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THE HEAVY LOAD OF THE BACKPACK ON THE SHOULDER POSITION AT THE AGE OF 12-15 YEARS AT SMPN 56 SURABAYA

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ABSTRACT

Using backpacks causes many problems for the body and has a negative impact on the user. Continuous use of a backpack will cause irreversible changes to the user. The heavy load on a backpack doesn't just have an impact on shoulder pain. Analytical observational method with a cross-sectional approach: the research was carried out by weighing the bag, distributing questionnaires to assess the length of time the bag was used and age, and measuring the position of the right and left shoulders using a measuring scale. Results: bag weighing ± 3.52 kg with a minimum bag weight of 1.90 kg and a maximum of 7.6 kg. using the bag for an average of ±27.25 minutes, with a minimum time of 5 minutes and a maximum time of 120 minutes. The average left shoulder posture is ± 124.28, the minimum value is 108, and the maximum value is 145. The average right shoulder posture is ± 123.50, the minimum value is 107, and the maximum value is 141. Conclusion: There is no relationship between the weight of the bag used by the respondent and the posture of the respondent's right shoulder, as evidenced by the resulting significance value of 0.607 <0.05; there is no relationship between the weight of the bag used by the respondent and the posture of the respondent's left shoulder, as evidenced by the resulting significance value of 0.848 <0.05; the weight of the bag used is still normal and has a value below 10% of the student's body weight.

INTRODUCTION

Lack of determining the concept of thinking of students in receiving material and solving learning problems (Paramitha, 2023), then students try to prepare learning materials well. Learning materials must be prepared as well as possible, and students sometimes bring excess books in their bags. The use of bags by students needs attention.

Currently, various kinds of bags are being bought and sold so that children really like them. Backpacks are an idol for children because of their many benefits. Because it stores more school supplies, which are what children need at school (Ratih, 2023). According to Septiani (2017), it is necessary to pay attention to the requirements and use of a backpack properly and correctly; it is hoped that its use will not be in one position only. Using a backpack on one side will cause the user's body shape to become bad. Bags used that are too big and have a lot of weight cause pain in other parts of the body's back (Ismiyasa et al., 2023; Karnadipa, 2024).

According to Lisanti (2017), 77.9% of backpacks are used by schoolchildren, 20.8% use shoulder bags, and 1.3% use other types of bags. The body condition of schoolchildren needs to be considered due to the use of overloaded school bags (Purba, 2020). The use of overloaded bags in children aged 12–14 years has meaning, based on research conducted by Mahendrayani (2018) on the relationship between back pain. Because the weight load in children's bags is between 6 kg and 13 kg, it is 38.7%.

Using backpacks causes many problems for the body and has a negative impact on the user. Continuous use of a backpack will cause changes in the user that are irreversible. An excessive burden will be at risk of becoming acute in short-term use and will have long-term impacts. Backpacks with heavy loads have an impact on children because they often complain of back pain. Excessive weight will have an impact on the lower back, which results in pain due to the pressure from the excessive load on the spine, which is getting bigger, and age has an effect on the lower back due to the process of increasing age (Setiawan, 2021; Achirda, 2023).

The heavy load on a backpack not only has an impact on back pain, but using the bag with a position on one shoulder has an impact on the user. Research conducted by Aini (2022) explains that the impact on the shoulder causes musculoskeletal disorders in 20.9% of the population. The impact of shoulder pain is felt in the shoulder area, upper side of the arm, joints, muscles, or the shoulder, which can cause injury. New pain will

be felt in the front of the shoulder and upper arm; this will be felt when moving the arm. Another impact will be felt when resting in a lying position; the pain radiates to the hand, accompanied by tingling in the fingers. The research was conducted at Taman Negeri 56 Surabaya Middle School in grade 7 with students ages 12–15. The aim of the research was to determine the effect of the weight of a backpack on the shoulders of children aged 12–15 at SMPN 56 Surabaya.

MATERIALS AND METHODS

The research design used in this study was analytical observational with a cross-sectional approach; namely, the research was carried out by weighing the weight of the bag, distributing questionnaires to assess the length of time the bag was used and age, and measuring the position of the right and left shoulders with a measuring scale. The research was conducted in October–November 2023. The research sample was class VII students of SMP Negeri 56 Surabaya who used backpacks and met the inclusion criteria, namely 65 people consisting of 30 men and 35 women.

RESULTS AND DISCUSSION

Results and Discussion The research was carried out at State Junior High School 56 Surabaya, which is located on Jl. Raya Dukuh Kupang Barat No. 31, Dukuh Kupang, Kec. Dukuhpakis, Surabaya, East Java 60225. Carrying out research with a sample of 65 7th grade students from 2 classes. Research using backpacks has an effect on body posture.

