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Exploring Factors Affecting Physical Health Perception Through Sports Participation: A PLS-SEM Approach

Exploración de los factores que afectan la percepción de la salud física a través de la participación deportiva: un enfoque PLS-SEM

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Abstract. This study aims to test models related to the influence of self-leadership, social relationships, and sports skill orientation on perceived physical health through sports participation. Data analysis was analyzed using the Partial Least Square (PLS) method by determining content validity, Average Variance Extracted (AVE), Inner Model, and Hypothesis testing. 1,351 volunteers participated in this study. They are from 18 regions in West Sumatra. Data collection techniques in this study used survey techniques through google forms and circulated via WhatsApp social media. The results showed: 1) relationship has a significant effect on physical health perception (t-count> t-table) =13.437> 1.966. 2) Self-leadership has no significant effect on physical health perception (t-count < t-table) = 0.189 > 1.966. 3) Self Leadership has a significant effect on relationships (t-count> t-table) =20.598> 1.966. 4) Self Leadership has a significant effect on skill orientation (t-count> t-table) = 65.769> 1.966. 5) Skill Orientation has a significant effect on Physical Health Perception (t-count> t-table) =3.387> 1.966. 6) Skill Orientation has no significant effect on Relationship (t-count < t-table) =1.065 > 1.966. Thus, self-leadership does not directly influence physical health but affects social relationships and exercise skill orientation. These two variables directly affect people's perception of being physically healthy. The results of this study can be helpful for designing more effective strategies for improving perceptions of physical health through developing self-leadership, strengthening social relationships, and improving exercise skill orientation.
Keywords: Self Leadership, Social Relationship, Sport Skill, Perception of Physical Health

Resumen. Este estudio tiene como objetivo probar modelos relacionados con la influencia del autoliderazgo, las relaciones sociales y la orientación de habilidades deportivas en la salud física percibida a través de la participación deportiva. El análisis de datos se analizó utilizando el método de mínimos cuadrados parciales (PLS) que determina la validez de contenido, la varianza media extraída (AVE), el modelo interno y la prueba de hipótesis. 1.351 voluntarios participaron en este estudio. Vienen de 18 regiones en el oeste de Sumatra. Las técnicas de recopilación de datos en este estudio utilizaron técnicas de encuesta a través de Google Forms y se difundieron a través de las redes sociales de WhatsApp. Los resultados mostraron: 1) la relación tiene un efecto significativo en la percepción de la salud física (t-count > t-table) =13.437 > 1.966. 2) El autoliderazgo no tiene un efecto significativo sobre la percepción de la salud física (t-count < t-table) = 0,189 > 1,966. 3) El liderazgo autónomo tiene un efecto significativo en las relaciones (t-count > t-table) = 20.598 > 1.966. 4) La autonomía tiene un efecto significativo en la orientación de habilidades (t-count > t-table) = 65.769 > 1.966. 5) La orientación hacia las habilidades tiene un efecto significativo sobre la salud física percibida (t-count > t-table) = 3,387 > 1,966. 6) La orientación a la habilidad no tiene un efecto significativo en la relación (t-count <t-table) = 1,065 > 1,966. Así, el autoliderazgo no influye directamente en la salud física pero sí afecta las relaciones sociales y la orientación de las habilidades físicas. Estas dos variables inciden directamente en la percepción que tienen las personas de gozar de buena salud física. Los resultados de este estudio pueden ser útiles para diseñar estrategias más efectivas para mejorar las percepciones de la salud física mediante el desarrollo del autoliderazgo, el fortalecimiento de las relaciones sociales y la mejora de la orientación hacia las habilidades físicas.
Palabras clave: Autonomía, Relación social, Habilidad deportiva, Percepción de salud física

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Introduction

Physical health is the most significant part of life. Physical health is affected by many factors, namely internal and external factors. Internal factors are the influences that come from the individual himself or are affected by the function of the person's body. A person is said to be healthy if the body functions properly. Someone who has good physical health will be able to keep his mind(Sepdanius et al., 2018). Other internal factors, namely psychological, are related to one's ability to control and take action toward good health. This ability helps us in acting and making decisions, namely the ability to lead ourselves.

