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THE CORRELATION BETWEEN PSYCHOLOGICAL RESILIENCE AND LEVEL OF PHYSICAL ACTIVITY INVOLVEMENT AMONG ATHLETES IN UiTM DURING MASUM SPORTS CARNIVAL

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ABSTRACT

Physical inactivity is a public health concern, as 1 in 4 adults in Malaysia is inactive. On the other hand, being able to cope with stress and adverse experiences was referred to as resilience. Being active prove to be one of the protective factors for better resilience. However, many other factors contributed to individual resilience. Therefore, this research aims to investigate the correlation between psychological resilience and the level of physical activity involvement among athletes in UiTM during the MASUM sports carnival, factors that contribute to better resilience, and the difference in psychological resilience between male and female athletes among UiTM MASUM's contingent. Purposive sampling was used to identify 206 (N=206) UiTM athletes involved in the MASUM sports carnival. A correlational study was used to help the researcher gain an in-depth view of the proposed topic. The data was analysed using Pearson correlation and T-test. Findings indicate no significant correlation between the level of physical activity involvement and psychological resilience. Besides, social resources, such as family, were the main factors contributing to better psychological resilience, and there was no difference between male and female athletes regarding psychological resilience. In conclusion, this study sheds light on the correlation between the level of physical activity involvement and psychological resilience, factors contributing to better psychological resilience and the difference between male and female students regarding their psychological resilience. For future research, it is advisable to widen the sample to include other universities and use a qualitative method to generalise the results better.

Keywords: *Intrapersonal, physical activity, psychological, resilience*

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INTRODUCTION

Physical activity has several positive impacts on psychological well-being. Moreover, current research findings implied that physical exercise experiences contributed to the psychological resilience of students (Seçer & Çakmak, 2020). In addition, it was determined that students should be encouraged to engage in physical activity. Therefore, UiTM athletes who were involved in the Malaysian Universities Sports Council (MASUM) sports carnival should be encouraged to engage in physical activities to strengthen their psychological resilience. According to the World Health Organization (WHO), physical exercise influenced people's physical and psychological conditions. Moreover, the ideas of "psychological health" and "mental wellness" in the WHO's definition of health were noteworthy (Ağırkan, 2017). Thus, this research focused on the correlation between psychological resilience and the level of physical activity involvement among athletes in UiTM during MASUM's sports carnival. The main objective is to determine the correlation between levels of physical activity involvement and psychological resilience of UiTM MASUM's athlete students. This study considers students to be both a species engaging in physical activities and learning and an individual having positive and negative mental experiences. Physical activity greatly affects psychological and social concerns and boosts self-efficacy, according to Bandura (1993). Maintaining these qualities in difficult life conditions is fundamental to being healthy and physically and spiritually strong. Despite difficult circumstances, psychological resilience, or self-recovery, is a key aspect of spiritual structure (Oz & Bahadır-Yılmaz, 2009). Every age group experiences stress. Stress from daily issues and severe occurrences can harm an individual's health, especially during a pandemic. Son, Hegde, Smith, Wang, and Sasangohar (2020) examined how COVID-19 disrupted college students' mental health and well-being. The study found that COVID-19 negatively impacts academic, health, and lifestyle results. The study found that 138 of 195 participants felt stressed and nervous due to COVID-19. Similar research in Malaysia found that 57% of students had moderate to severe anxiety (Irfan, Shahudin, Hooper, Akram, and Abdul Ghani, 2021). Seçer and Çakmak Yildizhan (2020) found that physically active individuals exhibit good psychological resilience. İlhan (2017) found similar results in a research of 300 university students where exercise was linked to psychological resilience and other characteristics. Individual psychological resilience differed greatly from weekly exercise frequency. Schaal, Tafflet, Nassif, Thibault, Pichard, Alcotte, and Toussaint (2011) found professional recreation boosted psychological resilience. Regular sports engagement boosts psychological strength, according to Babiss and Gangwisch (2009), with 14,594 adolescents, and Dishman, Hales, Pfeiffer, Felton, Saunders, Ward, and Pate (2006), with 1,250 female high school students. Şahin, Yetim, and Çelik (2012) found that regular physical activity strengthens an individual's physical structure and gives psychological support during times of difficulty. Adverse experiences tend to happen all the time in everyone’s life. Divorce, financial problems, academic workload, stress, poverty, death of loved ones, and many other problems lead to adverse outcomes in an individual’s life—for instance, emotional, behavioural, physical, and mental health issues. However, many people tend to manage their issues well and prevent adverse outcomes from happening to them. These kinds of people had remarkable resilience. Many studies indicate several protective factors for better psychological resilience. Some of the well-known protective factors are intrapersonal and interpersonal factors. Intrapersonal factors include optimism, self-esteem, and a history of adverse experiences, while interpersonal factors include a social resource such as peers and family environment. Psychological resilience is correlated with physical exercise, and male students are more active than female students, according to multiple studies. Some research found that males are more resilient than females, vice versa, or equal. Many research have compared psychological resilience with gender. In Vergili (2018)'s study on university students' relationship styles and psychological resilience, 150 participants found no gender differences. Kumar, Singh, and Mitra (2016) found no gender difference in psychological resilience among 72 elite volleyball players. Thus, this study could deliver fresh results by addressing following research questions:

