

## Perceived Stress and Stress Factor Among Sport Science Undergraduate: A Cross-Sectional Study

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### ABSTRACT

University students experience stress at different stages of the semester caused by various stressors. The aim of this study is to compare the perceived stress at the beginning, middle and end of the semester and to compare the stress factor at the beginning, middle and end of the semester. A total of 252 participants (begin semester), 169 participants (middle semester) and 267 participants (end semester) from Faculty of Sports Science and Recreation, Universiti Teknologi MARA Perlis Branch were recruited for this study. The Perceived Stress Scale (PSS) and the Stress Factor Questionnaire were used to measure perceived stress and stress factors. The results suggest that students experience stress, but at a moderate level, beginning semester ( $15.90 \pm 2.956$ ), middle semester ( $15.92 \pm 3.025$ ), and end semester ( $15.92 \pm 3.104$ ). There is a statistically non-significant difference between the perceived level at the beginning, middle and end of the semester as determined by one-way ANOVA ( $F(2, 685) = .002, p = .998$ ). The majority of students reported that they do not get enough sleep (76.25%), have financial problems (68.2%) and the course load (59.85%) as stress factors. These findings proved that stress is a constant factor for students throughout the semester and that interventions to manage these stressors may be beneficial to student well-being. Future research can explore the effectiveness of stress reduction interventions and their implementation to promote student mental health.

**Keywords:** *Perceived Stress, Stress Factor, Academic, Sport Science, Undergraduate*

## INTRODUCTION

Decreased psychological well-being of students is a growing health and societal problem. High levels of stress over a prolonged period of time have been linked to an increased risk of lower mental wellbeing and mental health problems. Stress is the psychological or emotional strain that occurs when a person is confronted with challenging or difficult situations that they believe are beyond their capacity to handle (Gardani et al., 2022). According to Baum and Dougall (2011), stress is a negative emotional experience is accompanied with anticipated biochemical, physiological, cognitive, and behavioural alterations that are aimed at either modifying the stressful event or adapting to its consequences. The degree of students' mental wellness is strongly influenced by their perception of stress. Stress seems to be a serious problem for university students, who are a very vulnerable population group. Other health issues that stressed students experience include physical tiredness, sleep issues, irritability, pessimism, and anxiousness (Casuso-Holgado et al., 2019).

One of the most enjoyable and exciting stages of young adulthood is university life. It is a phase where students have the opportunity to develop both educationally and intellectually. Unfortunately, they seem to have a hard time dealing with life when they enter university because they cannot handle stress. Stress is something common place, but it has negative effects on them. In a study, it was found that students experience stress because they encounter many challenges in their daily life with the vibrant university life (Ganesan et al., 2018). Time at university can be stressful for most students. This may be because they are exposed to various stressors. These include separation from family, high personal expectations, time pressure, academic overload, exams, competitions, trying to achieve educational goals despite financial constraints, and a lack of leisure activities (Sharp & Theiler, 2019).

In addition, researchers found that attending university for the first time is a stressful time for many first-year students (Abdullah et al., 2009). Stress affects both the mental and physical health of students. Stress factors have been reported from various studies. A study by Anwer et al. (2020), showed that university students, regardless of their course of study, are often confronted with various sources of stress, such as lifestyle changes, variable environmental conditions, interpersonal relationships and academic pressures, all of which lead to significant psychological impairment. Another study by Malik and Javed (2021), has shown that fear of lower performance and delay in completing their studies are also reasons that trigger stress in students. The education system in Malaysia also plays an important role in causing stress. In Malaysia, subjects are usually taught in terms of semesters rather than years. Some other universities have a third semester of 8-14 weeks so that students can complete their courses in a shorter time. Or in other courses they have a shorter time to complete the programme. This results in students not being able to complete their work on one or more occasions (Press, 2009). A recent study by Siripongpan et al. (2022), found that medical students have poorer stress levels compared to the general population. They are characterised by competition, lack of time for leisure activities or social contacts, and schedules that require an exclusive dedication. An acceptable level of stress can be a motivation for productivity and good performance. However, a high level that exceeds personal ability to cope could be harmful. It can have a negative impact on physical and psychological well-being. (Sharp & Theiler, 2019).

