



## Does social support mediate the relationship between self-confidence and learning anxiety in gymnastics? Evidence from primary school students

*¿Mediación del apoyo social en la relación entre la autoconfianza y la ansiedad ante el aprendizaje de la gimnasia? Datos procedentes de educación primaria*

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### Abstract

**Introduction:** Learning anxiety in physical education is a significant concern, particularly in performance-based activities such as gymnastics, which often generate psychological pressure among primary school students. This condition can hinder skill acquisition, reduce motivation, and affect students' overall participation. **Objective:** This study aims to examine the mediating role of social support in the relationship between self-confidence and learning anxiety in gymnastics among primary school students.

**Methodology:** A quantitative, causal-associative research design was employed. The sample consisted of 180 fourth-grade students selected through proportional random sampling. Data were collected using a self-confidence scale based on Lauster's theory, a gymnastics learning anxiety scale, and a social support scale adapted from Zimet et al. (1988). Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4. **Results:** Self-confidence had a significant positive effect on social support ( $\beta = 0.848$ ,  $t = 31.238$ ,  $p < 0.001$ ), and social support had a significant negative effect on learning anxiety in gymnastics ( $\beta = -0.694$ ,  $t = 7.960$ ,  $p < 0.001$ ). The direct effect of self-confidence on learning anxiety was not significant ( $\beta = -0.101$ ,  $t = 1.159$ ,  $p = 0.247$ ). Mediation analysis revealed a significant indirect effect through social support ( $\beta = -0.589$ ,  $t = 7.386$ ,  $p < 0.001$ ), indicating full mediation. **Discussion:** The findings indicate that self-confidence alone is insufficient to directly reduce gymnastics learning anxiety. Social support serves as the key mechanism linking self-confidence to reduced anxiety, highlighting the importance of teacher, peer, and supportive learning environments in mitigating psychological stress.

**Conclusions:** Social support plays an essential mediating role between self-confidence and learning anxiety in gymnastics among primary school students. Physical education teachers are encouraged to foster a supportive, empathetic, and collaborative learning atmosphere to minimize students' anxiety during gymnastics activities.

### Keywords

Self-confidence, social support, learning anxiety, gymnastics, primary school students.

### Resumen

**Introducción y Objetivo.** Este estudio pretende examinar el papel mediador del apoyo social en la relación entre la autoconfianza y la ansiedad de aprendizaje en gimnasia entre educación primaria. La ansiedad de aprendizaje en educación física es una cuestión importante, ya que las actividades basadas en el rendimiento, como la gimnasia, suelen generar presión psicológica en los alumnos. **Metodología.** Se empleó un diseño de investigación cuantitativo, causal-asociativo, en el que participaron 180 alumnos de cuarto curso seleccionados mediante muestreo aleatorio proporcional. Los datos se recogieron utilizando instrumentos validados: una escala de autoconfianza basada en la teoría de Lauster, una escala de ansiedad ante el aprendizaje de la gimnasia y una escala de apoyo social adaptada de Zimet et al. (1988). El análisis de los datos se realizó mediante el modelo de ecuaciones estructurales por mínimos cuadrados parciales (PLS-SEM) a través de SmartPLS 4. **Resultados.** Los resultados demostraron que la autoconfianza tenía un efecto positivo significativo sobre el apoyo social ( $\beta = 0,848$ ,  $t = 31,238$ ,  $p < 0,001$ ), mientras que el apoyo social tenía un efecto negativo significativo sobre la ansiedad de aprendizaje en gimnasia ( $\beta = -0,694$ ,  $t = 7,960$ ,  $p < 0,001$ ). Sin embargo, el efecto directo de la autoconfianza sobre la ansiedad de aprendizaje no fue significativo ( $\beta = -0,101$ ,  $t = 1,159$ ,  $p = 0,247$ ). El análisis de mediación reveló un efecto indirecto significativo de la autoconfianza sobre la ansiedad de aprendizaje a través del apoyo social ( $\beta = -0,589$ ,  $t = 7,386$ ,  $p < 0,001$ ), lo que indica una mediación completa.

**Conclusiones.** Estos resultados ponen de relieve el papel esencial del apoyo social en la reducción de la ansiedad de aprendizaje de la gimnasia en educación primaria. El estudio recomienda que los profesores de educación física fomenten un entorno de aprendizaje solidario, empático y colaborativo para mitigar eficazmente la ansiedad durante las actividades de gimnasia.

