Analysis of factors influencing empathy in sports participants using SEM PLS

Análisis de los factores que influyen en la empatía de los deportistas mediante SEM PLS

Authors

Muhamad Sazeli Rifki[1],
Anton Komaini[1],
Surya Adi Saputra[2],
Endang Sepdanius[1],
Mert Kurnaz[3]

[1] Universitas Negeri Padang (Indonesia)
[2] Universitas Negeri Malang (Indonesia)
[3] Haliç Üniversitesi (Turkiye)

Corresponding author:
Endang Sepdanius
endangsepdanius@fik.unp.ac.id

How to cite in APA

Sazeli Rifki, M., Komaini, A., Adi Saputra, S., Sepdanius, E., & Kurnaz, M. (2025). Analysis of factors influencing empathy in sports participants using SEM PLS. *Retos*, *68*, 331–345. https://doi.org/10.47197/retos.v68.111408

Abstract

Objective: This study aims to test relevant predictive models to develop effective interventions related to empathy, sport participation, and culture in sport activities.
Method: This research uses SEM_PLS with a quantitative approach. This study involved 680 participants (67.8% female, 32.2% male) aged 17 years from 6 cities in West Sumatra. The research instrument consisted of 5 sub-variables—sports participant empathy, sports participation, encouragement to exercise, attitude towards sports, and behavior in sports—with 29 items.
Results: The results showed a significant relationship between several variables, indicated by a P value <0.05. Significant relationships include Encouragement to Exercise to Sports Participation (0.349, P = 0.003), Exercise Behavior to Sports Participant Empathy (0.867, P = 0.000), Attitude Toward Sports to Encouragement to Exercise (0.826, P = 0.000), Attitude Toward Sports to Sports Participation (0.571, P = 0.000), and Attitude Toward Sports to Sports Behavior (0.757, P = 0.000). This shows a strong and significant relationship between these variables. In contrast, the relationship between Encouragement to Exercise and Sports Participation to Sports Participant Empathy is insignificant, indicating that the effect between these variables is weak or not statistically significant.
Conclusion: This study found that positive attitudes toward sports strongly influence sports behavior and participation. Sports behavior is also significantly linked to empathy. However, encouragement to exercise and participation alone did not impact empathy. As a correlational study, it suggests further research is needed to explore causal relationships and influencing factors.

Keywords

Attitude toward sport; behavior in exercise; Empathy; encouragement to exercise; sport participation.

Resumen

Objetivo: Este estudio pretende probar modelos predictivos relevantes para desarrollar intervenciones efectivas relacionadas con la empatía, la participación deportiva y la cultura en las actividades deportivas.
Método: Esta investigación utiliza SEM_PLS con un enfoque cuantitativo. En este estudio participaron 680 personas (67,8% mujeres, 32,2% hombres) de 17 años de edad procedentes de 6 ciudades de Sumatra Occidental. El instrumento de investigación constaba de 5 subvariables - empatía de los participantes en el deporte, participación en el deporte, estímulo para hacer ejercicio, actitud hacia el deporte y comportamiento en el deporte- con 29 ítems.
Resultados: Los resultados mostraron una relación significativa entre varias variables, indicada por un valor P <0,05. Las relaciones significativas incluyen el estímulo para hacer ejercicio con la participación deportiva (0,349; P = 0,003), la conducta deportiva con la empatía del participante deportivo (0,867; P = 0,000), la actitud hacia el deporte con el estímulo para hacer ejercicio (0,826; P = 0,000), la actitud hacia el deporte con la participación deportiva (0,571; P = 0,000) y la actitud hacia el deporte con la conducta deportiva (0,757; P = 0,000). Esto muestra una relación fuerte y significativa entre estas variables. Por el contrario, la relación entre Animación al Ejercicio y Participación Deportiva con Empatía del Participante Deportivo es insignificante, lo que indica que el efecto entre estas variables es débil o no es estadísticamente significativo.
Conclusiones: Este estudio descubrió que las actitudes positivas hacia el deporte influyen fuertemente en el comportamiento deportivo y la participación. El comportamiento deportivo también está significativamente relacionado con la empatía. Sin embargo, el estímulo hacia el ejercicio y la participación por sí solos no influyeron en la empatía. Al tratarse de un estudio correlacional, sugiere que se necesita más investigación para explorar las relaciones causales y los factores influyentes.

Palabras clave

Actitud hacia el deporte; comportamiento en el ejercicio; empatía, estímulo para el ejercicio; participación deportiva.

Introduction

Empathy plays a vital role in children's social and emotional development, shaping their ability to understand and connect with others(Kwon, 2018). In Indonesia, a country rich in cultural diversity, instilling empathy in the younger generation requires approaches that align with local values (Darmadi et al., 2020). Sports have long been recognized as an effective tool for fostering empathy, teamwork, and appreciation for differences (Sánchez et al., 2019)(Sepdanius et al., 2024). With Indonesia's strong tradition of indigenous games, martial arts, and local sports, integrating empathy-building activities within sports presents a promising opportunity (Hasanuddin et al., 2023).

However, despite the potential benefits, several social challenges hinder the development of empathy through sports. Issues such as bullying, stigma, and low self-efficacy negatively impact sports participation and social interactions. For example, cases of bullying among physical education students and psychological stress in young athletes highlight the need for structured interventions to promote tolerance and emotional well-being (Espinoza et al., 2023). Additionally, while various models and approaches have been proposed to promote positive attitudes and social skills through sports, there is a gap in understanding how specific psychological and social mechanisms contribute to empathy development within different cultural contexts.

This study addresses these gaps by developing a predictive model that examines the relationships between attitudes toward sports, encouragement to exercise, sports participation, and exercise behavior—factors that are hypothesized to shape empathy development. By investigating these variables, this study aims to contribute to the existing body of knowledge in sports psychology and support policymakers in designing effective interventions to enhance empathy and sports engagement among Indonesian children.

Attitude towards sports

Attitudes towards sports among athletes are shaped by multiple factors, including intrinsic motivation, training behavior, and empathy within the sports environment. Intrinsic motivation, such as personal satisfaction and enjoyment, plays a crucial role in sustaining long-term engagement in sports, even in challenging circumstances like the COVID-19 pandemic (Purc-Stephenson et al., 2022). Additionally, a task-oriented motivational climate has been shown to reduce stress and enhance moral functioning, highlighting the significance of the training context in shaping an athlete's commitment (Clancy et al., 2022).

Cultural influences also affect sports motivation, as evidenced by differing health priorities between Central and Western European athletes (Cahyono et al., 2020). Furthermore, empathy in the coach-athlete relationship significantly contributes to athlete motivation and training satisfaction, helping them adapt to their social environment (Aktaş et al., 2023)(Arı & Öz, 2023). Addressing athletes' basic psychological needs can also mitigate the risk of training dependence, fostering a healthier and more sustainable relationship with sports participation (Schüler et al., 2018).

