

OUTDOOR RECREATION PARTICIPATION MOTIVES AND MENTAL HEALTH AMONG STUDENTS AT UITM SEREMBAN 3 CAMPUS

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Abstract. Mental health challenges, particularly stress, anxiety, and depression, are increasingly prevalent among university students in Malaysia and worldwide. Despite the well-documented benefits of outdoor recreation on psychological well-being, limited research has examined the specific motivational factors that drive university students to engage in such activities and their direct impact on mental health outcomes. This study investigated the relationship between outdoor recreation participation motives and mental health among students of the Faculty of Sports Science and Recreation at Universiti Teknologi MARA Seremban. A quantitative cross-sectional survey design was employed, with data collected from 157 respondents using two validated instruments: the Recreation Experience Preference scale to assess five motive dimensions, namely achievement and stimulation, similar and new people, enjoyment of nature, physical fitness, and escape from pressure; and the Depression Anxiety Stress Scales to measure mental health outcomes. Data were analysed using descriptive statistics, Pearson correlation, and independent samples t-test. Findings revealed that all five participation motive dimensions were rated highly, with enjoyment of nature emerging as the predominant motivator. While the majority of respondents reported normal stress levels, moderate anxiety and depression were prevalent among nearly half the sample. No statistically significant relationship was found between participation motives and mental health outcomes, and no significant gender difference in mental health status was observed. These findings underscore the need for structured, nature-based mental health programmes within university settings.

Keywords: *outdoor recreation, participation motives, mental health, depression anxiety stress, university students*

Introduction

Mental health disorders represent one of the most pressing public health challenges of the twenty-first century. According to the WHO (2022), approximately one in eight people globally are affected by mental health conditions, with anxiety and depression constituting the leading causes of psychological impairment. These conditions not only affect individual well-being but also have far-reaching consequences on academic performance, social functioning, and overall quality of life. University students, in particular, are a highly vulnerable population, as they are exposed to a unique constellation of stressors including academic pressure, social expectations, financial concerns, and the demands of transitioning into adulthood (Iqmar et al., 2025; WHO, 2022). In the Malaysian context, the prevalence of mental health issues among university students has followed a worrying upward trajectory. The National Health and Morbidity Survey 2019 (IPH, 2020) reported that 29.2% of Malaysians aged 16 and

above experienced mental health problems, a figure that has continued to rise in subsequent years. University students are especially susceptible to these challenges due to the compounded pressures of academic life, limited access to mental health resources, and the psychological consequences of urbanisation and shifting social norms (Iqmar et al., 2025; WHO, 2022). Students enrolled in physically intensive programmes, such as those in sports science and recreation, face additional performance-related pressures that may further elevate their risk of psychological distress.

Outdoor recreation has emerged as a promising non-clinical intervention for managing mental health challenges among university students. Activities such as hiking, cycling, and camping have been consistently associated with reductions in stress, anxiety, and depression, as well as improvements in mood and emotional resilience (Davidson et al., 2025; Iqmar et al., 2025; Liu et al., 2025; Yu et al., 2025). These activities provide opportunities for physical exercise, relaxation, and social interaction, all of which are recognised as key contributors to positive mental health outcomes. Theoretical frameworks such as the Attention Restoration Theory and the Biophilia Hypothesis further support the psychological benefits of engagement with natural environments, suggesting that exposure to nature reduces mental fatigue and promotes psychological recovery (Kaplan and Kaplan, 1989; Wilson, 1984). Despite the well-established benefits of outdoor recreation on psychological well-being, existing literature has predominantly focused on the general outcomes of participation rather than on the specific motivational factors that drive individuals to engage in such activities. Understanding participation motives is critical, as the psychological reasons behind engagement, whether for achievement, social connection, enjoyment of nature, physical fitness, or escape from pressure, may differentially influence mental health outcomes (Iqmar et al., 2025; Yu et al., 2025). Moreover, research exploring the relationship between these motivational dimensions and mental health in the Malaysian university context remains scarce, particularly among students in sports-related disciplines (Iqmar et al., 2025).

