

## Achievement of Physical Education Learning Results Based on Gender Review and Learning Motivation on High School Students in the Yogyakarta Region, Indonesia

### Logro de resultados en el aprendizaje de la educación física en función del género y la motivación para el aprendizaje en estudiantes de secundaria de la región de Yogyakarta, Indonesia

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**Abstract.** This research aims to examine differences in Physical Education (PE) learning outcomes for high school students based on gender and learning motivation. The sample in this research was 84 high school students in Yogyakarta and was taken using a simple random sampling system. Data analysis used descriptive statistics and inferential factorial two-way anova. The mean score for male students in the low learning motivation category was 86.29 and female students in the low learning motivation category was 83.71. The mean score for male students in the moderate learning motivation category was 83.21 and female students in the moderate learning motivation category was 84.14. The mean score for male students in the high learning motivation category is 85.64 and female students in the high learning motivation category is 82.64. The results of the Anova test on the learning motivation factor variable value  $\text{Sig. } 0.42 < 0.05$  means that there is a significant difference or influence between students' learning motivation (low, medium and high) on PE learning outcomes. In the gender factor variable, the  $\text{Sig. value } 0.001 < 0.05$  means that there is a significant difference or influence between gender (male and female) on PE learning achievement. Next, on the variables of learning motivation and gender, the  $\text{Sig. value } 0.000 < 0.05$  means that there is an influence or interaction between learning motivation factors and gender on students' PE learning outcomes. The conclusion is that PE design needs to take into account the specifics of gender and type of sport. This is so that male and female students have the right to exercise according to their portion in order to benefit from the PE program at school. Apart from that, it is also to provide maximum enjoyment and achievement for students in various games and sports activities in PE without any pressure. The conclusion is that motivational factors and gender significantly interact and influence students' PE learning outcomes. Therefore, it is important for teachers to consider these two factors in designing and implementing effective PE learning, paying special attention to the specific needs and conditions of each student based on their respective learning motivation and gender.

**Keywords:** Achievement, Learning Results, Physical Education, Students, Gender, Learning Motivation

**Resumen.** El objetivo de esta investigación es examinar las diferencias en los resultados del aprendizaje de la Educación Física (EF) de los estudiantes de secundaria en función del género y la motivación para el aprendizaje. La muestra de esta investigación fue de 84 estudiantes de secundaria de Yogyakarta y se tomó utilizando un sistema de muestreo aleatorio simple. En el análisis de los datos se utilizó estadística descriptiva y un anova factorial inferencial de dos vías. La puntuación media de los alumnos varones en la categoría de baja motivación para el aprendizaje fue de 86,29 y la de las alumnas en la categoría de baja motivación para el aprendizaje fue de 83,71. La puntuación media de los estudiantes de sexo masculino en la categoría de motivación moderada para el aprendizaje fue de 83,21 y la de las estudiantes de sexo femenino en la categoría de motivación moderada para el aprendizaje fue de 84,14. La puntuación media de los alumnos de la categoría de alta motivación para el aprendizaje fue de 85,64 y la de las alumnas de la categoría de alta motivación para el aprendizaje fue de 82,64. Los resultados de la prueba Anova sobre el valor de la variable del factor motivación para el aprendizaje  $\text{Sig. } 0,42 < 0,05$  significa que existe una diferencia o influencia significativa entre la motivación de aprendizaje de los alumnos (baja, media y alta) en los resultados del aprendizaje de Educación Física. En la variable factor género, el valor  $\text{Sig. } 0,001 < 0,05$  significa que existe una diferencia o influencia significativa entre el género (masculino y femenino) en los resultados del aprendizaje de Educación Física. A continuación, en las variables de motivación para el aprendizaje y género, el valor  $\text{Sig. } 0,000 < 0,05$  significa que existe una influencia o interacción entre los factores de motivación para el aprendizaje y el género en los resultados del aprendizaje de educación física de los estudiantes. La conclusión es que el diseño de la educación física debe tener en cuenta las especificidades del género y el tipo de deporte. De este modo, los alumnos de ambos sexos tienen derecho a hacer ejercicio de acuerdo con su parte para beneficiarse del programa de educación física en la escuela. Aparte de eso, también se trata de que los alumnos disfruten al máximo y obtengan los máximos logros en los distintos juegos y actividades deportivas de educación física sin ningún tipo de presión. La conclusión es que los factores motivacionales y el género interactúan significativamente e influyen en los resultados del aprendizaje de educación física de los alumnos. Por lo tanto, es importante que los profesores tengan en cuenta estos dos factores a la hora de diseñar y poner en práctica un aprendizaje eficaz de la educación física, prestando especial atención a las necesidades y condiciones específicas de cada alumno en función de su motivación para el aprendizaje y de su sexo.

