

## The influence of performance in training on self-confidence of wheelchair athletes with coach-athlete intimacy as a moderating variable

### La influencia del rendimiento en el entrenamiento sobre la confianza en sí mismos de los deportistas en silla de ruedas con la intimidad entre el entrenador y el deportista como variable moderadora

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**Abstract.** This study aims to analyse the self-confidence of wheelchair basketball, tennis, badminton, and archery athletes. This study uses a moderated regression analysis (MRA) approach, namely performance in training as independent variable, self-confidence as a dependent variable, and coach-athlete intimacy as a moderator. Sampling was done using total sampling at the open tournament championship. The wheelchair athletes involved were 20 basketball athletes, 15 tennis athletes, 15 badminton athletes, and 15 archery athletes age  $29.98 \pm 2.4$  with  $11.37 \pm 1.2$  years of training. The highest experience of the competition is that 37 athletes have participated at the national and international level. This study was conducted for six months from early June to November 2023. The data were collected using questionnaires that were confirmed and given before the match and semi-structured interviews to strengthen the discussion. The instrument consists of 57 items, and an Aiken V validity value of 0.863 and Cronbach's Alpha value of 0.708 were obtained. The results showed that performance in training influenced self-confidence (sig. 0.003 or  $p < 0.05$ ) and ( $R^2 = 12.8\%$ ). Meanwhile, the coach-athlete intimacy can positively moderate the performance of the coach-athlete with self-confidence (sig. 0.000 or  $p < 0.05$ ) and ( $R^2 = 47.2\%$ ). The results of this study suggest the involvement of government agencies to foster, develop, and facilitate all individuals with special needs. In addition, it is necessary to increase the competence of coaches through special training or by opening a coach study program for coaching people with disability at the university. Further research should consider the number of samples involved and how to collect data with a research design adapted to the circumstances but can produce accurate data.

**Keywords:** Training Performance, Self-Confidence, Coach-Athlete Intimacy, Wheelchair

**Resumen.** Este estudio tiene como objetivo analizar la confianza en sí mismos de deportistas de baloncesto, tenis, bádminton y tiro con arco en silla de ruedas. Este estudio utiliza un enfoque de análisis de regresión moderado (ARM), es decir, el rendimiento en el entrenamiento como variable independiente, la confianza en uno mismo como variable dependiente y la intimidad entre el entrenador y el atleta como moderador. El muestreo se realizó mediante muestreo total en el campeonato del torneo abierto. Los atletas en silla de ruedas involucrados fueron 20 atletas de baloncesto, 15 atletas de tenis, 15 atletas de bádminton y 15 atletas de tiro con arco de  $29,98 \pm 2,4$  años con  $11,37 \pm 1,2$  años de entrenamiento. La mayor experiencia de la competición es que han participado 37 deportistas a nivel nacional e internacional. Este estudio se llevó a cabo durante seis meses, desde principios de junio hasta noviembre de 2023. Los datos se recopilaron mediante cuestionarios confirmados y administrados antes del partido y entrevistas semiestructuradas para fortalecer la discusión. El instrumento consta de 57 ítems y se obtuvo un valor de validez V de Aiken de 0,863 y Alfa de Cronbach de 0,708. Los resultados mostraron que el rendimiento en el entrenamiento influyó en la confianza en uno mismo (sig. 0,003 o  $p < 0,05$ ) y ( $R^2 = 12,8\%$ ). Mientras tanto, la intimidad entrenador-atleta puede moderar positivamente el desempeño del entrenador-atleta con confianza en sí mismo (sig. 0,000 o  $p < 0,05$ ) y ( $R^2 = 47,2\%$ ). Los resultados de este estudio sugieren la participación de agencias gubernamentales para fomentar, desarrollar y facilitar a todas las personas con necesidades especiales. Además, es necesario aumentar la competencia de los entrenadores mediante una formación especial o abriendo un programa de estudios para entrenar a personas con discapacidad en la universidad. Las investigaciones futuras deben considerar la cantidad de muestras involucradas y cómo recolectar datos con un diseño de investigación adaptado a las circunstancias pero que pueda producir datos precisos.