Self-leadership becomes the basis for the body to act and decide what to do. The study shows that self-leadership behaviour significantly affects job satisfaction, organizational commitment, and innovation(Sesen et al., 2017). In addition, a conceptual model showed how the construction of spirituality and self-leadership influence each other and impact mindset and self-efficacy (Godwin et al., 2016). Another research showed that self-leadership practices reduce students' attitudes towards stress levels. This relationship is moderated by problem-solving skills for students (Maykrantz & Houghton, 2020). Other research shows self-leadership as a cognitive resource for behaviour in protecting the health of populations at risk (Maykrantz et al., 2021). Thus, this factor is a part of determining whether a person is healthy throughout life. People with a leadership spirit can make decisions, and these people feel able to maintain a good lifestyle.

Another thing that can affect the state of physical health is social relationships. Social relations are also closely

related to one's encouragement to act(Méndez Sánchez et al., 2023). A person can have positive and negative behaviour. This can be influenced by the way the person relates to others, affecting the motivation to participate in sport(Moraes, 2022). The findings highlight the importance of close social relationships to determine sustainable behaviour in sports to foster a sense of friendship and eliminate feelings of loneliness in these activities (Engel et al., 2018). This social relationship sometimes becomes a turning point for someone to show their best performance in sports. Highlighting self-identity to maintain social relationships in sports teams can contribute to greater enjoyment of sports and reduce feelings of hopelessness in sports (Huang et al., 2018). Other research shows that the benefits of sports participation for young people in society are generally becoming more realistic(Bailey, 2005). In addition, findings from other studies show how social relations arise from sports participation in the educational classroom environment (Hasbrook, 2016). However, how big the impact of social relationships role in influencing a person to act in physical activity in achieving a degree of health is still poorly understood.

Someone's action to participate in sports activities is because they are interested in the sport or want to improve their sports skills(Rifki, M. S., Sepdanius, E., & Husni, 2020). A person's involvement in improving sports skills can indirectly enhance physical appearance and body health (Tompsett et al., 2017). Thus, studies show that sport and game-based education is a beneficial strategy for improving physical fitness related to health and skills in elementary school children (Jarani et al., 2016). Improving skill competence is a strategy for improving body composition and muscle fitness in male adolescents effectively (Smith et al., 2016). Involvement in sports to improve sports skills can also affect physical and psychological health (Halian et al., 2022). Other research findings suggest that exercise programs are beneficial to children's BMI and musculoskeletal fitness. Therefore, sports can be an alternative school-based program to complement traditional sports (Ye et al., 2018). In addition, sports physical activity also affects sleep quality and good emotional health (Sepdanius et al., 2023). The methods used in building sports skills can indirectly improve physical abilities and maintain physical health (Tulbure-Andone et al., 2020). Thus, a person's enjoyment of sports makes that person look for ways to stay active in sports to keep up the sports skills. Actively exercising is a way to get to good physical health.

This study aims to test the model related to the influence of self-leadership, social relationships, and sports skill orientation on perceived physical health through sports participation. From these objectives, several research questions were born that need to be answered in this study. 1) How social relationship affects physical health perception? 2) how self-leadership affects physical health perception, social relationship, and skill orientation? 3) How skill orientation affects physical health perception and social relationship? The results obtained are very important because they have updating value with the presence of a model that is identified as having a variable relationship with each other. The model produced in this study explains that a person's interest in participating in sports activities requires a good physical health perception value, which is influenced by several determinants that are interrelated with one another. Therefore, the results of this study become an idea and reference in providing input for public policy making to increase sports participation for the community.

Literature Review and Hypothesis

Social Relationship to physical health perception

Exercise significantly affects one's social relationships with others and society. Several studies have shown that sporting activities can improve social health, contribute to forming social networks and stimulate someone to be socially active in community groups (Skrok et al., 2019). Furthermore, research shows that participation in sporting activities has been associated with better psychological well-being and lower levels of psychological exhaustion (Hartley & Coffee, 2019). Moreover, another study proved that sports participation can strengthen social relationships, foster new friendships, and integrate into various social communities (Elmose-Østerlund et al., 2019). Furthermore, the highlight is that sports can help individuals bond with others and serve as a platform for social interaction, providing engaging topics of conversation during each exercise (Xiao, 2019). Moreover, the role of sports clubs is decisive in facilitating social contact and community well-being (Schallhorn et al., 2022). Overall, sports involvement showed a profound impact on social capital, social cohesion, and social well-being (Elmose-Østerlund et al., 2019).

