

## The effect of self-efficacy, social support, and achievement motivation on archery athlete's performance

### El efecto de la autoeficacia, el apoyo social y la motivación de logro en el rendimiento del atleta de tiro con arco

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**Abstract.** Background: Self-Efficacy, Social Support, and Achievement Motivation are needed to support archery athlete's performance, which impacts their achievement. Aim: This research aims at analyzing the effect of Self-efficacy, Social Support and Achievement Motivation on the Performance of Archery Athletes. Method: This research is descriptive-correlational with analysis of research data using a Structural Equation Model (SEM) approach using the smart PLS application. Participants: the sample for this research is 220, consisting of 135 male and 115 female archers, with an average age of 16 to 21 years, and previously they will take part in the 2023 Pre-PON qualifying round. First, researchers divided each variable, namely, Self-Efficacy variably into four items (Sport Discipline, Psychology, Professional Thought, Personality), Social Support into three items (Environment, Friends, Family), Achievement Motivation into two items (Intrinsic, Extrinsic), and Archery Athlete's Performance into three items (Discipline, Intensity, Ability) measured with 5-point Likert scale for each item. Self-Efficacy has a positive and significant effect on the Performance of Archery Athletes, with a p-value score of 0.000, less than 0.05. The Social Support relationship positively and significantly affects the Performance of Archery Athletes, with a p-value score of 0.000, less than 0.05. Moreover, Motivation positively and significantly affects Archery Athletes' Performance. From the results of this study, it is expected that it can be a reference for sports practitioners, owners of academics or sports clubs, coaches, and athletes so that they can take into account Self-Efficacy, Social Support, and Achievement Motivation to improve the performance of archery athletes who will maximize the achievement of an athlete.

**Keywords:** performance, self-efficacy, social support, achievement motivation, archery

**Resumen.** La autoeficacia, el Apoyo social y la Motivación por el Logro son necesarios para apoyar el desempeño de los atletas de tiro con arco, lo que impacta sus logros. Este estudio tiene como objetivo lograr la autoeficacia, el apoyo social y la motivación de logro que maximizarán el rendimiento de los deportistas de tiro con arco. Esta investigación es un estudio correlacional descriptivo y para analizar los datos se utiliza el enfoque del Modelo de Ecuaciones Estructurales (SEM) asistido por la aplicación inteligente PLS. Son 220 arqueros los que participaron como muestra de este estudio, y previamente, habían sido confirmados para seguir la ronda de clasificación Pre-PON 2023. Los investigadores dividieron cada variable, a saber, la variable de autoeficacia en cuatro ítems (Disciplina deportiva, Psicológica, Pensamiento profesional, Personalidad), el apoyo social en tres ítems (Medio ambiente, Amigos, Familia), la motivación de logro en dos ítems (Intrínseca, Extrínseca), y el rendimiento del atleta de tiro con arco en tres ítems (Disciplina, Intensidad, Habilidad) medido con una escala Likert de 5 puntos para cada ítem. La autoeficacia tiene un efecto positivo y significativo en el rendimiento de los atletas de tiro con arco, con una puntuación de valor p de 0,000, inferior a 0,05. La relación de Apoyo Social afecta positiva y significativamente el Rendimiento de los Deportistas de Tiro con Arco, con una puntuación de valor p de 0,000, inferior a 0,05. Además, la motivación afecta positiva y significativamente el rendimiento de los atletas de tiro con arco. De los resultados de este estudio se espera que pueda ser un referente para practicantes de deportes, dueños de académicos o clubes deportivos, entrenadores y deportistas para que puedan tomar en cuenta la Autoeficacia, el Apoyo Social y la Motivación de Logro para mejorar la Rendimiento de los atletas de tiro con arco que maximizará el logro de un atleta.

**Palabras clave:** desempeño, autoeficacia, apoyo social, motivación de logro, tiro con arco

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## Introduction

Archery is a sport that uses an arrow bow to shoot arrows (Kuswahyudi et al., 2020). Another opinion states that archery is a target precision sport for the ultimate purpose of shooting arrows using an arrow bow on the surface of the target (Spratford & Campbell, 2017). It is reinforced by experts that the victory of an archery athlete is determined by the ability to shoot at the right target (Pelana et al., 2021; Pontzer et al., 2017; Taha et al., 2018; Wood et al., 2017).