### Palabras clave

Autoconfianza, apoyo social, ansiedad de aprendizaje, gimnasia, educación primaria.



## Introduction

Learning anxiety within the context of physical education has emerged as an issue warranting serious academic attention. This concern is particularly relevant given that physical activities such as gymnastics frequently place students in performative situations, which are often accompanied by considerable mental pressure. Ávalos-Ramos & Ruiz (2022) emphasized that within the physical education learning process, episodes of anxiety, frustration, and mental obstacles frequently arise, which can hinder students' ability to perform motor skills effectively. Anxiety itself is defined as a negative emotional state resulting from an imbalance between the demands of the environment and an individual's perceived capacity to meet those demands (Rowland & van Lankveld, 2019). This conceptualization is further supported by Ford, Ildefonso, Jones, & Arvinen-Barrow (2017), who noted that anxiety experienced by children during physical education activities can diminish participation, impair motor skill development, and adversely affect academic performance. As such, teaching and learning in physical education should incorporate considerations of autonomy, self-control, and self-regulation, given the frequent emergence of anxiety, frustration, and mental barriers in performance and motor skill assessments (Ávalos-Ramos & Ruiz, 2022).

Among various physical activities, gymnastics is considered particularly beneficial for reducing anxiety and enhancing children's balance and mental well-being. A study conducted by Yu, Pan, Liu, & Deng (2025) found that long-term participation in structured gymnastics training significantly improved children's balance abilities, yielding greater benefits than irregular physical activity. Furthermore, physical activity has consistently been shown to play a crucial role in alleviating negative psychological states, including anxiety and depression (Schuch & Vancampfort, 2021). This conclusion is substantiated by a meta-analysis conducted by Li, Zhou, Huang, & Shao (2023), which indicated that sport-based interventions exerted a moderate effect in reducing anxiety symptoms among children.

The theoretical foundation of this study is grounded in Social Cognitive Theory (Bandura, 1999), which posits that an individual's belief in their ability to execute specific performances critically influences their participation, effort, and achievement. In the context of physical education, self-confidence represents a key psychological variable that can mediate the relationship between physical activity and students' mental health outcomes. Confidence is an essential psychological attribute that should be nurtured and developed, enabling individuals to perform tasks with assurance and without fear of failure. Astuti, Zulbahri, Lawanis, Erianti, & Damrah (2023) asserted that confidence is an inherent aspect of the subconscious, independent of transient emotions and feelings. Moreover, one's success or failure in engaging socially with their environment is largely determined by how effectively they cultivate their sense of confidence (Tito et al., 2025). This view is supported by Arroyo, Ferro, Retamal, & Ramos (2024), who demonstrated that adolescents' confidence in their physical capabilities can substantially influence their engagement and performance in physical education, thereby promoting overall health benefits.

In addition, the role of social support in mitigating anxiety among children should not be underestimated. In the field of sports psychology, various studies have established connections between social support and other constructs such as self-confidence (Martínez-Alvarado, Palacios, Rodríguez, & Flores, 2023). In the context of primary education, the types of social support received by students tend to vary depending on both the developmental stage of the child and the source of support. Emotional support, which includes expressions of empathy, attentiveness, and reassurance, exerts the most substantial influence when provided by teachers and parents—particularly during moments of failure or when children experience anxiety in motor tasks (Yan, Huang, Chen, & Wang, 2024). Instrumental support, such as physical assistance or hands-on help, is most frequently offered by peers in collaborative settings, including group activities or paired gymnastics practice (Jiang, Wang, & Qin, 2025). Meanwhile, informational support, which refers to the delivery of practical advice or guidance, is most effective when it comes from trusted instructors or coaches who can provide structured feedback relevant to the activity at hand (Zhang & Qian, 2024). Lastly, appraisal support, including praise and verbal encouragement, plays a critical role in building self-confidence during middle childhood, a stage particularly sensitive to social evaluation and the desire for recognition (Tahmassian & Moghadam, 2011).

Cobb (1976) stress-buffering hypothesis asserts that social support enhances individuals' psychological resources, thereby reducing the adverse effects of stress. Lin, Zhu, Liu, & Li (2024) reported that physical



activity positively impacts resilience and self-efficacy, resilience subsequently strengthening self-efficacy. This finding was further supported by a meta-analytic structural equation modeling (MASEM) study involving 17,043 participants, which identified significant mediation effects of resilience on mental health outcomes — approximately 40% for positive indicators and 29% for negative indicators.