Given these dynamics, it is essential to understand how attitudes towards sports interact with intrinsic drive, sports participation, empathy, and exercise behavior. A positive attitude towards sports is expected to encourage individuals to exercise consistently, increase participation, develop empathy, and shape exercise habits. Therefore, based on the existing literature, the following hypotheses are proposed:

H1: Attitudes toward sports are expected to influence the intrinsic drive to exercise.

H2: Positive attitudes towards sports can increase sports participation.

H3: Attitudes towards sports are predicted to impact participants' empathy.

H4: Attitudes towards sports are expected to shape exercise behavior.

Encouragement to Exercise

The relationship between encouragement to exercise, participation, and empathy plays a crucial role in shaping both individual and group exercise experiences. Encouragement, whether intrinsic or extrinsic,

can enhance motivation, participation, and social interactions in physical activity settings. Intrinsic motivation, such as personal satisfaction and enjoyment, has been shown to significantly increase participation in physical activity and sustain long-term engagement (Teixeira et al., 2022). However, motivation is not solely intrinsic; external factors such as live video feedback and structured exercise programs also contribute to increased exercise motivation and adherence (Soni et al., 2021).

Beyond motivation, demographic differences also influence exercise participation. For instance, female students are more likely to be motivated by health benefits and stress management, demonstrating that exercise encouragement may have varying effects across populations (Othman et al., 2022). Additionally, the social and emotional environment of exercise plays a vital role in participation and engagement. Empathy within the exercise setting fosters social cohesion, strengthens group support, and enhances overall satisfaction and motivation (Ferri-Caruana et al., 2020). An empathetic atmosphere helps create a balanced and supportive exercise environment, reducing the risk of unhealthy behavioral patterns and encouraging positive, long-term engagement in physical activity (Hannus, 2012).

Given these factors, encouragement to exercise is expected to serve as a key driver in promoting greater participation and fostering empathy among participants. Individuals who receive consistent encouragement are more likely to engage in physical activity, while those in supportive, empathetic exercise environments may develop stronger social bonds and emotional connections through sport. Based on this understanding, the following hypotheses are proposed:

H5: Encouragement to exercise is expected to increase participation in physical activity.

H7: Encouragement to exercise is also expected to influence participants' empathy.

Sports participation

Sports participation, particularly in team-based activities, plays a crucial role in fostering empathy among participants through various psychological and social mechanisms. Engaging in sports enhances interpersonal understanding and emotional intelligence, which are fundamental to the development of empathy. Research indicates that regular involvement in school sports clubs and structured physical activities can contribute to empathy development by promoting emotional stability, improving social interactions, and reducing aggressive behaviors (Duan et al., 2022).

Moreover, adolescents who actively participate in sports tend to exhibit higher levels of self-regulation, social competence, and empathy compared to their non-participating peers. This suggests that the structured nature of sports environments facilitates the acquisition of essential life skills that contribute to prosocial behavior (Caldarella et al., 2019). In educational settings, physical education programs have been shown to significantly improve students' empathy and assertiveness, further emphasizing the role of sports in emotional and social development (López & Gutiérrez, 2013).

The type of sport played also influences empathy development. Team sports tend to foster greater empathy than individual sports due to their collaborative nature, which requires effective communication, cooperation, and shared goals (Álvaro & Carmen, 2019). Furthermore, a positive and cooperative training environment has been found to enhance players' empathic responses, demonstrating that social interactions within sports settings contribute to empathy growth (Sezen-Balçikanli & Sezen, 2017).

Considering these factors, sports participation provides an ideal context for fostering empathy through teamwork, shared experiences, and positive social interactions. Therefore, this study hypothesizes that:

H8: Participation in sports is expected to influence participants' empathy,

Exercise behavior

The relationship between sports behavior and empathy in sports participants is a key focus in sports psychology and education, as evidence suggests that engagement in physical activity, particularly in team settings, enhances empathetic behavior and fosters a cooperative environment. Participation in sports, especially among adolescents, has been found to promote positive empathy, particularly when students exhibit favorable attitudes toward physical education and sports. This positive perspective encourages team spirit, mutual respect, and social cohesion, which are fundamental to empathy development (Kalkan, 2022).

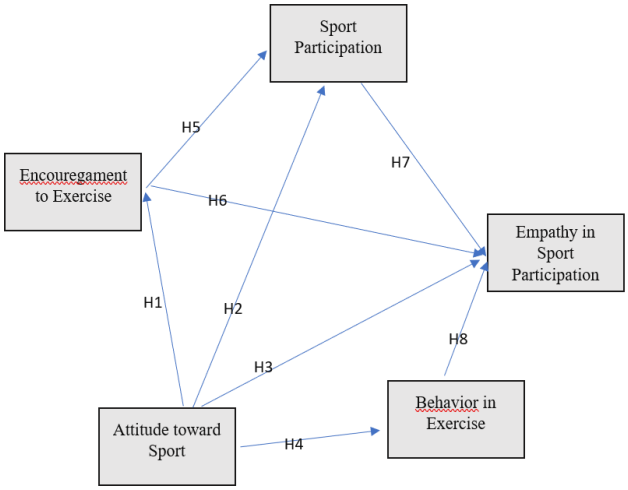
Additionally, sports activities serve as an outlet for stress and aggression, facilitating emotional stability, which in turn supports empathetic interactions and prosocial behaviors (Kwon, 2018). Research indicates that team sports tend to cultivate greater empathy than individual sports, as their collaborative nature necessitates effective communication, mutual support, and shared responsibilities (Buğdayci et al., 2019). Participation in sports education programs further reinforces these effects by enhancing students' empathy and assertiveness, emphasizing the role of structured learning environments in shaping these social traits (Buğdayci et al., 2019).

Furthermore, a supportive sports environment, characterized by positive peer relationships and strong athlete-coach connections, plays a crucial role in fostering empathy and prosocial behavior (Gano-Overway et al., 2023). Training approaches that emphasize empathy and emotional support from coaches have also been shown to increase athletes' empathic responses, highlighting the importance of mentorship in shaping emotional intelligence within sports contexts (Reinboth et al., 2004).

Given these findings, it is evident that sports behavior, particularly in team-oriented environments, supports the development of empathy through social interaction, collective experiences, and structured support systems. Therefore, this study hypothesizes that

H9: Exercise behavior is predicted to influence participants' empathy.

Figure 1. Research models and hypotheses.



Method

This study aims to test the hypothesis and analyze the direct and indirect relationships between variables in the structural model. This research uses SEM_PLS with a quantitative approach. SEM-PLS aims to identify patterns or factor structures between variables with initial hypotheses.