1. What are the factors that contributes to better psychological resilience?
2. Is there any correlation between levels of physical activity involvement with psychological resilience?
3. Is there any difference between male and female students with regards to their psychological resilience?

LITERATURE REVIEW

Factors that contribute to better psychological resilience.

Adverse experiences tend to happen all the time in everyone's life. Divorce, financial problems, academic workload, stress, poverty, death of loved ones, and many other problems lead to adverse outcomes in an individual's life—for instance, emotional, behavioural, physical, and mental health issues. However, many people tend to manage their issues well and prevent adverse outcomes from happening to them. These kinds of people had remarkable resilience. Many studies indicate several protective factors for better psychological resilience. Some of the well-known protective factors are intrapersonal and interpersonal factors. Intrapersonal factors include optimism, self-esteem, and a history of adverse experiences, while interpersonal factors include a social resource such as peers and family environment.

Personal resources

Personal or intrapersonal resources refer to apparent, social, psychological, or symbolic qualities wholly valued by an individual and could be directly utilized to enhance efficient functioning in specific areas (Lin, 2017). There were numerous categories of personal resources—for example, optimism and self-efficacy. Study by Smith, Epstein, Ortiz, Christopher, and Tooley (2012) indicate that mindfulness, mood clarity, purpose in life, optimism, and active coping were all significant personal resources for effectively recovering from stress. The optimism and mood clarity variables had the most significant effect sizes in all the samples. In contrast, optimism and purpose in life demonstrated the most prominent effects in those in ill populations. Similar findings by Belem, Caruzzo, Nascimento, Vieira, and Vieira (2014) showed that coping methods, combined with self-esteem, self-efficacy, task orientation, optimism, and intrinsic drive, played a crucial role in promoting the development of resilience. Besides, self-esteem has been one of the contributing factors to better resilience. Cambridge University defined *self-esteem* as confidence in belief, ability, and value. Additionally, it had been discovered that teenagers with higher self-worth suffered lower anxiety levels in reaction to specific stressful events, supporting the notion that resilience mechanisms were influenced by self-esteem. A study by Robbins, Catling, and Kaye (2018) among 214 female students at the University of Birmingham showed that higher self-esteem predicted higher resilience. A similar finding by Argyros (2019) showed that high self-esteem significantly predicted higher education students' resilience scores. Furthermore, a history of minor to moderate adverse experiences could contribute to better psychological resilience. This claim was based on a study by Seery, Leo, Lupien, Kondrak, and Almonte (2013) that found a moderate number of adverse life events was linked to less negative reactions to pain and more positive psychophysiological reactions while completing a test, compared to a history of either no adversity or non-extreme high adversity. A similar study among female students at the University of Birmingham by Robbins et al. (2018) stated that more exposure to challenging situations indicate greater resilience. Belem et al. (2014) noticed that the more frequently athletes experience general hardships of the sport, such as overcoming stressful situations, the more they develop optimism and enthusiasm, thus strengthening their resilience. Another study by McManama O'Brien, Rowan, Willoughby, Griffith, and Christino (2021) about psychological resilience in young female athletes found that adversity and pressure were vital components of forming resilience. Adversity included adverse life conditions from the past or present in both sports and non-sporting situations.

Social Resources – Family

A recent study by Kılınç (2023) emphasized the vast impact of attachment styles on the psychological resilience of teenagers, as well as the essential contribution of family support, support from peers, and school support in forming their levels of resilience. A study by Khamis (2015) showed that a good family environment promotes adolescent resilience. Similar findings in the university student population indicate that resilient outcomes in young people who have suffered trauma are promoted by positive correlations with parents and guardians (Edwards, Catling, and Parry, 2016). Social support, including family, peers, and surroundings, is the determining factor for high resilience. Sabouripour, Hassan, and Roslan (2018) stated that significant correlations exist between resilience and dimensions of social support, including family, friends, and significant others. Similar results were attained in the study of 95 first-year university students, where higher levels of optimism and social support experienced higher levels of resilience

(Dawson & Pooley, 2013). In their study, the authors demonstrated that optimism and perceived social support are directly or indirectly linked to resilience. They appeared helpful in dealing with college adjustment and adapting well to adversity. McManama O'Brien (2021), in the same study about the history of adversity, found that parent-athlete relationship, coach-athlete relationship, social connectivity, and social support have correlations with resilient-salient constructs like performance or well-being. Rouquette, Knight, Lovett, and Heuzé (2021) emphasized the significance of family assistance in enhancing an athlete's sense through actions that aim at improving the level of social support received from family members. A recent study also indicates the importance of family support in enhancing athletes' sense of identity, which has been acknowledged as a crucial element of social support. Families that offer emotional assistance, establish a loving atmosphere, and provide tolerance and encouragement contribute to the athletes' well-being and ability to bounce back from adversity (Hussain, Wang, and Li, 2023).

