



The Relationship Between Self-Efficacy and Attention to Table Tennis Topspin Technique

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History Article

Received March 2026

Approved April 2026

Published vol 13 no 1 2026

Keywords

Self Efficacy; Attention; Table Tennis

Abstract

Table tennis is a sport that requires a combination of technical skills, physical abilities, and psychological factors, particularly in executing complex techniques such as topspin. In practice, many athletes experience difficulties in performing consistent and accurate topspin strokes, which may be influenced not only by technical mastery but also by psychological aspects such as self-efficacy and attention. This study aims to analyze the relationship between self-efficacy and attention on topspin technique skills in athletes of the UPI Sumedang Table Tennis Student Activity Unit. The study used a quantitative approach with a correlational design. The sample consisted of 15 athletes selected through purposive sampling from a total population of 30 athletes. The research instruments included a self-efficacy questionnaire adapted from Albert Bandura's concept and an attention scale based on Robert L. Solso's cognitive theory, and a topspin skill test. Data analysis used Pearson correlation test and multiple linear regression with the help of SPSS 26 at a significance level of 0.05. The results showed that partially self-efficacy was significantly related to topspin skills ($r = 0.538$; $p = 0.039$), and attention was also significantly related ($r = 0.758$; $p = 0.001$). However, in the multiple regression analysis, only attention had a significant effect on topspin skills ($\beta = 0.646$; $p = 0.005$), while self-efficacy did not show a significant effect ($p = 0.157$). Both variables simultaneously contributed 64.2% to topspin skill ($R^2 = 0.642$; $p = 0.002$). These findings indicate that attention is the dominant predictor of topspin skill, while self efficacy plays an indirect role when analyzed together. The implications of this study emphasize the importance of integrating psychological training, particularly attention, into table tennis training programs.

How to Cite

Riyan, M. A. N., Safari, I., & Susilawati, D. (2026). The Relationship Between Self-Efficacy and Attention to Table Tennis Topspin Technique. *Journal of Physical Education, Health and Sport*, 13 (1), 288-296.

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INTRODUCTION

Table tennis is a sport played on a table using a racket and a small, lightweight ball. The game demands quick reactions, accuracy, hand-eye coordination, and ball control in a variety of situations. It is popular among everyone from children to the elderly. Table tennis has its own characteristics, including basic techniques. Several techniques are used in table tennis, including: racket grip (grip), ready attitude (stance), footwork (footwork), and punch (stroke) (Safari, 2019). All of these techniques must be mastered. When the techniques mentioned are mastered, the athlete will be able to become a professional athlete (Permatasari, 2017). One of the stroke techniques that plays an important role in modern table tennis is the technique topspin. The forehand topspin stroke technique in table tennis is the dominant technique used (Safari et al., 2022). Topspin is part of the stroke technique in table tennis, where the ball is hit to produce a large, fast, stable spin, and is difficult for the opponent to return. This rotation causes the ball to move towards the table surface, making it easier for the player to score points (Basri, 2021). This technique not only makes the ball difficult for the opponent to return but also allows the player to control the distance and angle of the game (Mao et al., 2023). In practice, this topspin movement can accelerate the resulting movement because the rotation is done faster. The successful implementation of this technique topspin not only influenced by physical and biomechanical aspects, but also by the psychological factors of the player.

One of the psychological factors that plays a crucial role in the implementation of sports techniques is self-efficacy. Self-efficacy here refers to a person's belief in their ability to plan and execute the necessary actions to face a particular situation or task (Bandura, 1997). A person's abilities are a key component of their success, reflecting their belief in themselves, which aligns with their skills. This will foster a table tennis athlete's belief in their ability to understand, practice, and master topspin techniques effectively. Athletes with self-efficacy tend to try harder hard work, perseverance in the face of adversity, and the courage to try new techniques such as topspin in table tennis (Setiawan, 2020). In addition to self efficacy, an athlete's psychological factor that can influence and impact the success of topspin techniques is attention. Attention is the mind's control, in a clear and vivid form, of one of what appears to be several objects or

trains of thought that may occur simultaneously. This aligns with Komarudin, (2013) explanation, which explains that attention is a process by which a person uses their common sense to perceive the outside world. Attention is the ability and process of thinking through the five senses that is carried out directly on a specific object, involving thought and feeling processes. This view is supported by Mahyudi et al., (2022) who found that attention contributes to stroke skills in table tennis. In practice, the resulting stroke is a series of movements with the main focus on movement attention. In research by Nurjana et al., (2021) it explains that psychological training has been shown to influence technical accuracy, for example in forehand topspin. This is in line with what was explained by Weinberg, R. S., & Gould, (2019) in their research which explains that psychological factors such as attention, anxiety, and self-confidence are very important in table tennis, where instant reactions and mental resilience determine success.

