



Gender Differences in Physical Education Motivation and Psychological Needs Satisfaction: Self-Determination Perspective

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Keywords

Learning Motivation,
Psychological Needs,
Physical Education,
Gender

Abstract

This study aimed to analyze gender differences in PE learning motivation and basic psychological needs satisfaction from the perspective of Self-Determination Theory (SDT) among students at SMK Muhammadiyah 1 Semarang. This study used a quantitative comparative research design involving 91 students consisting of 36 male and 55 female students. Data were collected using the Basic Psychological Needs in Physical Education (BPNS-PE) and Perceived Locus of Causality (PLOC) questionnaires. The data were analyzed using descriptive statistics, Kolmogorov-Smirnov normality tests, and the Mann-Whitney U test. The results showed that there was no significant difference in PE learning motivation between male and female students ($p = 0.111$). However, significant differences were found in basic psychological needs satisfaction ($p = 0.001$), where male students demonstrated higher levels of autonomy, competence, and relatedness compared to female students. These findings indicate that psychological experiences during PE learning activities may differ according to gender. Therefore, teachers need to create inclusive and supportive learning environments to improve students' motivation and psychological needs satisfaction during PE learning.

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INTRODUCTION

Physical education plays an important role in the educational system because it not only focuses on the development of students' physical abilities, but also supports cognitive, emotional, social, and character development. Through structured physical activities, students are encouraged to develop discipline, cooperation, responsibility, confidence, and sportsmanship values that are essential for their personal growth and social interaction. In the context of school education, Physical Education, Sports, and Health (PE) is expected to provide meaningful learning experiences that can improve students' physical literacy and promote lifelong healthy lifestyles. Therefore, the success of PE learning is not only determined by students' physical performance but also by their psychological involvement and learning motivation during learning activities (Rajab, 2024; Syafruddin et al., 2022)

Learning motivation is considered one of the most important factors influencing students' participation and engagement in educational activities. In PE learning, motivation contributes to students' willingness to participate actively, complete tasks, persist during physical activities, and achieve optimal learning outcomes. Students with higher motivation tend to demonstrate better participation, enjoyment, and commitment during physical education learning activities compared to students with lower motivation levels. In addition, motivation influences students' perceptions of learning experiences, especially in activities involving physical competence, social interaction, and performance evaluation (Pereira et al., 2021).

The concept of learning motivation in physical education can be comprehensively explained through the perspective of Self-Determination Theory (SDT) developed by Ryan and Deci. SDT explains that human motivation is strongly influenced by the fulfillment of three basic psychological needs, namely autonomy, competence, and relatedness (Ryan & Deci, 2020). Autonomy refers to students' feelings of having freedom and choice during learning activities. Competence reflects students' perceptions of their abilities and effectiveness in performing tasks, whereas relatedness refers to feelings of social connection, acceptance, and positive interaction with teachers and peers. According to SDT, students who experience the fulfillment of these three psychological needs tend to develop more autonomous forms of motivation and demonstrate greater engagement during learning activities (Ryan & Deci, 2019).

Furthermore, SDT explains that motivation exists along a continuum ranging from autonomous motivation to controlled motivation. Motivation regulation consists of intrinsic motivation, identified regulation, introjected regulation, and external regulation. Intrinsic motivation refers to participation driven by enjoyment and personal interest in the activity itself. Identified regulation occurs when students recognize the value and importance of participating in an activity. Introjected regulation is associated with internal pressure, such as guilt or the desire to gain social approval, whereas external regulation is influenced by rewards, punishments, or external demands (Ryan & Deci, 2020). Therefore, motivation should not only be viewed in terms of quantity but also in terms of the quality of motivational regulation experienced by students during learning activities.

Research related to Self-Determination Theory in physical education has shown that supportive learning environments contribute significantly to the development of students' autonomous motivation. A meta-analysis conducted by (Vasconcellos et al., 2020) found that support for autonomy, competence, and relatedness positively influences students' motivation, engagement, and enjoyment in physical education learning. Students who feel supported by teachers and peers tend to experience more meaningful learning experiences and demonstrate stronger participation during physical activities. (Pons et al., 2023) also explained that autonomy-supportive teaching behaviors positively influence students' intrinsic motivation and engagement through the fulfillment of basic psychological needs. Similarly, (Van Doren et al., 2021) explained that teachers' motivating styles significantly influence students' motivation and participation in physical education learning activities. These findings indicate that psychological needs satisfaction is an important determinant of students' learning quality in physical education settings.