H1: Social Relationship has a significant effect on physical health perception.

Self-Leadership on physical health perception, social relationship, and skill orientation

Self-leadership plays a significant role in perceptions of physical health. Several studies have shown that self-leadership and self-efficacy positively affect health-promoting physical activity (PA) (Tang et al., 2021). PA, in turn, has a beneficial impact on self-efficacy that plays a significant role in self-leadership (Tang et al., 2021). In addition, physical and mental health outcomes are usually affected by leadership style. For example, laissez-faire leadership is associated with poorer scores in physical and emotional role functioning and mental health, while transactional leadership is associated with higher vitality ratings (Sabbah et al., 2020). Studies have shown that self-leadership training increases commitment to exercise and intention to exercise, which improves physical health (Krampitz et al., 2023). In addition, it has been demonstrated that self-leadership effectiveness influences self-rated physical health. Otherwise, a lack of leadership

effectiveness negatively impacts physical health (Kuchenbaur & Peter, 2022). Overall, self-leadership and leadership approaches significantly impact how well people are physically confident.

H2: self-leadership has a significant effect on physical health perception

Self-leadership plays a substantial role in social relationships. According to previous research, different leadership philosophies can differently impact interpersonal interactions. For example, Studies showed that dictatorial leadership has a detrimental effect on job satisfaction. This effect is mediated through self-efficacy and leader-member exchange (Zhou et al., 2021). In addition, weaker social structural empowerment can neutralize the positive effects of leadership empowerment by reducing job purpose (Dennerlein, 2023). Ethical leadership has reduced unethical pro-organizational behaviours through social learning and exchange processes (Wang & Li, 2019). Studies showed that inclusive leadership, prioritizing teamwork and reciprocal relationships, causes higher employee engagement and well-being (Byrd, 2022). Inclusive leadership, impacting leader-member interaction, promotes pro-social rule-breaking through psychological safety and leadership identification. Connectivity and trust in interpersonal relationships are the result of effective leadership behaviours (Chong et al., 2022).

H3: Self Leadership has a significant effect on relationships

Self-leadership in sport skill orientation is a significant aspect of athlete development. Studies show that the training environment significantly influences life skills development and the psychological health of young athletes (Cronin & Allen, 2018). Coaches should encourage the development of various life skills, such as cooperation, goal planning, time management, emotional intelligence, interpersonal communication, social intelligence, leadership, and problem-solving. These skills affect players' psychological well-being (Cronin & Allen, 2018). Moreover, proper coaching practices predict athletes' leadership tendencies within the team. Team identification and task cohesion support these relationships (Backer et al., 2022). Therefore, it is crucial to encourage athlete leadership within the teams (Cotterill et al., 2022). Thus, improving athletes' well-being and performance requires developing self-leadership abilities and fostering a constructive coaching environment.

H4: Self Leadership has a significant effect on skill orientation

Skill Orientation on Physical Health Perception and Social Relationship

Perceptions of physical health are affected by many factors. Engaging in physical activity is associated with improved sports skills and indirectly affects perceptions of physical health (Ingold et al., 2020). Another study showed improvement in students' perceptions of their health can increase motivation to do physical exercise (Zhong et al., 2022). In addition, motor skills and competencies are closely linked to higher levels of physical fitness and physical activity in children and adolescents (Redondo-Gutiérrez et al., 2022). Moreover, physical activity is also associated with a sense of coherence, leading to reduced stress and better well-being (Moyers & Hagger, 2020). Overall, individuals' perceptions of physical health are influenced by physical activity improving sports skills or just participating sports.

H5: Skill Orientation has a significant effect on Physical Health Perception

Participation in skill-enhancing sports contributes to the development of various social relationships. Research shows that sport helps people develop skills; in leadership, problem-solving, interpersonal communication, emotional intelligence, goal-setting, and collaboration (Cronin & Allen, 2018). Furthermore, after-school sports skill development programs have proven to develop interpersonal skills and relationships among students from different cultural backgrounds (Carter-Thuillier et al., 2023). In addition, sports clubs are the root warriors in facilitating social contact, social cohesion, and community well-being (Schallhorn et al., 2022). Thus, sports participation has developed community social relations motivated by improving sports skills.