Most studies looking at the stress levels of medical students, nurses and other hard subjects, but have not yet examined the stress levels of sports science students. Until now, there are still fewer studies reporting or publishing on stress in sports science students, especially in institutions in northern Malaysia. As suggested by Chang et al. (2020), identifying the risk factors and other associated factors is crucial for developing new guidelines and targeted interventions to help students. To reduce stress, it is also important to understand how the different sources of stress arise and what factors can cushion the effects of stress. The results of this study will stimulate stakeholder action by providing basic information on the prevalence of perceived stress and identifying the associated causes. Therefore, the aim of this study is to find a comparison between the perceived stress level and stress factor at different times of the semester, at the beginning, middle and end of the semester, among the sports science students of UiTM Perlis. Because by

doing this at different times of the semester, it is possible to find out which semester is a high risk that can put students under stress.

## **METHODOLOGY**

For this study, a cross-sectional quantitative research design was used to measure and compare stress levels and determine stress factors.

### ***Participants***

The number of undergraduates from Faculty of Sports Science and Recreation, Universiti Teknologi MARA Perlis Branch was 700. The sample size was determined based on the guideline by Krejcie & Morgan (1970). The specific number of participants according to the phases of data collection were 252 (begin semester), 169 (middle semester) and 267 (end semester). The different participants were measured at the different phases of data collection. Participants were selected using convenience sampling, considering their availability and willingness to participate.

### ***Instrumentation***

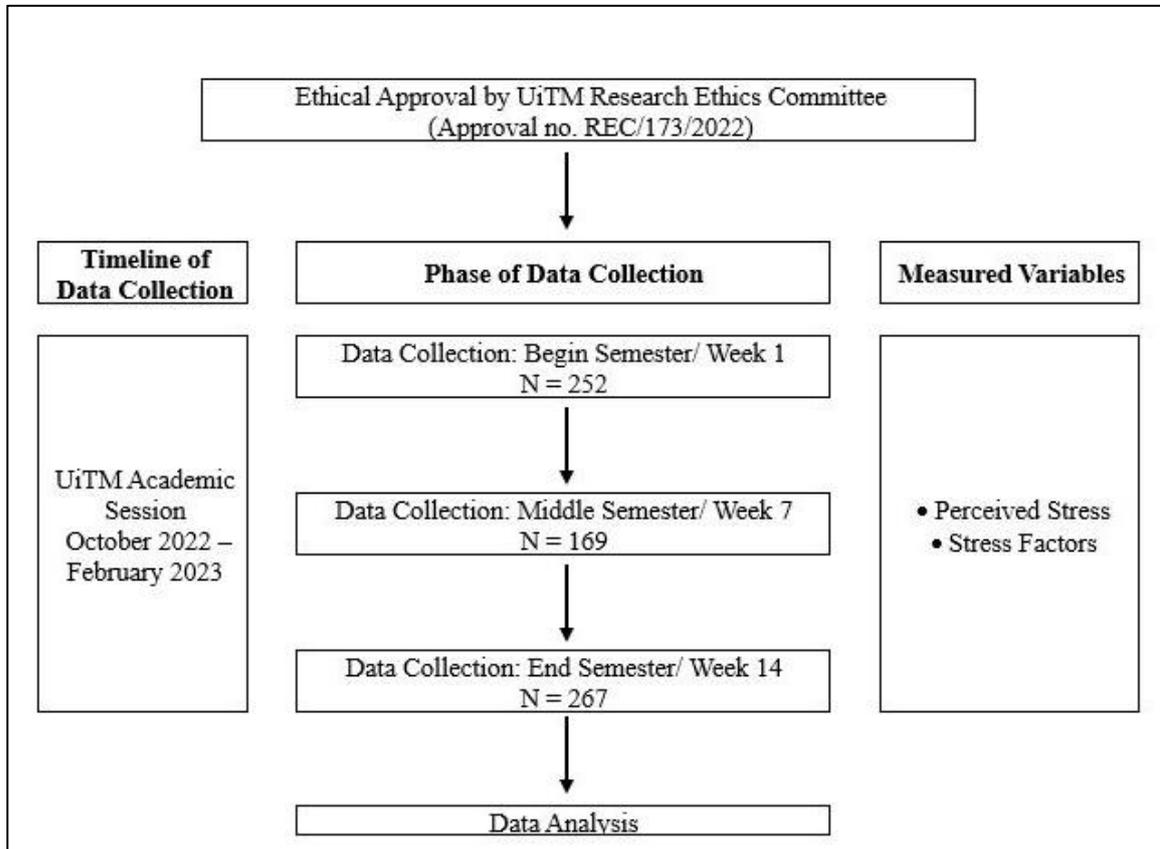
The instrument used for this study was an online-based questionnaire. The questionnaires were divided into three sections designated A, B, and C. Section A was the demographic information of participants, consisting of gender, study level, study program and semester. The questions in Section B were intended to assess stress levels using the Perceived Stress Scale (PSS-10). This 10-item scale, developed by Cohen et al. (1983), has been recognized as the most widely used psychological instrument in measuring the stress level. It is designed to evaluate the degree to which an individual has perceived life as unpredictable, uncontrollable and overloading (Cohen et al., 1983). The PSS-10 can be used by children aged 12 and above (e.g. Kechter et al., 2019). The measure has been validated in both adolescent and adult populations. There were 10 items in the Perceived Stress Scale (PSS-10) using a 7-point Likert-type scale ranging from 0 (never), 1 (almost never), 2 (sometimes), 3 (fairly often) and 4 (very often). To calculate a total PSS score, responses to the four positively stated items (items 4, 5, 7 and 8) first need to be reversed (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 and 4 = 0). The PSS score is then obtained by summing across all items. Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress. Scores ranging from 0 - 13 would be considered low stress, scores ranging from 14 - 26 would be considered moderate stress, and lastly scores ranging from 27 - 40 would be considered high perceived stress.

