

ball referees while leading a match is high; thus, the referee should always focus before, during, and after leading the match and be able to deal with all the pressures in the match (Mascarenhas et al., 2006). The focus of a soccer referee can be trained independently by the referee; one of those is using the PST method. The PST method's main benefit is that the referee can train himself independently to prepare himself well before, during, and after the match. This PST method will prepare the referee for events in the field, so vigilance and anticipation of all possibilities in the match will be highly prepared. This mental exercise can increase focus, attention, concentration, and confidence in making a decision and reduce anxiety and emotions in referees (Mascarenhas et al., 2006). It concludes that mental training using the PST method is important not only for athletes but also for referees who often experience disruptions when deciding to have a good level of focus, attention, and mentality to reduce anxiety and emotions when leading a match in the field.

CONCLUSION

The results of this study state that mental training using the PST model significantly influence a referee's decision-making skills in the field. Mental exercise is important and necessary to be carried out by referees. It should be practiced independently within the practice or before and during the game. The PST model helps referees carry out mental exercises independently, which can ultimately improve and help their performance on the field, especially in making decisions as a referee. This research has limitations, especially a small number of samples and a more competitive form of competition. However, this research can serve as a reference for conducting further research.

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CONFLICT OF INTEREST

The authors declared no conflict of interest.

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