Social Resources – Peers

The same finding from Kılınç (2023), Sabouripour et al. (2018), and Dawson and Pooley (2013) on social resources – family finds that highly resilient people are said to have a good social support from family, peers, and their surroundings. A crucial link between different types of social support and resilience includes family, friends, and significant others. Those with higher amounts of optimism and social support were more resilient. Sarkar and Fletcher (2014) in their paper found that in athletics sport, perceived social support is the belief that friends, teammates, and coaches will help if needed. The research revealed that the winners of the Olympics felt protected from the demands of competitive sports by feeling they had access to excellent social support. This support encompassed assistance from their family, coaches, friends, and assistance personnel. The discovery demonstrates the stress-alleviating implications of perceived social support and indicates that it is a crucial component of resilience in elite sports.

Physical activity and psychological resilience

Regular physical exercise plays a crucial role in combatting these unfavourable circumstances and reducing health risks. Numerous research has proven that physical activity has many advantages for an individual. However, according to the NHMS (2019), 1 in 4 adults in Malaysia were physically inactive. According to the same survey, 39% of the least active were students. These statistics were a critical threat to the nation, especially when the data showed that students contributed hugely to the overall data. According to the WHO, physical inactivity was the fourth leading risk factor for global mortality. Hence, with many statistics in different countries stating the same result, physical inactivity is a global concern. People should have been aware of this condition and acknowledged that being actively involved in sports or physical exercise significantly contributes to a better individual's well-being. It was no longer a fact that individuals' physical and mental conditions were influenced by exercise. By actively engaging in exercise, people could build physical and mental strength while maintaining integrity in undesirable situations. This term was called psychological resilience. Several studies found that engaging actively in physical activity helps build better resilience. According to Seçer et al. (2020), there was a low positive correlation between university students' levels of physical exercise and their psychological resilience. The study used a two-stage analysis to identify whether physical activity induced better psychological resilience. Based on the study discussion, the minimum physical activity levels were 600 Metabolic Equivalents of Task (MET) minutes or below per week, while 3000 minutes per week were considered active. Additionally, it was found that physical activity levels substantially predicted psychological resilience. This study involved 1734 students studying at Erzincan Binali Yıldırım University, Turkey, concluding that physical activity levels were a variable that predicted psychological resilience levels. In the researcher's opinion, although the findings showed a low correlation between physical activity and psychological resilience, the unbalanced sample of 725 males and 1009 females in this study contributed significantly to this outcome. If the study balanced both genders, the results could be different. One of the reasons researchers think that this unbalanced issue could affect the result is because of the different results found for levels of physical activity involvement between both genders. Males reported 46.1% of highly active individuals, while females only contributed 25.1%. Hence, if it were balanced between both genders, the result could be different. Other findings that show that physical active involvement induces psychological resilience are from Ilhan (2017). The study shows the association between exercise participation and psychological resilience and other variables in 300

university students observed between weekly exercise frequency and psychological resilience. Another study that supports these findings is by Ozkara, Kalkavan, Alemdag, and Alemdag (2016). The study found that participation in physical activity is a predictor of resilience. The study that measures the role of physical activity and psychological resilience among teachers and future teachers found a significant correlation. The results show that 59.8% of the psychological resilience that future teachers display is from participation in physical activities. In the researcher's opinion, the results of this study could be different if the sample were from different professions, such as office workers. As people are aware, a teacher has many responsibilities in school. They not only teach the students, but they also need to support their academic and social development. Therefore, they need to be resilient most of the time because if they feel lost motivation or depressed, it will affect their teaching and learning and also impact students' development. This claim is supported by Çelebi and Oğuzöncül (2013), who mentioned that the teaching profession is challenging work compared to other professions. The author said that unwanted circumstances occur where psychological strain is felt more than in other professions. However, this study does not change the fact that being physically active leads to better psychological resilience. Most future teachers seem more tolerant of challenges at work when their bodies are active. They can withstand setbacks, stress, and depressing circumstances. The following research by Arida and Teixeira-Machado (2021) mentioned that exercise involvement was linked to psychological resilience and cognitive improvement in human and animal studies. The study aimed to prove that exercise reduces brain disease and improves neuroplasticity and shows that engaging in exercise also heals or lessens cognitive deficiencies. The findings also conclude that regular exercise strengthens the brain, making it more resistant to cognitive decline and brain illness. This study about how engagement in physical activity during adolescence reduces depression during emerging adulthood is supported by McPhie and Rawana (2015) in their study about the effect of physical activity on depression in adolescence and emerging adulthood. The study indicates that mid-adolescent levels of physical activity were linked to lower depression levels and slower changes and decreases in depression throughout time. It also stated that physical activity is a protective factor that implies teenagers who exercise more frequently are less likely to have depressive symptoms. Therefore, based on this literature, the researcher concludes that a person's psychological resilience increases according to how frequently they engage in physical activity. The opposite is also true; the levels of psychological resilience decrease with fewer physical activities. Physical activity involvement led to better psychological resilience not only among students and teachers but also among adolescents. Besides mental well-being, engaging in physical activity results in lower depression and reduced brain-related diseases. The findings of this study will be presented to see whether this variable leads to better psychological resilience among UiTM MASUM's student-athletes.