Research participants

This study used percentage sampling to determine the minimum sample size. The minimum sample required in PLS is ten times the size of the question items (Chin & Newsted, 1998). The principle of statistical conservatism states that proper research should have a larger sample size. Therefore, this study requires a minimum sample size of 290, which was met by involving 680 volunteers of 461 (67.8%) women and 219 men (32.2%) with an age range of ± 17 years from 6 cities in West Sumatra. While a large sample size increases the reliability of the data, the use of this voluntary sampling technique has the potential for self-selection bias, so the sample may not be fully representative of the wider population. However, the involvement of participants from different cities provides geographical diversity in the sample, which also broadens the range of perspectives and increases the potential for generalisation of the findings to the regional context of West Sumatra.

The questionnaire distribution technique was carried out online, utilising social media and digital platforms such as Google Form to reach respondents from various cities efficiently. The advantage of using the Google Form platform is that it minimises the chance of missing data in filling out statement items by participants.

The link to the questionnaire was shared through social media WhatsApp groups, so that respondents could fill in the questionnaire independently. This approach allows researchers to collect large amounts of data in a relatively short time and at an efficient cost.

Research Instrument

The research instrument consists of 5 sub-variables: sports participant empathy, sports participation, encouragement to exercise, Attitude Toward Sports, and Behavior in Sports. The instrument was evaluated by several qualified experts in the fields of sport sociology, sport psychology and sport participation. Three components were assessed-materiality, clarity, and feasibility-each with three statement items. All these variables have 29 statement items.

Table 1. Research Instruments

Sub-Variables	Item
Empathy in sports participation	When other people get excited about exercising, I tend to get excited too.
	I find it disturbing to see someone treated with disrespect in sports.
	I remain unaffected when someone close to me feels happy about achieving a sporting achievement.
	I enjoy making others feel better about participating in sports.
	I have soft and caring feelings for the less fortunate in the game.
	When a friend starts talking about his problems in the game, I try to steer the conversation to a different topic.
	I can tell when others are sad about a loss, even if they don't say anything.
	I feel "connected" to other people's moods when participating in sports.
	I have no sympathy for people who cause serious injury to themselves and others while participating in sports.
Sports Participation	I participate in sports activities at least three times a week.
	I spend about 30 minutes to 1 hour exercising.
	I often participate in sports activities organized by the school or community.
Encouragement to Exercise	I exercise to maintain my health and fitness.
	I exercise to socialize and meet friends.
	I exercise to reduce stress and anxiety
	I exercise to improve my abilities and skills in a sport.
Attitude Towards Sports	I believe that sports are important for my personal development.
	I feel happy and satisfied after exercising
	I prefer to spend my free time doing sports rather than other activities.
	I often encourage my friends to join in sports.
	I believe that sports can help me develop my social skills.
	I feel proud of my achievements in sports
	I believe that sports helped me learn discipline and hard work.
Behavior in Exercise	I always follow the rules of the game in the sport I play.
	I try not to give up even though I face difficulties in sports.
	I often share my sports experiences and knowledge with my friends.
	I always try to be a fair player, whether I win or lose.
	I keep my sports equipment clean and safe.
	I always arrive on time for practice or sports games.

Data collection

Before filling out the questionnaire, respondents were given brief information at the beginning of the Google form regarding the purpose of the study, data confidentiality, and their rights as participants. They were asked to give informed consent by stating their willingness to participate voluntarily through the initial part of the form. All data collected was kept confidential and only used for academic purposes.

Data Analysis

Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to test a prediction model. PLS-SEM as a data analysis approach is very appropriate for this study because it tests a model, especially the causality model, in exploratory research involving latent variables (Pavlou & Fygenson, 2006). The data obtained using Smart PLS version 3 software were tested to find reliability, convergent validity,

discriminant validity, Average Variance Extracted (AVE), inner model, and variable validity testing. The analysis procedure included two main stages:

Table 2. The analysis procedure of Partial Least Squares Structural Equation Modeling (PLS-SEM)

Stages	Testing	Goals
Evaluation of the Measurement Model (Outer Model). This stage includes testing the reliability and validity of the constructs.	Convergent validity assessed through factor loadings	expected > 0.7
	Average Variance Extracted (AVE)	expected > 0.5
	Composite Reliability (CR)	to evaluate internal consistency Expected > 0.7
	Discriminant validity	assessed by comparing the square root of AVE with the correlations among constructs.
Evaluation of the Structural Model (Inner Model)	Nilai R-square	to assess the model's explanatory power
	Path coefficient and nilai t-statistic	obtained through a bootstrapping procedure
	Effect size (f^2) and predictive relevance (Q^2)	to evaluate the strength and predictive capability of the structural paths..

Results

Missing data was anticipated from the beginning by using a Google Form that was designed in such a way that respondents could not submit the questionnaire if there were questions that had not been answered. Thus, there were no blank data in the collected responses. Meanwhile, to detect outliers, a multiple outlier analysis was conducted which identified respondent data with ID 431, 440, 584, and 550 as significant outliers. These four data showed p values <0.001, which were 0.0000, 0.00032, 0.00057, and 0.00054, respectively. These results indicate that the data handling procedure has included steps to identify and address potential problems in the data prior to further analysis.

Validity and Reliability

Table 3. Measurement model parameter estimation

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Encouragement to Exercise	0.872	0.872	0.872	0.631
Empathy of sports participants	0.942	0.942	0.942	0.644
Sports Participation	0.843	0.849	0.844	0.644
Behavior in Exercise	0.918	0.920	0.919	0.655
Attitude Towards Sports	0.930	0.932	0.930	0.657

Based on the results of the reliability and construct validity tests, it can be concluded that the five research variables, namely Encouragement to Exercise, Empathy of Sports Participants, Sports Participation, Exercise Behavior, and Attitude Towards Sports, have a strong level of internal consistency and reliability with Cronbach's Alpha, rho_A, and Composite Reliability values above 0.8. In addition, the Average Variance Extracted (AVE) value which ranges from 0.631 to 0.657 indicates adequate convergent validity, which means that each variable successfully explains more than 50% of the variance in the related indicator. This indicates that the instrument used in this study is valid and reliable.