In general, the problems experienced by table tennis athletes are physical and biomechanical. This is in line with the explanation Prima & Kartiko, (2021) who stated that physical conditioning is the process of developing the ability to perform physical activities systematically and progressively to maintain or improve physical fitness levels to achieve optimal physical performance. Physical conditioning is also a crucial element for achieving performance. A prerequisite for improving performance is physical condition (Mashuri et al., 2019). However, psychological factors in athletes also pose a problem. A study by Chu et al., (2011) explained that psychological factors play a crucial role in improving athletes' playing skills in table tennis. The authors wanted to determine the extent of the relationship when psychological factors are also considered in the training process. Through consistent practice and a proper understanding of technique, players can optimize their skills. in this dynamic sport. Players must start in a semi-flexible knee position to quickly move toward the ball and direct the racket downward before quickly lifting it upward and forward to generate topspin (Lam et al., 2018). Table tennis athletes must be able to combine these crucial aspects simultaneously. This issue is one that requires significant attention, as in the same situation, athletes will perform these movements simultaneously with internal factors within themselves. This problem is not only a challenge for the athletes themselves but also a shared problem, meaning it is felt by

many related parties.

In conducting the study "The Relationship Between Self-Efficacy and Attention to Table Tennis Topspin Techniques", there are several relevant studies from abroad and within the country that are explored and reviewed, such as the journal "Anxiety Level of Table Tennis Athletes" Safitri & Alficandra, (2023) focused on the anxiety level of athletes in student activity units, with the aim of measuring and analyzing the factors that influence anxiety. Furthermore, the Journal "The Effectiveness Of Visualization Techniques On The Confidence Of Table Tennis Players" Kembaren et al., (2024) focused on visualization techniques to increase self-confidence, with the aim of identifying the effectiveness of these techniques. In addition, the Journal "The Effect of Agility, Eye-Hand Coordination and Concentration on Basic Table Tennis Skills" Mahyudi et al., (2022) focused on the relationship between agility, coordination, and concentration with basic skills, with the aim of analyzing the contribution of these factors. Furthermore, in the journal "Contribution of Self-Confidence, Reaction Speed, and Kinesthetic Perception to Table Tennis Playing Skills" Akbar & Hasan, (2022) focused on the contribution of self-confidence, reaction, and kinesthetic perception to playing skills. In the journal "Survey of Nervousness of Table Tennis Athletes" Irvannoor, (2024) focused on the level of nervousness (anxiety) during competition, with the aim of identifying internal and external factors. In the journal "Adjustment of Table Tennis Athletes PPLP Central Java" Prawistri & Masykur, (2016) focused on the adjustment of adolescent athletes, with the aim of understanding the adjustment process between the world of athletes and education. In the journal "Exploring cognitive processing speed, emotional intelligence, and topspin shot accuracy in table tennis" by Haryanto et al., (2024) focused on The relationship between cognitive processing speed (CPS), emotional intelligence (EI), and topspin accuracy (TPA) in novice athletes, with the aim of investigating the correlation of CPS and EI with TPA to provide psychological insights in topspin training. Furthermore, in the journal "Psychological Profiling of Table Tennis Players: A Comparative Study of Mental Toughness, Anxiety, and Concentration in Perak and Yinchuan" Yue et al., (2025) focuses on comparing mental toughness, anxiety, and concentration between Malaysian and Chinese players with the aim of identifying psychological profiles for performance optimization.