Gender and resilience

It was discovered in the study by Seçer et al. (2020) that there was a correlation between the gender variable and the students' amounts of physical activity, with male students having a higher activity level than female students. Similar findings by Oğuz, Çamcı, and Yılmaz (2018) showed that male students were more active than female students, and they did this for fun and to meet new people, while women engaged in activities to help them maintain or lose weight. However, in terms of gender variables and resilience, several studies differed. Regarding resilience, some studies agreed that a male is better than a female, but a study also stated that both sexes are equal. According to the gender variable found by Seçer et al. (2020), there was no noticeable difference in the psychological resilience levels of university students. Other studies by Vergili (2018) also indicated no difference between gender and psychological resilience. The study involved 150 participants and attempted to determine the correlation between university students' attachment types and their resilience. A study by Kumar et al. (2016) comparing the mental toughness among male and female volleyball athletes at the 12th South Asian Games (SAG) showed no noticeable difference in mental toughness between both genders. Although the results supported the previous study, there was no difference because the players had equal ability levels, were more mentally stable, and were in good physical shape. When the pressure was at its highest, they could maintain pressure control. Both were driven to win the gold medal in the 12th SAG, which was probably why there was not much of a difference. Hence, the results would be different if the situation changed from a winning mentality to a calmer situation and changed the subject. In contrast, some studies showed that males are better than

females regarding resilience. Antonini Philippe et al. (2021) indicate that men and women significantly differed in the scores they obtained from the resilience test. Women tend to have significantly lower scores on average than men. Erdogan, Ozdogan and Erdogan (2015) also indicate that male students demonstrated higher resilience in cases of difficulty and hardship when compared with female students. The study of 596 university students (216 males and 378 females) selected from several fields in the faculties of Education and Theology indicate that the possible reason for the results is that men dominate Turkish society. Other reasons that could lead to this finding are that women are expected to be more responsible than men in various situations, such as house chores and taking care of children. Women also tend to be more emotional than men, which allows them to be more emotionally affected by traumatic events. This claim is supported by Conversano, Di Giuseppe, Miccoli, Ciacchini, Gemignani, and Orrù (2020), which found that women are more likely to experience psychological hardship than men, but men are better at coping with stressful conditions. According to the WHO's (2002) assessment, socially defined gender norms, duties, and obligations may be responsible for the increased prevalence of depression among women. In the researcher's opinion, those studies could be considered biased because, in the modern era, both men and women should hold the same responsibilities, especially in marriage. However, it was no longer a fact that women were more stressed than men, especially during the pandemic. Women had been more negatively impacted by the pandemic, which they were expected to carry a more significant burden when it came to managing a household organization or caring for children. When it came to cutbacks, women might be more vulnerable. These many presumptions could be the root of numerous worries that can put women at greater psychological risk than men. Thus, with more stress burden, their psychological at-risk and, eventually, their resilience could be lower compared to men. However, in the researcher's opinion, those with more psychological stress should handle their problems better because they are already familiar with them and know how to cope. Thus, they would bounce back and return to their normal condition because they were needed, especially when they were someone's mother, wife, or teacher, and this term was called “resilience”. This claim was supported by Zarulli, Barthold Jones, Oksuzyan, Lindahl-Jacobsen, Christensen, and Vaupel (2018) in their study of women living longer than men, even during severe famines and epidemics. The study found that women lived longer than men on average, even in periods of exceptionally high mortality. Baby girls were better able to withstand harsh environments than baby boys, accounting for most of the female advantage. These findings supported the hypothesis that a complex correlation between biological, environmental, and social factors influences the female survival advantage. Nevertheless, this literature combined all three conditions in which some of the studies proved that males are better than females and vice versa, and both sexes are equal in terms of their psychological resilience. Therefore, by conducting this study, the comparison between males and females regarding their psychological resilience in the context of UiTM students involved in the MASUM sports carnival is seek.