H6: Skill Orientation has a significant effect on social relations

It was concluded that sport has a significant positive impact on social relationships, psychological well-being, individual physical health perceptions, self-leadership and sport skill orientation. However, it is important to know how these factors relate to each other in influencing participants' perceived physical health in sport. Therefore, this study tests a model related to the factors that influence the perceived physical health of sport participants so that it can be used in designing sport policies for the community.

Method

Research design

This study aims to figure out factors related to perceptions of physical health related to involvement in sports activities. This study focuses on three influential factors; 1) self-leadership, marked by every action in sports activities associated with a leader figure; 2) social relations with the community that encourage participants to be involved in sports activities; and 3) sports involvement, affected by efforts to increase or maintain sports skills. The participants in this study were all people who contributed to sports activities at sports venues and when conducting the survey or after carrying out sports activities. In determining the minimum sample size, this research used proportion sampling. This approach involves determining the expected proportion in the population and the desired confidence level. The p-value is 9%, with a 95% confidence level. The p-value is taken from the estimated population proportion (p) based on data on the population of West Sumatra in 2022 (Sedarmayanti & Hidayat, 2011). Therefore, the number of

participants who participated in this study voluntarily was 1,351 people from 18 regencies/cities in the province of West Sumatra. The survey participants are those who are willing to take the time to fill out a questionnaire on the Google form sent via WhatsApp or scanning a barcode.

Research Structure and hypothesis

This study aims to find relationship between variables related to physical health with some influencing factors, namely self-leadership, social relationships, and sports skills orientation. The structure of this study is shown in Figure 1.

Definitions and measuring tools of the research dimensions

All dimensions in this study refer to the relevant literature to obtain operational definitions of the determined variables. The definitions and question items from this study are shown in table 1. The instrument in this study used a Likert scale with intervals of 1 to 5.

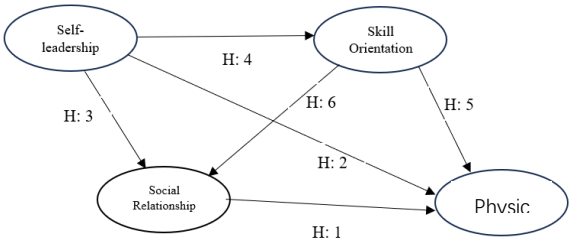

Figure 1. *Hypotheses and research models.*

Table 1.
Research Instruments

Self-Leadership		
Operational definition:		Statements:
A self-perception as a leader figure that triggers an individual to participate in sports activities	X28	I participate in sports activities to maintain my status as a leader.
	X29	I participate in sports activities to maintain my status as a public figure.
	X30	I participates in sports activities because I influence society.
	X31	I participate in sports activities to keep in touch with the people in society.
Social relations		
Operational definition:		Statements:
An individual's view of doing physical activity based on social interaction.	X32	I participate in sports activities to make friends.
	X33	During the pandemic, I continued to maintain communication in sports activities.
	X34	I promote sports to maintain my social relationship.
Sports Skills Orientation		
Operational definition:		Statements:
It is an act of exercising because of sports skills.	X35	I do sports to show my skills/abilities to others.
	X36	I continue to improve my skills in sports activities to gain recognition.
Perception of Physical Health		
Operational definition:		Statements:
A person's view of their physical health based on the act of exercising	Y1	I exercise to improve my fitness
	Y2	I exercise to keep fit
	Y3	I exercise to increase my body's immunity to avoid viruses.

Methods of data collection and analysis

Partial Least Squares Structural Equation Modelling (PLS-SEM) is an analytical technique for detecting or building predictive models. Because in this study testing a model, PLS-SEM is very appropriate to use as a data analysis technique. Especially for analyzing causality models between latent variables in exploratory research (Pavlou & Fygenson, 2006). The PLS sample size requirement should be ten times the dimensions of the question items (Chin & Newsted, 1998). According to the principle of statistical conservatism, a proper study should use a larger sample size. Therefore, the minimum sample size for this research must be at least 120.

The sample for this study was 1,351. It met the minimum sample size requirement. Data in this study was analyzed using the Partial Least Square (PLS) method, using SmartPLS version 3 software.