Several previous studies also revealed the existence of gender differences in students' motivation and psychological experiences during physical education learning. (Navarro-Patón et al., 2024) reported that male students tended to demonstrate higher intrinsic motivation, competence perception, and enjoyment compared to female students during physical education learning activities. Male students were generally more active and confident during sports participation, whereas female students tended to experience lower confidence and lower perceptions of competence in physical activity contexts. These differences may be influenced by social experiences, gender stereotypes, cultural expectations, and the learning environment experienced by students. (Afiyah et al., 2025) emphasized that gender differences in learning motivation are influenced by psychological and social contexts within the school environment. (Wang & Chen, 2022) also found that male students tended to report higher competence and autonomy satisfaction during physical education learning compared to female students.

In the Indonesian educational context, studies investigating PE learning motivation from the perspective of Self-Determination Theory remain limited, particularly in vocational high schools. Previous research conducted by (Octarie, 2020) found no significant difference in PE learning motivation between male and female students. However, the study only examined motivation as a general construct and did not analyze the quality of motivation regulation and psychological needs satisfaction based on the SDT framework. Meanwhile, research conducted by (Permatasari & Wibowo, 2024) found that male students tended to demonstrate higher learning motivation in PE participation compared to female students. Nevertheless, the study did not specifically examine the dimensions of autonomy, competence, relatedness, and motivation regulation simultaneously. In addition, most previous studies in Indonesia have primarily focused on general learning motivation without exploring students' psychological experiences in physical education settings. Research examining the relationship between gender, basic psychological needs satisfaction, and motivation regulation in PE learning activities remains limited, especially in religion-based vocational schools. This limitation creates a research gap that needs further investigation because psychological experiences during PE learning may differ according to school culture, learning environment, and students' social interactions.

SMK Muhammadiyah 1 Semarang, as a religion-based vocational high school, provides a unique educational context for examining students' motivation and psychological experiences during PE learning activities. Based on preliminary observations conducted during PE learning activities, male students appeared to participate more actively in team sports and physical activities, while some female students tended to be less active and less confident during learning activities. These differences indicate the possibility of variations in psychological needs satisfaction and motivation regulation based on gender.

In addition, most previous studies in Indonesia have primarily focused on general learning motivation without examining the fulfillment of basic psychological needs and the quality of motivational regulation simultaneously within the framework of Self-Determination Theory (SDT). Research investigating gender differences in autonomy, competence, relatedness, and motivation regulation in Physical Education, Sports, and Health (PE) remains limited, particularly in vocational high schools with religious educational backgrounds. This limitation is important because students' psychological experiences during PE learning may influence their participation, engagement, enjoyment, and long-term involvement in physical activity.

The urgency of this study is strengthened by the increasing concern regarding students' declining participation in physical activity and the unequal psychological experiences experienced by male and female students during physical education learning. Previous studies have shown that female students often report lower competence perceptions, lower confidence, and lower participation in physical activity contexts compared to male students. If these differences are not identified and addressed, they may negatively affect students' learning experiences, motivation development, and healthy lifestyle behaviors. Therefore, understanding gender-based differences in motivation and psychological needs satisfaction is essential for designing more inclusive, supportive, and equitable PE learning environments.

SMK Muhammadiyah 1 Semarang, as a religion-based vocational high school, provides a unique educational context for examining these issues. Based on preliminary observations, male students appeared to participate more actively in team sports and physical activities, whereas several female students tended to demonstrate lower participation and confidence during PE learning activities. These observations indicate the possibility of differences in psychological needs satisfaction and motivational regulation between male and female students. Consequently, empirical evidence is needed to better understand these differences and to support the development of gender-responsive physical education practices.

METHODS

This study employed a quantitative approach with a comparative research design to analyze differences in PE learning motivation and basic psychological needs satisfaction between male and female students from the perspective of Self-Determination Theory (SDT). This study used a cross-sectional research design because the data were collected at one point in time to analyze students' psychological experiences and motivation during PE learning activities. The study was conducted at SMK Muhammadiyah 1 Semarang during the 2025/2026 academic year.

The population of this study consisted of students at SMK Muhammadiyah 1 Semarang. The sampling technique used was total sampling, with the criteria that students actively participated in PE learning activities and were willing to become research respondents. The sample consisted of 91 students, including 36 male students and 55 female students.

The independent variable in this study was gender, categorized into male and female students. The dependent variables were PE learning motivation and basic psychological needs satisfaction.

Data were collected using the Basic Psychological Needs Satisfaction in Physical Education (BPNS-PE) questionnaire and the Perceived Locus of Causality (PLOC) questionnaire. The BPNS-PE questionnaire measured students' autonomy, competence, and relatedness during PE learning activities. Meanwhile, the PLOC questionnaire measured students' motivation regulation, which consisted of intrinsic motivation, identified regulation, introjected regulation, and external regulation. All questionnaire items used a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The instruments used in this study were standardized instruments that had been widely used in previous studies related to Self-Determination Theory in physical education settings. Reliability testing was conducted using Cronbach's Alpha coefficient to ensure the internal consistency of the instruments. All variables obtained Cronbach's Alpha values greater than 0.70, indicating that the instruments had acceptable reliability and were appropriate for data collection.