In section C, the Stress Factor Survey will be used because to determine what sources will be found to influence student stress. The section requires the participants to identify the factors of stress that they experience during the given period (in beginning, middle and end of semester) by answering Yes/No questions. The Stress Factor Survey was adapted from a study by Rafidah et al., (2009). Eleven factors of stress will be listed down in the questionnaire and respondents may indicate more than one factor, which they perceive as relevant to themselves.

### ***Procedures***

This study was approved by UiTM Research Ethics Committee (approval no. REC/173/2022). Data collection occurred three times which were begin semester (week 1), middle semester (week 7) and end semester (week 14). Questionnaires were administered during the same week to minimize the effect of varying stress levels that may occur. The weeks of data collection correspond to the UiTM academic calendar for the session October 2022 – February 2023. The questionnaire was distributed to the participants through a Google form link via mobile application (i.e.: WhatsApp). A brief description of the purpose of

the study, procedure, and informed consent were included in the information. Participants were asked to read the instructions written in the questionnaire carefully. The estimated time for answering the questionnaire is about 7 - 10 minutes. The flow chart of the study is shown in Figure 1.



**Figure 1:** The flow chart of the study

### *Statistical Analysis*

All data were analyzed using the Statistical Package of Social Science (SPSS) version 28.0. The descriptive analysis of frequency and percentage was used to for demographic data and determine stress factors. The One Sample T-test was employed to determine the stress level. One-way ANOVA was used to distinguish stress level between different weeks of study.

### **RESULT AND DISCUSSION**

Table 1 shows the demographic data of the participants. A total number of 688 sport science undergraduates participated in this study, whereby 308 (44.8%) were female and 380 (55.2%) were male. An examination on education level showed that the participants were 45.9% ( $n = 316$ ) and 54.1% ( $n = 372$ ) in degree and diploma level. The participants represent five study programs in Faculty of Sport Science and Recreation, UiTM Perlis Branch.

**Table 1:** Demographic Characteristics

	Gender	Frequency	Percentage (%)
Gender	Female	308	44.8
	Male	380	55.2
Education Level	Degree	316	45.9
	Diploma	372	54.1
Study Program	SR111	171	24.9
	SR113	201	29.2
	SR241	141	20.5
	SR243	83	12.1
	SR245	92	13.4
Semester	Semester 2	166	24.1
	Semester 3	34	4.9
	Semester 4	345	50.1
	Semester 5	143	20.8

Table 2 shows the distribution of perceived stress at different times of the semester which indicates the highest percentage for moderate stress through the beginning, middle and end of the semester (80.2%, 81.1%, 81.3%). The percentage of moderate stress has shown gradually increase towards the end of the semester.