A further gap in the literature concerns the role of gender in moderating the relationship between outdoor recreation participation and mental health. Some studies have suggested that male and female students may differ in the psychological benefits they derive from outdoor activities, with males reportedly benefiting more from physical challenge and stress relief, while females tend to experience greater emotional rejuvenation and social bonding (Fariás-Torbidoni et al., 2024). However, empirical evidence on gender differences in mental health outcomes among outdoor recreation participants in Malaysian university settings remains limited. This study therefore sought to address these gaps by examining the impact of outdoor recreation participation motives on mental health outcomes among students of the Faculty of Sports Science and Recreation at Universiti Teknologi MARA (UiTM) Seremban 3. Specifically, the study aimed to: (1) identify the prevalent motivational factors for outdoor recreation participation; (2) assess the mental health status of students in terms of stress, anxiety, and depression; (3) examine the relationship between outdoor recreation participation motives and mental health outcomes; and (4) determine whether significant differences in mental health status exist between male and female students. The findings of this study are expected to contribute to the development of targeted, nature-based mental health interventions within university settings, and to inform the programme design of camp organisers, university counsellors, and public health policymakers.

Review of literature

Outdoor recreation participation motives

Outdoor recreation participation motives refer to the psychological factors that drive individuals to engage in leisure activities conducted in natural environments. These motivational dimensions have been widely studied using the Recreation Experience Preference framework, which categorises participation motives into several distinct constructs (Iqmar et al., 2025; Yu et al., 2025). In the context of university students, understanding these motives is essential for comprehending how and why outdoor recreation influences psychological well-being. The present study examined five key motivational dimensions: achievement and stimulation, similar and new people, enjoyment of nature, physical fitness, and escape from pressure.

Achievement and stimulation

Achievement and stimulation refer to the motivation to engage in outdoor recreation as a means of challenging oneself, testing personal limits, and attaining a sense of accomplishment. Davidson et al. (2025) noted that individuals driven by this motive seek to develop their skills, improve self-confidence, and experience personal growth through the completion of physically or mentally demanding tasks. Davidson et al. (2025) further highlighted that achievement-based motivation fosters self-efficacy, which is the belief in one's capacity to succeed in the face of challenges. For students in sports-related disciplines, overcoming obstacles during outdoor activities reinforces resilience and contributes to emotional growth, both of which are closely linked to positive mental health outcomes.

Similar and new people

Social interaction constitutes a significant motivational dimension in outdoor recreation participation. Engaging in group-based outdoor activities provides opportunities for individuals to form new social connections and strengthen existing ones, both of which are associated with reduced feelings of isolation and improved psychological well-being. Iqmar et al. (2025) demonstrated that participation in outdoor recreation with others promotes social support networks and helps mitigate symptoms of depression by fostering a sense of community and belonging. Iqmar et al. (2025) similarly found that shared outdoor experiences, whether among friends or strangers, were effective in reducing anxiety and stress, as participants developed a sense of collective identity and mutual support.

Enjoyment of nature

The motivation to engage in outdoor recreation for the enjoyment and restorative qualities of natural environments is one of the most widely cited dimensions in the literature. Students who participate in activities such as hiking, camping, or nature walks often do so to experience the calming and rejuvenating effects of immersion in natural settings. Kaplan and Kaplan (1989) emphasised that exposure to nature significantly reduces anxiety levels and promotes relaxation by enabling individuals to disconnect from academic and personal pressures. These findings are consistent with the Attention Restoration Theory proposed by Kaplan and Kaplan (1989), which posits that

natural environments replenish depleted cognitive resources and restore psychological equilibrium. Iqmar et al. (2025) further corroborated this, noting that time spent in natural environments provides meaningful relief from stress and contributes to a restored sense of psychological balance.