Archery is a sport whose movements involve fine and gross motor skills (Musa et al., 2019), where achievement is determined by the ability to shoot repeatedly with accuracy on target (Musa et al., 2019; Simsek et al., 2019).

Self-efficacy is self-confidence in the ability to function in certain situations to perform the expected actions (Ayoobiyan & Soleimani, 2015; Pillay et al., 2022). Athletes who have self-efficacy can be interpreted as individuals who have full

confidence in the ability they have to carry out a task. In this sense, the athlete's task is an achievement they get when competing. This belief is obtained from social support through the role of coaches and fellow athletes during competitions and training (Omchan, 2019), the support of parents (Sugiono, 2020), and also the achievement motivation possessed by an athlete (Marques et al., 2019). Based on several arguments above, it can be said that self-efficacy is very important for an athlete's spiritual ability to achieve achievements. Parental support or involvement as the closest person an athlete owns will have an important impact on athlete performance. The concept of social support is perceived support, which has two basic elements: many individuals who can be relied upon when needed and the satisfaction of existing support (Zhang, 2017). It is the same with the role of the trainer as one of the factors for the formation of self-efficacy because the trainer provides a feeling of comfort and enthusiasm so that the athlete feels relaxed and

can display maximum performance, supported by state- ment or research from Ross. While training and competing, coaches provide information and give affection, attention, respect, and appreciation (Ross et al., 2015).

Achievement motivation is an effort to achieve success and to compete with a measure of excellence (Singh, 2018). Achievement motivation greatly determines the athlete's performance in competing and training (Sin & Ruslin, 2018). Measurement of motivational aspects can help athletes or coaches discover, develop, and provide the right training program for athletes (Blynova et al., 2020). Athlete's achievement motivation does develop naturally in each athlete. Achievement goals are one of the motivating factors for athletes to be motivated. Having strong motivation will influence the athlete's performance.

Achievement is the result of maximum athlete performance. The performance of archery athletes is marked by the ability to shoot targets repeatedly in one increment with a specified time and high accuracy (Eswaramoorthi et al., 2018). In addition, athlete performance in archery also includes a combination of physical, technical, and mental aspects that impact the maximum score obtained (Ergen et al., 2021). Therefore, many factors influence the athlete's performance both from within and outside the athlete.

However, many studies discuss the influence of self-efficacy, social support, and achievement motivation on archery athlete performance. Meanwhile, to get maximum athlete performance, an archery athlete must also need these elements.

Previous research states that there is an effect of self-efficacy and social support on an athlete's anxiety that has an impact on improving athlete's performance (Koçak, 2019). However, other studies on the effects of self-efficacy, social support, and achievement motivation on performance have not been studied, especially in archery. Therefore, with attention to the achievement motivation variable to improve athlete performance (Blynova et al., 2020), the provision of achievement motivation in athletes needs to be given to archery athletes.

Conducting this research is very important. It is needed to provide the development of sports science, to provide literacy for sports development, and especially to coaches at archery clubs in order to provide a more intense approach both by providing motivation and other personal approaches and the role of parents to provide support for development in a better direction. This research aims at achieving self-efficacy, social support and achievement motivation which will maximize the performance of archery athletes.

## Methods

### Research Design

This research is a descriptive correlational study to measure each variable by analyzing the effects of self-efficacy, social support, and achievement motivation on archery athlete performance. The researchers adapted the items from previous research, namely Athlete Self-efficacy Scale: Development and psychometric properties which (Koçak, 2020) which divides each variable, namely, self-efficacy into four items (Sport Discipline, Psychology, Professional

Thought, Personality), social support into three items (Environment, Friends, Family), achievement motivation into two items (Intrinsic, Extrinsic) and archery athlete performance into three items (Discipline, Intensity, Ability). The researchers then divided each variable, aiming for the values contained, namely the independent and related relationships in more detail. Each item was measured using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The implementation time in this study was during February.

### Questionnaire Designs and Measures

The items in the self-efficacy variable (cognitive, motivation, affection, and selection) were developed from several previous studies (Aliyyah et al., 2020; Dirmanchi & Khanjani, 2019; Popovych et al., 2020). The social support variable was developed from previous studies (Trotter et al., 2021; Martínez-Alvarado et al., 2021). Meanwhile, the achievement motivation variable were from several studies (Mouloud & El-Kadder, 2016; Pietrzak & Tokarz, 2019). This study uses a questionnaire validated by academy sector experts using FGD (Forum Group Discussion) with small revisions suggested. 25 question items were formed, which were then distributed using Google form.

