



THE EFFECT OF MASSAGE AND INJURY *GRADE* ON IMPROVING *RANGE OF MOTION* IN PATIENTS WITH CHRONIC ANKLE INJURIES

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ABSTRACT

This study aimed to determine the levels of physical fitness, physical activity, and learning motivation among eighth-grade public junior high school students in urban and rural areas of Garut Regency. This research employed a quantitative method with a descriptive comparative design. The research stages began with selecting a sample of 180 students from the population using a random sampling technique based on the Slovin formula with a seven percent margin of error. Prior to the main data collection stages, the English version of the validity and reliability tests had been conducted on 25 individuals to strictly ensure the instrument's accuracy. Subsequently, data were carefully collected using the Indonesian Student Fitness Test Phase D, the Physical Activity Questionnaire for Adolescents, and a specific learning motivation questionnaire. Finally, the collected data were analyzed using descriptive statistics, normality tests, homogeneity tests, and independent samples t-tests. The results showed a significant difference in physical fitness between rural and urban areas for both male and female students. Regarding physical activity, a significant difference was found among female students, while no significant difference was found among male students. Meanwhile, learning motivation did not show a significant difference among either male or female junior high school students.

Keywords: learning motivation; physical activity; physical fitness; rural areas; urban areas

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INTRODUCTION

Physical Education, Sports, and Health (PJOK) plays an important role in the overall educational process because it contributes to the development of physical fitness, motor skills, as well as students' character and personality. According to (Nanang Kurniawan et al., 2024), physical education is an educational process carried out consciously and systematically to support individuals in developing themselves both as individuals and as members of society. However, in practice, PJOK learning is still often not managed creatively and innovatively, which can result in low student enthusiasm for participating in learning activities

Physical fitness is one of the main objectives of PJOK learning because it supports students' ability to perform daily activities and contributes to the learning process. According to (Sudiana, 2014) physical fitness describes an individual's physical capacity to perform daily tasks and activities efficiently without experiencing significant fatigue, while retaining sufficient energy reserves for leisure activities and responding to unexpected emergencies. Physical fitness is also associated with the body's ability to perform daily activities without causing significant fatigue (Yuliana & Sugiharto, 2019) Low levels of physical fitness tend to limit an individual's ability to perform relatively strenuous physical activities because the body's work capacity, endurance, muscular strength, and respiratory and circulatory systems do not function optimally (Septyananda & Suropto, 2023).

The current condition of students' physical fitness in Indonesia shows a declining trend. One of the main contributing factors is the low level of physical activity performed by students, both at school and outside the school environment. According to (Rochmah & Nadhiroh, 2024), insufficient physical activity among adolescents is associated with increasing sedentary behaviors, such as spending time using electronic devices in front of screens, reading, sitting for prolonged periods, and engaging in leisure activities. Physical activity levels are influenced by various factors, including the environment, sports facilities, lifestyle habits, parental support, and motivation to exercise. Differences between urban and rural areas may also affect students' physical activity due to differences in lifestyle patterns, recreational spaces, and access to sports facilities.

These regional differences are important to investigate because the living and PJOK learning environments of students in rural and urban areas are not the same. Based on a preliminary study involving PJOK teachers at junior high schools in rural areas, students' physical fitness and learning motivation were considered to range from good to very high. However, these assessments have not been supported by regular testing and there are no official records of the data. In addition, limited PJOK equipment and facilities remain a major issue in rural areas. Meanwhile, in urban areas, students' physical fitness was considered to range from good to very good, and some schools had previously used fitness tests such as the *bleep test*, although not on a regular basis. Nevertheless, comprehensive data on students' physical fitness, physical activity, and learning motivation in urban areas have also not been systematically compiled and remain constrained by limitations in facilities and instructional time.

These conditions indicate that the evaluation of students' physical fitness, physical activity, and learning motivation has not yet been conducted in a structured and comprehensive manner. Most previous studies have tended to examine these three variables separately or focus on only one or two variables. In addition, studies comparing students' conditions based on geographical background remain limited, and empirical data on the physical fitness of junior high school students in Garut Regency objectively measured using the Indonesian Student Fitness Test (Tes Kebugaran Siswa Indonesia/TKSI) are not yet available.