Meanwhile, in the journal "Forehand Topspin Stroke and Backhand Stroke Abilities of Table Tennis Athletes at the PTM Taruna Club Bajang Mataram" by Ikwatunnas, (2024) focuses on measuring forehand topspin and backhand stroke abilities in novice athletes and aims to evaluate basic technical abilities to improve performance. The latest article in the journal "Analysis and Research on the Diagnosis of Techniques, Tactics, and Psychology in Table Tennis" by Hun, (2020) focuses on analyzing techniques, tactics, and psychology in table tennis, with a focus on the ABS ball reform, which aims to diagnose the impact of the reform on players' techniques and psychology. Various studies have shown that psychological and cognitive factors have a significant relationship with sports skill performance. However, studies that specifically examine the relationship between self-efficacy and attention to the implementation of technique topspin Table tennis education remains relatively limited, particularly in the context of learning and training in educational and sports development settings. However, understanding the interrelationship between these two factors is crucial for designing training programs that emphasize not only physical and technical aspects but also the psychological and cognitive development of athletes.

Previous studies have also not provided an empirical picture regarding the extent of the contribution of these two psychological variables to the technique topspin when compared to other factors such as strength, coordination, and training frequency. Using a quantitative approach to link psychological factors to technical athletic ability provides a more objective methodological perspective. Through initial observations at the Table Tennis Student Activity Unit (UKM) at UPI Sumedang Campus, it was identified that there was a significant lack of attention to athletes' psychological well-being, including self-efficacy and attention during training. These factors influence the quality of an athlete's table tennis performance. Therefore, this study not only confirms previous research but also contributes to providing practical insights for coaches, which can form the basis for new training models that combine psychological and technical coaching for athletes. Therefore, the study "The Relationship Between Self-Efficacy and Attention to Topspin Technique in Table Tennis" is very important considering that not only physical factors need to be considered to achieve successful table tennis technique topspin. However, psychological factors also play a crucial role and are essential

for attention. The results of this study are crucial for understanding the relationship between self-efficacy and attention to technique. topspin. It can be interpreted that this research focuses on the analysis of the relationship between these two psychological variables and topspin technique skills, both partially and simultaneously.

METHOD

The method used in this study is quantitative with a correlational design. Quantitative methods are research approaches that focus on collecting and analyzing numerical data to test hypotheses or answer research questions. In this context, the most commonly used research design is the correlational design. This design focuses on identifying and analyzing relationships between two or more variables, without experimental manipulation or intervention (Lagesan et al., 2023). In this method, data is measured using standardized instruments and statistical analysis, allowing researchers to obtain objective results and broader generalizations regarding the population studied. With a correlational design, the researcher aims to analyze the relationship between three variables: the independent variable (X) and the dependent variable (Y). The independent variables are Self-Efficacy and Attention, and the dependent variable is the Table Tennis Topspin Technique. The use of a quantitative method with a correlational design is to determine whether or not there is a relationship, the direction of the relationship, and the level of closeness between Self-Efficacy and Attention with the Table Tennis Topspin Technique objectively, so that it can serve as a basis for improving the quality of training in the Table Tennis UKM UPI Sumedang. The population in this study were all 30 members of the Table Tennis UKM UPI Sumedang. The subjects of this study were taken using a purposive sampling technique where the research subjects were determined first based on relevant characteristics, including having experience playing table tennis and being able to perform topspin techniques independently. Purposive sampling technique is a technique for determining and taking samples determined by the researcher with certain considerations (Sugiyono, 2013). The considerations made in this purposive sampling technique can vary and depend on the needs of the research to be conducted. Therefore, the sample in this study was 15 athletes of the table tennis UKM UPI Sumedang.

In this study, the equipment and materials used to measure psychological variables (in-

dependent) and technical performance of the sample's topspin (dependent). The equipment used consisted of research instruments ranging from a Self-Efficacy Questionnaire adapted from the General Self-Efficacy Scale created by Aris-ti Born et al. 1995 in Arfanda & Wahid (2021) which uses a validated Likert scale as a measuring tool for athletes' confidence in performing techniques. The Attention Test was used as an instrument to measure the level of concentration when performing movements in the form of questions through a questionnaire with a Scale Attention is structured from the concept formulated by (Solso et al., 2007). There are five aspects of attention: Processing capacity and selectivity, Attentional control, Automatic processing, Cognitive neuroscience, and Consciousness. Furthermore, there are tables, bats, table tennis balls, and writing instruments as one of the supporting equipment for the test of the technique performed by athletes as supporting materials and separate assessments of the technique. The materials used in this study were 10 table tennis balls and a table surface that had been given scoring lines during the test during the technique testing (Haryanto et al., 2023). The assessment sheet as an evaluation of the quality of the technique with reference to indicators. Respondent data in the form of information forms obtained through several questionnaire tests that focused on personal statements.