METHODOLOGY

The researcher used a quantitative, correlational approach, distributing an online survey via Google Forms to UiTM sports managers involved in the MASUM sports carnival. This method allowed for easy and quick data collection, with the non-experimental design enabling the exploration of the correlation between physical activity involvement and psychological resilience. Google Forms ensured data accuracy and minimized errors through automated entry, mandatory questions, and response validation. However, a potential drawback is that it may exclude participants without internet access, familiarity with the platform, or those with busy schedules. To address this, alternative methods, such as paper surveys and digital assistance, were offered to ensure broader participation and reduce sampling bias.

Participants

This study employed purposive sampling, a non-probability sampling technique, to select participants from the student-athlete population. The specific target population was UiTM students participating in the MASUM (Majlis Sukan Universiti Malaysia) sports carnival. The study focused on athletes engaged in both individual and team sports contested during the event. The total population of student-athletes representing UiTM was 321. However, 115 participants were excluded from the study due to missing data from incomplete surveys, outliers or the presence of extreme values. Following the data cleaning process, 206 participants were selected for the study. This sample size is consistent with the recommended sample size according to Krejcie and Morgan (1970). The final sample comprised 108 male and 98 female student-

athletes, with ages ranging from 18 to 44 years. The participants were enrolled in semesters 1 to 6 and came from both urban and rural areas. To ensure the inclusion of athletes with the necessary characteristics, the researcher collaborated with the UiTM Shah Alam Centre of Sports to obtain a list of eligible participants. Purposive sampling was then used to select individuals specifically involved in the MASUM sports carnival, ensuring that the sample accurately represented the population of interest. This approach was deemed appropriate as purposive sampling allows the researcher to focus on individuals with specific traits, thereby enhancing the relevance and accuracy of the research results.

Measures

The instrument the researcher chose for this research was a set of questionnaires contained four sections: Sections A, B, C, and D. Section A consisted of the respondents' demographic background, which focused on the details of respondents, including gender, age category, residential area, and household income. Section B, the Protective Factors for Resilience Scale (PFRS), was adopted from Harms, Cohen, Pooley, Chambers, Galvão, and Newton (2018). This instrument highlighted three main factors contributing to psychological resilience: personal resources, social resources – peers and social resources – family. This version replaced the initial version from 2017, which contained 20 items, to 15 items on a 7-point Likert scale, with one indicating "strongly disagree" and seven indicating "strongly agree". The 15 items were divided into five items for each factor. The 15-item responses were combined into a single score, where higher scores reflected one's perception towards the component. PFRS offered significant evidence supporting the claim that there is a correlation between several aspects of psychological resilience, such as personal resources, social resources related to peers, and social resources related to the family. To test the reliability of PFRS, the Cronbach Alpha value was used, indicating .952. In section C, seven open-ended questions surrounding respondents' last 7-day physical activity recall from the International Physical Activity Questionnaire-Short Form (IPAQ-SF) version were adopted. Dr Michael Booth, an Austrian, created the questionnaire in 1996 to assess the correlation between individual physical and health activity levels.. The IPAQ-SF assessed the frequency and duration of three categories of physical activity: vigorous-intensity activities, moderate-intensity activities, and walking. To determine the necessary weekly physical activity, one must calculate the sum of these three categories of activities. The information regarding the validity of the IPAQ form has been obtained from the prior research conducted by Craig, Marshall, Sjostrom, Bauman, Booth, Ainsworth, Pratt, Ekelund, Yngve, Sallis, and Oja (2003). The findings indicate that the IPAQ demonstrated a satisfactory measurement quality comparable to other well-established self-reports. Section D focused more on determining respondents' psychological resilience levels. The Brief Resilience Scale (BRS) was a 5-point Likert type adopted by Smith, Dalen, Wiggins, Tooley, Christopher and Bernard (2008). It has an answer key such as "Strongly Disagree" (1), "Disagree" (2), "Neutral" (3), "Agree" (4), and "Strongly Agree" (5). The maximum score obtained from the scale was 30, and the minimum score was 6. Items 1, 3, and 5 were positively worded, and items 2, 4, and 6 were negatively worded. The higher the mean BRS scored, the more resilient the respondent is. The Cronbach Alpha for BRS was .718. which indicated acceptably high internal consistency.