### Sampling and Data Collection

The population of this study is all Indonesian archery athletes. However, we have archer criteria to fill this research instrument. The maximum criteria are archers from every province in Indonesia who follow the Pre-PON 2023. PON is a National Sports Week held in Indonesia, and the implementation is held every four years. However, not all Indonesian archery athletes can participate in the PON event, archers must participate and qualify at the Pre-PON qualification stage held one year before the PON is implemented. With the Pre-PON held in 2023, the PON event will be held in 2024. The number of archery athletes who collected data in this study were 220 consisting of 135 male and 115 female archers with an average age of 16 to 21, previously confirmed to be participating in the Pre-PON 2023 qualification round.

### Research Hypothesis

H1: The effect of self-efficacy on archery athlete's performance

H2: The effect of social support on archery athlete's performance

H3: The effect of achievement motivation on archery athlete's performance

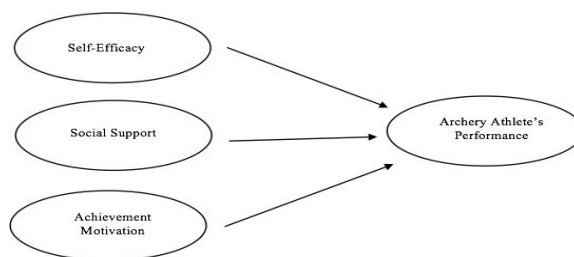


Figure 1. Research Hypothesis

### Data Analysis

This research data analysis uses the Structural Equation Model (SEM) approach assisted by the smart PLS version

4.0 application as a data analysis tool to estimate the parameters of the research model and the correlation between indicators and variables. This study has five independent variables and two dependent variables to find the value of the cause-and-effect relationship. The stages of data analysis in this study are:

#### Measurement Model Stage

This stage is done to test the validity and reliability of each indicator. The validity test in this study uses convergent validity by correlating the item score (component score) with the construct score, which then produces a loading factor value. The instrument is declared valid if it has a loading factor value of > 0.6. After the validity test is carried out, the reliability test is then carried out to determine the instrument's reliability. Measurement of reliability level in this study used alpha coefficient or Cronbach alpha and composite reliability. The items were declared reliable if they had a coefficient value of > 0.6.

#### Structural Model Test Stage

It is a hypothesis testing stage that aims to determine the presence or absence of influence between variables or correlations between constructs measured using Smart PLS. The structural model or inner model is measured by looking at the the-square which shows how much influence between variables in the model. Then, the estimated path coefficient obtained by the bootstrapping procedure with a value considered significant if the p-values score is < 0.05.

Table 1. Convergent Validity Test

Variable	Code	Outer Loading
Self-Efficacy	X1.1	0.901
	X1.2	0.891
	X1.3	0.882
	X1.4	0.797
	X1.5	0.822
	X1.6	0.815
	X1.7	0.857
	X1.8	0.813
Social Support	X2.1	0.739
	X2.2	0.748
	X2.3	0.857
	X2.4	0.774
	X2.5	0.751
	X2.6	0.793
	X2.7	0.722
	X2.8	0.720
Achievement Motivation	X3.1	0.797
	X3.2	0.786
	X3.3	0.876
	X3.4	0.779
	X3.5	0.910
	X3.6	0.799
	X3.7	0.881
	X3.8	0.813
Archery Athlete's Performance	Y1	0.811
	Y2	0.821
	Y3	0.858
	Y4	0.812
	Y5	0.819
	Y6	0.878
	Y7	0.761
	Y8	0.851
	Y9	0.787
	Y10	0.743

### Results

#### Outer Model

The evaluation of the measurement model was tested with several indicators, including Convergent Validity, Discriminant Validity, and Reliability. The measurement model was calculated using the PLS Algorithm.