Data collection techniques in this study were conducted for three variables. The first was data on self-efficacy, the second on attention, and the third on the topspin technique. The three measuring instruments used in this study were questionnaires for the self-efficacy and attention variables, while for the topspin technique a topspin test was conducted. A questionnaire is a series or list of questions systematically arranged, then sent to be filled out by respondents. After being completed, the questionnaire is returned to the officer or researcher. The questionnaire was created with short answers using Google Forms because it has a simple, concise, yet professional appearance (Adiratna et al., 2024). After going through the data processing stage, it was analyzed using inferential statistics to test the hypothesis regarding the strength and direction of the relationship between the self-efficacy and attention variables (free) and the topspin technique (bound). Inferential analysis was also used to test the research hypothesis using correlation and regression tests. Therefore, statistical data is usually analyzed using the SPSS computer program. SPSS is an application program capable of high-level statistical analysis and data management in

a graphical environment, utilizing descriptive menus and simple dialog boxes for easy understanding (Handayani et al., 2023). SPSS has many versions; this study used SPSS version 26, with a significance level of 95% or $\alpha = 0.05$.

Data analysis is quantitative using correlation tests and regression tests. A linear correlation test is used to determine the extent of the relationship between three variables. A correlation test is a statistical analysis technique used to determine whether or not there is a relationship between two or more variables. In quantitative research, this test is very important. Identifying and measuring the strength and direction of relationships between variables without manipulating them. The choice of correlational test is often influenced by data characteristics, such as normality and linearity, which must first be tested to ensure the reliability of the analysis (Kartika et al., 2022). Multiple linear regression is a statistical method used to evaluate the relationship between one dependent variable and one or more independent variables. This method is important in quantitative analysis, especially when researchers want to predict the value of the dependent variable based on information obtained from the independent variables. Simple linear regression involves only one independent variable, while multiple linear regression involves two or more independent variables.

RESULTS AND DISCUSSION

The research data consists of two independent variables, namely self-efficacy (X1) and attention (X2), and the dependent variable, table tennis topspin technique (Y). In this section, the data from each variable that has been processed will be explained or described based on the average, median, mode, and standard deviation values. In addition, a frequency distribution table for each variable is also presented. The following are details of the results of data processing that have been carried out with the help of SPSS version 26.

Table 1. Descriptive Statistics

Statistical Value	Self Efficacy	Attention	Topspin Result
N	15	15	15
Range	12	14	11
Minimum	24	39	7
Maximum	36	53	18
Sum	452	722	179
Mean	30.13	48.13	11.93
SD	2.66	3.58	3.23

It can be noted that self-efficacy has a mean value of 30.13 and a standard deviation of 2.66, while 7,124 12,838 attention has a mean value of 48.13 and a standard deviation of 3.58, and the results of the topspin test obtained a mean score of 11.93 and a standard deviation of 3.23.

The author used IBM SPSS Statistics Version 26 to calculate the Kolmogorov-Smirnov normality test to determine whether the data distribution was normal. The requirement for data to be normally distributed is if the significance obtained from the calculation is greater than Sig.

Table 2. One-Sample Kolmogorov-Smirnov Test

		Zscore: Topspin Result	Zscore: Self Efficacy	Zscore: Attention
N	15	15	15	
Normal Parameters ^{a,b}	Mean	.0000000	.0000000	.0000000
	Std. Deviation	1.00000000	1.00000000	1.00000000
Most Extreme Differences	Absolute	.175	.175	.176
	Positive	.154	.175	.101
	Negative	-.175	-.161	-.176
Test Statistic		.175	.175	.176
Asymp. Sig. (2-tailed)		.200c,d	.200c,d	.200c,d

Based on the **Table 2**, it can be seen that the significance value of self-efficacy is equal to the significance value (Sig.) = 0.200 > 0.05, and attention 0.200 > 0.05. Therefore, it can be concluded that the data is normally distributed. In the topspin test results, the significance value (Sig.) = 0.200 > 0.05, so it can be concluded that the data is normally distributed. Calculating Pearson correlation test using IBM SPSS Statistics version 26.