Procedures

Ethics approval for this study was obtained from the Faculty of Education at Universiti Teknologi MARA (UiTM) Puncak Alam Campus to ensure research authenticity. The goal of this research and some of the researcher's background were briefly explained in the Google link form. The researcher also provided bilingual questionnaires in English and Bahasa to improve comprehension and make it easier for the respondents to answer the questions. The questionnaire was sent via Google Form link to 321 students through the UiTM sports centre, the manager for each sport, officers in charge of the MASUM sports tournament, and friends involved in MASUM. All responses were automatically recorded after the participants provided their answers. The average time it took a respondent to complete the questionnaire was 10-15 minutes. Once data has been collected, data analyse has been performed.

Data analysis

The descriptive analysis was carried out for the first objective, which was to examine the factors that contribute to better psychological resilience. Descriptive analysis is the method of describing or summarizing a group of data through statistical methods. An inferential analysis was carried out to identify the second objective: the correlation between the levels of physical activity involvement and psychological resilience. Therefore, the Pearson Correlation was used to study the correlation between the two data. As for the final objective, which was to find the difference between males and females regarding their

psychological resilience, inferential analyses were carried out using a T-test. A statistical test called a T-test was applied to compare the means of the two groups. It was widely employed in hypothesis testing to establish whether a procedure or treatment truly affects the population of interest or whether two groups differ. A conclusion was made from the findings.

RESULTS AND DISCUSSION

Factors that contribute to better psychological resilience

The first research question seeks to identify the factors contributing to better psychological resilience. The 15-item using a 7-point Likert scale range combines to form a single score, where higher scores indicate the perception of having more personal and psychosocial protective factors from family and peers. Each factor has five items. These factors help individuals remain resourceful in challenging situations. Descriptive analysis was conducted by seeking the mean and standard deviation of the three factors. The social resources – family factor is determined as the highest factor contributing to better psychological resilience with (mean= 6.1971) followed by personal resources (mean=5.6146). The lowest factor based on respondents' answers is social resources – peers (mean=5.5243).

Table 1: Total mean factors that contributes to better psychological resilience

	N	Mean	Std. Deviation
Personal Resources	206	5.614	1.081
Social Resources Peers	206	5.524	1.160
Social Resources Family	206	6.197	1.192

Correlation between levels of physical activity involvement with psychological resilience

A Pearson correlation was conducted to analyse the correlation between levels of physical activity involvement and psychological resilience. The result found that r (204) = -.011, p > .05, indicating a weak negative correlation between those two variables.

Table 2: Correlation between levels of physical activity involvement with psychological resilience

		Resilience scale
Total Physical	Pearson Correlation	-.011
Activity	Sig. (2-tailed)	.871
	N	206

The difference between male and female students with regards to their psychological resilience

An independent samples t-test was performed to determine the difference between male and female students' psychological resilience. The results show that there was no significant difference between males (M = 3.35, SD = .767) and females (M = 3.35, SD = .665); t (204) = -.068, p = .946.

Table 3: Test scores of males and female

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Resilience scale	Male	108	3.3503	.76764	.07387
	Female	98	3.3571	.66538	.06721

Table 4: Independent sample test between male and female

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff	Std. Error Diff
Resilience scale	Equal variances assumed	.060	.807	-.068	204	.946	-.00683	.10056
	Equal variances not assumed			-.068	203.585	.946	-.00683	.09987

Factors that contribute to better psychological resilience

The findings of this study revealed that the main factor contributing to better psychological resilience among athletes in UiTM during MASUM's sports carnival is the social resources – family factor. The second factor went to personal resources, while the lowest factor based on respondents' answers was social resources – peers. This finding is backed up by a prior study conducted by Kılınç (2023), which emphasized the significant impact of attachment styles on the psychological resilience of teenagers, as well as the essential contribution of family support, support from peers and school in forming their levels of resilience. Khamis (2015) suggested that an optimal family environment increases resiliency in teenagers. Research conducted among university students has revealed that positive interactions with parents and guardians play a crucial role in promoting resilient outcomes in teenagers who have undergone trauma (Edwards et al., 2016). Social support, comprising biological, peer, and environmental factors, has been identified as the main predictor of elevated resilience. In their study, Sabouripour et al. (2018) found noteworthy correlations between resilience and several aspects of social support, such as family, friends, and love correlations. The study of 95 first-year university students found that individuals with higher degrees of optimism and social support also had higher levels of resilience (Dawson & Pooley, 2013). The study proved that optimism and perceived support from others were directly and indirectly associated with resilience. These factors were beneficial in managing the challenges of college adjustment and effectively adapting to adversity. In the study on the history of adversity, McManama O'Brien et al. (2021) discovered that there is a correlation between many factors, such as parent-athlete relationship, coach-athlete relation, social connectivity, and social support, and resilient-salient constructs like performance and well-being. Rouquette et al. (2021) highlighted the importance of familial support in building an athlete's resilience by using observation that seek to enhance the social help provided by family members. A recent study has recognized the significance of family support in strengthening athletes' resilience, highlighting it as a vital component of social support. The presence of families that provide emotional support, foster a nurturing environment, and exhibit tolerance and enthusiasm have a significant role in enhancing the overall well-being and resilience of athletes, enabling them to recover from challenges and setbacks effectively (Hussain et al., 2023). Besides, family support since early childhood helps athletes become elite because of the social support received. One of the items in PFRS about the family factor is "My family is a source of strength for me," in which their dedicated involvement and investment in their children's sports journey help them become good athletes, thus becoming the main factor contributing to their better resilience. Nunomura and Oliveira (2013), in their study on parents' support in the sports career of young gymnasts, found that parental support is crucial in determining the level of involvement and commitment of young gymnasts in their sport. Parents who offer positive experiences contribute to their children's success and overall well-being in sports and other aspects of life. The same study stated that the support through financial aid, their level of participation, their degree of involvement through accompanying training, and their physical and emotional well-being enabled and greatly influenced the children entering into sports.