**Palabras Clave:** Rendimiento, resultados del aprendizaje, educación física, estudiantes, género, motivación para el aprendizaje.

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## Introduction

Education is an important need for every human life. The main and first education is the family, which of course is the parents (Wati, 2015). Biological and psychomotor differences between male and female students can influence abilities in various physical activities and sports. Aspects of strength, flexibility, endurance and coordination have the potential to have an impact on Physical Education (PE) learning achievement. Learning motivation is very important for students, including: 1) making students aware from the beginning, process, to the end of learning. 2) provide information about each student's learning efforts. 3) give encouragement. 4) directing student activities in the learning process. 5) make students aware that in learning there are also gaps for play and rest (Faiz, 2012). There are significant differences between genders due to performance orientation in PE activities which are also initiated by teachers (Yu et al., 2023). There are significant differences between the sports participation of male and female students (Yao & Yang, 2023). Women's participation in PE is often lower than men's participation (Deng, 2023). In fact, same-sex sports classes are more popular with female students (Beasley, 2013). This discussion will answer the question of whether educational policies and PE curriculum design are inclusive enough and take into account the needs and potential of students of both genders. This is important to ensure that all students have the same opportunities to achieve maximum achievement in PE. In this way, it is hoped that it can provide the development of more effective and inclusive teaching and learning strategies, as well as support educational policies that pay attention to diversity and gender equality in schools.

Learning motivation is recognized as one of the key factors that influence student success and achievement in the learning process. Learning motivation is the dominant factor that influences PE learning outcomes (Firdaus et al., 2023). Teaching strategies through structured tasks are the strongest predictor of motivation (Weeldenburg et al., 2022). Study Honchar (2023) emphasizes the importance of motivation in improving the learning process. Learning motivation indirectly influences learning outcomes through physical fitness (Asrinal et al., 2023). PE learning outcomes can also be influenced by learning motivation, perceptions of the importance of physical activity, previous sports experience, as well as social support from peers and encouragement from teachers. Apart from intrinsic motivation, there is also extrinsic motivation, such as rewards or social pressure which can potentially influence learning achievement. By focusing on learning motivation as the main factor that influences the achievement of PE learning outcomes, it can provide solutions to gaps and new insights regarding the planning and implementation of PE teaching to support the successful achievement of student learning outcomes.

Learning in general is influenced by factors. These factors come from internal, which means they come from