Table 4. Discriminant validity test (Fornell-Larcker Criterion)

	Exercise Motivation	Empathy of sports participants	Sports Participation	Exercise Behavior	Attitude Towards Sports
Encouragement to Exercise	0.794				
Empathy of sports participants	0.745	0.802			
Sports Participation	0.821	0.594	0.802		
Behavior in Exercise	0.755	0.947	0.620	0.809	
Attitude Towards Sports	0.826	0.739	0.860	0.757	0.811

Based on table 4 shows the results of the correlation analysis between variables related to sports, namely Encouragement to Exercise, Empathy of Sports Participants, Sports Participation, Exercise Behavior, and Attitude Towards Sports, with diagonal values as indicators of reliability (with values above 0.8 for all variables). The correlation between variables shows a strong positive relationship, as seen in

the high correlation between Exercise Behavior and Empathy of Sports Participants (0.947) and between Attitude Towards Sports and Sports Participation (0.860), which shows a close relationship between factors influencing behavior and attitudes in the context of sports.

Structural equation modelling analysis

The model testing results in Table 5 show that in general the model has a fairly good level of fit. The SRMR values in the Saturated Model (0.053) and Estimated Model (0.061) are below the general limit of 0.08, which indicates that there is a small residual difference between the observed data and the predicted data, so the model can be said to have a good fit. The NFI values of 0.874 and 0.870 respectively indicate a level of fit close to the standard value of 0.90, indicating that the model has an acceptable fit, although there is still room for improvement to achieve a more ideal fit.

The difference between the d_ULS and d_G values in both models is relatively small, which indicates the overall stability of the model structure. Meanwhile, although the Chi-Square value of the Saturated Model (2229.835) is lower than that of the Estimated Model (2296.382), without additional information such as significance values or the ratio to degrees of freedom (χ^2/df), interpretation of the model fit of this indicator is limited. Overall, the model shows an adequate level of fit, but needs to be supported by a more comprehensive interpretation of each indicator to make the model assessment more robust and accurate.

Table 5. FIT Model

	Saturated Model	Estimated Model
SRMR	0.053	0.061
d_ULS	1,245	1,631
d_G	0.605	0.641
Chi-Square	2229,835	2296,382
NFI	0.874	0.870

Table 6. R-Square

	R Square	R Square Adjusted
Encouragement to Exercise	0.683	0.682
Empathy of sports participants	0.901	0.900
Sports Participation	0.778	0.777
Behavior in Exercise	0.572	0.572

Table 6 shows the R Square and Adjusted R Square values for four variables: Encouragement to Exercise, Participant Empathy, Exercise Participation, and Exercise Behavior. The R Square values are high for Participant Empathy (0.901) and Exercise Participation (0.778), indicating that the independent variables can explain 90.1% and 77.8% of the variance in these variables. Encouragement to Exercise has an R Square value of 0.683 and Exercise Behavior of 0.572, which also show significant contributions. Overall, the Adjusted R Square values are very close to the R Square, indicating that the model fits well without too much bias.

Table 7. Construct cross-validated redundancy

	SSO	SSE	Q^2 (=1-SSE/SSO)	Information
Encouragement to Exercise	2740,000	1649,207	0.398	Moderate
Empathy of sports participants	6165,000	2857,538	0.536	Pretty good
Sports Participation	2055,000	1087,592	0.471	Pretty good
Behavior in Exercise	4110,000	2695,305	0.344	Moderate
Attitude Towards Sports	4795,000	4795,000		

Table 7 displays the SSO (Sum of Squares Observed), SSE (Sum of Squares Error), and Q^2 values for the four study variables: Encouragement to Exercise, Participant Empathy, Sport Participation, Sport Behavior, and Attitude Toward Sport. The Q^2 value, calculated as 1 - (SSE/SSO), measures the predictive relevance of the model. Participant Empathy and Sport Participation had Q^2 above 0.5 (0.536 and 0.471, respectively), indicating moderate prediction. Encouragement to Exercise and Behavior in Sport had Q^2 in the range of 0.3–0.4 (0.398 and 0.344, respectively), indicating moderate prediction.

Hypothesis Testing

Based on the results of hypothesis testing in Table 8, a number of important findings were obtained regarding the relationship between the variables studied. First, attitude towards sport was found to have a significant effect on behaviour in sport (β = 0.757, p < 0.001), participation in sport (β = 0.571, p < 0.001), but did not directly affect empathy of sport participants (β = 0.085, p = 0.323). The findings suggest that the more positive one's attitude towards sport is, the higher the tendency to actively engage and exhibit positive behaviours in sport activities, but the attitude is not strong enough to directly shape empathy.

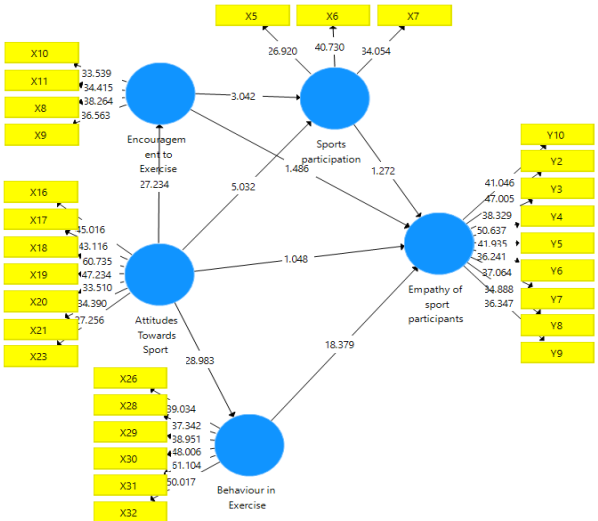
Furthermore, attitudes towards sports activities also significantly influenced the drive to exercise (β = 0.826, p < 0.001), which in turn promoted participation in sports (β = 0.349, p = 0.003). However, the drive did not significantly influence the empathy of sports participants (β = 0.104, p = 0.131), suggesting that the motivation to exercise does not always go hand in hand with the development of social values such as empathy.

In addition, participation in sports also did not show a significant influence on empathy (β = -0.102, p = 0.167), and even tended to be negative, indicating that involvement in sports activities alone may not develop empathy towards fellow participants. In contrast, exercise behaviour showed the strongest and most significant influence on participants' empathy (β = 0.867, p < 0.001). This underscores the importance of actual sport behaviours - such as cooperation, sportsmanship and social interaction - in fostering empathy. The results of this test can be seen in the form of a Model of PLS-SEM path analysis diagram displayed in Figure 2.