Correlation between levels of physical activity involvement with psychological resilience

Numerous previous findings demonstrated a correlation between physical exercise and psychological resilience. The study by Seçer et al. (2020) found a weak positive link between the amount of physical exercise university students engaged in and their psychological resilience. The study utilized a two-stage approach to determine whether physical activity improves psychological resilience. According to the study discussion, physical activity levels below 600 Metabolic Equivalents of Task (MET) minutes per week are considered minimal, while being active is defined as engaging in 3000 minutes of physical activity per week. The previous study is aligned with the current study, which recorded 39 respondents who scored a high level of physical involvement in activity; however, it did not correlate with the resilience level. Findings from this study show no significant correlation between the levels of physical activity involvement and psychological resilience. This finding was supported by Yoshikawa, Nishi, and Matsuoka (2016), who discovered no notable distinctions in the scores of the depressive symptom scale between physically active individuals and those who were inactive. A similar study by Mariani, Melchiori, and Marcolongo (2020) found no correlation between physical activity or energy expenditure and resilience. Thus, the current study suggested that individuals who perform physical activity do not correlate with psychological resilience. This might be because the respondents are inconsistent with their training and highly active at a low-moderate level during the off-season. It can be hypothesized that the athletes are only highly active during the competition period since the findings show that only 18.9% are at a high level of physical activity during the data collection. The data for this study was gathered after MASUM's sports carnival, in which the athletes are in their off-season. Hence, they are not highly active, thus justifying the result. This claim is supported by Weiler, Aggio, Hamer, Taylor, and Kumar (2015) in their paper titled "Sedentary behaviour among elite professional footballers: Health and 45 performance implications." The result of the study showed that professional footballers exhibit a concerning lack of physical activity during their free time, which is even more apparent when compared to non-athletic individuals of the same age and older. A similar study by Júdice, Silva, Magalhães, Matias, and Sardinha (2014), Franssen, Vanbrabant, Cuveele, Ivanova, Franssen, and Eijnde (2021) and Swartzendruber (2018) stated that athletes may engage in intense physical activity. However, they may also spend most of their day sedentary. Furthermore, the result indicates an insignificant correlation because the respondents did not have depressive symptoms severe enough to link the correlation between the two variables, similar to the previous study by Yoshikawa et al. (2016) that examined Japanese corporate employees who participated in consistent physical activity and those who were not involved in frequent physical activity. He found that they did not exhibit depression symptoms to such an extent that would hinder their ability to carry out their regular job responsibilities within the companies they work for. Another reason for the lack of high activity could be the students' commitment and academic workload, in which they must go to class, complete assignments and practicals, and study (Gomez, Bradley, and Conway, 2018). Besides, this study also recorded that only a minority of respondents are at a high resilience level, while most are at an average level. This finding is supported by Blanco-García et al. (2021) in their paper about resilience in sports: sport type, gender, age, and sport level differences. He found that resilience is not correlated with the specific sports (basketball, handball, volleyball, athletics, and judo) among the athletes who participated in this study. It also does not have a correlation based on the sports categories such as individual, team sport, and combat sport. All the respondents in his paper recorded an average resilience level, and the author used the same instrument as this study, the Brief Resilience Scale (BRS).