The measurement model used was to test the validity of the variables, including content validity, convergent validity, Average Variance Extracted (AVE), Discriminant Validity, looking for Reliability, Inner Model, and Testing hypothesis.

Result

Background Variable Analysis

Table 2 describes the descriptive data from the participants of the study. 54% of the participants were male, while 46% were female. Regarding marital status, only 8% were married, and 92% were single. Furthermore, data related to work, educational history, type of exercise performed, frequency of doing exercise, duration, and intensity performing exercise. The information is explained in Table 2 below.

Validity and reliability

The factor loading test ensures that the measurement used is feasible as a measurement with a value above > 0.60 (Hair et al., 2012). Based on Table 3, the factor loading value has exceeded the limit of 0.60. It means that the measurement is valid. Then, the composite reliability (CR) value for all constructs is above 0.70. It indicates that all variables are reliable (Hair et al., 2011). It is reinforced by Cronbach's Alpha values for all constructs are above 0.60 (above the recommended value), which indicates that all variables are reliable (Hair et al., 2011).

Furthermore, the Average Variance Extracted (AVE) Output Value is higher than 0.50 (Hair et al., 2011) Besides, it is found that all constructs value are more than 0.50. Therefore, they are valid.

To determine whether the questions for each latent variable are not confounded by other latent variables, a validity discriminant test is performed. The variance extracted indicator is higher than the correlation involving these latent variables (Kock & Lynn, 2012). Table 4 shows that the variance extracted is higher than the correlation involving these latent variables. Therefore, all variables in this study have met discriminant validity.

Table 2.
Characteristics of the participants.

Age	±21,18 years old	
Gender	=N	%
Male	620	46%
Female	731	54%
Status		
Married	110	8%
Not Married	1,241	92%
Occupations		
High school students	392	29%
University Students	672	50%
Civil Servant	44	3%
Private Sector Employee	197	15%
Farmer/Gardener	46	3%
Educational background		
Elementary School	4	0%
Junior High School	231	17%
Senior High School	871	64%
Associate's degree	76	6%
Bachelor's Degree	151	11%
Graduate	10	1%
Postgraduate	8	1%
Sports Type		
Basketball	60	4%
Walk	189	12%
Jogging	325	21%
Cycling	90	6%
Badminton	124	8%
Volleyball	104	7%
Football	78	5%
Sepaktakraw/ kick volleyball	14	1%
Karate	20	1%
Taekwondo	12	1%
Swimming	49	3%
Gymnastics	59	4%
Pencaksilat	25	2%
Futsal	279	18%
GYM	25	2%
Others	78	5%
Frequency of exercise in a week		
Once	304	23%
Twice	352	26%
3 times	357	26%
4 times	118	9%
5 times	68	5%
6 times	28	2%
7 times	124	9%
Duration		
1 to 10 minutes	109	8%
10 to 20 minutes	229	17%
21 to 30 minutes	284	21%
31 to 60 minutes	331	25%
More than 1 hour	398	29%
Exercise Intensity		
Below 65% of maximum physical ability	437	32%
Between 70% to 80% of maximum physical ability	748	55%
More than 80% of maximum physical ability	166	12%

Table 3.
Measurement model parameter estimation.

Dimension	Question Item	Factor Loading	Cronbach's α	CR	AVE
Physical Health Perception	X28	0.824	0.810	0.810	0.587
	X29	0.815			
	X30	0.836			
	X31	0.861			
Relationship	X32	0.816	0.841	0.841	0.638
	X33	0.777			
	X34	0.803			
Self-Leadership	X35	0.886	0.902	0.901	0.696
	X36	0.893			
Skill Orientation	Y1	0.784	0.884	0.884	0.792
	Y2	0.736			
	Y3	0.778			

Table 4.
Discriminant validity test (Fornell–Larcker).

	Physical Health Perception	Relationship	Self-Leadership	Skill Orientation
Physical Health Perception	0.766			
Relationship	0.525	0.799		
Self-Leadership	0.326	0.752	0.834	
Skill Orientation	0.222	0.715	0.809	0.890

Structural Equation Modelling Analysis

The next step is determining the SRMR value. If the SRMR value is <0.10, the model of the observed variable relationships is suitable (Hu & Bentler, 1999). Table 5 shows that the SRMR value is 0.060 <0.10. Therefore, the model fit the observed relation. After that, we check the NFI (Normal Fit Index) value. In other words, the closer the value to 1, the more appropriate the model is built (Hu & Bentler, 1999). The table shows that the NFI value is 0.880. It is almost close to 1. Thus, the model built is very close to suitability.