Table 8. Path coefficients (Mean, STDEV, T-Values).

s	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Encouragement to Exercise -> Empathy of Sports Participants	0.104	0.106	0.068	1,486	0.131
Encouragement to Exercise -> Sports Participation	0.349	0.341	0.116	3,042	0.003
Sports Participation -> Empathy of sports participants	-0.102	-0.097	0.073	1,272	0.167
Behavior in Exercise -> Empathy of sports participants	0.867	0.872	0.049	18,379	0,000
Attitude Towards Exercise -> Encouragement to Exercise	0.826	0.826	0.031	27,234	0,000
Attitude Towards Sport -> Empathy of sport participants	0.085	0.074	0.086	1,084	0.323
Attitude Towards Sport -> Sport Participation	0.571	0.578	0.114	5,032	0,000
Attitude Towards Sport -> Behaviour in Exercise	0.757	0.755	0.027	28,983	0,000

Figure 2. Model of PLS-SEM path analysis diagram



Discussion

The Effect of Encouragement to Exercise on Sports Participant Empathy

The results of this study indicate that the relationship between encouragement to exercise and the empathy of sports participants has a positive coefficient (β = 0.104), suggesting a tendency for encouragement to increase empathy. However, this relationship is not statistically significant (p = 0.131; T = 1.486), indicating that encouragement alone does not have a direct impact on the development of empathy among sports participants. This finding implies that while motivational support may create a favorable environment for physical activity, it is not sufficient by itself to foster socio-emotional outcomes such as empathy.

One possible explanation is that encouragement must be complemented by strategies that enhance self-efficacy to yield meaningful psychological or behavioral changes(Neil-Sztramko et al., 2017). Previous research has demonstrated that structured motivational strategies—such as goal setting, personalized feedback, and skill development—are more effective in promoting exercise adherence than encouragement alone, especially among individuals with chronic health conditions (Nicolson et al., 2017; Peiris et al., 2023). Additionally, Aro et al.(2018) found that older adults with limited social support may not respond positively to encouragement unless it is supported by strong personal motivation and a sense of belonging within a social network.

Therefore, it can be concluded that while encouragement to exercise has potential, it does not directly influence the empathy of sports participants. The development of empathy likely involves more complex mechanisms, including behavioral engagement, interpersonal interaction during exercise, and consistency in participation—factors that are often shaped by self-regulation and social connectedness. In this context, encouragement may act as an indirect factor, mediated by elements such as exercise adherence, quality of interaction, and emotional involvement in the activity.

The Influence of Exercise Encouragement on Sports Participation

The results of this study demonstrate that encouragement to exercise has a significant and positive influence on sports participation (β = 0.349, p = 0.003; T = 3.042). This indicates that individuals who receive support or motivation to engage in physical activity are more likely to participate in sports. The strength of this relationship suggests that encouragement plays an important role in fostering engagement in physical activities.

These findings are consistent with previous studies that have highlighted the impact of motivational support on increasing sports participation, particularly among adolescents. For instance, Kwon (2018) emphasized that encouragement to exercise contributes to mental stability and supports personality development, which are crucial factors in promoting consistent involvement in sports among youth. Furthermore, the internalization of positive sports values can enhance individual loyalty and motivation, as these values help shape a deeper commitment to regular participation(Oh, 2023). Awareness and appreciation of sports values can moderate the relationship between behavior and long-term adherence to sports, suggesting that encouragement coupled with value-based education may yield better results.

Therefore, encouragement to exercise should be seen not only as a motivational trigger but also as a catalyst for building a supportive social environment that promotes active lifestyles. Effective exercise programs should go beyond the physical benefits and incorporate elements that foster character development, teamwork, and positive social interactions. By doing so, such programs can strengthen individuals' willingness and motivation to consistently engage in sports activities.

Sports Participation on Empathy Sports Participant

The results of the study indicate that sports participation does not have a significant effect on the empathy of sports participants (β = -0.102, p = 0.167; T = 1.272). Although the coefficient is negative, the relationship between these variables is weak and statistically insignificant. This suggests that mere participation in sports activities is not sufficient to foster empathy among participants. While sports are often assumed to encourage teamwork, cooperation, and emotional understanding, these outcomes are not guaranteed without supportive behavioral and social frameworks.

One possible explanation is that sports environments can sometimes foster competitiveness without adequately emphasizing emotional regulation or respect for others. As highlighted by Kaye and Hoar (2015), antisocial behaviors in sports—such as aggression, taunting, or unsportsmanlike conduct—are not uncommon, particularly in high-stakes or competitive settings. These behaviors may hinder the development of empathy, as athletes may prioritize winning over interpersonal understanding.

Furthermore, Wheeler (2011) emphasized that athletes' satisfaction with their sports experience plays a key role in sustaining their engagement. If participation is accompanied by negative experiences such as disrespect or hostility, it may not only reduce empathy but also decrease motivation and commitment to the sport. These findings suggest that participation alone is insufficient; the quality of the sporting experience, including emotional support, team values, and respectful interaction, is crucial in shaping pro-social outcomes like empathy.

In conclusion, developing empathy through sports participation requires intentional efforts to cultivate positive behaviors and emotional awareness. Coaches, educators, and sports organizers should design programs that explicitly promote respectful conduct, emotional intelligence, and team cohesion to ensure that participation in sports becomes a meaningful avenue for social and emotional development.

Sports Behavior on Sports Participants' Empathy

The results of the study reveal that sports behavior has a very strong and statistically significant influence on the empathy of sports participants ($\beta = 0.867$, $p = 0.000$; $T = 18.379$). This indicates that positive behavior exhibited during sports activities plays a crucial role in fostering empathetic attitudes among participants. In other words, individuals who demonstrate appropriate, respectful, and constructive behaviors in sports contexts are more likely to develop the ability to understand and relate to the emotions of others.

These findings are supported by previous studies showing that athletes, whether participating in individual or team sports, tend to exhibit higher levels of empathy compared to non-athletes. For instance, Buğdaycı et al. found that active engagement in sports helps strengthen individuals' emotional awareness and sensitivity towards others, suggesting that positive sports behavior directly contributes to social-emotional development(Buğdayci et al., 2019). Moreover, Kwon highlighted that sports activities can reduce aggression and promote mental stability, particularly among adolescents, which in turn supports the development of empathy(Kwon, 2018). This may be partly due to the activation of the parasympathetic nervous system during physical activity, which calms the body and mind, facilitating emotional regulation and prosocial behaviors.

Therefore, fostering positive sports behavior is essential not only for fair play and discipline but also for cultivating empathy and emotional intelligence among participants. Sports programs should place equal emphasis on character education and social development alongside physical training. By doing so, they can create environments that not only build physical competence but also nurture empathy, respect, and meaningful interpersonal connections.

Attitudes Towards Sport and Towards Encouragement to Exercise

The results of the study indicate that attitudes towards sport have a very strong and statistically significant influence on encouragement to exercise ($\beta = 0.826$, $p = 0.000$; $T = 27.234$). This suggests that individuals who hold positive attitudes toward sport are more likely to feel motivated and encouraged to engage in physical activity. In other words, the way individuals perceive and value sport plays a key role in shaping their willingness to participate in exercise-related behaviors.