within the individual student himself, the second is external factors, which are environmental conditions around the student that support and approaches to learning, which are types of student learning efforts including strategies and methods used in carrying out learning activities (Syah, 2010). There is a close relationship between physical activity and PE learning outcomes, and physical activity can contribute to students' physical and mental health (Irianto et al., 2021). Study Hall-López & Ochoa-Martínez (2023) concluded that women had lower participation in moderate to vigorous levels of physical activity, while attending PE classes. Gender considerations and gender-related social norms can influence students' participation and motivation in physical activities. Meanwhile, learning motivation is recognized as a key factor that can influence student participation and achievement in PE. Thus it is important to understand how these factors complexly contribute to student achievement. Research related to PE and sports (both educational sports, health sports or performance sports) has been carried out by many researchers, including: (Hall-Lopez, 2020); (Burgueño et al., 2021); (Botelho & Moreira, 2022); (Setyawan et al., 2023); (Moya-Mata et al., 2023); (Setyawan et al., 2023); (Meriño et al., 2024); (Setyawan et al., 2024). However, there is still very little research that discusses students' PE learning outcomes based on learning motivation and gender. Therefore, this study aims to identify and analyze PE learning outcomes based on a review of learning motivation and gender. This will be able to explore learning strategies that can increase students' motivation and achievement in PE learning outcomes, as well as accommodate students' individual and gender differences.

## Method

This research is a comparative quantitative research which aims to determine the extent of variation or differences between related variables. This research aims to examine differences in PE learning outcomes for high school students based on gender and learning motivation. The sample in this study was high school students in the Yogyakarta region of Indonesia, male and female, and with low learning motivation, medium learning motivation and high learning motivation categories. Samples were taken using a Simple Random Sampling system or simple random sampling technique. Every high school student has the same opportunity to be selected as a respondent in this research.

Data analysis used descriptive statistics and inferential factorial two-way anova. Two-way anova analysis is a two-way or two-category classification analysis based on observing certain factors that cause variation. Data prerequisite tests were carried out using the Shapiro-Wilk normality test and homogeneity tests using Levene's test of equality of error variances. The results of the Shapiro-Wilk normality test show that the Sig. 0.131 > 0.05 means the data is normally distributed. The results of Levene's test of equality of error variances show that the Sig. 0.002 < 0.05

so that the variation in the data obtained is not homogeneous. However, even though the data is not homogeneous, the two-way anova test can still be carried out because the data is normally distributed.

PE learning achievement data comes from secondary data on PE subject report cards for students sampled in this research, namely 84 class X and XI students in high schools in the Yogyakarta region, Indonesia. Learning motivation data was taken from the results of a questionnaire with a 1-5 Likert Scale which was distributed to students. The learning motivation instrument consists of 15 items which are prepared based on the concept of learning motivation variables and have been tested for validity (product moment Pearson correlation) and reliability (Cronbach's alpha), and

have been validated by experts in the field. The data on learning motivation results were then analyzed using Microsoft Excel into 3 categories, namely; low learning motivation, medium learning motivation, and high learning motivation.

The next step is that the data is classified or broken down into six cells, namely; male students with low learning motivation category, male students with medium learning motivation category, and male students with high learning motivation category, female students with low learning motivation category, female students with medium learning motivation category, and female students with the high learning motivation category as shown in (Table 1) below:

Table 1.  
Achievement Results PE Learning Based on Gender Review and Learning Motivation

