THE RELATIONSHIP BETWEEN SPORT and STRESS in MEDICAL FACULTY STUDENT STUDENTS MALANG MUHAMMADIYAH UNIVERSITY

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Abstract

Medical students are prone to experiencing stress during the lecture period due to the demands of the learning process. Women experience stress more easily than men due to a higher body response to stress. Exercise is known to help reduce stress because it stimulates the release of endorphins in the body. The purpose of this study was to determine whether there is a relationship between sports activity and stress in female students at the Faculty of Medicine, University of Muhammadiyah Malang. The research was conducted in January 2021 with a sample of 127 people and was taken using the technique of purposive sampling, that is, female students who are sampled must comply with the inclusion and exclusion criteria. Data was collected using a questionnaire (Godin-Shepard). Leisure Time Physical Activity and Depression, Anxiety, and Stress Scale (THAT)-21 The results of data analysis using the Kruskal-Wallis test show a value of p = 0.614 (p > 0.05), which indicates that there is no relationship between sports activity and stress levels in female students at the Faculty of Medicine, University of Muhammadiyah Malang.

Keywords: exercise, stress, female medical students.

INTRODUCTION

The medical faculty is a branch of lecture education that requires students to master all learning, both in terms of material and skills, before being able to carry out their profession 2. This causes medical students to be vulnerable to stress during their studies. Research conducted on medical students at Saudi Arabia's King Abdul Aziz University stated that more than half (59.2%) of study participants experienced stress [1].

In Indonesia, research that was conducted on medical students at Andalas University stated that out of 188 people who took part in the study, a distribution of stress levels was obtained, namely, that 21 people (11.2%) experienced mild stress, 91 people (48.4%) experienced moderate stress, and 76 people (40.4%) experienced severe stress [4]. This study also states that female students experience stress at a higher level than male students. Students who can deal with stress have better learning performance than students who cannot control stress [20]. One way that can be done to deal with stress is by exercising [11]. Stated in their research conducted on new students at the Faculty of Medicine, University of Riau, that exercise can reduce the level of stress experienced by students. From the results of the study, it is known that students who exercise regularly (18.1%) experience more mild levels of stress, while students who do not exercise regularly (81.93%) experience more moderate and severe levels of stress[18].

It was reported that medical students suffer from higher stress levels compared to students in other faculties. This can be caused by stressors in the academic field, such as the number of assignments or tight learning schedules [17]. Previous research conducted on female students at the Faculty of Medicine, University of Muhammadiyah Malang, stated that more female students experienced stress than female students who did not experience stress. This can be caused by academic demands such as the number of assignments that must be done, various tests that must be taken such as OSCE, MCQ-CBT, or Practicum Exams, and the necessity to be active during learning activities such as tutorial activities [24]. Medical faculty students show higher levels of stress when exposed to problems [12]. This is due to differences in responses to stress in women

and men related to HPA axis activity, the sympathetic nervous system, and sex hormones [7].

Based on the explanation above, the researcher wanted to test the effect of sports activity on stress levels in female students at the Faculty of Medicine, University of Muhammadiyah Malang.

METHOD

The study is observational analytic in nature and employs a cross-sectional approach. The research was carried out in January 2021 at the Faculty of Medicine, University of Muhammadiyah Malang. The population in this study were all female students of the Faculty of Medicine, University of Muhammadiyah Malang, with samples taken using the technique of purposive sampling, namely students who meet the inclusion criteria, namely students who are active and willing to be respondents, as well as the exclusion criteria, namely students who have a history of drug abuse, smoking, or have been diagnosed with psychiatric disorders. The sample size is calculated using the formula who squares, and a sample of 121 female students is required.

The research variables consist of the independent variable, namely sports activity, and the dependent variable, namely the level of stress. Variable data was taken using a questionnaire tool. Godin-Shepard Leisure Time Physical Activity to retrieve sports activity data and questionnaires Depression, Anxiety, and Stress Scale (THAT)-21 to collect stress level data The collected data were analyzed using SPSS version 25. Univariate analysis used descriptive analysis to see the frequency distribution, while bivariate analysis used the Who Square to see whether there is a relationship between sports activity and stress levels in female students at the Faculty of Medicine, University of Muhammadiyah Malang.

RESULTS AND DISCUSSION

Table 1. Characteristics of female students by age

Student Age	Amount	
	N	%
17	3	2,4
18	10	7,9
19	14	11,0
20	21	16,5
21	46	36,2
22	27	21,3
23	6	4,7
Total	127	100,0

The total number of samples that matched the inclusion and exclusion criteria was found to be 127 female students. Based on Table 5.1., the female students who participated in the study were in the age range of 17–23 years. The highest number was found in students aged 21 years with a total of 46 students (36.2%), and the lowest number was found in students aged 17 years with a total of 3 students (2.4%). This is in accordance with research conducted at the Faculty of Medicine, Airlangga University, with the largest number of students participating in the study being aged 21 years [10].