#### Convergent Validity

An indicator is valid if the indicator's loading factor is positive and more significant than > 0.7. The loading factor value shows the weight of each indicator/item as a measure of each variable. Indicators with significant loading factors indicate that the indicator is the strongest (dominant) variable gauge. The following can be seen the loading factor value in Table 1 below:

Based on Table 1 above, it is known that the loading factor value produced by each indicator is more than 0.7. Thus, these indicators are declared valid to gauge their latent variables.

Table 2. Fornell-Larcker Criterion Value.

Variable	Motivation	Archery Athlete's Performance	Self-Efficacy	Social Support
Motivation	0.831			
Archery Athlete's Performance	0.783	0.815		
Self-Efficacy	0.731	0.754	0.848	
Social Support	0.753	0.787	0.692	0.764

Table 3. Cross Loading Value

Item	Motivation	Performance of Archery Athletes	Self-Efficacy	Social Support
X1.1	0.702	0.673	0.901	0.621
X1.2	0.582	0.658	0.891	0.578
X1.3	0.638	0.652	0.882	0.634
X1.4	0.652	0.641	0.797	0.619
X1.5	0.596	0.616	0.822	0.543
X1.6	0.518	0.568	0.815	0.510
X1.7	0.569	0.601	0.857	0.527
X1.8	0.683	0.686	0.813	0.638
X2.1	0.581	0.648	0.602	0.739
X2.2	0.522	0.569	0.556	0.748
X2.3	0.636	0.651	0.594	0.857
X2.4	0.544	0.551	0.475	0.774
X2.5	0.593	0.575	0.447	0.751
X2.6	0.595	0.633	0.476	0.793
X2.7	0.534	0.638	0.548	0.722
X2.8	0.591	0.522	0.513	0.720
X3.1	0.797	0.613	0.570	0.747
X3.2	0.786	0.593	0.610	0.705
X3.3	0.876	0.670	0.595	0.603
X3.4	0.779	0.631	0.605	0.496
X3.5	0.910	0.680	0.641	0.625
X3.6	0.799	0.616	0.627	0.458
X3.7	0.881	0.716	0.640	0.700
X3.8	0.813	0.676	0.578	0.670
Y1	0.689	0.811	0.553	0.687
Y2	0.688	0.821	0.610	0.719
Y3	0.710	0.858	0.655	0.677
Y4	0.611	0.812	0.662	0.559
Y5	0.597	0.819	0.601	0.676
Y6	0.667	0.878	0.632	0.604
Y7	0.501	0.761	0.486	0.612
Y8	0.713	0.851	0.721	0.728
Y9	0.624	0.787	0.598	0.584
Y10	0.542	0.743	0.602	0.541

**Discriminant Validity**

Discriminant validity is used to test the validity of a model. Discriminant validity is seen through the cross loading value, which shows the correlation between the construct and its indicators and indicators from other constructs. The standard value used for cross loading must be greater than 0.7 or by comparing the value of square root of average variance extracted (AVE) of each construct with the correlation between the construct and other constructs

in the model. If the AVE root value of each construct is greater than the correlation value between the construct and the other constructs in the model, it is said to have a good discriminant validity value.

Based on tables 2 and 3, the cross-loading value in each item is > 0.70, and each item has the most significant value when associated with its latent variable compared to when connected with other latent variables. It shows that each manifest variable in this study has precisely explained the latent variable and proved that the discriminant validity of all items is valid.

**Reliability**

PLS uses Cronbach alpha and Composite reliability. It is reliable if the Composite reliability value is above 0.7 and Cronbach's alpha value is recommended above 0.7. Here are the Cronbach alpha and Composite reliability values in Table 4. Strategic issues below:

Table 4. Reliability Test

Variable	Cronbach's Alpha	Rho-A	Composite Reliability	Average Variance Extracted (AVE)
Motivation	0.936	0.938	0.947	0.691
Archery Athlete's Performance	0.944	0.946	0.952	0.664
Self-Efficacy	0.944	0.945	0.953	0.719
Social Support	0.898	0.900	0.918	0.584

Based on Table 4 above, it can be seen that the composite reliability value of all research variables > 0.7 and Cronbach Alpha > 0.7. These results indicate that each variable has met the composite reliability and Cronbach's alpha so that it can be concluded that the overall variable has a high level of readability. Thus, further analysis can be carried out by examining the goodness of fit model by evaluating the inner model.