Table 5.
Model FIT.

	Saturated Model	Estimated Model
SRMR	0.060	0.060
d_ULS	0.283	0.283
d_G	0.193	0.193
Chi-Square	1,405.099	1,405.099
NFI	0.880	0.880

After the estimated model meets the criteria for the outer model, the next step is to test the structural model (inner model). Table 6 is a table of R-square values or what is often called the Coefficient of Determination R^2:

Table 6.
R-Square

	R Square
Physical Health Perception	0.332
Relationship	0.747
Skill Orientation	0.826

Based on Table 6, the coefficient of determination R^2 or R-square in this study, namely social relationships, is influenced by self-leadership by 74.7%. Furthermore, the remaining 25.3% is affected by other factors not present in this model. In addition, orientation skills are influenced by self-leadership by 82.6% and the remaining 17.4% by other

factors not examined in this study. 33.22% of the Physical Health Perception is affected by leadership, orientation skills, and social relationships, and the remaining 66.78% is by other factors.

Then, apart from looking at the effect of each latent variable, it is also seen how well the model is in this study by calculating Q-square predictive relevance or Q^2(Vinzi et al., 2010), while the results of the calculations are as follows:

Table 7.
Construct Cross Validated redundancy

	SSO	SSE	Q^2 (=1-SSE/SSO)	Criteria
Physical Health Perception	4,053.000	3,482.767	0.141	Moderate
Relationship	4,053.000	2,373.643	0.414	Strong
Self-Leadership	5,404.000	5,404.000		
Skill Orientation	2,702.000	1,122.106	0.585	Strong
Q-square predictive relevance:			0.7911	

From the calculation in table 7 above, the Q2 value obtained is 0.7911 > 0, indicating that the model has **predictive relevance.**

Hypothesis testing

To determine whether the hypothesis is accepted, a statistical T-test is done with the value in Table 8. If the table value (1.966) is higher than the T-test value, the hypothesis is invalid/rejected (Vinzi et al., 2010). Table 5 shows the results of hypothesis testing by looking at the T Statistics value. 1) Social relationship has a significant effect on physical health perception because the value of t-count > t-table (13.437 > 1.966). 2) Self-leadership has no significant effect on physical health perception, as shown by t-count < t-table (0.189 < 1.966). 3) Self Leadership has a significant effect on the relationship since t-count > t-table (20.598 > 1.966). 4) Self Leadership has a significant effect on orientation skills, as seen from t - count > t-table (65.769 > 1.966). 5) Skill Orientation has a significant effect on Physical Health Perception since t-count > t-table (3.387 > 1.966). 6) Skill Orientation has no significant effect on Social Relationships, proven by t - count < t-table (1.065 < 1.966)

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

	O	M	STDEV	T Statistics	P Values	Hypothesis
Relationship -> Physical Health Perception	0.509	0.513	0.038	13.437	0.000	H1 Valid
Self-Leadership -> Physical Health Perception	0.010	0.008	0.053	0.189	0.850	H2 Invalid
Self-Leadership -> Relationship	0.708	0.707	0.034	20.598	0.000	H3 Valid
Self-Leadership -> Skill Orientation	0.811	0.811	0.012	65.769	0.000	H4 Valid
Skill Orientation -> Physical Health Perception	-0.135	-0.134	0.040	3.387	0.001	H5 Valid
Skill Orientation -> Relationship	0.043	0.043	0.040	1.065	0.288	H6 Invalid