Physical fitness

Physical fitness represents the motivation to participate in outdoor recreation with the objective of maintaining or improving physical health. Regular engagement in outdoor physical activities such as running, cycling, and hiking has been strongly linked to the reduction of stress and enhancement of mental health outcomes (Iqmar et al., 2025; Liu et al., 2025; Yu et al., 2025). The physiological mechanism underlying this relationship involves the release of endorphins during physical exertion, which elevates mood and alleviates symptoms of depression and anxiety. Iqmar et al. (2025) further demonstrated that physical exercise conducted in outdoor settings exerts a significant positive influence on mental health by improving self-esteem and fostering emotional stability, effects that are amplified when compared to exercise performed in indoor environments.

Escape from pressure

Escape from pressure refers to the motivation to engage in outdoor recreation as a strategy to detach from daily stressors and academic demands. Students who participate in outdoor activities for this reason often seek a mental break from the responsibilities and expectations of university life. Kaplan and Kaplan (1989) noted that activities such as camping and hiking serve as effective coping mechanisms by allowing students to regain psychological equilibrium and reduce anxiety. Iqmar et al. (2025) further highlighted that outdoor recreation serves as a valuable tool for managing stress and depression, offering a healthy and constructive outlet through which students can temporarily disengage from life's pressures and restore their mental well-being.

Mental health among university students

Mental health encompasses an individual's emotional, psychological, and social well-being, and is fundamental to functioning effectively in daily life. In the context of university students, mental health is commonly assessed across three principal dimensions: stress, anxiety, and depression. These dimensions are not mutually exclusive and frequently co-occur, collectively representing the psychological burden experienced by students navigating the demands of higher education (Lovibond and Lovibond, 1995).

Stress

Stress is defined as the emotional and physiological response to perceived external demands that exceed an individual's available coping resources. Lazarus and Folkman (1984) characterised stress as arising when individuals appraise a situation as threatening or overwhelming. Among university students, academic workload, examination pressure, and social expectations are well-documented sources of stress. Outdoor recreation activities such as hiking and cycling offer a means of interrupting the stress response by providing a change of environment, opportunities for physical release, and temporary relief from academic obligations (Iqmar et al., 2025).

Anxiety

Anxiety is characterised by persistent feelings of unease, worry, and apprehension, particularly in anticipation of future events or uncertain outcomes. It is among the most prevalent mental health concerns reported by university students globally. Davidson et al. (2025) demonstrated that outdoor recreation serves as an effective strategy for reducing anxiety by encouraging present-moment awareness and physical engagement, both of which have been shown to interrupt anxious thought patterns. Davidson et al. (2025) further affirmed that participation in outdoor activities promotes relaxation and significantly reduces the physical and cognitive symptoms associated with anxiety disorders.

Depression

Depression involves sustained feelings of sadness, hopelessness, and diminished interest or pleasure in activities that were previously enjoyable. Among university students, depression is often precipitated by academic failure, social isolation, and the cumulative effects of chronic stress. Liu et al. (2025) established a significant association between regular participation in physical outdoor activities and reduced depressive symptomatology, attributing this relationship to the endorphin-mediated mood enhancement that accompanies sustained physical exertion. Iqmar et al. (2025) similarly reported that outdoor group activities contributed to measurable reductions in depressive symptoms by fostering social connectedness and providing a sense of purpose and accomplishment.

Relationship between outdoor recreation participation motives and mental health

The theoretical basis for the relationship between outdoor recreation and mental health is grounded in two principal frameworks. The Attention Restoration Theory posits that natural environments facilitate the recovery of directed attention capacity by providing a restorative experience characterised by fascination, extent, compatibility, and being away from daily demands (Kaplan and Kaplan, 1989; Wilson, 1984). The Biophilia Hypothesis, advanced by Wilson (1984), further suggests that human beings possess an innate affinity for the natural world, and that engagement with natural environments fulfils a fundamental psychological need, thereby reducing stress and promoting well-being. Empirical evidence supports these theoretical propositions. Iqmar et al. (2025) found that outdoor activities such as hiking and cycling were associated with significant reductions in stress and anxiety and improvements in emotional resilience. In the Malaysian context, Iqmar et al. (2025) demonstrated that outdoor recreation substantially enhanced the mental health of university students by alleviating depression and stress. Liu et al. (2025) further reported that outdoor activity time was inversely associated with depression risk among adults, with consistent engagement in nature-based activities linked to meaningful reductions in depressive symptoms.