These findings are supported by several previous studies. Research has shown that attitudes toward sport and motivation to exercise are closely interrelated, and both significantly influence participation in physical activity. Üstün noted that many students discontinue their involvement in sports after entering college, and that understanding their attitudes and motivations is essential to sustaining participation(Üstün, 2018). A positive perception of sport can enhance one's intention to continue exercising by reinforcing the perceived benefits and enjoyment derived from physical activity.

Additionally, Hsu and Valentová found that intrinsic motivations—such as enjoyment and personal interest—were stronger among individuals who actively engage in sport, compared to those who exercise

purely for external reasons such as health or appearance(Hsu & Valentová, 2020). This underscores the importance of cultivating a positive and enjoyable sport experience to foster long-term motivation.

Moreover, Schorno et al. emphasized that individualized sports counseling, which considers participants' personal preferences and interests, can enhance emotional well-being and help maintain exercise behavior over time(Schorno et al., 2022). These insights reinforce the importance of creating supportive, engaging, and personalized sport environments to help individuals develop positive attitudes and sustained motivation toward physical activity.

In conclusion, a positive attitude toward sport is a foundational element that drives encouragement to exercise. Coaches, educators, and program designers should focus not only on the physical benefits of exercise but also on promoting enjoyment, autonomy, and personal relevance in sport activities to effectively motivate and retain participants.

Sports attitudes towards sports participant empathy

The results of this study demonstrate that attitudes towards sport do not have a statistically significant effect on the empathy of sports participants (β = 0.085, p = 0.323; T = 1.084). Although the relationship shows a positive direction, the effect is weak and not significant, suggesting that having a favorable attitude toward sport alone may not be sufficient to foster empathetic behavior among participants.

This finding is in line with previous research. Kalkan, in a study involving high school students, found that although attitudes toward physical education and sports were predictors of empathy, their overall effect was relatively limited(Kalkan, 2022). Similarly, research by Çiriş and Başkonuş revealed that even though teachers who participated in sports tended to have more positive attitudes toward sports, this did not correlate with higher levels of empathy(Çiriş & Başkonuş, 2020). The findings suggested that while sports involvement may enhance perceptions of sport, it does not automatically translate into increased empathetic tendencies.

In addition, Ohali observed a discrepancy between sports participation and attitudes among university students, noting that some participants held negative attitudes despite actively engaging in sports(Ohali, 2020). This highlights the complexity of the relationship and suggests that empathy development may be more influenced by contextual and personal factors, such as meaningful social interactions, emotional experiences during play, or the presence of explicit character education in sports settings.

In summary, although a positive attitude toward sport may reflect an appreciation for physical activity, it does not appear to directly shape empathetic behavior. Other mediating factors—such as emotional intelligence, social dynamics, and structured behavioral guidance—may play a more significant role in influencing empathy among sports participants.

Sports attitudes towards sports participation

The results of this study indicate that attitudes toward sport have a significant and substantial influence on sports participation (β = 0.571, p = 0.000; T = 5.032). This finding confirms that individuals with more positive attitudes towards sport are more likely to actively participate in physical activities. A strong and favorable perception of sport appears to serve as a key motivational driver for involvement in sporting activities.

This relationship is supported by previous research. Yin et al found that children who possess positive attitudes toward sport often receive encouragement from their parents, which not only boosts their motivation but also contributes to improved physical health outcomes, such as better body mass index (BMI)(Yin et al., 2021). The study underscores the role of parental influence in shaping children's views and habits related to physical activity.

Additionally, Timperio et al. emphasized that both the physical environment and emotional support from family members are closely associated with increased sports participation among youth(Timperio et al., 2013). These elements help shape beliefs, perceived behavioral control, and enjoyment of physical activity, all of which are important psychological precursors to participation.

Furthermore, Karahüseyinoğlu found that individuals who regularly engage in sports activities tend to hold more positive attitudes towards exercise compared to those who are less active(Karahüseyinoğlu,

2019). This suggests a reinforcing cycle: participation in sport fosters a more favorable outlook, which in turn encourages continued involvement.

In conclusion, the development of positive attitudes towards sport plays a critical role in enhancing sports participation. Efforts to promote sport should therefore focus not only on providing access but also on cultivating favorable attitudes through family engagement, supportive environments, and meaningful sport experiences. Such strategies can help sustain long-term involvement in physical activity, ultimately supporting individual well-being and public health.

Attitudes towards sport and sports behavior

The results of this study demonstrate that attitudes toward sport have a very strong and significant influence on sports behavior ($\beta = 0.780$, $p = 0.000$; $T = 6.927$). This indicates that individuals who hold positive attitudes toward sport tend to engage in more constructive and consistent sports behaviors. Positive attitudes serve not only as internal motivators but also shape the way individuals approach and maintain their engagement in physical activities.

This finding aligns with research conducted by Jones and Norman, who highlighted that experiential attitudes—those based on emotional responses and direct experiences—play a key role in shaping future intentions and behaviors related to sports(Jones & Norman, 2021). Similarly, Conner et al. found that affective attitudes, which involve feelings and emotions toward exercise, are more influential than cognitive attitudes in driving actual exercise behavior(Conner et al., 2011). These findings emphasize the importance of emotional engagement in promoting active lifestyles.

Moreover, psychological traits such as resilience and intrinsic motivation also contribute to shaping positive attitudes toward sport. Liu et al. found that students with stronger psychological characteristics are better equipped to maintain favorable attitudes and are more likely to persist in physical activity even when faced with obstacles(Liu et al., 2022). This suggests that fostering these traits alongside positive attitudes can strengthen sports behavior over time.

In conclusion, attitudes toward sport are a key determinant of sports behavior. Interventions aiming to improve sports participation and consistency should prioritize the enhancement of affective and experiential attitudes. Encouraging positive emotional experiences in sport settings, promoting resilience, and fostering intrinsic motivation may lead to sustained behavioral changes and overall improvements in physical health and psychological well-being.

Conclusions

This study aimed to examine the relationships among encouragement to exercise, sports attitudes, sports behavior, sports participation, and empathy among sports participants. The findings revealed several significant relationships that highlight important dynamics in the context of physical activity and social-emotional development.

Notably, attitudes toward sport were found to have a strong and significant influence on both sports behavior and sports participation, indicating that fostering positive attitudes may enhance both engagement in physical activity and the quality of behavior during sports. Similarly, sports behavior demonstrated a significant and strong association with empathy, suggesting that how individuals behave during sports may play a meaningful role in developing social-emotional skills such as empathy.

On the other hand, some variables did not show statistically significant relationships, including the effects of encouragement to exercise and sports participation on empathy. These non-significant findings suggest that merely participating in sports or receiving encouragement may not be sufficient to foster empathy among participants. It is possible that empathy development requires more structured interventions or context-specific experiences, such as reflective practices, guided teamwork, or values-based coaching. However, further research is needed to explore these possibilities.