Therefore, a comprehensive study is needed to analyze differences in physical fitness, physical activity, and learning motivation among junior high school students participating in PJOK learning in urban and rural areas of Garut Regency. This study is important because, to date, there are no empirical data examining these three variables simultaneously based on differences in regional characteristics, nor are there data on physical fitness measured using the standardized Indonesian Student Fitness Test (TKSI). Through this study, a more comprehensive overview of students' physical fitness, physical activity, and learning motivation is expected to be obtained, which can serve as a basis for policy-making and improvements in PJOK learning in Garut Regency.

METHOD

This study employed a quantitative method with a descriptive comparative design. The sampling technique used in this study was random sampling. This research employed a quantitative method with a descriptive comparative design to analyze the physical fitness, physical activity, and learning motivation of eighth-grade public junior high school students in urban and rural areas of Garut Regency. The sample consisted of 180 students selected through a random sampling technique based on the Slovin formula with a 7% margin of error. Data collection was conducted using three main instruments: the Indonesian Student Fitness Test (TKSI) Phase D for measuring physical fitness, the Physical Activity Questionnaire for Adolescents (PAQ-A) for assessing physical activity levels, and a specific questionnaire for evaluating learning motivation. Prior to the main data collection, the English version of the validity and reliability tests had been conducted on 25 individuals to ensure the instrument's accuracy. The collected data were subsequently analyzed using descriptive statistics, normality tests, homogeneity tests, and t-tests with the assistance of

IBM SPSS Statistics version 27. The population consisted of eighth-grade students from public junior high schools in urban and rural areas of Garut Regency. The sample size was determined using the Slovin formula with a 7% margin of error, resulting in a total sample of 180 students.

To obtain the data, the researchers assessed physical fitness using the Indonesian Student Fitness Test (Tes Kebugaran Siswa Indonesia/TKSI) Phase D. The TKSI is a physical fitness assessment adapted from an instrument developed by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek, 2021). The TKSI Phase D consists of five tests: the *Hand and Eye Coordination Test*, *Sit-Up Test*, *Standing Broad Jump Test*, *T-Test*, and *Bleep Test*. Physical activity data were collected using the *Physical Activity Questionnaire for Adolescents (PAQ-A)*, while data on Physical Education learning motivation were obtained through a learning motivation questionnaire that had undergone validity and reliability testing prior to its use in the study. The data were analyzed using descriptive statistical analysis and comparative testing with the assistance of IBM SPSS Statistics version 27.

RESULT

Data Description

Physical Fitness

Data on students' physical fitness levels were obtained from score conversions based on the assessment guidelines of the Indonesian Student Fitness Test (Tes Kebugaran Siswa Indonesia/TKSI) (Kemendikbudristek, 2021). The physical fitness levels of eighth-grade students at public junior high schools in rural and urban areas were classified into five categories: very good, good, moderate, poor, and very poor. The frequency distribution of students' physical fitness levels is presented below.

Table 1.
Frequency Distribution of Students' Physical Fitness

Score Interval	Category	Frequency			
		Rural f (%)		Urban f (%)	
22 – 25	Very Good	0	(0,00%)	1	(1,11%)
18 – 21	Good	1	(1,11%)	10	(11,11%)
14 – 17	Moderate	23	(25,56%)	42	(46,67%)
10 – 13	Poor	55	(61,11%)	36	(40,00%)
< 9	Very Poor	11	(12,22%)	1	(1,11%)

Based on table 1, the physical fitness levels of students in rural and urban areas showed different category distributions. In rural areas, the poor category was the most dominant, comprising 55 students (61.11%), while in urban areas, the moderate category was the most prevalent, comprising 42 students (46.67%). Urban areas also had a higher number of students in the good category, with 10 students (11.11%), and in the very good category, with 1 student (1.11%). Meanwhile, rural areas had a higher number of students in the very poor category, with 11 students (12.22%), compared with 1 student (1.11%) in urban areas. Thus, descriptively, the physical fitness level of students in urban areas tended to be better than that of students in rural areas.