Gender differences in mental health among university students

Gender has been identified as a significant factor in the manifestation and severity of mental health outcomes among university students. Female students consistently report higher levels of stress, anxiety, and depression compared to their male counterparts, a

pattern attributed to a combination of biological, psychological, and sociocultural influences including hormonal variability, societal role expectations, and gender-specific coping styles (Davidson et al., 2025; WHO, 2022). Conversely, male students are less likely to report psychological distress due to prevailing social stigma surrounding mental health disclosure, which may result in underreporting and unaddressed psychological need (WHO, 2022). With respect to outdoor recreation, gender differences in the benefits derived from participation have also been observed. Farías-Torbidoni et al. (2024) reported that female students experienced greater emotional rejuvenation and social bonding through outdoor activities, while males reported more pronounced stress relief and satisfaction from physical challenge. These differences suggest that gender-sensitive programme design may be necessary to maximise the mental health benefits of outdoor recreation across diverse student populations. Understanding these gender dynamics is therefore an important consideration in the development of targeted mental health interventions.

Conceptual framework

The conceptual framework underpinning this study positions outdoor recreation participation motives as the independent variable and mental health as the dependent variable. The five motivational dimensions, namely achievement and stimulation, similar and new people, enjoyment of nature, physical fitness, and escape from pressure, are hypothesised to exert an influence on three mental health outcomes: stress, anxiety, and depression. This framework is informed by the Recreation Experience Preference model and is consistent with the theoretical propositions of the Attention Restoration Theory and the Biophilia Hypothesis. Gender is additionally examined as a moderating variable in relation to mental health outcomes, in recognition of the documented differences in psychological responses to outdoor recreation participation between male and female students.

Materials and Methods

Research design

A quantitative cross-sectional survey design was adopted for this study. This approach was selected for its suitability in examining patterns, relationships, and differences across a large sample within a defined period. The use of a structured, closed-ended questionnaire enabled the systematic collection of numerical data, facilitating hypothesis testing and the identification of statistically meaningful associations between outdoor recreation participation motives and mental health outcomes. The quantitative approach is well-established in recreational and mental health research and supports the generalisability of findings to comparable student populations (Iqmar et al., 2025).

Population and sampling

Target population and sample size

The target population for this study comprised students of the Faculty of Sports Science and Recreation at Universiti Teknologi MARA (UiTM) Seremban 3 who participated in the Semester 3 Final Camp. The total estimated population was 193

students. Based on the sample size determination table proposed by Krejcie and Morgan (1970), the minimum required sample size for a population of 193 was 131 respondents. To account for potential non-responses and incomplete questionnaires, a 20% buffer was applied, yielding a final target sample size of 157 respondents. This adjustment ensured that sufficient data would be available for robust statistical analysis.

Sampling technique

A non-probability convenience sampling technique was employed in this study. This approach was deemed appropriate given that the target participants were readily accessible during the Semester 3 Final Camp event, and the study required respondents with direct experience of structured outdoor recreation activities. Convenience sampling is a widely accepted strategy in survey-based research involving specific, accessible student populations within a defined institutional context (Lyu et al., 2025).

Instrumentation

A structured self-administered questionnaire was employed as the primary data collection instrument, comprising three sections as detailed in *Table 1*.

Table 1. Research instrumentation.

Section	Variable	No of items	Scale	Source
A	Demographic Profile	4	Closed-ended	Author-constructed
B	Outdoor Recreation Participation Motives	20	5-point Likert Scale	Recreation Experience Preference (REP)
C	Mental Health (Stress, Anxiety, Depression)	21	4-point Likert Scale	Depression Anxiety Stress Scales (DASS-21)

Section A: Demographic profile

Section A collected background information on respondents including gender, age, course code, and prior participation in a final camp. This demographic data provided essential contextual information for subgroup analyses and aided in the interpretation of findings across different student profiles.