Difference between male and female students with regards to their psychological resilience

Some studies suggest that males may exhibit higher levels of resilience compared to females. For instance, Antonini Philippe et al. (2021) found a significant gender difference in resilience test scores, with men achieving higher average scores than women. Similarly, Erdogan, Ozdogan, and Erdogan (2015) demonstrated that male students displayed greater resilience in the face of challenges and adversity relative to their female counterparts. This discrepancy may be attributed to the sociocultural context of Turkish society, where men often hold more dominant positions, and women face higher expectations regarding domestic responsibilities, such as household chores and childcare. Moreover, women are frequently perceived as more emotional, which might increase their susceptibility to psychological distress from traumatic experiences. This perspective is supported by Conversano et al. (2020), who found that women are more likely to experience psychological hardships, while men generally exhibit better coping mechanisms under stress. However, previous study by Seçer et al. (2020) indicated no noticeable difference

in the psychological resilience levels of university students concerning the gender variable. Other studies by Vergili (2018) also indicated no difference between gender and psychological resilience. The study included 150 participants and attempted to determine the correlation between university students' attachment types and their resilience. Bingol and Bayansalduz (2016) discovered no statistically significant difference in psychological resilience levels between genders. Bayrakdaroglu (2014) conducted a study on Taekwondo and team sports players and discovered no statistically significant gender disparity regarding psychological resilience ratings. The current study is consistent with what has been found in previous studies, which indicated no significant difference in the test scores between genders. In other words, male and female students have similar psychological resilience. The mean between both genders also showed almost the same value. One of the main reasons the result showed no difference is that both males and females have almost the same value, which recorded high resilient levels. Only 6.5% and 8.2% of males and females recorded high resilient levels. This sampling and results were similar to Narwal (2021) in her comparative study on resilience, satisfaction and quality of life among 38 male and 39 female athletes in Tricity (Chandigarh, Mohali and Panchkula) of India. Her study stated that resilience in athletes can be affected by a range of elements, including psychological characteristics, coping mechanisms, social assistance, and prior encounters with hardship are equal for both genders. Furthermore, it has been postulated that hope, an optimistic mindset, and perceived social support can impact positive health and resilience for both males and females. Besides, the noticeable differences might be because both genders do not see the competition as a threat but rather as a challenge, which explains why no significant difference has been found. The athletes treated the competition positively and used it as a strategy to win the competition. The strategy, such as focusing on winning their own goals and concentrating on material prizes such as medals and financial rewards, could result in no significant difference between both genders. This claim is supported 47 by Litwic-Kaminska and Izdebski (2015) in their paper about resiliency against stress among athletes and the study by Kumar et al. (2016) examined the mental resilience of male and female volleyball athletes participating in the 12th South Asian Games (SAG). The study found no noticeable gap in mental resilience between the two genders. While the findings verified the prior research, no significant difference was observed due to the players' comparable skill levels, heightened mental resilience, and optimal physical condition. At peak pressure levels, they could effectively regulate and manage pressure. Both individuals were highly motivated to win and secure the gold medal in the 12th SAG, which likely explains the barely noticeable gap between them. Other than that, it was found that the UiTM MASUM's athletes were given a psychological session a day before they departed for the tournament. During the data collection procedures, the officer in charge mentioned this matter to the researcher, which could be the reason for this finding. Thus, it can be said that mental talk before the competition helps both male and female athletes have better resilience during MASUM competitions, which indicates no noticeable difference since both attend the same session. This claim is supported by Brewer, Haznadar, Katz, Van Raalte, and Petitpas (2019), who stated that athletes reported that they were more psychologically prepared to perform following the mental preparation than they were prior to its completion.

CONCLUSION

This study examined the relationship between physical activity involvement and psychological resilience among UiTM athletes during the MASUM sports carnival. The findings showed no significant correlation between the level of physical activity and psychological resilience. However, it was found that social resources, particularly support from family, played an important role in fostering psychological resilience among athletes. Additionally, the study revealed no gender differences in resilience levels, with both male and female athletes exhibiting similar psychological resilience, which aligns with previous research. Despite these valuable insights, the study had several limitations. Data were collected during the off-season, which may have influenced the results, and the sample size was limited to UiTM athletes. Future studies should aim to collect data during competition periods to capture a more accurate picture of resilience in athletes. Expanding the sample to include athletes from various universities in Malaysia, categorizing the sports by individual and team types, as well as considering comparisons across different faculties, races, and religions, would provide a more comprehensive understanding. Future research should also explore additional variables, such as coping strategies, stress levels, BMI, adverse experiences, and motivation, to better understand their impact on resilience. Furthermore, incorporating qualitative methods, such as interviews or focus group discussions, could provide deeper insights into the factors that contribute to resilience, beyond what can be captured through quantitative measures. The study also highlighted the

limitations of using the IPAQ and BRS instruments, which may not fully account for sport-specific resilience. Future research could explore alternative tools that are more tailored to the athletic context. Overall, this study provides valuable insights for university sports centers, student-athletes, and coaches, and suggests several areas for further exploration to better support athletes' mental and physical well-being.

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CONFLICT OF INTREST

The authors whose names are listed immediately below certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity.

AUTHORS CONTRIBUTIONS

All authors contribute in this preparing this manuscript.

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