**Table 2:** The Distribution of Perceived Stress at Different Times of the Semester

	Low Stress		Moderate Stress		High Stress	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Begin semester	50	19.8	202	80.2	0	0
Middle semester	32	18.9	137	81.1	0	0
End semester	49	18.4	217	81.3	1	4

Table 3 presented the result of One Sample T-Test comparing the stress level at different week of study with the normal stress level value at 13. The result showed that the stress level at the beginning of the semester was statistically significantly higher than the normal stress level,  $t(251) = 15.581, p = .001$ . The result for middle semester showed that the stress level was statistically significantly higher than the normal stress level,  $t(169) = 12.538, p = .001$ . For the end semester, the stress level was statistically significantly higher than the normal stress level,  $t(267) = 15.361, p = .001$ . All three different weeks of study, participants experienced moderate stress level.

**Table 3: One Sample T-Test of Stress Level**

	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>t</b>	<b>df</b>	<b>Sig. (2-tailed)</b>
Begin semester	252	15.90	2.956	15.581	251	.001
Middle semester	169	15.92	3.025	12.538	168	.001
End semester	267	15.92	3.104	15.361	266	.001

Test value = 13

Table 4, Table 5, and Table 6 showed the result of one-way ANOVA test comparing stress level at different weeks of study. The result indicates that there was no significant difference between weeks of study as determined by one-way ANOVA ( $F(2, 685) = .002, p = .998$ ). Further analysis used the Post Hoc Test (LSD), confirmed that there was no significant difference between beginning semester ( $15.90 \pm 2.956$ ), middle semester ( $15.92 \pm 3.025$ ), and end semester ( $15.92 \pm 3.104$ ),  $p > .05$ .

**Table 4: Mean  $\pm$  SD of Stress Level at Different Weeks**

	<b>N</b>	<b>Mean</b>	<b>SD</b>
Beginning semester	252	15.90	2.956
Middle semester	169	15.92	3.025
End semester	267	15.92	3.104
Total	688	15.91	3.026

**Table 5: ANOVA Result of Stress Level at Different Weeks**

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Squares</b>	<b>F</b>	<b>Sig.</b>
Between groups	.044	2	.022	.002	.998
Within groups	6291.547	685	9.185		
Total	6291.592	687			

**Table 6: LSD Post Hoc Test Comparison Stress Level Between Weeks**

		<b>Mean Diff.</b>	<b>Sig.</b>
Begin Semester	Middle semester	-.016	.957
	End semester	-.017	.950
Middle semester	End semester	.000	.999

Table 7 shows the results in percentage of the Stress Factor Survey which consists of eleven stressors at the beginning, middle and end semester. In the beginning semester, the majority of participants claimed that the stress factors were not getting enough sleep, not enough exercising and finances with 76.2%, 76.0% and 64.3% respectively. In the middle semester, the factors of not getting enough sleep (71.6%), finances (63.3%) and course load (59.8%) contribute to stress. The trend of stress factors observed in the end semester was alike the stress factors in middle semester. The factors of not getting enough sleep (74.5%), finances (68.3%) and course load (55.8%) contribute to stress.

**Table 7: Percentage of Students Experiencing Stress During the Semester**

<b>Stress Factors</b>	<b>Beginning Semester (%)</b>	<b>Middle Semester (%)</b>	<b>End Semester (%)</b>
Nutrition	50.0	51.5	53.9
Sleeping too much	40.1	29.0	29.2
Not getting enough sleep	76.2	71.6	74.5
Problem with boyfriend or girlfriend	19.8	18.3	19.5
Class attendance	42.9	36.7	27.3
Problem with roommate	7.9	11.8	18.4
Over exercising	5.2	14.8	11.6
Not enough exercising	70.6	48.5	53.2
Social activities	46.4	40.8	44.9
Finances	64.3	63.3	68.2
Course load	58.3	59.8	55.8