No	Man		Learning outcomes	No	Woman		Learning outcomes
	Student's name	Label/ Motivation to learn			Student's name	Label/ Motivation to learn	
1	BFM	Low	84	1	DPR	Low	84
2	BFIA	Low	82	2	A A	Low	83
3	NFS	Low	83	3	NH	Low	85
4	ATA	Low	87	4	S.A	Low	84
5	GCBP	Low	87	5	VR	Low	84
6	MFO	Low	85	6	HMH	Low	82
7	SHA	Low	87	7	HMGL	Low	84
8	ARAF	Low	87	8	NAA	Low	84
9	ARR	Low	87	9	NGAR	Low	83
10	RICP	Low	88	10	FNH	Low	80
11	MFR	Low	89	11	HIN	Low	80
12	LJS	Low	88	12	MAR	Low	84
13	VPA's	Low	87	13	BC	Low	88
14	MR	Low	87	14	AYS	Low	87
1	MFHM	Currently	83	1	NSFP	Currently	84
2	EAN	Currently	83	2	AQA	Currently	84
3	DWP	Currently	85	3	AFK	Currently	84
4	AJP	Currently	82	4	AR	Currently	84
5	MND	Currently	84	5	YZK	Currently	83
6	NMS	Currently	83	6	FIG	Currently	83
7	RAF	Currently	84	7	APR	Currently	85
8	ARM	Currently	82	8	NLPA	Currently	85
9	LH	Currently	84	9	ANA	Currently	85
10	MGR	Currently	84	10	UAK	Currently	85
11	SYM	Currently	84	11	ZTR	Currently	83
12	ACK	Currently	81	12	ACN	Currently	84
13	BP	Currently	86	13	NQY	Currently	85
14	DNP	Currently	80	14	NA	Currently	84
1	RP	Tall	81	1	HAD	Tall	85
2	PGR	Tall	84	2	SAC	Tall	85
3	FIG	Tall	83	3	IL	Tall	84
4	MRR	Tall	84	4	HKZ	Tall	85
5	ASRW	Tall	84	5	LCD	Tall	84
6	AR	Tall	83	6	F.A	Tall	84
7	HKP	Tall	85	7	SNL	Tall	84
8	MDA	Tall	88	8	BNU	Tall	84
9	BNN	Tall	88	9	RIGHT	Tall	80
10	AB	Tall	87	10	IR	Tall	81
11	BI	Tall	87	11	SNNA	Tall	80
12	MZFR	Tall	89	12	BNS	Tall	80
13	DPPA	Tall	89	13	NPD	Tall	81
14	DLR	Tall	87	14	EN	Tall	80
Number of Men = 42			Number of Women = 42				
Total = 84							

## Results

Based on the analysis of the between-subjects factors test results, it is known that (N) the learning motivation factor is 84 with details: 28 student data in the low learning

motivation category; 28 student data in the moderate learning motivation category and 28 student data in the high learning motivation category. The total data (N) for the gender factor is 84 with details: 42 male gender data and 42 female gender data as shown (Table 2) below:

Table 2.  
Results Between-Subjects Factors Test

Between-Subjects Factors			
		Value Labels	N
Motivation to learn	1	Low Learning Motivation	28
	2	Medium Learning Motivation	28
	3	High Learning Motivation	28
Gender	1	Man	42
	2	Woman	42

Based on the analysis of the descriptive statistics test results, it is known *Mean* PE learning achievement for male students in the low learning motivation category is 86.29 with an SD of 2,016, while the mean PE learning achievement for female students in the low learning motivation category is 83.71 with an SD of 2,199. The mean PE learning achievement of male students in the moderate learning motivation category is 83.21 with SD 1.578, while the mean PE learning achievement of female students in the moderate learning motivation category is 84.14 with SD 0.770. Furthermore, the mean PE learning achievement of male students in the high learning motivation category is 85.64 with SD 2,530, while the mean PE learning achievement of female students in the high learning motivation category is 82.64 with SD 2,134. Based on the results of this analysis, it is known that the PE learning achievement of female students with the high learning motivation category is the lowest, while the PE learning achievement of male students with the low learning motivation category is the highest. as shown (Table 3) below:

Table 3.  
Results Descriptive Statistics Test

Descriptive Statistics				
Dependent Variable: Achievement of PE Learning Outcomes				
Motivation to learn	Gender	Mean	Std. Deviation	N
Low Learning Motivation	Man	86.29	2,016	14
	Woman	83.71	2,199	14
	Total	85.00	2,449	28
Medium Learning Motivation	Man	83.21	1,578	14
	Woman	84.14	,770	14
	Total	83.68	1,307	28
High Learning Motivation	Man	85.64	2,530	14
	Woman	82.64	2,134	14
	Total	84.14	2,758	28
Total	Man	85.05	2,429	42
	Woman	83.50	1,890	42
	Total	84.27	2,299	84