Physical Activity

Data on physical activity levels were obtained through measurements using the *Physical Activity Questionnaire for Adolescents (PAQ-A)*. The physical activity levels of eighth-grade students at public junior high schools in rural and urban areas were classified into five categories: very high, high, moderate, low, and very low. The frequency distribution of students' physical activity levels is presented below.

Table 2.
Frequency Distribution of Students' Physical Activity in Rural Areas

Score Interval	Category	Frequency			
		Rural f (%)		Urban f (%)	
5	Very High	0	(0,00%)	0	(0%)
4	High	3	(3,33%)	2	(2,22%)
3	Moderate	19	(21,11%)	39	(43,33%)
2	Low	63	(70,00%)	47	(52,22%)
1	Very Low	5	(5,56%)	2	(2,22%)

Based on Table 2, the physical activity levels of students in rural and urban areas showed different category distributions, although the low category was dominant in both areas. In rural areas, 63 students (70.00%) were classified in the low category, while in urban areas, 47 students (52.22%) were classified in the same category. The moderate category was more prevalent in urban areas, with 39 students (43.33%), compared with 19 students (21.11%) in rural areas. In the high category, there were 3 students (3.33%) in rural areas and 2 students (2.22%) in urban areas. Meanwhile, the very low category consisted of 5 students (5.56%) in rural areas and 2 students (2.22%) in urban areas. No students in either area were classified in the very high category. Descriptively, the physical activity levels of students in urban areas tended to be better than those of students in rural areas.

Learning Motivation

Data on students' learning motivation were obtained through measurements using a questionnaire instrument. The learning motivation levels of eighth-grade students at public junior high schools in rural and urban areas were classified into five categories: very good, good, moderate, poor, and very poor. The frequency distribution of students' Physical Education learning motivation levels is presented below.

Table 3.
Frequency Distribution of Students' Physical Education Learning Motivation

Score Interval	Category	Frequency			
		Rural f (%)		Urban f (%)	
$X > M + 1,5 \text{ SD}$	Very Good	0	(0,00%)	1	(0,00%)
$M + 0,5 \text{ SD} < X \leq M + 1,5 \text{ SD}$	Good	1	(1,11%)	10	(1,11%)
$M - 0,5 \text{ SD} < X \leq M + 0,5 \text{ SD}$	moderate	23	(25,56%)	42	(25,56%)
$M - 1,5 \text{ SD} < X \leq M - 0,5 \text{ SD}$	Poor	55	(61,11%)	36	(61,11%)
$X \leq M - 1,5 \text{ SD}$	Very Poor	11	(12,22%)	1	(12,22%)

Based on Table 3, the students' learning motivation levels in both rural and urban areas were generally classified as moderate. In rural areas, 45 students (50.00%) were classified in the moderate category, while in urban areas, 54 students (60.00%) were classified in the same category. In the high category, there were 19 students (21.11%) in rural areas, which was higher than the 14 students (15.56%) in urban areas. The low category consisted of 26 students (28.89%) in rural areas and 21 students (23.33%) in urban areas. The very high category was found only in urban areas, with 1 student (1.11%), while no students in either area were classified in the very low category. Thus, the learning motivation levels of students in both rural and urban areas were generally classified as moderate.

Data Analysis

Normality Test

The normality test was conducted to determine whether the research variable data were normally distributed. Normality was tested using the Shapiro-Wilk analysis technique. The data were considered normally distributed when the significance value obtained from the analysis was greater than 0.05 (Sig. > 0.05). The analysis was performed using SPSS 27 for Windows. The results of the normality test for the research variables are presented below.

Table 4.
Results of the Normality Test

Group	N	Physical Fitness (sig.)	Physical Activity (sig.)	Learning Motivation (sig.)	Descriptio n
Rural Male Students	45	0,240	0.066	0.057	Normal
Urban Male Students	45	0.230	0.314	0.172	Normal
Rural Female Students	45	0.052	0.187	0.357	Normal
Urban Female Students	45	0.078	0,447	0.167	Normal

The physical activity and learning motivation data of male students in rural and urban areas showed significance values greater than 0.05. In the rural male group, the significance value for physical fitness was 0.240, physical activity was 0.066, and learning motivation was 0.057. In the urban male group, the significance value for physical fitness was 0.230, physical activity was 0.314, and learning motivation was 0.172. These results indicate that the data from both areas were normally distributed.