Further reinforcing this perspective, Jiang, Wang, & Qin (2025) found that active participation in sports was significantly associated with self-efficacy and resilience among 700 elementary school students, thereby substantiating the theoretical proposition that gymnastics can support the development of students' mental capacities. Likewise, Tahmassian & Moghadam (2011) demonstrated that total self-efficacy, physical self-efficacy, and emotional self-efficacy were all negatively and significantly correlated with student.

Nevertheless, very few studies have specifically examined the mediating role of social support in the relationship between self-confidence and gymnastics learning anxiety among elementary school students, particularly those in the fourth grade. This is a crucial oversight, as children aged 9–10 are at a critical developmental stage characterized by increasing performance pressures in both academic and extracurricular domains. Therefore, this study is highly relevant in addressing this gap, investigating whether self-confidence affects gymnastics learning anxiety and whether social support from teachers, parents, and peers serves as a mediating factor in this relationship.

This research adopts a Structural Equation Modeling (SEM) approach, employing the mediation model proposed by Baron & Kenny (1986) alongside Hayes (2015) bootstrapping method. Conceptually, this study contributes significantly by reinforcing empirical evidence that self-efficacy serves as a principal mediator between physical activity and mental health, proposing a social support-based intervention model, and addressing an evident gap in research related to comprehensive mediation models within elementary school gymnastics programs.

## Method

### Participants

The population of this study comprised all fourth-grade students enrolled in public elementary schools within Sleman Regency, Special Region of Yogyakarta (DIY). A total of 180 students were selected using a proportional random sampling technique. The participants consisted of 94 boys and 86 girls, with an average age of 9.6 years ( $SD = 0.47$ ), which is typical for fourth-grade students in Indonesia. This sample size adhered to the recommendations proposed by Hair & Alamer (2022), which suggest that the minimum sample size should be five to ten times the number of observed indicators in the study variables.

### Research Design

This study employed a quantitative, causal-associative research design, aimed at analyzing the simultaneous relationships among the variables of self-confidence, social support, and gymnastics learning anxiety. The research instruments consisted of a self-confidence scale based on Lauster's theoretical framework (Jati et al., 2024) comprising 12 items, a gymnastics learning anxiety scale developed by Susilowati, Suherman, Hastuti, Rahayu, & Hartanto (2024) also containing 12 items, and a social support scale adapted from Zimet, Dahlem, Zimet, & Farley (1988) with 12 items. Following the development of the instrument items, a focus group discussion (FGD) was conducted involving experts in gymnastics instruction, sports psychology lecturers, and several physical education teachers to validate the content and contextual relevance of the instruments. The blueprint of the research instruments, including the variables, indicators, number of items, and sources, is presented in the following table.

Table 1. Instrument Indicators

No	Variable	Indicator	Number of Items	Source
1	Self-Confidence	Belief in one's own abilities Optimism in facing situations Objectivity in self-assessment Personal responsibility Rationality in thinking Realism towards situations	12	Lauster (Jati et al., 2024)



2	Gymnastics Learning Anxiety	Fear of making mistakes during movements Worry about others' judgment Tension during gymnastics examinations Concern about injury Feelings of inadequacy Physical discomfort during gymnastics	12	(Susilowati et al., 2024)
3	Social Support	Emotional support (attention, empathy, sense of acceptance) Informational support (advice, helpful information) Instrumental support (concrete/physical assistance) Appraisal support (praise and recognition)	12	(Zimet et al., 1988)

## Data analysis

The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the assistance of SmartPLS 4 software. The analytical procedures included assessments of the outer model, which covered convergent validity, discriminant validity, and construct reliability, as well as evaluations of the inner model, encompassing  $R^2$  values, path coefficients, t-statistics, and mediation tests through bootstrapping procedures. The interpretation of results was guided by the evaluation criteria recommended by Hair & Alamer (2022) and Henseler, Ringle, & Sarstedt (2015).