Data analysis was conducted using descriptive statistics to describe students' motivation and psychological needs satisfaction based on gender. Normality testing was conducted using the Kolmogorov-Smirnov test. Since several variables did not meet the assumption of normality, hypothesis testing was conducted using the nonparametric Mann-Whitney U test to analyze differences between male and female students. All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS). The level of statistical significance used in this study was 0.05.

Prior to data collection, all respondents were informed about the purpose of the study, and participation was voluntary. The confidentiality and anonymity of respondents' data were maintained throughout the research process.

RESULTS AND DISCUSSION

This study was conducted at SMK Muhammadiyah 1 Semarang during the 2025/2026 academic year. The purpose of this study was to analyze gender differences in PE learning motivation and basic psychological needs satisfaction from the perspective of Self-Determination Theory (SDT). The respondents consisted of male and female students who actively participated in PE learning activities. The data were collected using the Basic Psychological Needs Satisfaction (BPNS) questionnaire and the Perceived Locus of Causality

(PLOC) questionnaire. The BPNS dimensions included autonomy, competence, and relatedness, while the PLOC dimensions consisted of intrinsic motivation, identified regulation, introjected regulation, and external regulation. Prior to hypothesis testing, the data were analyzed using descriptive statistics and normality testing. Since the data were not fully normally distributed, hypothesis testing was conducted using the nonparametric Mann-Whitney U test.

Table 1. Descriptive Statistics of Basic Psychological Needs and Motivation Regulation Based on Gender

Variable	Gender	Mean	SD	Minimum	Maximum
Autonomy	Male	4,12	0,74	1,25	5,00
	Female	3,92	0,48	2,25	5,00
Competence	Male	4,24	0,73	1,00	5,00
	Female	3,90	0,56	2,50	5,00
Relatedness	Male	4,17	0,78	1,00	5,00
	Female	4,09	0,47	3,00	5,00
Intrinsic Motivation	Male	4,30	0,87	1,00	5,00
	Female	4,06	0,55	2,25	5,00
Identified Regulation	Male	4,30	0,72	1,00	5,00
	Female	4,20	0,48	3,00	5,00
Introjected Regulation	Male	3,65	0,92	1,00	5,00
	Female	3,69	0,59	2,00	5,00
External Regulation	Male	3,23	1,08	1,00	5,00
	Female	2,97	1,02	1,00	5,00

Based on **Table 1**, the descriptive analysis showed that the mean scores of PE learning motivation between male and female students were relatively similar. This finding indicates that both groups had comparable levels of learning motivation in participating in PE learning activities. The relatively similar mean scores suggest that male and female students demonstrated comparable enthusiasm, participation, and engagement during physical education learning activities at school.

Meanwhile, differences in mean scores were identified in the variable of basic psychological needs satisfaction between male and female students. Male students tended to show higher scores in several aspects of psychological needs satisfaction, particularly in competence and relatedness, compared to female students. These findings indicate that psychological experiences during PE learning activities may differ according to gender.

In the context of Self-Determination Theory, learning motivation develops optimally when individuals experience fulfillment of three basic psychological needs, namely autonomy, competence, and relatedness. Students who feel capable during learning activities, receive social support from peers and teachers, and are given opportunities to participate actively in learning tend to demonstrate stronger intrinsic motivation. Therefore, differences in psychological needs satisfaction may influence the quality of students' learning experiences during PE activities. These findings also support (Van Doren et al., 2021), who explained that supportive teaching styles contribute positively to students' psychological needs satisfaction and participation in physical education learning.

The relatively similar motivation scores found in this study may indicate that the learning environment at SMK Muhammadiyah 1 Semarang has provided equal participation opportunities for both male and female students. Teacher support and the implementation of inclusive learning activities may contribute to maintaining balanced learning motivation among students regardless of gender differences. However, although learning motivation was relatively similar, the differences in psychological needs satisfaction suggest that male and female students may perceive and experience PE learning activities differently. This finding is also consistent with (Chen et al., 2020), who found that male students tended to report higher competence and autonomy satisfaction compared to female students during physical education learning.

Table 2. Normality Test Results Using Kolmogorov–Smirnov.