Table 2. Characteristics of female students by class

Year	Amount	
	N	%
2017	70	55,1
2018	20	15,7
2019	10	7,9
2020	27	21,3
Total	127	100,0

Based on table 2, of the 4 active batches who were respondents, namely 2017, 2018, 2019, and 2020, the female students who participated the most in the research were the 2017 cohort students with a total of 70 female students (55.1%) and the least from the 2019 class with a total of 10 female students (7.9%). The uneven number of participants per class could be caused by the less thorough distribution of the research questionnaire, because it was carried out randomly online and not face-to-face, so that it is difficult for researchers to distribute the research questionnaire as a whole and ensure that each female student per batch fills out the research questionnaire.

Table 3. Characteristics of female students based on sports activities

Sports Activity	Amount	
	N	%
Actively exercising	33	26
Active enough to exercise	27	21,3
Less active exercise	67	52,8
Total	127	100,0

Based on Table 3, it was found that most of the female students at the Faculty of Medicine, University of Muhammadiyah Malang, were included in the category of less active sports, namely 67 female students (52.8%). These results are in accordance with research conducted on female students of the Faculty of Medicine, Udayana University, for the 2017 academic year, which found that 84 out of 100 female students (87.50%) were not doing sports regularly [14], as well as previous research conducted on female students of the Faculty of Medicine, Udayana University, class of 2016 with an age range of 18-24 years, which showed the same results, namely that 65 out of 96 female students (67.70%) did not do sports as recommended, namely less than 3 times a week, as recommended (Sports training should be done at least three times a week because a person's body strength and endurance will decrease over time, so they must be trained again. This research was also supported by research on first-year students at the Faculty of Medicine, University of Riau, which found that 136 out of 166 students (81.93%) did not exercise regularly [21]. This can be caused by the nature of lectures in medicine, which are very demanding and have a long and busy study period, so female students find it difficult to find time to participate in sports activities [19]. The learning structure at the medical faculty makes it possible for students to have difficulty being physically active during lectures due to the busy learning schedule, so students have difficulty finding time to exercise regularly . The prohibition to do activities outside the home during the COVID-19 pandemic can also be a reason for students' limitations in doing sports [22].

Table 4. Characteristics of female students based on the type of sports they do

Sports Type	Amount	
	N	%
No sporting activity is carried out	28	22
Light sports activity	26	20,5
Moderate sports activity	6	4,7
Strenuous sports activity	5	3,8
Light and moderate sports activities	21	16,5
Light and heavy sports activities	8	6,3
Moderate and vigorous sports activities	6	4,7
Light, moderate and vigorous sports activities	27	21,3
Total	127	100

From table 4, it is known that among female students who did sports in the last week (77.8%), the highest number of female students were found among female students who did all types of sports activities,

from mild to moderate to heavy (21.3%). These results are different from research conducted at the Faculty of Medicine, Andalas University, with the results that female students did only one type of exercise, namely light exercise or vigorous exercise, and also from research conducted at the Faculty of Medicine, Udaya University, with the results that female students did only one type of aerobic exercise, namely running, cycling, swimming, or dancing [15]. These results can indicate that female students of the Faculty of Medicine at the University of Muhammadiyah Malang have an interest in sports activities. This can be caused because the Faculty of Medicine at the University of Muhammadiyah Malang has various kinds of autonomous arts institutions (LSO) in sports such as basketball, volleyball, futsal, and badminton. Other studies also state that women are motivated to exercise for reasons of maintaining their physical appearance and condition [6].

Table 5. Characteristics of female students based on stress levels

Level stress	Amount	
	N	%
Normal	60	47,2
Light Stress	24	18,9
Moderate Stress	25	19,7
Heavy Stress	15	11,8
Extremely Stressful	3	2,4
Total	127	100,0

Based on table 5, it was found that the highest frequency of female students experienced normal levels of stress or did not experience stress, namely 60 female students (47.2%), and the least experienced stress at very severe levels, namely 3 female students (2.4%). Appropriate results were obtained in research conducted in 2018 on students of the Faculty of Medicine at Airlangga University, with the result that 45 students (47.4%) did not experience stress [5].

The results of the study with the highest number of female students showed that female students did not experience stress, which could have been caused by the research schedule carried out during the COVID-19 pandemic, where the learning system at the Faculty of Medicine, University of Muhammadiyah Malang, already used a learning system. online or online, According to research that has been conducted on students at the Faculty of Medicine in India, it was found that learning using online methods helps reduce academic stress on students because online methods can open up more communication between teachers and students [27]. This is also supported by a systematic study conducted which found that many students are more daring to ask questions and discuss with lecturers so as to make them more active in learning [28]. The results of this systematic review also state that the online method makes students free to adjust their learning environment according to their individual convenience [23]. Research in Kazakhstan also states that in the conventional learning method, the academic process is determined more by the lecturers who teach, so sometimes there are students who feel they are not compatible with the specified process, while the online method makes students more independent and can determine the desired learning process conditions themselves, so that can have a positive effect on student mental health [9].