## Results

The results of data analysis using the PLS-SEM method indicated that the structural model in this study met the criteria for internal goodness of fit. All indicator loading factors exceeded the threshold of 0.70, the Average Variance Extracted (AVE) values were above 0.50, the discriminant validity—assessed using the Heterotrait-Monotrait Ratio (HTMT)—remained below 0.90, and the composite reliability values surpassed 0.70. These criteria align with the standards established by Sarstedt, Ringle, & Hair (2021), which state that a structural model can be considered valid and reliable when these thresholds are satisfied.

Figure 1. Results in the PLS Algorithm

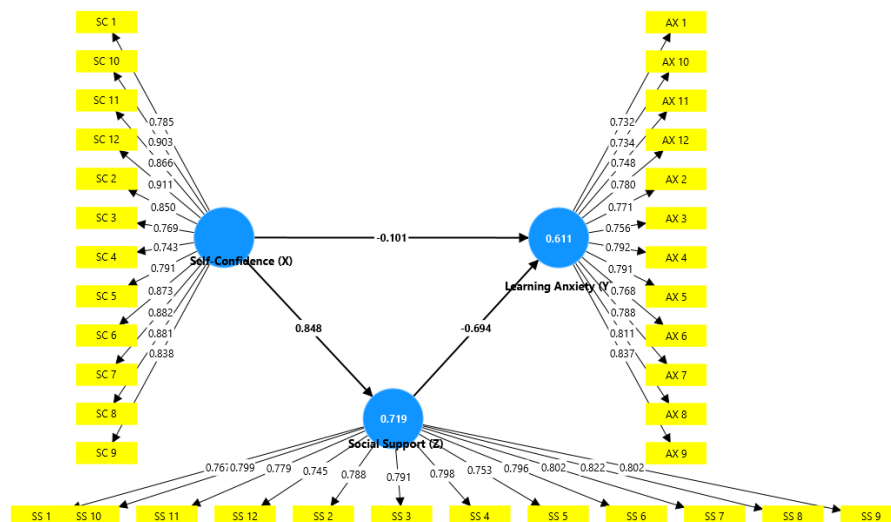


Table 2. Outer Loading

Code	Learning Anxiety (Y)	Code	Self-Confidence (X)	Code	Social Support (Z)
AX 1	0.732	SC 1	0.785	SS 1	0.767
AX 10	0.734	SC 10	0.903	SS 10	0.799
AX 11	0.748	SC 11	0.866	SS 11	0.779
AX 12	0.780	SC 12	0.911	SS 12	0.745
AX 2	0.771	SC 2	0.850	SS 2	0.788
AX 3	0.756	SC 3	0.769	SS 3	0.791
AX 4	0.792	SC 4	0.743	SS 4	0.798

AX 5	0.791	SC 5	0.791	SS 5	0.753
AX 6	0.768	SC 6	0.873	SS 6	0.796
AX 7	0.788	SC 7	0.882	SS 7	0.802
AX 8	0.811	SC 8	0.881	SS 8	0.822
AX 9	0.837	SC 9	0.838	SS 9	0.802

The results of data analysis using the Partial Least Squares Structural Equation Modeling (PLS-SEM) method demonstrated that the structural model in this study met the criteria for internal goodness of fit. This was evidenced by all indicator loading factors exceeding the threshold of 0.70. Specifically, the loading factors for the Learning Anxiety variable ranged from 0.732 to 0.837, for the Self-Confidence variable from 0.743 to 0.911, and for the Social Support variable from 0.745 to 0.822. These values fall within the strong category, as recommended by Hair & Alamer (2022), who state that a loading factor above 0.70 indicates that the indicator makes a significant contribution to its corresponding construct.

Table 3. Reliability Test Results

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Learning Anxiety (Y)	0.940	0.940	0.948	0.602
Self-Confidence (X)	0.962	0.963	0.967	0.710
Social Support (Z)	0.944	0.945	0.951	0.619

Furthermore, the Average Variance Extracted (AVE) values for each construct exceeded the 0.50 threshold, with Learning Anxiety at 0.602, Self-Confidence at 0.710, and Social Support at 0.619. These AVE values indicate that more than 50% of the variance in the indicators can be explained by their respective constructs, thereby meeting the criteria for convergent validity. In terms of reliability, the results showed that both Cronbach's alpha and Composite Reliability (CR) values for all constructs were above the recommended threshold of 0.70. Specifically, the Cronbach's alpha values were 0.940 for Learning Anxiety, 0.962 for Self-Confidence, and 0.944 for Social Support. Meanwhile, the CR values reached 0.948, 0.967, and 0.951, respectively. These values indicate that all constructs demonstrated excellent internal consistency.