**Palabras clave:** Rendimiento en el entrenamiento, Autoconfianza, Intimidad Entrenador-Deportista, Silla de Ruedas

Fecha recepción: 03-01-24. Fecha de aceptación: 24-06-24

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## Introduction

Self-confidence is a part of psychology related to belief in an individual's ability to perform a task or job. Success in a task or job can be interpreted as achievement (Flores Ferro et al., 2023). Achievements can be achieved by everyone, one of which is athletes. The results of scientific studies agree that self-confidence can affect an athlete to produce high performance in competing (Waluyo et al., 2022; Lochbaum et al., 2022; Astuti et al., 2023). High self-confidence and the ability to improvise techniques or tactics are essential in all situations during the match. It is due to the athlete's ability to train based on his discipline and experience in participating in competitions (Komarudin et al., 2021; Kristina et al., 2022; Marks et al.,

2022). However, to train and increase good self-confidence, it consider not only the level of training or experience in participating in competitions but also the condition of the athlete, one of which is the wheelchair athlete (Berardi et al., 2018; Mortenson et al., 2022).

Individuals with disabilities that require wheelchairs generally experience low self-confidence (Foley et al., 2020; Gutiérrez-García et al., 2023). Based on the evidence in the existing environment, a lack of self-confidence is caused because they feel they do not have the expertise. Being an athlete is a specialty for a wheelchair athlete. By becoming an athlete, it is expected that individuals with disabilities can raise their self-esteem. The ability of self-confidence in an athlete with a disability is generally determined by many factors, from internal factors such as motivation,

unstable mood and emotions, and anxiety, to concentration (Palencia & Gallón, 2022; Huenullán et al., 2023; Youngson et al., 2023). Meanwhile, external factors are the relationship with the coach, the state of the surrounding environment, family and social support, and training facilities (Balan & Mujea, 2022; Sudarko et al., 2023). However, few scientific publications examine what factors are dominant in influencing the self-confidence level of wheelchair athletes. Nevertheless, several studies report that increasing an athlete's self-confidence can be done by improving the training performance and skills of the coach (Kim & Park, 2020; Marks et al., 2022; Quartiroli et al., 2022; Nerissa & Tutiasri, 2022; Rintaugu et al., 2023; Hani Tri Azhari et al., 2023). Meanwhile, these reports are still widely found in non-disabled athletes.

The results of other studies also showed that the confidence level of male wheelchair-fencing athletes was better than that of female in pre-competition (Peron & Elsner, 2020). These results are characterized by a tense body, a sense of worry about appearance, and the body feeling stiff when doing movements. Wheelchair basketball also shows that shooting is the most critical performance in wheelchair basketball. However, from the analysis of this study, it is explained that the confidence level of a wheelchair basketball athlete plays a vital role in a shot (Ceruso et al., 2022; Hernandez-Beltran et al., 2023). The findings of another study compared the confidence levels of wheelchair tennis athletes and wheelchair badminton athletes, and the results showed no difference in the level of confidence between the two (Abdullah et al., 2021). The study suggests to find any factors that affect the level of self-confidence of both. In addition, the results of studies that affect the quality of life of wheelchair athletes, namely fencing, basketball, tennis, rugby, handball, and athletics, show that self-confidence is part of the psychological factors that make them able to improve the quality of life through disability sports clubs (Côté-Leclerc et al., 2017; Clemente et al., 2019; Calheiros et al., 2021; Rengifo Cruz et al., 2023).

This study aims to analyse the confidence of wheelchair athletes, in basketball, tennis, badminton, and archery. The independent variable in this study is athletes' performance analysis in training (Rodríguez Macías et al., 2023). Then, the study also involves coach-athlete intimacy as a moderator variable because there is a presumption from the results of previous studies that the closeness of coaches with athletes with disabilities affects the level of athlete psychology. The coach-athlete intimacy is shown by being interlocutors outside of training, giving a sense of security to athletes, and being a reliable person from both sides (Judge et al., 2021; Ivček et al., 2021, Hani Tri Azhari et al., 2023). Therefore, the published results of this study can provide an evaluation for sports club facilities providers and coaches to be able to pay attention to wheelchair athletes. Wheelchair athletes were chosen because they only experienced physical limitations in the limbs, namely the legs or feet. At the same time, other body parts do not experience obstacles, such as the eyes to read the questionnaire, the ears to hear the

instructors and researchers, and the mouth to speak to convey answers or opinions. Getting attention through improving sports facilities and the closeness of coaches will directly impact their quality of life.