Section B: Outdoor recreation participation motives

Section B assessed the motivational dimensions underlying outdoor recreation participation using an adapted version of the Recreation Experience Preference scale. The section comprised 20 items organised under five constructs: achievement and stimulation, similar and new people, enjoyment of nature, physical fitness, and escape from pressure. Respondents indicated their level of agreement with each statement on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The instrument demonstrated strong internal consistency in the pilot study, with a Cronbach's alpha coefficient of .967, substantially exceeding the commonly accepted threshold of .70 (Khanal and Chhetri, 2024).

Section C: Mental health

Section C measured mental health outcomes using the Depression Anxiety Stress Scales, a validated 21-item instrument developed by Lovibond and Lovibond (1995). Each subscale comprised seven items assessing the severity of stress, anxiety, and depression experienced over the preceding week. Respondents rated each item on a

four-point scale from 0 (did not apply to me at all) to 3 (applied to me most of the time). Subscale scores were interpreted using the established clinical severity classifications provided by Lovibond and Lovibond (1995), ranging from normal to extremely severe. The instrument yielded a Cronbach's alpha of .978 during pilot testing, indicating excellent reliability.

Pilot study, data collection procedure and data analysis

A pilot study was conducted prior to the main data collection to evaluate the clarity, comprehensibility, and psychometric reliability of the research instruments. A sample of 30 participants, selected on the basis of characteristics similar to those of the main study respondents, completed both questionnaire sections. Reliability was assessed using Cronbach's alpha analysis. The Recreation Experience Preference scale yielded a Cronbach's alpha of .967, and the Depression Anxiety Stress Scales yielded a Cronbach's alpha of .978. Both values substantially exceeded the acceptable threshold of .70, confirming that the instruments were highly reliable and suitable for deployment in the main study (Lyu et al., 2025; Too et al., 2024). Data collection was conducted in accordance with ethical research protocols. Prior to the commencement of data collection, ethical approval was obtained from the university research ethics committee, and formal permission was sought from the relevant faculty authorities at UiTM Seremban 3. Participants were provided with a detailed briefing on the purpose of the study, the structure of the questionnaire, and the voluntary nature of their involvement. Informed consent was obtained from all participants prior to questionnaire distribution. The questionnaire was administered electronically via Google Forms, with the link distributed to eligible respondents during the Semester 3 Final Camp. A total of 157 completed responses were collected and subsequently coded, organised, and prepared for statistical analysis. All data were analysed using Jamovi statistical software (version 2.6.44). Both descriptive and inferential statistical techniques were employed to address the four research objectives, as summarised in *Table 2*. Descriptive statistics, including means and standard deviations, were computed to summarise the distribution of outdoor recreation participation motives and mental health outcomes across the sample. Pearson product-moment correlation analysis was employed to assess the strength and direction of the association between the independent and dependent variables. An independent samples t-test was conducted to determine whether statistically significant differences in mental health scores existed between male and female respondents. The significance threshold was set at $p < .05$ for all inferential analyses.

Table 2. Data analysis strategy by research objective.

Research objective	Statistical technique
To identify the prevalent motivational factors for outdoor recreation participation	Descriptive statistics (mean, standard deviation)
To assess the mental health status of FSR students	Descriptive statistics (mean, standard deviation)
To examine the relationship between participation motives and mental health outcomes	Pearson product-moment correlation
To examine gender differences in mental health status	Independent samples t-test

Results and Discussion

Demographic profile of respondents

A total of 157 respondents participated in the study, all of whom were students from the Faculty of Sports Science and Recreation at UiTM Seremban 3. As presented in *Table 3*, the sample was predominantly male, with 115 respondents (73.1%) identifying as male and 42 respondents (26.9%) identifying as female. *Table 3* shows that 98.7% of respondents ($n = 155$) fell within the 18 to 27 years age bracket, consistent with the typical age range of undergraduate students. Only two respondents (1.3%) were aged between 28 and 37 years. *Table 3* indicates that the majority of respondents were enrolled in Programme SR111 (54.1%, $n = 85$), followed by SR241 (43.9%, $n = 69$), and SR113 (1.9%, $n = 3$). As shown in *Table 3*, nearly all respondents (99.4%, $n = 156$) had previously participated in a final camp, with only one respondent (0.6%) reporting no prior experience.