Table 3. Correlations

		Topspin Result	Self Efficacy	Attention
Result Topspin	Pearson Correlation	1	.538*	.758**
	Sig. (2-tailed)		.039	.001
	N	15	15	15
Self Efficacy	Pearson Correlation	.538*	1	.394
	Sig. (2-tailed)	.039		.146
	N	15	15	15
Attention	Pearson Correlation	.758**	.394	1
	Sig. (2-tailed)	.001	.146	
	N	15	15	15

Based on the results of the **Table 3**. Correlation test analysis, the correlation value between self-efficacy and table tennis topspin technique ability was obtained at $r = 0.538$ with a significance value of $p = 0.039$. This significance value is smaller than the specified significance level of

0.05 ($p < 0.05$), so it can be interpreted that there is a positive and significant relationship between self-efficacy and table tennis topspin technique ability. The correlation coefficient value of 0.538 indicates that the relationship between the two variables is in the moderate category. This indicates that the higher the level of self efficacy possessed by an individual, the better the ability to perform table tennis topspin techniques.

Furthermore, the results of the correlation test between attention and table tennis topspin technique ability showed a correlation coefficient value of $r = 0.758$ with a significance value of $p = 0.001$. This significance value is also smaller than 0.05 ($p < 0.05$), so it can be concluded that there is a positive and significant relationship between attention and table tennis topspin technique ability. The correlation coefficient value of 0.758 is included in the strong category, which means that attention has a stronger relationship with topspin technique ability compared to self efficacy. This shows that the higher the level of individual attention, the ability to perform table tennis topspin technique will also increase.

Based on these two results, it can be concluded that self-efficacy and attention partially have a positive and significant relationship with table tennis topspin technique ability, with the attention variable showing a stronger level of relationship compared to self-efficacy.

After conducting a Pearson correlation test, it was found that the sample data were related. Then we can test linear regression. One of the most common statistical techniques A popular and useful method for analyzing the relationship between two or more variables. Simply put, linear regression attempts to find the best straight line that describes the relationship between a dependent variable (the variable we want to predict) and one or more independent variables (the variables we use to make predictions). The Pearson correlation test was calculated using IBM SPSS Statistics version 26.

Table 4. Coefficientsa

Model	Unstandardized Coefficients			t	Sig.
	B	Std. Error	Beta		
(Constant)	-26.554	8.374		-3.171	.008
Self Efficacy	.344	.228	.284	1.509	.157
Attention	.584	.170	.646	3.438	.005

Testing the First Hypothesis (H1). Based on the analysis above, the Sig value is known for the relationship between Self-Efficacy (X1) against the topspin technique (Y) of $0.157 > 0.05$ and the

calculated t value of $1.509 < 2.178$ so that It can be concluded that there is no significant relationship between self-efficacy and topspin technique.

Testing the Second Hypothesis (H2). It is known that the Sig value for the relationship between attention (X2) and the topspin technique (Y) is $0.005 < 0.05$ and the calculated t value is $3.438 > 2.178$ so it can be concluded that there is a relationship between attention and the topspin technique.

So from the two T tests, X1 has no effect (there is no relationship) while X2 has an effect (there is a relationship) based on the T test. Based on the output above, it is known that the significance value for the relationship between self-efficacy x1 and attention x2 simultaneously on the topspin technique is 0.002 F table 3.81, so it can be concluded that H3 is accepted which means there is a relationship between X1 and X2 simultaneously with Y.

Based on the data processing results, the authors found a relationship between self-efficacy and attention to the table tennis topspin technique. This suggests that psychological factors are indeed crucial to an athlete's success in topspin.

These findings support the sport psychology theory that attention plays a central role in high-precision motor skills. In table tennis, the process of selecting visual stimuli and timing shots relies heavily on attentional control.

Although self-efficacy was partially related to topspin skill, when analyzed alongside attention, the effect was insignificant. This suggests that self-confidence alone is insufficient without the ability to focus attention during technique execution. Consequently, coaches need to integrate focus training, concentration drills, and match pressure simulations into topspin technique training programs.

The results of the study indicate that self-efficacy and attention are related to table tennis topspin technique skills. Partially, self-efficacy shows a positive and significant relationship with a correlation coefficient value of 0.538 ($p < 0.05$), which is included in the moderate category. This finding indicates that the higher the level of self-efficacy possessed by students, the better their ability to perform the topspin technique. This is in line with the self-efficacy theory which states that an individual's belief in their abilities will influence performance in completing certain tasks (Bandura, 1997).