## Research Method

### Study Design

This quantitative research used Moderated Regression Analysis (MRA). It showed performance in practicing as an independent variable and self-confidence as a dependent variable. Then, the moderating variable aimed to test whether the coach-athlete intimacy relationship strengthens or weakens. This research was conducted in June to November 2023 because wheelchair competition events, namely basketball, tennis court, badminton, and archery in Indonesia, is infrequent. Therefore, the researchers conducted a research study based on the competition held at the time previously described. In addition, the events held were also different places, and at that time, only one type of wheelchair sport was carried out.

The data were collected using questionnaire sheet containing statement items on a scale of 1 – 5. When the athletes filled out the questionnaire sheet, only the researchers had the authority to provide instructions and accompany the athletes. Thus, these athletes could fill out questionnaires honestly, and there was no intervention from other parties. The data collection time on the questionnaire was carried out two to one day before the athlete competed.

### Study Participants

The sampling of this study was carried out with *total sampling* at the special *open tournament* championships for wheelchair athletes. However, the sample would be included in this study if they completed the questionnaire and were willing to respond with an interview voluntarily. The research involved 20 basketball athletes, 15 tennis athletes, 15 badminton athletes, and 15 archery athletes. A total of 65 wheelchair athletes age  $29.98 \pm 2.4$  with  $11.37 \pm 1.2$  years of training were involved. Thirty-seven athletes who had participated in national level competitions; 14 athletes participated in international level competitions and 28 athletes participated in regional level competitions.

### Research Instrument

The initial stage in the instrument's preparation was to examine the scientific literature and books with keywords, disabled athletes, athlete performance, training performance, coach-athlete relationship, and self-confidence. The results of the first stage that could be identified were that the training performance variable was the training load, which included the successful completion of the daily program, the physical test results during the training period, the perceived intensity and volume, and the improvement of technical ability (Nugroho et al., 2021; Wijayanti et al., 2024) (Table.1). Coach-athlete intimacy variable that were successfully identified were closeness,

commitment, and complementarity (Mandan et al., 2024) (Table.2). Meanwhile, the self-confidence variables are optimistic, independent, sportsman-like, not worrisome, and self-adaptable (Djaba et al., 2024; Mandan et al., 2024; Utami et al., 2024) (Table.3).

In the second stage, after all the preparation materials were collected, the FGD (focus group discussion) was carried out involving several experts, namely sports coaching

lecturers and lecturers teaching athletes with disabilities. The result of the second stage was to produce 57 statement items. Then, the third stage, namely by testing the validity and reliability with the Delphi technique on coaches of athletes with disabilities to test whether the instrument was suitable for data collection. The following is a grid of research instruments:

Table 1.

Performance Training Instrument Grid

Variable	Factor	Statement	Item
Performance in Training	Training Load	I always complete the training program given by the coach	1
		The progress of my physical test results is constantly improving	2
		Training intensity is suitable for the competition	3
		I rarely feel tired when I train	4
		The training volume is according to the program given by the trainer	5
		I feel my technique skills continue to improve	6
	Discipline	I never come late	7
		Even in bad weather, I always attend the training	8
		I still train, even though there is no coach or friend	9
		I never complained about the training program given by the coach	10
		I never joke when I train	11
		I always ask for additional training programs when I recover from illness	12
	Teamwork	I always encourage and support my teammates	13
		I always help my friend when in trouble	14
		I feel confident with my friends when competing	15
		I feel that my friend is always helping and supporting me in all situations	16
		I always try to meet my friends outside the training schedule	17
		I always try to establish good communication with coaches and colleagues	18
Motivation	I am always eager to train when there is no competition	19	
	I want to be recognized and known by others	20	
	I want to be an athlete because I get money and prizes when I win	21	
	I have the ambition to be a champion in every competition	22	
	Even though I have special needs, I want to be seen as a great individual	23	
	I realized that my opponent was constantly training to beat me	24	

Table 2.