Based on the analysis of the test results of between-subjects effects from 82 student score data, it shows that the learning motivation factor variable has a value of Sig. 0.042 < 0.05 means that there is a significant difference or influence between students' learning motivation (low, medium and high) on high school students' PE learning outcomes. In the gender factor variable, the Sig. value 0.001 < 0.05 means that there is a significant difference or influence between gender (male and female) on high school students' PE learning outcomes. Furthermore, on the variables of learning motivation factors and gender, the Sig. value 0.000 < 0.05 means that there is an influence or interaction between learning motivation factors and gender on the PE learning outcomes of high school (SMA) students, as shown in (Table 4) below:

Table 4.  
Results Tests of Between-Subjects Effects

Tests of Between-Subjects Effects					
Dependent Variable: Achievement of PE Learning Outcomes					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	140.488a	5	28,098	7,349	,000
Intercept	596574.298	1	596574.298	156038.116	,000
Motivation to learn	25,167	2	12,583	3,291	,042
Sex	50,298	1	50,298	13,156	,001
Learning Motivation * Gender	65,024	2	32,512	8,504	,000
Error	298,214	78	3,823		
Total	597013,000	84			
Corrected Total	438,702	83			

a. R Squared = .320 (Adjusted R Squared = .277)

## Discussion

The research results show that there are differences in PE learning achievement based on gender, with the results that male students generally have a higher mean achievement than female students in the low learning motivation category. This can be related to physical and psychomotor differences which generally affect physical activity abilities. Additionally, there is the influence of social and cultural factors that support men's more active participation than women in physical activities or sports. Study Deng (2023) that gender stereotypes in physical education have an impact on participation levels, and women's participation in physical education is often lower than men's participation. Girls showed greater positive

emotions in non-competitive games, whereas boys experienced greater positive emotions in competitive and cooperative games (Alcaraz-muñoz et al., 2023). In certain sports, women can sometimes outperform men's abilities/achievements. Study Mocanu et al. (2022) found that women outperformed men in most sports activities involving balance tests. On the other hand, learning motivation factors can also influence students' PE learning outcomes. As the results of this research show that Learning motivation has a significant influence on PE learning achievement, but the influence varies between genders. Motivation is important to increase learning effectiveness (Kurmanbaeva, 2022). However, increasing motivation is not always directly related to increasing achievement, especially for female students with high motivation who

actually show the lowest achievement. This indicates that factors other than motivation, such as the learning environment, social support, or psychological factors, play an important role in determining learning achievement. Male students with low motivation have the highest achievement, while female students with high motivation have the lowest achievement, indicating a complex interaction between gender and learning motivation. There is a gender influence, where male students may feel more expected to excel in sports even without high motivation, while female students may not see an increase in achievement despite high motivation due to a lack of external environmental support.

Based on the results of the Anova test on the learning motivation factor variable Sig. value  $0.042 < 0.05$  means that there is a significant difference or influence between students' learning motivation (low, medium and high) on high school students' PE learning outcomes. High achievement motivation can improve student learning achievement (Darsiah, 2023). Increasing student motivation and learning outcomes can also be supported by various teaching strategies from teachers. Increasing motivation through the cooperative learning model results in a significant increase in student achievement (Rasanti et al., 2022). Increased motivation can lead to increased student achievement by addressing factors such as learning methods and distractions, which ultimately improves learning achievement for adolescents (Firdaus et al., 2022). With high learning motivation, it will encourage students to be more active and diligent in learning. Active learning has the highest impact on student achievement (Tuzzakayah & Usman, 2021). High learning motivation has a significant influence on increasing high school students' PE learning achievement. This improvement can be supported by implementing diverse and innovative teaching strategies, including cooperative learning models. Students who have high learning motivation tend to be more active and diligent in studying, so that it has a direct positive impact on their learning achievement.