Table 3. Descriptive statistical analysis.

Category	Frequency (N)	Percentage (%)
Gender		
Male	115	73.1
Female	42	26.9
Age group		
18 – 27 years	155	98.7
28 – 37 years	2	1.3
38 – 47 years	0	0.0
48 years and above	0	0.0
Programme code		
SR111	85	54.1
SR113	3	1.9
SR241	69	43.9
Prior participation		
Yes	156	99.4
No	1	0.6

Descriptive analysis of outdoor recreation participation motives

Table 4 presents the descriptive statistics for the five dimensions of outdoor recreation participation motives. All five dimensions recorded high mean scores, ranging from 4.65 to 4.73 on a five-point scale. Enjoyment of nature emerged as the highest-ranked motive ($M = 4.73$, $SD = .360$), followed by physical fitness ($M = 4.69$, $SD = .383$) and escape from pressure ($M = 4.69$, $SD = .378$). Achievement and stimulation ranked fourth ($M = 4.68$, $SD = .368$), while similar and new people was the lowest-ranked dimension ($M = 4.65$, $SD = .420$).

Table 4. Descriptive statistics for outdoor recreation participation motives ($N = 157$).

Dimension	Mean (M)	Standard Deviation (SD)	Rank
Enjoyment of Nature	4.73	.360	1
Physical Fitness	4.69	.383	2
Escape from Pressure	4.69	.378	3
Achievement and Stimulation	4.68	.368	4
Similar and New People	4.65	.420	5

Descriptive analysis of mental health outcomes

The mental health status of respondents was assessed using the severity classifications established by Lovibond and Lovibond (1995). As shown in *Table 5*, 92.4% of respondents (n = 145) recorded stress scores within the normal range. A small proportion reported mild (3.8%, n = 6) and moderate stress (3.8%, n = 6). In contrast, moderate anxiety was the most prevalent category (45.2%, n = 71), as shown in *Table 5*. Normal anxiety levels were reported by 33.8% (n = 53), mild anxiety by 14.0% (n = 22), severe by 4.5% (n = 7), and extremely severe by 2.5% (n = 4). The distribution of depression scores closely mirrored that of anxiety (*Table 5*), with moderate depression being the most frequently reported category (45.2%, n = 71), followed by normal (33.8%, n = 53), mild (14.0%, n = 22), and severe (4.5%, n = 7).

Table 5. Descriptive analysis of mental health.

Severity level	Frequency (N)	Percentage (%)
Stress		
Normal (0 – 14)	145	92.4
Mild (15 – 18)	6	3.8
Moderate (19 – 25)	6	3.8
Severe (26 – 33)	0	0.0
Extremely Severe (34+)	0	0.0
Anxiety		
Normal (0 – 7)	53	33.8
Mild (8 – 9)	22	14.0
Moderate (10 – 14)	71	45.2
Severe (15 – 19)	7	4.5
Extremely Severe (20+)	4	2.5
Depression		
Normal (0 – 9)	53	33.8
Mild (10 – 13)	22	14.0
Moderate (14 – 20)	71	45.2
Severe (21 – 27)	7	4.5
Extremely Severe (28+)	0	0.0

Relationship between outdoor recreation participation motives and mental health

A Pearson product-moment correlation analysis was conducted to examine the relationship between outdoor recreation participation motives and mental health outcomes. As presented in *Table 6*, the analysis revealed a very weak positive correlation, $r(153) = .04$, $p = .62$. As the p-value substantially exceeded the significance threshold of .05, the result was deemed statistically non-significant, and the null hypothesis was not rejected.