However, regression analysis showed that self-efficacy did not have a significant direct effect on topspin technical skills ($p > 0.05$). This indi-

cates that self-efficacy is not the primary factor in determining technical skill success, but rather plays a supporting role that needs to be accompanied by other abilities. However, in Adam, (2023) study, athletes' self-efficacy and self-confidence jointly influenced increased achievement motivation.

In contrast to self-efficacy, attention showed a stronger relationship with topspin technique skills. The correlation test results showed a value of 0.758 ($p < 0.05$), which is considered strong. Furthermore, regression analysis showed that attention significantly influenced topspin technique skills ($p < 0.05$). This indicates that attention is a dominant factor in supporting the success of topspin technique in table tennis. This is in line with the view of Mahyudi et al., (2022) who stated that attention plays a crucial role in improving table tennis stroke skills.

Attention is an individual's ability to focus and direct attention to relevant stimuli while ignoring distractions. In the context of table tennis, attention is crucial for observing the direction, speed, and spin of the ball, as well as determining appropriate motor responses in a short period of time. Attention plays a crucial role in training activities Mahyuddin & Darwis, (2023). Therefore, a high level of attention contributes to the accuracy and quality of topspin shots.

Together, self-efficacy and attention contributed 64.2% to topspin technical skills, while the remaining 35.8% was influenced by other factors outside the study. This indicates that both variables play an important role in supporting technical skills, although attention plays a more dominant role. In the study of Mahyuddin & Darwis, (2023) explained that athlete sports psychology is influenced by two factors: internal factors of sports psychology in athletes and external factors of sports psychology in athletes. This means that among the supporting psychological factors of self-efficacy and attention, there are other factors that can support athlete development.

The results of this study align with previous research, such as that of Mahyudi et al., (2022) who found that concentration significantly contributes to basic table tennis skills, and that of Nurjana et al., (2021) who stated that psychological training can improve the accuracy of forehand topspin techniques. Furthermore, Weinberg, R. S., & Gould, (2019) emphasized that psychological factors such as attention, anxiety, and self-confidence are important components of sports performance, especially in sports that require fast reactions like table tennis.

The implication of this research is the

importance for coaches and physical education teachers to focus not only on technical and physical aspects, but also on psychological aspects, especially attention. Rohmatika, (2021) stated that sports psychology plays a crucial role in improving athlete performance. The benefit of sports psychology is understanding the psychological symptoms that arise in athletes, such as feelings, motivation, anxiety, thoughts, and so on. Therefore, exercises designed to improve focus and concentration, such as reaction training, game simulations, and quick decision-making, need to be integrated into the learning and training process of table tennis.

Thus, it can be concluded that attention is the main factor that influences table tennis topspin technique skills, while self-efficacy plays a supporting role in increasing an individual's mental readiness in performing these skills.

CONCLUSION

Self-efficacy was positively and meaningfully partially related to topspin skill. Attention was strongly associated with topspin skill and emerged as the dominant predictor. Simultaneously, self-efficacy and attention contributed 64.2% to topspin skill. Attention is the most important psychological factor in determining topspin technical skills. This study emphasizes the importance of integrating psychological training into table tennis coaching, particularly the aspect of attention as a technical skill enhancer.

Based on the research results and discussion above, it can be concluded that self-efficacy and attention have a meaningful relationship with technique.topspin table tennis. A good level of self-efficacy indicates a relationship with an individual's ability to execute techniques. Topspin more optimally, as reflected in self-confidence, movement control, and consistency in executing strokes. Furthermore, attention plays a crucial role in supporting the accuracy and quality of technique.topspin, especially in focusing attention on the direction of the ball, timing of the shot, and coordination of movements.

The findings of this study confirm that the successful implementation of the technique.topspin Table tennis is not solely determined by physical and technical aspects, but is also influenced by psychological and cognitive factors. Therefore, developing self-efficacy and attention needs to be an integral part of the learning and training process for table tennis. The results of this study are expected to provide theoretical contributions to the development of sports psychology studies and

provide a basis for practical considerations for educators and coaches in designing more comprehensive training programs oriented toward the development of comprehensive technical skills.

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