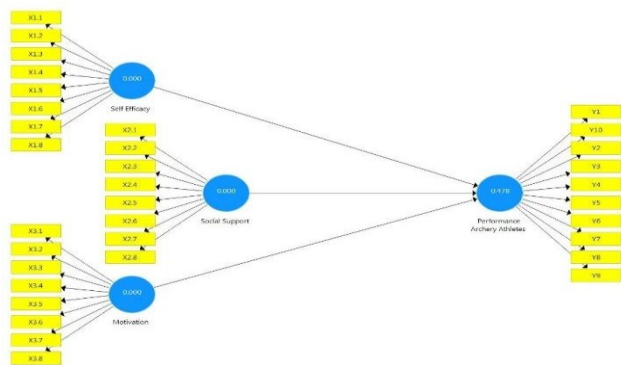


Figure 2. Structural Model

**Inner Model**

After testing the outer model, the next step is to test the inner model. Inner or structural model testing was carried out to see the relationship between constructs, significant values and R-square of the research model. The evaluation of the PLS structural model begins by looking at the R-square adjusted for each dependent latent variable. Table 3 is the estimated result of R-square adjusted using PLS.

**R Square**

Table 5. Goodness of Fit Test Result

Variable	R-Square	R-Square Adjusted
Archery Athlete's Performance	0.736	0.730

Based on table 5 above, the adjusted R-Square value of the Archery Athlete's Performance variable is 0.730, this value means that the Performance of Archery Athletes variable can be explained by the Self-Efficacy, Social Support, and Motivation variables of 73% and the remaining 27% can be explained by other variables that are not contained in this study.

**Predictive Relevance (Q Square)**

Predictive relevance is a test that shows how well the observation value is produced using the blindfolding procedure by looking at the Q square value. If the value of Q square > 0 then it can be said to have a good observation value, while if the value of Q square < 0 then it can be stated that the observation value is not good. Q-Square predictive relevance for structural models, measuring how well the observation value is generated by the model and also estimating the parameters.

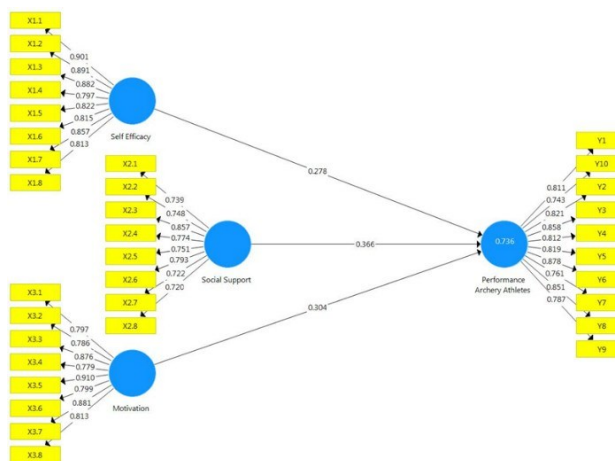


Figure 3. Predictive Relevance

Based on the figure above, it can be concluded in the table below. Based on the data presented in the table above, it can be seen that the value of Q square in the dependent variable is > 0. By looking at these values, it can be concluded that this study has a good observation value because the Q square value is > 0 (zero).

Table 6. Predictive Relevance.

Variable	Q <sup>2</sup> (=1-SSE/SSO)	Description
Archery Athlete's Performance	0.478	Has predictive relevance value

**Fit Model**

For the model to meet the fit model criteria, the RMS Theta or Root Mean Square Theta value < 0.102, SRMR or Standardized Root Mean Square value < 0.10 or < 0.08 and NFI Value > 0.9. Here are the results of the fit model testing.

Table 7. Fit Model

Criteria	Saturated Model	Estimation Model
SRMR	0.071	0.071
d_ULS	3.022	3.022
d_G	2.795	2.795
Chi-Square	1581.371	1581.371
NFI	0.679	0.679

However, based on the SRMR value or Standardized Root Mean Square, the value is 0.064 < 0.10 then the fit model. So, it can be concluded that the model is fit with the data.