Table 6. Pearson correlation between outdoor recreation participation motives and mental health (N = 157).

Variable	Pearson's r	p-value	N
Outdoor Recreation Participation Motives – Mental Health	.04	.62	157

Gender differences in mental health status

An independent samples t-test was conducted to examine gender differences in mental health scores. As presented in *Table 7*, male respondents (n = 114) recorded a slightly higher mean mental health score (M = 1.37, SD = 0.596) compared to female

respondents ($n = 42$; $M = 1.23$, $SD = 0.749$). However, this difference was not statistically significant, $t(154) = -1.19$, $p = .237$, and the null hypothesis was not rejected.

Table 7. Independent samples T-test: Gender differences in mental health ($N = 157$).

Variable	Group	N	Mean (M)	SD	t	p-value
Mental health	Female	42	1.23	0.749	-1.19	.237
	Male	114	1.37	0.596		

Prevalent motivational factors for outdoor recreation participation

The descriptive analysis revealed that FSR students demonstrated consistently high levels of motivation across all five outdoor recreation participation dimensions, with mean scores ranging from 4.65 to 4.73. Enjoyment of nature emerged as the predominant motivational dimension ($M = 4.73$, $SD = .360$), followed closely by physical fitness and escape from pressure (both $M = 4.69$). The primacy of nature enjoyment is consistent with the Attention Restoration Theory, which holds that natural environments possess inherent restorative properties that replenish depleted attentional resources and facilitate psychological recovery (Kaplan and Kaplan, 1989). This finding aligns with Iqmar et al. (2025), who similarly identified nature appreciation as a central motivational driver among university students engaged in outdoor programmes. The high rankings of physical fitness and escape from pressure suggest a dual-purpose motivational orientation among FSR students, whereby outdoor recreation is perceived both as a means of maintaining physical conditioning and as a vehicle for psychological disengagement from academic demands. This pattern is consistent with the observations of Davidson et al. (2025) and Iqmar et al. (2025) regarding high-performing undergraduates in health-related disciplines. The lowest ranking of the social dimension, while still high in absolute terms, stands in partial contrast to Farías-Torbidoni et al. (2024), who argued that social belonging constitutes the primary catalyst for recreation participation. A plausible explanation is that FSR students already fulfil their social needs through compulsory team-based academic activities and consequently prioritise individual psychological recovery during discretionary outdoor participation (Iqmar et al., 2025).

Mental health status of FSR students

The assessment of mental health outcomes revealed a notable divergence across the three dimensions examined. With respect to stress, 92.4% of respondents recorded scores within the normal range, suggesting effective management of immediate academic pressures. This outcome may be attributable to the active lifestyle characteristic of FSR students, whose regular physical engagement is known to attenuate the physiological stress response (Iqmar et al., 2025; Liu et al., 2025; Yu et al., 2025). In contrast, the distributions for anxiety and depression presented a considerably more concerning profile. Moderate anxiety and depression were each reported by 45.2% of respondents, indicating that while FSR students demonstrate functional resilience against acute stress, a substantial proportion harbour underlying psychological vulnerabilities not adequately addressed through routine physical activity alone. This pattern is consistent with Davidson et al. (2025) and Iqmar et al. (2025), who noted that sports science students often maintain low perceived stress through habitual physical activity yet remain susceptible to moderate anxiety due to high-stakes practical

assessments and performance-oriented academic environments. This challenges the assumption advanced by Lovibond and Lovibond (1995), who argued that high anxiety is almost invariably preceded by elevated stress, and suggests that the relationship between these mental health dimensions may differ meaningfully across disciplinary contexts.