Table 1. Measurement data

	N	Minimum	Maximum	Mean	Std. Deviation
Bag_Weight	65	1.90	7.60	3.5231	.79937
Length_of Use	65	5	120	27.25	20.495
Posture_Right	65	108.00	145.00	124.2769	7.23923
Posture_Left	65	107.00	141.00	123.5000	6.97596
Valid N (listwise)	65				

Most respondents, on average, carry a bag weighing approximately 3.52 kg, with a minimum bag weight of 1.90 kg and a maximum of 7.6 kg. According to the length of time they used the bag, most respondents used the bag for an average of ± 27.25 minutes,

with a minimum time of 5 minutes and a maximum time of 120 minutes. Most of the respondents had a left shoulder posture with an average of ± 124.28, with a minimum value of 108 and a maximum value of 145. Meanwhile, for respondents' right shoulder posture, the average was ± 123.50, with a minimum value of 107 and a maximum of 141.

Table 2. Correlation test results from measurement data

		Bag_Weight	Length_of Use	Postur Kanan
Bag_Weight	Correlation Coefficient	1.000	-.069	.065
	Sig. (2-tailed)	.	.585	.607
	N	65	65	65
Length_of Use	Correlation Coefficient	-.069	1.000	.131
	Sig. (2-tailed)	.585	.	.300
	N	65	65	65
Posture_Right	Correlation Coefficient	.065	.131	1.000
	Sig. (2-tailed)	.607	.300	.
	N	65	65	65

Meanwhile, the correlation test using Spearman's rho showed that there was no relationship between the weight of the bag used by the respondent and the respondent's right shoulder posture, as evidenced by the resulting significance value of 0.607 < 0.05. The test results also showed that there was no significant relationship between the length of time the bag was used and the respondent's right shoulder posture, as evidenced by the resulting significance value of 0.300 < 0.05. Meanwhile, the correlation test using Spearman's rho showed that there was no relationship between the weight of the bag used by the respondent and the respondent's left shoulder posture, as evidenced by the resulting significance value of 0.848 < 0.05. The test results also showed that there was no significant relationship between the length of time the bag was used and the respondent's left shoulder posture, as evidenced by the resulting significance value of 0.275 < 0.05.

Children will always feel the heavy burden of using backpacks filled with books for learning at school. Students at SMPN 56 Surabaya are aged 12–15 years. The results of the data from the questionnaire show that 1.5% are 11 years old, 51% are 12 years old, 43% are 13 years old, 3% are 14 years old, and 1.5% are 15 years old. So the research shows that class VII students at SMPN 56 are between 12 and 13 years old. Class hours at school are Monday through Friday, from 06.30 to 14.30 WIB; except Friday, school hours are only until 12.30. Because there are extracurricular activities that students, especially in grade 7, must take part in. With study hours between 06.30 and 14.30, it is

necessary to bring textbooks. So the bags used by students must have a heavy load of books, drinking bottles, and food supplies. Based on research by Oktari et al. (2020), it is explained that at school age, bones are still undergoing a growth process, so heavy loads that must be carried in carry-on bags will cause problems. So there will be disturbances in the bones and the impact of the bones growing abnormally, so that it can be concluded that the normal status level range for the weight of the contents of the bag is in the range 0 to 10%, and the warning status range is for the weight of the contents of the bag to be more than 10% of the child's body weight. . So it is known from Table 1 that the average female student carries a bag weighing approximately 3.52 kg, with a minimum bag weight of 1.90 kg and a maximum of 7.6 kg.

The heavy load of the backpack used will cause musculoskeletal disorders such as neck, shoulder, and lower back pain. The heavy load will put pressure on the muscles, ligaments, and tendons, causing tension that ends in pain (Ni'mah, 2023; Nikmah, 2023) According to Ainun (2022), there is a significant relationship between pain complaints that occur in the shoulders and loads, and heavy loads can increase the potential risk of muscle fatigue, resulting in complaints of shoulder pain. Based on the results of correlation test data using Spearman's rho, it shows that there is no relationship between the weight of the bag used by the respondent and the respondent's right shoulder posture, as evidenced by the resulting significance value of $0.607 < 0.05$. This shows that pain in the right shoulder with a heavy bag does not cause muscle fatigue, which can cause pain. The shoulder is in an area of musculoskeletal anatomy where pain complaints often occur.

CONCLUSION

Research conducted on SMPN 56 students aged 12–15 years, : 1. There is no relationship between the weight of the bag used by the respondent and the respondent's right shoulder posture, as evidenced by the resulting significance value of $0.607 < 0.05$, 2. There is no relationship between the weight of the bag used by the respondent and the respondent's left shoulder posture, as evidenced by the resulting significance value of $0.848 < 0.05$, 3. The weight of the bags used by students at SMPN 56 Surabaya is still normal and has a value below 10% of the student's body weight.

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