The results of the Anova test on the gender factor variable Sig.  $0.001 < 0.05$  means that there is a significant difference or influence between gender (male and female) on high school students' PE learning outcomes. Consideration of psychological factors including motivation, self-confidence, and perceptions of PE may differ between male and female students. Gender and sport experiences also have psychological influences (García-Ceberino et al., 2023). Boys consider themselves more motor competent than girls (García-Ceberino et al., 2022). The existence of norms, expectations, and gender in society can influence student participation and achievement in PE. As research (Delgado, 2013) states that the comfort level of adolescent girls can be threatened in mixed educational environments. In addition, there is also an opinion that some sports are more suitable for certain genders, which can limit students' learning and self-development opportunities. There are significant differences between the sports participation of

male and female students (Yao & Yang, 2023). Women's participation in PE is often lower than men's participation (Deng, 2023). In fact, same-sex sports classes are more popular with female students (Beasley, 2013). Thus, various factors such as physiological, social, societal and psychological differences between the two genders contribute to differences in PE learning achievement between male and female students. It is important for PE educators to recognize and address these differences by providing an inclusive and supportive environment for all students to participate and develop themselves.

The results of the Anova test on the variables of learning motivation factors and gender, Sig.  $0.000 < 0.05$  means that there is an influence or interaction between learning motivation factors and gender on the PE learning outcomes of high school (SMA) students. Study Adhikari (2022) states that Motivational factors in PE include the existing curriculum, teacher competence, and pedagogy applied in lessons. In addition, lower economic status was associated with less adaptive experiences of PE activities, where gender moderated this relationship, and girls showed less adaptive outcomes in motivation and affective experiences in sport. (Saoudi et al., 2023). Boys have better emotional experiences than girls in PE class activities (Fierro-Suero et al., 2022). The existence of physical, psychomotor and psychological differences between male and female students can influence PE learning outcomes. Physical, psychomotor and psychological differences between male and female students have an impact on PE results, with female students having higher anxiety about failure, while male students are superior in physical condition and commitment to learning (Poblete-Valderrama et al., 2023). Thus it can be concluded that motivation factors and gender significantly interact and influence students' PE learning outcomes. Therefore, it is important for teachers to consider these two factors in designing and implementing effective PE learning, paying special attention to the specific needs and conditions of each student based on their respective learning motivation and gender.

## Conclusion

PE learning strategies are needed that take into account individual differences, including gender and learning motivation. The existence of fundamental differences in characteristics between men and women is a challenge for a teacher to present interesting lessons. Learning approaches must be flexible and adaptive by providing a variety of types of physical activity that are interesting to all students. Teachers need to develop strategies to increase student learning motivation, either through providing constructive feedback, more student-oriented learning, or through the use of science and technology in learning. Between men and women, both have their respective strengths and weaknesses in the context of physical education learning outcomes or those related to physical activity. The teacher

must interpret these differences positively so that the teacher is aware that each student has their own uniqueness and potential. A PE strategy is needed that is more inclusive and supports individual differences in motivating learning, as well as overcoming gender barriers in sports by providing sports facilities according to the needs and specificities of the male and female genders. This could include developing PE programs that are more varied and enjoyable for all students, training for teachers in providing student motivation and categorizing specific types of sport according to gender in order to reduce the bad stigma related to gender in Physical Education (PE).

The findings of this study show the complexity of the relationship between learning motivation, gender, and achievement in PE learning outcomes. By understanding these dynamics, educational interventions can be designed to more effectively support all students, recognize gender differences, and maximize PE's learning potential. Therefore, it is necessary to design physical education that takes into account the specifics of gender and type of sport. This is so that male and female students have the right to exercise according to their portion in order to benefit from the physical education program at school. Apart from that, it is also to provide maximum enjoyment and achievement for students in various games and sports activities in physical education without any pressure. The conclusion is that motivational factors and gender significantly interact and influence students' PE learning outcomes. Therefore, it is important for teachers to consider these two factors in designing and implementing effective PE learning, paying special attention to the specific needs and conditions of each student based on their respective learning motivation and gender.

### Conflicts of Interest

The authors declare that there are no conflicts of interest.

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