Relationship between outdoor recreation participation motives and mental health outcomes

The Pearson correlation analysis yielded a very weak and statistically non-significant positive relationship between outdoor recreation participation motives and mental health outcomes, $r(153) = .04$, $p = .62$. Accordingly, the null hypothesis was not rejected. This finding is interpreted not as evidence that outdoor recreation is inconsequential to mental health, but rather as a reflection of the critical distinction between motivational orientation and actual participation behaviour. Yu et al. (2025) argued that positive psychological outcomes from outdoor recreation are contingent upon consistent and active participation rather than motivational orientation alone. Furthermore, the near-uniformly high motivation scores across the sample may have introduced a ceiling effect, reducing the statistical variance necessary to detect a meaningful correlation. These findings contrast with Iqmar et al. (2025), who identified a moderate positive correlation between outdoor recreation participation frequency and mental health in a Malaysian university sample, underscoring the importance of incorporating behavioural measures alongside motivational assessments in future research.

Gender differences in mental health status

The independent samples t-test revealed no statistically significant difference in mental health scores between male and female FSR students, $t(154) = -1.19$, $p = .237$. This outcome is noteworthy given the broader literature documenting gender disparities in university mental health, with female students typically reporting higher distress levels (Farías-Torbidoni et al., 2024; World Health Organization, 2022). The absence of a significant gender difference in the present study may be explained by the shared motivational profile of male and female students, particularly their mutual emphasis on nature enjoyment and escape from pressure, which may function as a psychological equaliser producing comparable mental health outcomes. This is supported by Davidson et al. (2025) and Iqmar et al. (2025), who found that common participation motives in health-related disciplines frequently outweigh biological gender as a predictor of mental health. Additionally, the relatively small number of female respondents ($n = 42$) may have limited statistical power, and future studies with more balanced gender distributions would be better positioned to examine this question with greater precision.

Conclusion

This study investigated the impact of outdoor recreation participation motives on mental health outcomes among students of the Faculty of Sports Science and Recreation at Universiti Teknologi MARA Seremban. Drawing on data collected from 157 respondents, the study addressed four research objectives encompassing the identification of prevalent participation motives, the assessment of student mental health, the examination of the relationship between motives and mental health

outcomes, and the exploration of gender differences in mental health status. The findings revealed that FSR students demonstrated consistently high motivation across all five outdoor recreation participation dimensions, with enjoyment of nature emerging as the most prominent driver. This motivational profile suggests that students in sports science programmes approach outdoor recreation primarily as a restorative and physically purposive activity, placing particular value on the psychological benefits of natural environments. With respect to mental health, while the majority of respondents reported normal stress levels, moderate anxiety and depression were prevalent among approximately 45% of the sample, indicating that routine physical engagement alone is insufficient to address the underlying psychological vulnerabilities of this population. The Pearson correlation analysis yielded a statistically non-significant relationship between outdoor recreation participation motives and mental health outcomes, interpreted as reflecting the critical distinction between motivational orientation and actual participation behaviour. The independent samples t-test similarly revealed no significant gender difference in mental health outcomes, suggesting that the FSR environment functions as a contextual equaliser that attenuates gender-based mental health disparities documented in other disciplinary contexts.

The practical implications of these findings are significant. Universities should formalise structured outdoor mental health programmes that prioritise nature immersion and psychological restoration, aligned with the dominant motivational profile of students. Camp organisers and facilitators should incorporate elements of relaxation and stress recovery into programme design, and policymakers should formally recognise outdoor recreation as a preventive, non-clinical mental health strategy within Malaysian higher education. Several limitations should be acknowledged, including the use of convenience sampling from a single faculty, the cross-sectional design, the reliance on self-reported data, and the gender imbalance in the sample. Future research should employ longitudinal designs, larger and more gender-balanced samples drawn from multiple institutions, and incorporate both motivational and behavioural measures to more comprehensively model the pathway from recreational intent to mental health outcome. Qualitative approaches would further enrich understanding of the subjective experiences linking outdoor recreation to psychological well-being. In conclusion, this study affirms outdoor recreation as a valuable, accessible, and inclusive non-clinical resource for supporting student mental health. Realising its full psychological potential requires a coordinated commitment from educators, programme designers, and policymakers to translate the high motivational capital observed among FSR students into consistent, purposeful, and health-oriented participation in nature-based activities.

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Conflict of interest

The authors confirm that there is no conflict of interest involving any party in this research study.

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