Coach-athlete Intimacy Instrument Grid

Coach-Athlete Intimacy	Proximity	I wish the coach had a strong sense of responsibility	25
		My coach and I have a good relationship	26
		I find my career and accomplishments promising	27
	Commitment	My coach and I like to work together in every field	28
		My coach and I have a high sense of trust	29
		My coach and I respect each other	30
		I am always given appreciation from coaches, as well as coaches who always give me appreciation in every training or competition	31
	Complementarity	I feel comfortable working with my current coach	32
		My coach and I are ready to do our best for our achievements	33
		I feel responsive to the efforts of my coach	34
		My coach and I are always friendly in all places and situations	35

Table 3.

self-Confidence Instrument Grid

Self-Confidence	Optimistic	I do not give up easily and believe in my abilities	36
		I can do my task	37
		I can make decisions and try my best	38
		I have strong faith and determination	39
	Independent	I do things to my ability	40
		I try to do things on my own and not depend on others	41
		I train under any conditions	42
		I was able to resolve the issue	43
	Sportsman-like	I admit my mistakes and am ready to accept risks	44
		I am open to suggestions	45
		I play fair during matches	46
		I accept a decision	47
		I do not underestimate my opponents	48
		I accept defeat	49
		I can voice my opinion	50
		I dare to take part in tournaments	51
I am not afraid of my opponent's performance	52		

	I am not intimidated by my opponents	53
	I am easy to get along with	54
Self-Adaptable	I do not feel awkward in social situations	55
	I can adapt	56
	I am not nervous	57

**Data Analysis**

The first stage of analysis was to test the validity and reliability of the instrument. The validity test used the Aiken V formula (figure.1), and the reliability test used Intraclass Correlation Coefficient. Further testing was carried out by conducting a normality test on the sample. Then, a regression test was carried out on all variables, including the moderator variable. Data analysis of this study used the help of SPSS 26.

$$V \text{ Aiken's: } \frac{\sum s}{n(c-1)}$$

- S : r – lo
- Lo : lowest rating score
- C : highest rating score
- r : the score given by the assessor

Figure 1. Aiken V Formula

**Results**

**Validity and Reliability Test of Research Instruments**

Before the instruments were distributed to wheelchair athletes in basketball, tennis, badminton, and archery, the first stage was to test the validity and reliability of 16 expert judgments from 16 disabled coaches, with each wheelchair sport involving four coaches. The results of the validity test show that the average Aiken V value is 0.863, meaning the value is valid (Lewis. R. Aiken, 1985). Then, the results of the Intraclass Correlation Coefficient value in the table obtained a value of 0.708, for quantitative research involving psychological variables, the value is reliable, and the instrument is feasible to use for data collection in wheelchair athletes (Shieh, 2016), (Martínez Pérez & Pérez

Martin, 2023). Thus, 57 statement items are declared valid and reliable, and it can be concluded that this instrument is suitable for data collection.

Table 4.

	Intraclass Correlation Coefficient Value						
	Intraclass Correlation <sup>b</sup>	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	0.141 <sup>a</sup>	0.115	0.313	3.422	15	840	0.000
Average Measures	0.708 <sup>c</sup>	0.460	0.878	3.422	15	840	0.000

**Normality Test**

Before the regression analysis with moderation, the second stage is the normality test based on the Kolmogorov-Smirnov value due to a sample of more than 50 wheelchair athletes.

Table 5.

	Normality Test Results					
	Normality Test					
	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	0.062	65	0.200	0.985	65	0.603

In the previous normality test, the data showed an abnormality, so the normality test analysis uses residual values. Based on the normality test results in Table 2, the Kolmogorov-Smirnov value gave a Sig value. 0.200 means that the data is usually distributed to be used for further regression analysis.

**Regression Test without Moderation**

The third stage is regression analysis without using moderating variable. Thus, the analysis focuses on the relationship of performance in training to the self-confidence of wheelchair athletes in basketball, tennis, badminton, and archery.