Homogeneity Test

The homogeneity test was conducted to determine whether the data from the compared groups had equal or homogeneous variances. The homogeneity test was performed using Levene's Test with the assistance of SPSS 27 for Windows. The data were considered homogeneous when the significance value was greater than 0.05 (Sig. > 0.05). The results of the homogeneity test for physical fitness, physical activity, and learning motivation are presented below.

Table 5.
Results of the Homogeneity Test

Group	N	Physical Fitness (sig.)	Physical Activity (sig.)	Learning Motivation (sig.)	Description
Male	90	0.180	0.417	0.883	Homogeneous
Female	90	0.098	0.814	0.545	Homogeneous

Based on the results of the homogeneity test presented in Table 5, the significance values of all variables in the male and female student groups were greater than 0.05. In the male group, the significance value for physical fitness was 0.180, physical activity was 0.417, and learning motivation was 0.883. In the female group, the significance value for physical fitness was 0.098, physical activity was 0.814, and learning motivation was 0.545. These results indicate that the data in both groups had homogeneous variances.

Hypothesis Test

The hypothesis test was conducted to determine whether there were differences in physical fitness, physical activity, and students' learning motivation. Hypothesis testing was performed using the Paired Samples t-Test with the assistance of SPSS 27 for Windows. The decision-making criteria for the hypothesis test were based on the Sig. (2-tailed) value. If the Sig. (2-tailed) value was < 0.05, H_0 was rejected and H_a was accepted, indicating a significant difference. Conversely, if the Sig. (2-tailed) value was > 0.05, H_0 was accepted and H_a was rejected, indicating no significant difference. The results of the hypothesis testing using the Paired Samples t-Test are presented below.

Physical Fitness Hypothesis Test

Table 6.
Results of the Physical Fitness Hypothesis Test

Group	df	Sig	Description
Male	88	0.000	Significant difference
Female	88	0,000	Significant difference

Based on Table 6, the results of the Paired Samples t-Test showed a significant difference in the physical fitness results of male and female students between rural and urban areas. This was indicated by the Sig. (2-tailed) value of $0.000 < 0.05$ for both male and female students. Therefore, it can be concluded that there was a significant difference in the physical fitness levels of male students between urban and rural areas.

Physical Activity Hypothesis Test

Table 7.

Results of the Physical Activity Hypothesis Test

Group	df	Sig	Description
Male	88	0,235	No Significant difference
female	88	0,001	Significant difference

Based on Table 7, the results of the Paired Samples t-Test showed that there was no significant difference in the physical activity of male students between rural and urban areas. This was indicated by the Sig. (2-tailed) value of $0.235 > 0.05$. Meanwhile, among female students, there was a significant difference in physical activity between rural and urban areas, as indicated by the Sig. (2-tailed) value of $0.001 < 0.05$. Therefore, it can be concluded that there was no significant difference in physical activity among male students, while there was a significant difference among female students between urban and rural areas.

Learning Motivation Hypothesis Test

Table 8.

Results of the Learning Motivation Hypothesis Test

Group	Df	Sig	Description
Male	88	0.577	No Significant difference
Female	88	0,800	No Significant difference

Based on Table 8, the results of the Paired Samples t-Test showed that there was no significant difference in learning motivation among male and female students between rural and urban areas. This was indicated by the Sig. (2-tailed) value of $0.577 > 0.05$ for male students and $0.800 > 0.05$ for female students. Therefore, it can be concluded that there was no significant difference in the learning motivation levels of male students between urban and rural areas.