Table 4. Discriminant Validity

	Learning Anxiety (Y)	Self-Confidence (X)	Social Support (Z)
Learning Anxiety (Y)			
Self-Confidence (X)	0.723		
Social Support (Z)	0.826	0.885	

Discriminant validity was evaluated using the Heterotrait-Monotrait Ratio (HTMT), with all values found to be below the threshold of 0.90. The HTMT values among the variables ranged from 0.723 to 0.885, indicating that the constructs within the model were sufficiently distinct from one another and did not conceptually overlap.

Table 5. R-square

	R-square	R-square adjusted
Learning Anxiety (Y)	0.611	0.607
Social Support (Z)	0.719	0.718

Furthermore, the R-square ( $R^2$ ) values were 0.611 for Learning Anxiety and 0.719 for Social Support, indicating that the exogenous variables in the model were able to explain approximately 61.1% of the variance in Learning Anxiety and 71.9% of the variance in Social Support. According to Hair & Alamer (2022),  $R^2$  values within the range of 0.45 to 0.75 are considered moderate to substantial in studies related to children's sports psychology within physical education settings.

Table 6. Fit Model Results

	Saturated model	Estimated model
SRMR	0.064	0.064





d_ULS	2.699	2.699
d_G	2.084	2.084
Chi-square	1749.756	1749.756
NFI	0.742	0.742

The results of the structural model evaluation indicated that the Standardized Root Mean Square Residual (SRMR) value was 0.064, which is below the threshold of 0.08, suggesting that the model demonstrated a good level of fit. In addition, the Chi-square value of 1749.756 and the Normed Fit Index (NFI) value of 0.742 further confirmed that the model was within an acceptable range for use in empirical analysis.

Figure 2. Results in the Bootstrapping

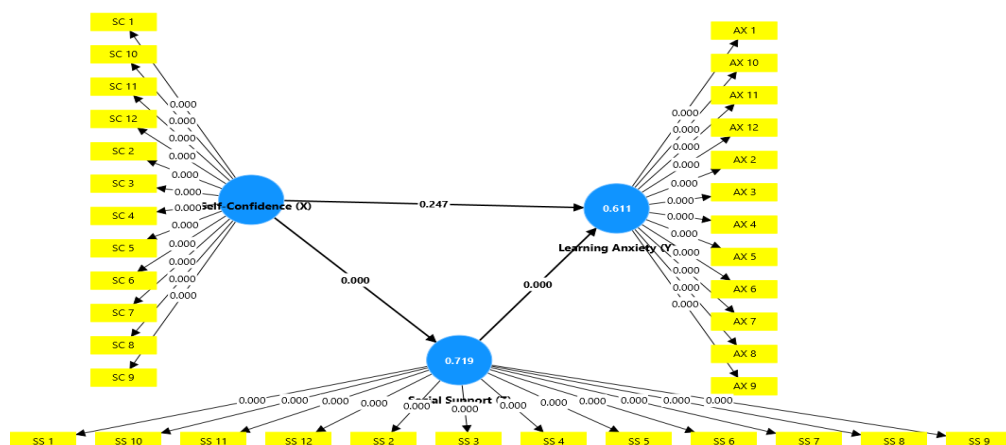


Table 7. Results of Hypothesis Testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	P values
Self-Confidence (X) -> Learning Anxiety (Y)	-0.101	-0.098	0.087	1.159	0.247
Self-Confidence (X) -> Social Support (Z)	0.848	0.847	0.027	31.238	0.000
Social Support (Z) -> Learning Anxiety (Y)	-0.694	-0.700	0.087	7.960	0.000
Self-Confidence (X) -> Social Support (Z) -> Learning Anxiety (Y)	-0.589	-0.593	0.080	7.386	0.000

In the path coefficient analysis, it was revealed that:

- 1) Self-Confidence exerted a significant positive effect on Social Support ( $\beta = 0.848$ ,  $t = 31.238$ ,  $p < 0.001$ ).
- 2) Social Support had a significant negative effect on Learning Anxiety ( $\beta = -0.694$ ,  $t = 7.960$ ,  $p < 0.001$ ).
- 3) The direct effect of Self-Confidence on Learning Anxiety was not statistically significant ( $\beta = -0.101$ ,  $t = 1.159$ ,  $p = 0.247$ ).