Table 6.

Regression Test Without Moderation

Model	Coefficients						Collinearity Statistics	
	Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Tolerance	VIF
	B	Std. Error	Beta					
1	(Constant)	66.682	13.205		5.050	0.000		
	Performance in Training	0.354	0.116	0.358	3.042	0.003	0.846	1.053

a. Dependent Variable: Self-Confidence

Based on the results of unmoderated regression (table 3), it shows a sig value of 0.003 or (p<0.05), which means that there is a relationship between performance in training

and the self-confidence of wheelchair athletes in basketball, tennis, badminton, and archery. Then, from these results, there are no symptoms of multicollinearity.

Table 7.  
R Square Value Results

Model	R	R Square	Adjusted R Square	Model Summary		Change Statistics			
				Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	0.358	0.128	0.114	2.458	0.128	9.256	1	63	0.003

a. Predictors: (Constant), Performance in Training

Then, the R square value in Table 4 shows 0.128, which means that the magnitude of the value of the effect of performance in training on the self-confidence of wheelchair athletes in basketball, tennis, badminton, and archery is 12.8%. Meanwhile, 87.2% are influenced by other variables that this study cannot explain.

Table 8.  
Moderated Regression Test Results

Model	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
		1	(Constant)	67.241			10.359	
	Performance in Training	0.567	0.097	0.574	5.840	0.000	0.880	1.136
	Performance in Training*Coach-Athlete Intimacy	0.604	0.101	0.625	6.356	0.000	0.873	1.214

a. Dependent Variable: Self-Confidence

Based on the regression results using moderation (table 5) shows a sig value of 0.000 or ( $p < 0.05$ ), there is a relationship between performance in training and the confi-

### Regression Test Using Moderating Variable (moderated regression analysis)

The fourth stage is regression analysis using moderation variables (moderated regression analysis). So, the analysis focuses on examining the relationship between coach-athlete intimacy as the moderating variable affects the performance in training and self-confidence variables.

dence of wheelchair athletes in basketball, tennis, badminton, and archery through the Coach-Athlete Intimacy relationship as a moderator. Then, from these results, there are no symptoms of multicollinearity.

Table 9.  
R Square Value Results

Model	R	R Square	Adjusted R Square	Model Summary		Change Statistics			
				Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	0.687 <sup>a</sup>	0.472	0.455	1.928	0.472	27.719	2	62	0.000

a. Predictors: (Constant), Performance in Training\*Coach-Athlete Intimacy, Performance in Training

Then, the R square value in Table 6 shows 0.472, meaning that the magnitude of the value of the effect of performance in training and coach-athlete intimacy as a moderator on the confidence of wheelchair athletes in basketball, tennis, badminton, and archery is 47.2%. Meanwhile, 87.2% are influenced by other variables that this study cannot explain.

## Discussion

Self-confidence is one of the most important factors for athletes, especially wheelchair athletes. Factors that affect the confidence of wheelchair athletes in basketball, tennis, badminton, and archery are performance in training, including training load, distinction, cooperation, and motivation. Then, supported by coach-athlete intimacy, the self-confidence level of wheelchair athletes in basketball, tennis, badminton, and archery can be maximized. The results of this study show that the performance of training affects the confidence of wheelchair athletes in basketball, tennis, badminton, and archery, even though it is only 12.8%. Recently, there is still a lack of scientific investigation that reports the relationship between performance in training and the self-confidence of wheelchair athletes in basketball, ten-

nis, badminton, and archery. However, there is an indication that a measured training load can reduce negative mood, depression, and anger in wheelchair basketball athletes (De Oliveira et al., 2021). These indications are evidenced by the results of measurements and qualitative studies for the analysis of high levels of confidence, mental solid toughness, low anxiety, as well as the confidence to win in athletes competing in the paralympic (Huenullán et al., 2023; Hanh et al., 2023; Anderson et al., 2023). However, this evidence is still carried out by the research on athletes with disabilities in general. Then, physically ready wheelchair athletes will have an excellent competitive mentality, which is marked by a physical test resulting from a lengthy training process and a level of confidence that focuses on winning (Mohamed & Kader, 2021; Luarte-Rocha et al., 2022).