Based on table 6, it can be seen that of the 67 female students who were less active in sports, 35 female students (52.2%) did not experience stress, 11 female students (16.4%) experienced mild stress, 11 female students (16.4%) experienced moderate stress, 8 female students (12%) experienced severe stress, and 2 female students (3%) experienced very severe stress. Of the 27 female students who were quite active in sports, it was found that 10 female students (37%) did not experience it, 8 female students (29.7%) experienced mild stress, 4 female students (14.8%) experienced moderate stress, 4 female students (14.8%) experienced severe stress, and only 1 female student (3.7%) experienced very severe stress. Of the 33 female students who actively exercised, it was found that 15 female students (45.5%) did not experience stress, 5 (15.1%) female students experienced mild stress, 10 (30.3%) female students experienced moderate stress, 3 (9.1%) female students experienced severe stress, and no female students experienced very severe stress (0%). Descriptively, it can be seen that among the female students who are less active in sports, the number of female students who experience severe and very heavy stress is higher than among the female students who are quite active in sports and

are active in sports. This is consistent with the research results obtained by Wahyudi et al. (2015) that the number of students who experience mild stress is higher (68.4%) than the number of students who experience mild stress and exercise regularly (31.6%), as well as the number of students who experience There was also more severe stress among students who did not exercise regularly (87.9%) than among students who experienced severe stress and did regular exercise (12.1%).

Table 6. Cross Tabulation of Sports Activity and Stress Levels

		Stress Rating					Total
		Normal	Light Stress	Moderate Stress	Heavy Stress	Extremely Stressful	
Sports Activity	Less Active Exercise	35	11	11	8	2	67
		52,2 %	16,4 %	16,4 %	12 %	3 %	100 %
	Active Enough Exercise	10	8	4	4	1	27
		37 %	29,7 %	14,8 %	14,8 %	3,7 %	100 %
	Active Exercise	15	5	10	3	0	33
		45,5 %	15,1 %	30,3 %	9,1 %	0,0 %	100 %
Total		60	24	25	15	3	127
		47,2 %	18,3 %	19,7 %	11,8 %	2,4 %	100 %

Table 7. Test *Kruskal Wallis*

	Stress Rating
Kruskal-Wallis H.	.977
Df	2
Asymp Sig.	.614

Test Who Square Initially, it was carried out to see the significance value to find out whether there was a relationship between sports activity and stress levels in female students at the Faculty of Medicine, University of Muhammadiyah Malang, but because 5 cells were obtained that had an expected count value of 5, the test requirements were not met and we proceeded with the Kruskal-Wallis test. Based on table 7, the results of the Kruskal-Wallis test obtained a significant value of 0.614 ($p > 0.05$), so it can be concluded that statistically, there is no significant relationship between sports activity and stress levels in female students of the Faculty of Medicine, University of Muhammadiyah Malang, and sports activities cannot reduce stress on students of the Faculty of Medicine, University of Muhammadiyah Malang. These results are in accordance with previous research that was conducted on students of the Faculty of Medicine, University of Muhammadiyah Malang, classes of 2017 and 2017, which found that there was no effect of exercise on stress levels, which could be caused by other factors such as social support, individual personality, rest periods, and current competency. exercising. Different results were shown by research conducted on medical students in Pakistan, with the results indicating a decrease in stress for students who did sports, while students who did not do sports experienced twice as much stress as those who did. This study states that sports help improve students' ability to deal with stress and emotional trauma during the learning period [8].

Much literature states that exercise can effectively have a positive impact on physical health and can help reduce stress and symptoms of anxiety and depression. One of the most commonly explained theories is that exercise causes the release of beta-endorphins in the central nervous system, which work as a modulator of the positive effects of exercise on mood. The positive effect of exercise on stress can also be caused because exercise can be a distraction from negative thoughts [3]. Sports are included in emotion-focused coping, namely stress coping strategies that help change one's views or feelings when facing a problem [16].

Individuals can have different responses to stress; one of the things that can influence this is the coping strategies used [25]. Research conducted in Malaysia on first- and third-year medical students showed that more students used coping strategies that focused directly on the stressors or problems they faced, with the result that first-year students scored higher than third-year students. This is because first-year students must be able to adapt to a new learning

environment and be responsible for solving their own problems, while third-year students are getting used to the learning environment at the medical faculty but still face different problems, and coping strategies with a focus on problems are the best way to solve problems .This result is also supported by research conducted on students of the Faculty of Medicine, Malahayati University, class of 2016, with the results showing that more students used the strategy Problem-focused coping versus strategy-emotion-focused coping Problem-focused coping works in a direct way to solve problems and look for alternative solutions to problems, whereas emotion-focused coping only helps divert or avoid negative thoughts, so emotion-focused coping is an inappropriate strategy because it does not resolve the stressors experienced by each individual .

CONCLUSION

From the research conducted, it was found that most female students were included in the category of less active sports and did not experience stress or were at normal levels. There is no relationship between sports activity and stress levels in female students at the Faculty of Medicine, University of Muhammadiyah Malang.

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