The aim of the present study was to compare the perceived stress and stressors at different time points, namely at the beginning, middle and end of the semester, focusing exclusively on the sports science students of UiTM Perlis. In this study, more than 80% of the students experienced moderate stress, with the highest percentage recorded at the end of the semester (81.3%). A study by Sheroun et al. (2022), found a similar percentage among nursing students in India who also had moderate levels of perceived stress (82.67%). The Iranian medical students had a lower percentage (58.4%) of perceived stress at a moderate level, but still not above the "high level" category, which was 34%. (Ganjoo et al., 2021). A study by Abdul Ghafar et al. (2022), in Malaysia, university students felt moderate to high levels of perceived stress, with female students having significantly higher mean perceived stress levels compared to males. However, another study in Malaysia studied among university students shows contrast result where 43% of the students experienced severe stress levels due to the previous pandemic (Ibharim et al., 2022). Another contradictory result was also seen in the Polish, Saudi Arabian and Turkish students, where a larger number of students had higher stress levels (Rogowska et al., 2020; AlAteeq et al., 2020; Aslan et al., 2020). The differences in stress levels can be attributed to financial worries and insufficient financial support for students. Students' satisfaction with their lives was low. This indicates that socio-economic position is a crucial indicator of psychological performance under extremely stressful conditions such as the academic load during semester. In addition, the survey on stress factors revealed that too little sleep, too little exercise and financial problems contributed most to students' feelings of stress.

In this study, students consistently reported insufficient sleep at the beginning, middle and end of the semester (76.2%, 71.6%, 74.5%). Although sports science students do not study as much as nursing and medical students, their timetable is packed with theory and practical sessions of at least twenty credit hours per semester. Not to mention the additional assignments that have to be handed in at a certain time during the fourteen weeks. These possible reasons may have contributed to the high percentage of moderately perceived stress experienced by sports science students. Poor sleep quality is closely related to an individual's health and well-being, as reported by Çelik et al. (2019), who show that about 65.4% of health science students have too little sleep. Hence, lack of sleep can interfere with mood regulation, increasing perceived stress levels and making students more vulnerable to stress.

Another stressor reported by the sports science students was the problem of finances. The present study shows that the percentage of financial problems is constant at the beginning, middle and end of the semester (64.3%, 63.3%, 68.2%). Financial stress can cause people to cut back on spending, limit social activities or forgot things they enjoy, leading to an overall lower quality of life. When people face financial difficulties

or challenges, this can lead to increased stress levels, which can have both short and long-term effects on their physical and mental health.

In the middle and at the end of the semester, another stress factor is added, namely the course load. The average course load is about three to four hours and up to seven to eight subjects in total. In the sports science subjects, they also have to take four assessments for each subject. A heavy course load with a large number of credits or demanding courses can lead to increased academic pressure. Students may feel overwhelmed by the amount of coursework, assignments and exams, which contributes to higher stress levels. In our study, students reported having difficulty with course load at the beginning, middle and end of the semester (58.3%, 59.8%, 55.8%). The same factor experienced by nursing students from assignments and clinical work (Sheroun et al., 2020).

Limitations of this study include the cross-sectional design, which limits inferences about causality, the questionnaire-based format, which may result in response bias, and the fact that it was a single university of a public university, which limits the generalizability of the findings to other private or public universities in the state and the country.

## **CONCLUSION**

The present study highlighted the level of perceived stress and stress factors among sport science undergraduates. on pharmacy student mental health. The study showed the prevalence of perceived stress was highest at the moderate level, consistently evident at the beginning, middle and towards the end of the semester. The major stressors were mentioned: too little sleep, financial problems, and course load during the semester. The study's findings revealed an alarming increase in perceived stress among study participants, which strongly recommend immediate treatment or action to overcome this issue. Sports science students need to be made aware of stress management strategies and the importance of healthy lifestyles, physical activity and seeking counselling. We also suggest that students should be physically assessed and screened for mental health before being admitted to the programme.

## **AUTHORS' CONTRIBUTION**

Siti Nurjannah Abas: Carried out this study and drafted the manuscript.

Masshera Jamaludin: Idea, draft and review the manuscript.

Al Hafiz Abu Bakar: Study design and data collection.

Siti Hannariah Mansor: Data collection and data analysis.

Nor Nandinie Mohd Nizam Edros: Construct methodology and data interpretation.

Zulkifli Ismail: Study design, data interpretation and draft the manuscript.

All authors read and approved the final manuscript.

## **CONFLICT OF INTEREST**

No agency or organization has a conflict of interest with this study, which might be interpreted as influencing the findings or interpretation of this study. No financial resources were available to support this project.

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