More in-depth observations also showed that wheelchair athletes in the sports of basketball, tennis, badminton and archery did not show negative results from their training process. Then, there is a strong presumption that facilities also affect the mentality of a wheelchair athlete. This reason is because athletes with disabilities feel that they are cared for and treated like non-disabled athletes (Zambrano Palencia & Hincapié Gallón, 2021; Palencia & Gallón,

2022). Then, supporting suitable training facilities can improve the quality of life of athletes with disabilities (Rengifo Cruz et al., 2023). However, from the regression and observation results, there was no indication that wheelchair athletes in basketball, tennis, badminton and archery expressed complaints about the facilities used. They felt that the facilities provided were sufficient, they felt that the facilities provided were sufficient, and the facilities were said to be adequate, namely having a level of security, hygiene, and enough space (Prabowo et al., 2024). In addition, the management of club administrators, officials, and coaches is also excellent, then wheelchair athletes also experience a measurable and systematic training program to earn coaching money every month.

Then, the regression analysis results using moderation, namely coach-athlete intimacy, can affect the confidence level of wheelchair athletes in basketball, tennis, badminton, and archery by 47.2%. The regression analysis results with moderation are also supported by their statement that the involvement of trainers, namely closeness, confidence, and trust with each other, significantly influences self-confidence. They also assessed that coaches are very aware of the needs of a wheelchair athlete in basketball, tennis, badminton, and archery; this makes athletes provide mutual trust between coaches and athletes (Loules et al., 2023). Then, previous research studies show that coaches with good planning can provide adequate training and a definite career path (P. Pires et al., 2022). The research study results are in accordance with the results of moderating regression analysis on coach-athlete intimacy using a questionnaire distributed to athletes. In addition, further information from as many as 20 athletes who had competed at the national and international levels said they had never changed their coach because they believe in the level of the coach's skills, the coach can provide comfort and motivate training or competition. Previous research data states that coaches who can bring themselves closer to athletes with disabilities, especially in wheelchair sports, will have a positive impact on their confidence when competing or in everyday life (Judge et al., 2021; Pires et al., 2022; Allan et al., 2023).

An athlete's success is determined by performance and quality during practice. Good performance in training certainly affects the self-confidence level of an athlete, especially wheelchair athletes in basketball, tennis, badminton, and archery. Training and increasing self-confidence are not only measured through physical test results from a training or psychological test. However, wheelchair athletes and coaches must also assess how the relationship is established from the beginning of training to becoming an athlete. The limitation of this study is that the number of samples is considered insufficient because not all wheelchair athletes of basketball, tennis, badminton, and archery are dedicated to this study. Most of the athletes had filled out the questionnaires but wanted to avoid responding directly, so we did not include samples in this study as researchers. In addition, wheelchair competence in Indonesia is also limited. It is due

to the interest and motivation of individuals with disabilities to participate as athletes. It is expected that the publication of this study will be a good step for all disability sports and provide facilities and improve the competence of coaches so that someone with special needs can improve their quality of life, one of which is by becoming a paralympic athlete.

## Conclusion

Based on the results of this study, it can be explained that performance in training of wheelchair athletes in basketball, tennis, badminton, and archery can increase self-confidence before competing. Then, the coach-athlete intimacy variable is able to positively and significantly influence the performance in training on the confidence of the wheelchair athlete. Other results show that the influence without the coach-athlete intimacy variable was only 12.8%, while the coach-athlete intimacy variable could moderate training performance and confidence at 47.2%. There has yet to be a severe response regarding facilities to support athlete training performance because facilities are an essential element for athletes to improve performance in training. However, it should be noted that if the facilities provided are exemplary, wheelchair athletes feel cared for, and of course, the most important thing is they will train more actively and discipline. From the results of this research study, the involvement of a government agency is recommended to foster, develop, and facilitate all individuals with special needs. In addition, it is necessary to increase the competence of trainers through special training or by opening a coach study program for coaching people with disability at the university. Further research is needed to pay more attention to the number of samples involved and how to collect data. Of course, it is suggested to use a simple research design which can produce accurate data.

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