DISCUSSION

Based on the research findings, the physical fitness levels of students in urban areas tended to be better than those of students in rural areas. Urban students were more frequently classified in the moderate, good, and very good categories, whereas rural students were more frequently classified in the poor and very poor categories. This condition indicates differences in physical fitness levels between the two areas. Based on the implementation of the tests, the T-Test and coordination test were relatively more difficult for students to perform. This indicates that agility, changes in direction, accuracy, and movement coordination were still not optimal. Differences in physical fitness between the two areas may be associated with the characteristics of students' physical activities and lifestyles, although physical fitness is also influenced by various factors, such as the frequency and intensity of physical activity, exercise habits, lifestyle, rest patterns, dietary patterns, and sedentary behavior. These findings are supported by research conducted by (Farhanu & Afifah, 2026), which showed that students in urban areas obtained higher average TKPN scores than students in rural areas across all test components. These results demonstrate a similar tendency to the present study, in which students living in urban areas had relatively better physical fitness levels than students living in rural areas. Although the previous study used TKPN while the present study used TKSI, both findings provide an indication that characteristics of the living environment may be associated with differences in students' physical fitness levels.

The results showed that the physical activity levels of students in both rural and urban areas were generally classified as low. However, students in urban areas showed a tendency toward better physical activity levels, indicated by a lower percentage in the low category and a higher percentage in the moderate category compared with students in rural areas. This condition may be associated with differences in activity patterns, exercise habits, the use of vehicles and electronic devices, and opportunities to engage in physical activity within each environment. Regular physical activity can provide stimuli for the development of various components of physical fitness. Therefore, the tendency toward better physical activity levels among urban students may be one factor associated

with their relatively better physical fitness levels. These findings are supported by research conducted by (Zainuddin et al., 2024), which showed that students in rural areas were classified as having low physical activity levels, whereas students in urban areas were classified as having moderate physical activity levels. These findings further support the observation that students in urban areas tend to have better physical activity levels than students in rural areas.

The students' motivation levels in both areas were generally classified as moderate. Nevertheless, students in urban areas showed a tendency toward higher motivation, as indicated by a higher percentage in the moderate category and a lower percentage in the low category compared with students in rural areas. This condition indicates that students' motivation in both areas can still be improved. Motivation may be associated with students' willingness and engagement in participating in activities and can be influenced by family support, peers, teachers, previous experiences in performing activities, as well as environmental conditions and the availability of facilities.

Differences in facility conditions between urban and rural areas may be one factor associated with students' motivation to participate in PJOK learning. According to (Maulana et al., 2025), schools in rural areas often face limitations in facilities, such as inadequate sports fields and a lack of sports equipment. Such conditions may hinder the implementation of active learning and reduce students' motivation. Similarly, (Nabila & Juntara, 2025) stated that students with access to adequate sports facilities tend to be more enthusiastic about participating in learning activities, whereas students who experience limited facilities tend to be less motivated to participate actively in PJOK activities. Thus, limitations in sports facilities and infrastructure may be one condition associated with differences in students' motivation between rural and urban areas.

This finding is supported by research conducted by (Ristawati et al., 2025) through a comparative study of students' interest and motivation toward basketball in rural and urban areas. The study found that children in urban areas had higher levels of interest and motivation than children in rural areas. This condition was influenced by social support, media exposure, and the greater availability of facilities in urban areas. Although Ristawati et al.'s study focused specifically on basketball, its findings can support the present study's observation that students in urban areas tend to have better motivation than students in rural areas.

Students in urban areas tended to have better physical activity and motivation levels, which were also accompanied by better physical fitness levels. Regular physical activity can provide stimuli for the development of physical fitness, while motivation can support students' willingness and engagement in participating in physical activities. Overall, students in urban areas showed a tendency toward better conditions in physical fitness, physical activity, and motivation compared with students in rural areas. These findings indicate the need for greater attention to improving students' physical activity and physical fitness, particularly among groups that remain in the low category. Improvement efforts can be implemented through regular, varied, and enjoyable physical activities, as well as by creating an environment that supports students in adopting an active lifestyle

CONCLUSION

Based on the results of the study on the physical fitness, physical activity, and learning motivation of public junior high school students in urban and rural areas of Garut Regency, it can be concluded that the physical fitness levels of students in urban areas tended to be better than those of students in rural areas, with the moderate category being dominant in urban areas and the poor category being dominant in rural areas. The physical activity levels of students in both areas were generally classified as low, with urban students tending to have better physical activity levels because the proportion in the very low category was smaller than that in rural areas. The learning motivation levels of students in both areas were generally classified as moderate, with urban students showing

a tendency toward better learning motivation. The difference test results showed a significant difference in physical fitness between male and female students in urban and rural areas ($p = 0.000$). Regarding physical activity, there was no significant difference among male students ($p = 0.554$), whereas a significant difference was found among female students ($p = 0.000$). Meanwhile, there was no significant difference in learning motivation among either male students ($p = 0.322$) or female students ($p = 0.273$). Thus, differences in regional characteristics were more evident in students' physical fitness and in the physical activity of female students, whereas learning motivation did not show a significant difference between urban and rural areas.