Variable	Gender	Statistic	df	Sig.	description
Autonomy	Male	.242	36	.000	Not normal
	Female	.186	55	.000	Not normal
Competence	Male	.203	36	.001	Not normal
	Female	.186	55	.000	Not normal
Relatedness	Male	.242	36	.000	Not normal
	Female	.176	55	.000	Not normal
Intrinsic	Male	.209	36	.000	Not normal
	Female	.221	55	.000	Not normal
Identified	Male	.200	36	.001	Not normal
	Female	.190	55	.000	Not normal
Introjected	Male	.120	36	.200*	Normal
	Female	.161	55	.001	Not normal
External	Male	.138	36	.082	Normal
	Female	.126	55	.030	Not normal

Based on **Table 2**, the results of the Kolmogorov–Smirnov normality test showed that most variables had significance values below 0.05, indicating that the data were not normally distributed. The variables of autonomy, competence, relatedness, intrinsic motivation, and identified regulation in both male and female student groups were categorized as not normally distributed. Meanwhile, the introjected regulation and external regulation variables in the male student group showed significance values greater than 0.05, indicating normal distribution. Since several variables did not fulfill the assumption of normality, hypothesis testing in this study was conducted using the nonparametric Mann–Whitney U test. The use of nonparametric analysis was considered appropriate for comparing differences between male and female students in the dimensions of basic psychological needs satisfaction and motivation regulation.

Table 3. Mann–Whitney U Rank Results

Variable	Gender	N	Mean Rank	Sum of Ranks
Total motivation	Male	36	51.44	1852.00
	Female	55	42.44	2334.00
	Total	91		
Total phsycological	Male	36	57.31	2063.00
	Female	55	38.60	2123.00
	Total	91		

Table 4. Mann–Whitney U Test Statistics

	Total Motivation	Total Psychological
Mann-Whitney U	794.000	583.000
Wilcoxon W	2334.000	2123.000
Z	-1.592	-3.311
Asymp. Sig. (2-tailed)	.111	.001

Based on **Table 3** and **4**, The results of the Mann–Whitney U test showed that there was no significant difference in PE learning motivation between male and female students ($p = 0.111$). This finding indicates that both groups demonstrated relatively similar levels of motivation during PE learning activities. The absence of significant differences may suggest that the learning environment at SMK Muhammadiyah 1 Semarang has provided equal opportunities for participation, engagement, and involvement in physical education learning regardless of gender differences.

However, the Mann–Whitney U test revealed a significant difference in basic psychological needs satisfaction between male and female students ($p = 0.001$). Male students tended to report higher levels of autonomy, competence, and relatedness compared to female

students. These findings indicate that students' psychological experiences during PE learning activities may differ according to gender.

In the context of Self-Determination Theory, the fulfillment of autonomy, competence, and relatedness plays an important role in developing autonomous motivation and positive learning experiences. Students who perceive themselves as capable, socially connected, and actively involved in learning activities tend to demonstrate greater participation and enjoyment during PE learning. These findings also support (Van Doren et al., 2021), who explained that supportive teaching styles contribute positively to students' psychological needs satisfaction and participation in physical education learning.

The relatively similar motivation scores found in this study may indicate that teachers have provided balanced learning opportunities for both male and female students during PE learning activities. Teacher support and inclusive learning practices may contribute to maintaining comparable levels of motivation among students. Nevertheless, differences in psychological needs satisfaction suggest that male and female students may perceive and experience PE learning environments differently. This finding is also consistent with (Wang & Chen, 2022), who found that male students tended to report higher competence and autonomy satisfaction compared to female students during physical education learning. This study has several limitations. The research was conducted only in one vocational high school, which may limit the generalizability of the findings. In addition, the study relied on self-report questionnaires that may be influenced by students' subjective perceptions. Future studies are recommended to involve larger samples and broader educational contexts. This study has several limitations. The research was conducted only in one vocational high school, which may limit the generalizability of the findings. In addition, the study relied on self-report questionnaires that may be influenced by students' subjective perceptions. Future studies are recommended to involve larger samples and broader educational contexts.

CONCLUSION

This study concluded that there was no significant difference in PE learning motivation between male and female students at SMK Muhammadiyah 1 Semarang. Both groups demonstrated relatively similar levels of motivation during PE learning activities. However, significant differences were found in basic psychological needs satisfaction, where male students showed higher levels of autonomy, competence, and relatedness compared to female students. From the perspective of Self-Determination Theory (SDT), the fulfillment of basic psychological needs contributes to the development of autonomous motivation and positive learning experiences. Students who feel competent, socially connected, and actively involved in learning activities tend to demonstrate stronger engagement and participation in PE learning activities. These findings indicate the importance of creating inclusive PE learning environments that support the psychological needs of all students regardless of gender. Teacher support, positive classroom interaction, and opportunities for active participation may contribute to improving students' motivation and learning experiences in physical education learning.

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