However, the indirect effect of Self-Confidence on Learning Anxiety through Social Support was significant, with a path coefficient of  $\beta = -0.589$ ,  $t = 7.386$ ,  $p < 0.001$ . These findings indicate the presence of a full mediation effect of Social Support in the relationship between Self-Confidence and Learning Anxiety in the context of gymnastics learning.

## Discussion

Firstly, the analysis revealed that Self-Confidence had a significant positive influence on Social Support ( $\beta = 0.848$ ,  $t = 31.238$ ,  $p < 0.001$ ). This finding suggests that the higher the level of self-confidence possessed by students, the stronger their perception of receiving social support from their surrounding environment, including peers, teachers, and family members. This result is consistent with the study by Akbari & Sahibzada (2020), who found that students' self-confidence influenced their participation, goal-seeking behavior, interest development in learning, reduction of classroom anxiety, and overall comfort in interacting with instructors and classmates, as well as in expressing their opinions. Similarly, (Alsubaie, Stain, Webster, & Wadman, 2019) emphasized that self-confidence serves as a crucial determinant in shaping perceptions of social support, particularly in contexts requiring courage, such as gymnastics activities in school settings.

Secondly, the study also found that Social Support had a significant negative effect on Gymnastics Learning Anxiety ( $\beta = -0.694$ ,  $t = 7.960$ ,  $p < 0.001$ ). In other words, the greater the social support received by students, the lower their level of anxiety experienced during gymnastics learning. This finding is reinforced by the meta-analysis conducted by Shi (2022), which demonstrated that social support is effective in reducing both academic anxiety and anxiety related to physical activity among students. Social support provides a sense of security, acceptance, and enhanced self-assurance for students when facing learning challenges — including gymnastics, an activity often associated with risks of movement errors and potential injuries. These results are further supported by Zhang & Qian (2024), who noted that support from the surrounding environment plays a significant role in lowering anxiety in children and adolescents when confronting competitive or evaluative situations.

Additionally, Xu, Xu, Liu, Gu, & Hu (2024) corroborated these findings by demonstrating that social support plays an important role in enhancing self-efficacy, which in turn positively influences participation in physical activities. Although the causal pathway in their study followed a different order (social support  $\rightarrow$  self-efficacy  $\rightarrow$  physical activity), the reciprocal relationship between these variables remains consistent.

Thirdly, the direct effect of Self-Confidence on Gymnastics Learning Anxiety was found to be statistically insignificant ( $\beta = -0.101$ ,  $t = 1.159$ ,  $p = 0.247$ ). This outcome indicates that while self-confidence is indeed an important factor in various physical activities, within the context of gymnastics learning, it is not sufficiently strong to directly reduce students' anxiety. This aligns with the findings of Wu, Shao, Zang, & Hu (2025), who asserted that the effect of self-confidence on sports-related anxiety is more effective when supported by external factors such as social support and a positive learning environment. Nevertheless, the present study demonstrated that the indirect effect of Self-Confidence on Gymnastics Learning Anxiety through Social Support was significant ( $\beta = -0.589$ ,  $t = 7.386$ ,  $p < 0.001$ ). This indicates that self-confidence can significantly reduce gymnastics learning anxiety when supported by a strong perception of social support. This full mediation mechanism underscores the crucial role of social support as an intermediary in the relationship between self-confidence and gymnastics learning anxiety. A meta-analysis by Andermo et al., (2020) similarly emphasized that the mental health benefits of physical activity in children are highly influenced by supportive social environments. Confidence shapes students' positive perceptions of social support, which then plays a role in lowering anxiety levels. This concept was validated by (Yan et al., 2024) in a study of junior high school students, revealing that mediation pathways through negative emotions and self-efficacy accounted for 70% of the total effect of physical activity on mental well-being. This sequential mediation concept remains consistent with the model proposed in the present study, where both self-confidence and social support work simultaneously to influence anxiety. This study's findings are also supported by Jiang et al., (2025), who reported significant associations between physical activity, self-efficacy ( $r = 0.29$ ;  $p < 0.001$ ), and resilience ( $r = 0.37$ ;  $p < 0.001$ ) in elementary school students in China. This reinforces the notion that the relationship mechanisms among physical activity, self-confidence, social support, and anxiety are not only relevant among adolescents but are equally applicable to elementary school-aged children.