It is important to note that the current study is correlational in nature, and therefore does not allow for causal interpretations. While significant associations were found, these do not imply that one variable directly causes changes in another. The observed relationships should be understood as statistical associations that may be influenced by other underlying factors.

In sum, this study underscores the importance of positive attitudes and constructive behaviors in sports contexts, while also highlighting the limitations of general encouragement or participation in promoting empathy. Future research could explore the role of mediating factors, such as emotional regulation or team dynamics, and utilize longitudinal or experimental designs to understand causal pathways better.

Acknowledgements

I would like to express my deepest gratitude to Universitas Negeri Padang through the Indonesian collaborative research funding that has provided financial support. We would also like to thank all parties involved in this research for their participation and support.

Financing

This research article is financially supported by LPTK Collaborative Research of Universitas Negeri Padang with Decision No 724/UN35/KU/2024.

References

Aktaş, O., KARAOĞLAN, M. F., & Ünlü, H. (2023). Antrenör Pedagojik Yeterliliğin Duygu Düzenleme Üzerindeki Etkisi: Genç Judo Sporcuları Üzerine Bir Araştırma. Spor Bilimleri Araştırmaları Dergisi, 8(3), 435–447. https://doi.org/10.25307/jssr.1246104

Arı, A., & Öz, N. D. (2023). Investigation of Social Capital, Empathy and Individual Responsibility Parameters in Dual Career Athletes: An Exploratory Study. Physical Education of Students, 27(2), 89–96. https://doi.org/10.15561/20755279.2023.0205

Aro, A. A., Agbo, S., & Omole, O. B. (2018). Factors Influencing Regular Physical Exercise Among the Elderly in Residential Care Facilities in a South African Health District. African Journal of Primary Health Care & Family Medicine, 10(1). https://doi.org/10.4102/phcfm.v10i1.1493

Buğdayci, S., Abakay, U., & Abakay, Z. (2019). Examining the Empathetic Tendency Levels of the Athletes Dealing With Team and Individual Sports. Turkish Journal of Sport and Exercise, 192–195. https://doi.org/10.15314/tsed.573556

Cahyono, H. D., Siradjuddin, I., & Setiawan, B. (2020). Kontrol Lengan Robot Badminton dan Analisis Kinematika. Jurnal Elektronika Dan Otomasi Industri, 2(2). https://doi.org/10.33795/elkolind.v2i2.57

Chin, W. W., & Newsted, P. R. (1998). The partial least squares approach to structural equation modeling. Modern methods for business research. Statistical Strategies for Small Sample Research, January 1998, 295-336. http://books.google.com.sg/books?hl=en&lr=&id=EDZ5AgAAQBAJ&oi=fnd&pg=PA295&dq=chin+1998+PLS&ots=47qB7ro0np&sig=rihQBibvT6S-Lsj1H9txe9dX6Zk#v=onepage&q&f=false

Çiriş, V., & Başkonuş, T. (2020). Examining the Attitudes of Classroom Teachers Towards Sports: Example of Kırşehir Province. Journal of Education and Learning, 9(5), 248. https://doi.org/10.5539/jel.v9n5p248

Clancy, S., Owusu-Sekyere, F., Shelley, J., Veltmaat, A., De Maria, A., & Petróczi, A. (2022). The role of personal commitment to integrity in clean sport and anti-doping. Performance Enhancement and Health, 10(4). https://doi.org/10.1016/j.peh.2022.100232

Conner, M., Rhodes, R. E., Morris, B., McEachan, R., & Lawton, R. (2011). Changing Exercise Through Targeting Affective or Cognitive Attitudes. Psychology and Health, 26(2), 133–149. https://doi.org/10.1080/08870446.2011.531570

Darmadi, D., Gaffar, M. F., Ma'mun, A., & Nuryadi. (2020). Human Resource Development Through Novice Coach Education and Training in Indonesia. International Journal of Human Movement and Sports Sciences. https://doi.org/10.13189/saj.2020.080502

Espinoza, S. M., Martin, C. L., Eisenberg, M. E., Borowsky, I. W., McMorris, B. J., & Hooper, L. (2023). Internal and Social Assets, Weight-Based Bullying, Sport, and Activity Among Female Adolescents. Women in Sport and Physical Activity Journal, 31(2), 82–91. https://doi.org/10.1123/wspaj.2022-0047

Ferri-Caruana, A., Millán-González, L., García-Massó, X., Pérez-Nombela, S., Pellicer-Chenoll, M., & Serra-Añó, P. (2020). Motivation to Physical Exercise in Manual Wheelchair Users With Paraplegia. Topics in Spinal Cord Injury Rehabilitation, 26(1), 1–10. https://doi.org/10.1310/sci2601-01

Hannus, A. (2012). Preliminary Evidence for Relations Between Motivation and Beliefs Related to Exercise Dependence. Acta Kinesiologiae Universitatis Tartuensis, 18, 68. https://doi.org/10.12697/akut.2012.18.08

Hasanuddin, Saori, S., Alghamdi, A. A., & Fahlevi, M. (2023). Influential Factors on Student Satisfaction in High School Sports Education: Unravelling the Roles of Instructor Empathy, System Quality, and Reputation. REVISTA DE PSICOLOGIA DEL DEPORTE, 32(3), 29–41.

Hsu, R. M. C. S., & Valentová, J. V. (2020). Motivation for Different Physical Activities: A Comparison Among Sports, Exercises and Body/Movement Practices. Psicologia Usp, 31. https://doi.org/10.1590/0103-6564e190153

Jones, G., & Norman, P. (2021). Predicting Exercise After University: An Application of the Reasoned Action Approach Across a Significant Life Transition. Psychology Health & Medicine, 27(7), 1495–1506. https://doi.org/10.1080/13548506.2021.1890160

Kalkan, N. (2022). Investigation of the Effect of High School Students' Attitudes to Physical Education Course on Empathic Behavior in Sports Environment. Education Quarterly Reviews. https://doi.org/10.31014/aior.1993.05.01.444

Karahüseyinoğlu, M. F. (2019). Investigation of the Attitudes of Academicians Towards Sports. Asian Journal of Education and Training, 5(4), 589–594. https://doi.org/10.20448/journal.522.2019.54.589.594

Kaye, M. P., & Hoar, S. (2015). Antisocial Sport Behaviors Survey: Instrument Development and Initial Validation. Journal of Sport and Exercise Psychology, 37(2), 164–179. https://doi.org/10.1123/jsep.2014-0057

Kwon, S. J. (2018). A relationship between personality and empathy in teenagers' school sports club participation. JOURNAL OF EXERCISE REHABILITATION, 14(5), 746–757. https://doi.org/10.12965/jer.1836320.160