**Hypothesis Testing Results**

The fifth stage of testing the structural relationship model is to explain the relationship between the variables in the study. Structural model testing was carried out through tests using PLS software. The basis used in testing the hypothesis directly is the value contained in the output path coefficients. The basis used to test the hypothesis directly is if p value < 0.05 (significance level= 5%), then it is stated that there is a significant effect of exogenous variables on endogenous variables. Here is a complete explanation of hypothesis testing:

Table 8. Hypothesis Testing: Total Effects (Mean, STDEV, T-Values, P-Values)

Variable	Original Sample (O)	Mean Sample (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Self-Efficacy -> Performance of Archery Athletes	0.278	0.275	0.079	3.518	0.000
Social Support -> Performance of Archery Athletes	0.366	0.369	0.097	3.765	0.000
Motivation -> Performance of Archery Athletes	0.304	0.305	0.094	3.247	0.001

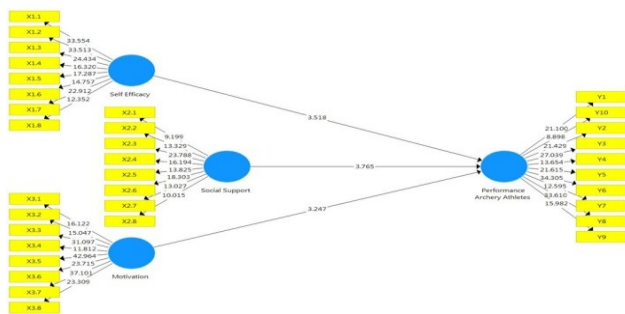


Figure 4. Hypothesis Testing

**Discussions**

In statistical PLS testing, each hypothesized relationship is carried out using simulation. In this case, it is done by the bootstrapping method against the sample. The following are the results of PL bootstrapping analysis as follows:

The Influence of Self-Efficacy on Archery Athlete's Performance.

The results of the first hypothesis test, namely the effect of Self-Efficacy on Archery Athlete's Performance, showed a coefficient value of 0.278 p-values of 0.000 and t-statistics of 3.518. The p-value of 0.000 is less than 0.05 and the t- statistic value of 3.518 is more than t-table of 1.960. These results show that Self-Efficacy affects Performance of Archery Athletes (Kwon et al., 2022; Samah et al., 2019). Thus, the hypothesis that says Self-Efficacy has a positive and significant influence on Archery Athlete's Performance is accepted. The Influence of Social Support on the Archery Athlete's Performance. The results of the second hypothesis test, namely the effect of social support on the Performance of Archery Athletes, showed a coefficient value of 0.366 p- values of 0.000 and t-statistics of 3.765. The p-value of is less than 0.05 and the t-statistic value of 3.765 is more than t-table of 1.960. These results indicate that So- cial Support affects Archery Athlete's Performance (Ahmad et al., 2018; Arnold et al., 2018). Thus, the hypothesis that says Social Support has a positive and significant influence on Archery Athlete's Performance is accepted. The Influ- ence of Motivation on Archery Athlete's Performance.

The results of the third hypothesis test, namely the ef- fect of Motivation on the Performance of Archery Athletes, showed a coefficient value of 0.304, p-values of 0.001, and t-statistics of 3.247. The p-value of 0.001 is less than 0.05 and the -statistic value of 3.247 is more than t-table of 1.960. These results indicate that Motivation affects Ar- chery Athletes' Performance (Jose, 2018; Samah et al., 2019). Thus, the hypothesis that says Motivation has a pos- itive and significant influence on Archery Athlete's Perfor- mance is accepted.

**Conclusion**

Self-Efficacy, Social Support, and Achievement Motiva- tion are some of the factors needed by an athlete, especially an archery athlete to achieve an achievement. The results of the 220 Indonesian archery athletes consisting of 135 male and 115 female archers involved in this study showed that Self-Efficacy has a positive and significant effect on the Archery Athlete's Performance with a p-value score of 0.000, less than 0.05. The Social Support also positively and signif- icantly affects Archery Athlete's Performance with a p- value score of 0.000, less than 0.05. Moreover, Achiev- ement Motivation also positively and significantly influences Archery Athlete's Performance. It is expected that this study can be a reference for sports practitioners, owner of academics or sports clubs, coaches and athletes so that they can take into account Self-Efficacy, Social Support and Achievement Motivation to improve the performance of archery athletes that will maximize their achievement.

## Acknowledgement

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## Conflict of Interest

There were no conflicts from the authors from the beginning of the research until the final completion of this product.

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