Explanation; O : Original Sample. M : sample Mean

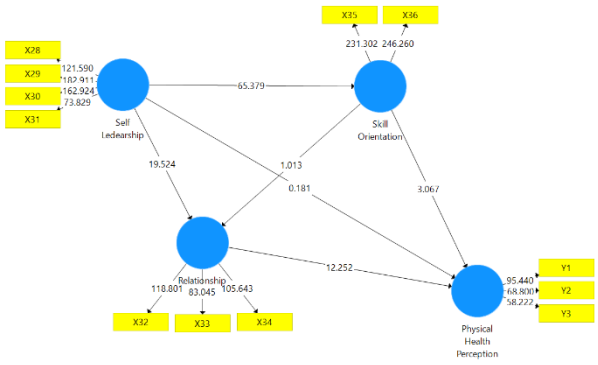

Figure 2. *Model of PLS-SEM path analysis diagram*

Discussion

The main objective of this research is to explore the factors that influence a person's perception of physical health through sports participation. This study explains that social relationships and skill orientation significantly influence perceptions of getting physical health with sports participation. Meanwhile, self-leadership does not significantly influence physical health perception. However, it affects social relationships and skill orientation. Meanwhile, skill orientation does not have a significant effect on social relationships. Based on the findings in this model, it can be explained in other studies that support these results.

First, based on the results, social relations are beneficial to physical health perceptions in sports activities. It is evidence that someone with high social relationships during the post-covid 19 pandemics has a good physical health perception by engaging in sports activities. Even though at a limited distance during the pandemic, research shows that there is no change in compensation for limited social relations because social relations are still intertwined with the use of technology (Gonçalves et al., 2012). In other words, this social relationship increases motivation to be healthy. Therefore, the person is motivated to carry out physical activities such as exercising together with the family and individually.

Second, self-leadership is the most significant part of acting. Based on the results of this study, it shows that self-

leadership does not have a direct, significant effect on perceptions of physical health in the post-pandemic period. It happens since leadership is influenced by each individual's mindset, responsibilities, and burdens (Aristayudha et al., 2021). Other research also shows that matters relating to self-leadership do not directly impact physical health perceptions but have another variable intervention, namely motivation to exercise first(Hoyland et al., 2021). In other words, someone with a mindset about sports is one way to get good physical health will carry out sports activities to achieve the physical health.

Third, the research results in this study show a positive influence on social relations in sports participation. This result is in line with the results of other studies that self-leadership is the key to achieving good social life participation (Neck et al., 2003). Then, self-leadership becomes the most crucial part of acting, influenced by social closeness after interaction and mutual support for one another (Grey et al., 2020). Thus, self-leadership has a role in social relations in the context of sports participation.

Fourth, self-leadership is a concept whose understanding and application vary for each individual. The results of the study show that self-leadership has a positive impact on willingness to improve sports skills. Several studies support the results of this study which state that individual characteristics greatly determine the decisions taken (Alves et al., 2006). Individuals who want to improve their sports skills will look for ways to keep practicing in improving sports skills (Melguizo-Ibáñez et al., 2022). Thus, self-leadership has a positive influence on orientation in improving sports skills.

Fifth, the study shows a significant influence on the orientation of sports skills on perceptions of physical health. In line with several other research, individuals who are persistent in improving sports skills tend to understand physical health (Grix et al., 2021). In another study, individuals who participated in sports activities tended to be alone, and reduced the risk of obesity for children (Downward et al., 2018). Apart from that, being involved in a sport helps maintain a level of happiness which is the foundation of physical health (Pacewicz et al., 2019). Then the positive aspects of sports activities is that it potentially reduce boredom (Lv & Takami, 2015). From some of these studies, we can conclude that efforts to improve sports skills lead to direct changes in perceptions of physical health through sports activities.

Sixth, the results of the study show that orientation towards sports skills does not have a significant effect on social relations. It is supported by several other studies showing individuals who focus on skill orientation focus on increasing skills and physical and acting behavior. However, in running a training camp, they tend to limit it with a lot of contact with outdoor activities. This behavior is the assumption that having a relationship with the outside world causes distraction in concentrating on practicing sports skills (Andrew et al., 2010). Thus, improving sports skills can reduce social interaction.

Conclusion

It can be concluded that self-leadership does not directly affect health but has an influence on social relationships and exercise skill orientation, where these two variables directly impact on people's perception of being healthy. It is recommended that people lead themselves to maintain social relationships and engage in exercise to improve perceptions of physical health. The implication of the results of this study is that it can help to design more effective strategies in improving perceptions of physical health through developing self-leadership, strengthening social relationships, and improving exercise skill orientation. However, this study has the limitation of allowing selection bias in the sample because only respondents who were willing to participate were included in this study.

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