These findings are consistent with self-regulation theory, which posits that learners develop competence and autonomy through internal control mechanisms—such as goal setting, monitoring, and self-reflection—that are often activated or enhanced via external support systems, particularly from teachers and peers (Panadero, 2017). In the context of gymnastics learning, social support functions not



merely as an external buffer against anxiety but also as a scaffolding mechanism that helps students build and sustain their self-confidence in performing motor tasks. This scaffolding is especially important during early developmental stages, such as middle childhood, when students are still forming their self-regulatory capacities and are highly dependent on feedback from teachers, peers, and parents. The presence of emotional, instrumental, and appraisal support enables learners to take on challenging tasks with reduced anxiety, thereby strengthening their belief in their own abilities and enhancing their motivation to persist. This aligns with the work of Schunk & Zimmerman (2007), who emphasized that guided social input fosters the internalization of competence beliefs and self-regulated learning behaviors in children. Similarly, research by Andermo et al., (2020) highlighted that structured physical education programs incorporating supportive environments significantly contribute to children's mental health and self-efficacy development through socially mediated processes.

Overall, the results of this study highlight the importance of emphasizing the role of social support in efforts to reduce gymnastics learning anxiety among students. While self-confidence alone may not be sufficiently effective in directly alleviating anxiety, it plays a significant role in shaping perceptions of social support, which ultimately contributes to lowering anxiety during gymnastics learning. These findings carry practical implications for physical education teachers and sports educators, suggesting the need to create supportive, open, and mutually encouraging learning environments for students.

However, this study is not without limitations. The use of a cross-sectional design and limited geographic coverage necessitates caution in generalizing the findings. Future studies are recommended to adopt longitudinal approaches and to examine differences based on gender or anxiety levels using latent profile analysis, as suggested by Mammarella, Donolato, Caviola, & Giofrè (2018). The PLS-SEM model demonstrated that both the direct and indirect effects (via social support) of children's self-confidence significantly reduce gymnastics learning anxiety, reinforcing evidence that holistic interventions which build self-confidence and foster emotional support networks within schools are highly effective strategies for promoting the psychological well-being of elementary school students.

One important limitation of this study is its cultural and geographical scope. Since the data were collected exclusively from elementary school students in Sleman Regency, Indonesia, the findings may reflect sociocultural dynamics specific to the Indonesian educational and familial context. Consequently, the generalizability of the results to other countries or cultural settings—especially those with differing emphases on collectivism, authority structures, or educational practices—should be approached with caution.

## Conclusions

Based on the results of data analysis and the discussions conducted, several conclusions can be drawn: (1) Self-Confidence has a significant positive effect on the Social Support perceived by students in gymnastics learning activities. The higher the students' self-confidence, the greater their perception of the social support they receive. (2) Social Support has a significant negative effect on Gymnastics Learning Anxiety. Social support provided by peers, teachers, and the surrounding environment can effectively reduce students' anxiety during gymnastics activities. (3) The direct effect of Self-Confidence on Gymnastics Learning Anxiety was found to be not significant, indicating that self-confidence alone is insufficient to alleviate anxiety in the context of gymnastics learning without the presence of social support. (4) The indirect effect of Self-Confidence on Gymnastics Learning Anxiety through Social Support was significant, indicating the existence of a full mediation effect. Social support serves as the primary intermediary in channeling the positive influence of self-confidence on reducing gymnastics learning anxiety. In general, the findings of this study emphasize that students' self-confidence can contribute to lowering gymnastics learning anxiety when supported by a positive and supportive social environment. Therefore, interventions that focus on strengthening social support within the school environment represent an effective strategy for reducing gymnastics learning anxiety among students.

Future research is recommended to replicate this mediation model across different demographic subgroups, such as by gender and socioeconomic status, to determine whether the mechanisms observed in this study hold across diverse populations. In addition, longitudinal intervention studies should be designed to examine the sustained impact of social support-based strategies on reducing learning anxiety.





ety in physical education contexts. Such interventions could include structured teacher-student mentoring programs, peer support groups, or parent-engagement initiatives aimed at reinforcing students' confidence and emotional well-being over time.

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## Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article. All procedures followed were in accordance with ethical standards, and no financial or personal relationships could have appeared to influence the research outcomes reported in this paper.

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