Liu, M., Li, X., & He, Z. (2022). Self-Control Mediates, and Mobile Phone Dependence Moderates, the Relationship Between Psychological Capital and Attitudes Toward Physical Exercise Among Chinese University Students. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.888175

Neil-Sztramko, S., Winters-Stone, K. M., Bland, K. A., & Campbell, K. L. (2017). Updated Systematic Review of Exercise Studies in Breast Cancer Survivors: Attention to the Principles of Exercise Training. British Journal of Sports Medicine, 53(8), 504–512. https://doi.org/10.1136/bjsports-2017-098389

Nicolson, P. J., Bennell, K. L., Dobson, F., Ginckel, A. V, Holden, M., & Hinman, R. S. (2017). Interventions to Increase Adherence to Therapeutic Exercise in Older Adults With Low Back Pain and/or Hip/Knee Osteoarthritis: A Systematic Review and Meta-Analysis. British Journal of Sports Medicine, 51(10), 791–799. https://doi.org/10.1136/bjsports-2016-096458

Oh, Y. (2023). Team Cohesion in Individual/Team Sports Athletes: Transformational Leadership and the Role of Social Norms. Healthcare. https://doi.org/10.3390/healthcare11060792

Ohali, H. H. A. (2020). The Attitude of University Students to Participating in Sports for All in Saudi Arabia. Journal of Educational and Social Research, 10(6), 202. https://doi.org/10.36941/jesr-2020-0120

Othman, M. S., Ludin, A. F. M., Chen, L. L., Hossain, H., Halim, I., Sameeha, M. J., & Tahir, A. R. M. (2022). Motivations, Barriers and Exercise Preferences Among Female Undergraduates: A Need Assessment Analysis. Plos One, 17(2), e0264158. https://doi.org/10.1371/journal.pone.0264158

Pavlou, P. A., & Fygenson, M. (2006). Understanding and Predicting Electronic Commerce Adoption: An Extension of the Theory of Planned Behavior. MIS Q. https://api.semanticscholar.org/CorpusID:16192025

Peiris, C. L., Gallagher, A., Taylor, N. F., & McLean, S. (2023). Behavior Change Techniques Improve Adherence to Physical Activity Recommendations for Adults With Metabolic Syndrome: A Systematic Review. Patient Preference and Adherence, Volume 17, 689–697. https://doi.org/10.2147/ppa.s393174

Purc-Stephenson, R. J., Zimmerman, T. M. J., & Edwards, R. S. (2022). Motivation to Train During a Pandemic: The Role of Fitness Resources, Mental Health, and Motivational Profiles Among Student-

Athletes in Team Sports. Frontiers in Sports and Active Living, 4. https://doi.org/10.3389/fspor.2022.954086

Gómez Sánchez, V., Padial Ruz, R., Gentil Adarve, M., & Chacón Zagalaz, J. (2019). Implicaciones del Deporte Federado hacia la Empatía y Actitud a la Educación Física en Adolescentes (Implications of Federated Sports towards Empathy and Attitude to Physical Education in Adolescents). *Retos*, *36*, 412–417. https://doi.org/10.47197/retos.v36i36.71582

Schorno, N., Gut, V., Conzelmann, A., & Schmid, J. (2022). Effectiveness of Individual Exercise and Sport Counseling Based on Motives and Goals: A Randomized Controlled Trial. Journal of Sport and Exercise Psychology, 44(2), 103–115. https://doi.org/10.1123/jsep.2021-0018

Schüler, J., Knechtle, B., & Wegner, M. (2018). Antecedents of Exercise Dependence in Ultra-Endurance Sports: Reduced Basic Need Satisfaction and Avoidance-Motivated Self-Control. Frontiers in Psychology, 9. https://doi.org/10.3389/fpsyg.2018.01275

Sepdanius, E., Shafie, M. S. Bin, Nor, M. A. B. M., Sidi, M. A. B. M., Sanuddin, N. D. B., Rifki, M. S., & Afriani, R. (2024). Moderation of empathy in sport on athletes' education and performance: a systematic review. Retos, 59, 602–607. https://doi.org/10.47197/retos.v59.108325

Soni, M., Wijeratne, T., & Ackland, D. C. (2021). The Effect of Real-Time Video-Based Engagement and Feedback During Pedaling on Cadence Control and Exercise Motivation: A Proof-of-Concept Study. Bioengineering, 8(7), 95. https://doi.org/10.3390/bioengineering8070095

Teixeira, H., Palma, M., Messias, P., Dias, P., Fonseca, C., Fernandes, M., de Sousa, L., & Ferreira, R. (2022). Contributions to Rehabilitation Nursing Care for the Elderly with Hip Fracture. In J. GarciaAlonso & C. Fonseca (Eds.), GERONTECHNOLOGY IV (Issue 4th International Workshop on Gerontechnology (IWoG), pp. 296–306). https://doi.org/10.1007/978-3-030-97524-1_28

Timperio, A., Stralen, M. M. v., Brug, J., Bere, E., Chinapaw, M. J. M., Bourdeaudhuij, I. D., Jan, N., Maes, L., Manios, Y., Moreno, L. A., Salmon, J., & Velde, S. J. t. (2013). Direct and Indirect Associations Between the Family Physical Activity Environment and Sports Participation Among 10–12 Year-Old European Children: Testing the EnRG Framework in the ENERGY Project. International Journal of Behavioral Nutrition and Physical Activity, 10(1), 15. https://doi.org/10.1186/1479-5868-10-15

Üstün, Ü. D. (2018). Participation Motivation in University Students Who Engage in Different Team Sports. World Journal of Education, 8(3), 12. https://doi.org/10.5430/wje.v8n3p12

Wheeler, S. (2011). The Significance of Family Culture for Sports Participation. International Review for the Sociology of Sport, 47(2), 235–252. https://doi.org/10.1177/1012690211403196

Yin, L., Chen, P., Wang, K., Zhang, T., Liu, H., Jinxin, Y., Wen-yun, L. U., & Luo, J. (2021). The Influence of Family Sports Attitude on Children's Sports Participation, Screen Time, and Body Mass Index. Frontiers in Psychology, 12. https://doi.org/10.3389/fpsyg.2021.697358

Authors' and translators' details:

Muhamad Sazeli Rifki	msr_rifki@fik.unp.ac.id	Author
Anton Komaini	antonkomaini@fik.unp.ac.id	Author
Surya Adi Saputra	Surya.adi.fik@um.ac.id	Author
Endang Sepdanius	endangsepdanius@fik.unp.ac.id	Author
Mert Kurnaz	Mertkurnaz53@gmail.com	Author