REFERENCES

- Farhanu, R. F., & Afifah, H. M. (2026). Analysis of Determinants of Students' Physical Conditions in Urban and Rural Environments. *ACTIVE: Journal of Physical Education, Sport, Health and Recreation*, 15(2), 934–942. <https://doi.org/10.15294/active.v15i2.49603>
- Kemendikbudristek. (2021). *TKSI - BGP*. bgpbanten@kemendikbud. <https://tksi.kemendikdasmen.go.id/home/fase/4#>
- Maulana, R., Kastrena, E., & Rochman, T. (2025). Analisis Perbandingan Sarana Dan Prasarana PJOK pada Sekolah di Kawasan Perdesaan dan Perkotaan. *Jurnal Olahraga dan Kesehatan Indonesia (JOKI)*, 6(1), 80–87. <https://doi.org/10.55081/joki.v6i1.4433>
- Nabila, P., & Juntara, P. E. (2025). Profil Ketersediaan Sarana Prasarana Olahraga Dan Minat Belajar Siswa Pada Pembelajaran PJOK di SMP Negeri 7 Kotabumi. *Jurnal Griya Cendikia*, 10(1), 443–446. <https://doi.org/10.47637/griyacendikia.v10i1.1923>
- Nanang Kurniawan, Anung Priambodo, & Marsudianto Marsudianto. (2024). Upaya Meningkatkan Motivasi Belajar Siswa Dalam Pembelajaran PJOK Melalui Permainan Tradisional Engklek. *PUSTAKA: Jurnal Bahasa dan Pendidikan*, 4(4), 148–156. <https://doi.org/10.56910/pustaka.v4i4.1729>
- Ristawati, Rahayu, T., & Rahayu, S. (2025). Studi komparatif minat dan motivasi anak usia sekolah terhadap olahraga bolabasket di perkotaan dan pedesaan. *Jurnal Edukasi Citra Olahraga*, 5(3), 498–510. <https://doi.org/10.38048/jor.v4i3.6257>
- Rochmah, A., & Nadhiroh, S. R. (2024). Aktivitas Fisik dengan Status Gizi Remaja di SMP Negeri 25 Surabaya Physical Activity with Adolescent Nutritional Status in State Junior High School 25 Surabaya. *Media Gizi Kesmas*, 234–240. <https://doi.org/10.20473/mgk.v13i1.2024.234-240>
- Septyananda, R., & Suripto, A. W. (2023). Tingkat Kebugaran Jasmani dan Indeks Massa Tubuh Peserta Didik di SD Negeri Gejayan Kabupaten Sleman. *Indonesian Journal for Physical Education and Sport*, 4(1), 8–13.
- Sudiana, I. K. (2014). Peran Kebugaran Jasmani Bagi Tubuh. *Seminar Nasional FMIPA UNDIKSHA IV*, 389–398.
- Yuliana, A., & Sugiharto. (2019). Survei Tes Tingkat Kebugaran Jasmani Atlet Ssb Putra Tugumuda Semarang Usia 14 Tahun. *Journal of Sport Sciences and Fitness*, 5(1), 14–18. <https://doi.org/10.15294/jssf.v5i1.39496>
- Zainuddin, Z., Ma'arif, I., & Prasetyo, G. (2024). Tingkat aktivitas fisik berdasarkan tempat tinggal perkotaan dan pedesaan. *Bravo's: Jurnal Program Studi Pendidikan Jasmani dan Kesehatan*, 12(2), 159–168. <https://doi.org/10.32682/bravos.v12i2/25>.