

Sex Differences in University Students' Motivation for Running

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Abstract

With a sedentary lifestyle often manifesting among students, motivation for participation in sports activities, such as running, is a concern of particular interest. Studies so far have not assessed students' running motivation using a standardized questionnaire. Therefore, this paper aimed to evaluate sex differences in students' motivation for running. A total of 321 students from Serbian universities (162 males and 159 females) completed the standardized Motivations for Marathon 56-item questionnaire, consisting of 9 subscales. T-test for independent samples showed significant sex differences in General health ($p < 0.001$), Affiliation ($p = 0.004$), and all psychological scales (Coping, Self-esteem, and Life meaning; $p < 0.001$), indicating higher scores in females than male students. In contrast, male students had significantly higher scores on the Competition scale ($p < 0.001$) than females. The Weight Concerns, Recognition, and Personal Goal scales showed no significant sex differences. In line with our hypothesis, we can conclude that female students' motivation for running mostly relies on psychological and health motives. In contrast, male students only differentiate themselves from their female colleagues in competition motives. Running coaches in collegiate teams or student organizations interested in engaging students in running could benefit from these results by profoundly understanding sex differences in students' motivation. For example, they can organize running activities for female students focused on stress relief or health improvement while providing their male colleagues with more 19 race-related running activities.

Keywords: *marathon, psychology, health, fitness, competition*

Introduction

Today, physical activity is often reduced to a minimum, and it is well known that insufficient physical activity itself is recognized as a risk factor (WHO, 2024). An insufficient amount of movement and engaging in physical activity increases the possibility of the appearance of various types of diseases, the most common of which are hypertension, cardiovascular problems, obesity, diseases of the locomotor apparatus, and impairment of the individual's mental health (Knight, 2012). In general, physical activity among youth has declined (Ekelund et al., 2011), while sedentary behavior, particularly screen time among college students, has increased (Pate et al., 2011), contributing to negative health outcomes (Tremblay et al., 2011). According to Arnett et al. (2003) young adults experience physical, social, and cultural shifts as they leave home and are shaped by peer influence. Most of the time is dedicat-

ed to studying, exploring literature, conducting research, and taking exams. Preoccupation with education and some exam obligations leaves little time for students to engage in recreational sports activities, which can help reduce stress, improve mood, and enhance working capacity (Liu, Shi, & Gao, 2024).

Sports professionals are seeking to develop a suitable model of physical exercise that meets the needs of students in modern times. Physical activity promoters are increasingly recognizing that to keep people active, they need to help them develop physical activity habits that fit their lifestyle (Bess & LeighAnn, 2003). Over the last decade, running in nature, trail races, and half marathons have experienced significant growth as a sport-recreational activity, with a corresponding increase in the number of running clubs. A participation analysis shown that in early 2024, foot race participation rose by 13%, with marathon finishers increasing by 26% compared to the same period last year (Ryan, 2024). With a sedentary

lifestyle often prevalent among students, motivation for participation in sports activities, such as running, is a particular concern (Chernozub et al., 2024). Running can offer 45% lower adjusted risks of cardiovascular mortality, while it is a widely accessible, cost and time-efficient form of exercise (Oja et al., 2024).

Research into the motivational factors that influence participation in running events reveals clear gender-based patterns, with men and women often being driven by different psychological needs and goals. Men are typically more goal-oriented and are influenced by extrinsic motivations, such as competition, personal goal achievement and recognition (León-Guereño et al., 2020; Malchrowicz-Moško et al., 2020; Malchrowicz-Moško & Poczta, 2018). These factors are often associated with traditional masculine traits and external validation, as evident in the emphasis men place on timing, ranking, and outperforming others (Malchrowicz-Moško et al., 2020). In contrast, women tend to prioritize intrinsic motivations in sports participation (Zhang et al., 2024) and specifically in running are motivated mainly by well-being, affiliation, self-esteem and life meaning (Ogles et al., 1995). These motivators drive physical activity participation and reflect a more holistic approach to physical activity, emphasizing personal well-being and internal satisfaction (Frederick & Ryan, 1993). Studies, such as those by Malchrowicz-Moško and Poczta (2018), have found that women are more likely to run for psychological benefits, such as improving their mood or escaping daily stressors, rather than pursuing competitive outcomes. Furthermore, qualitative research by McGannon and Spence (2010) has emphasized how broader psychosocial narratives, including body image, empowerment, and community belonging, shape women's running experiences. Recognizing these gender-based differences in running motivation is crucial for event organizers, coaches, and health professionals aiming to design inclusive and supportive environments. Tailoring communication, rewards, and support systems to address both intrinsic and extrinsic motives can lead to higher participation rates and improved satisfaction among male and female runners alike.

While there has been a lot of research examining the motivation of university students to participate in physical activity in general (Kilpatrick et al., 2005; Sáez et al., 2021; Sánchez et al., 2022; Sibley et al., 2013), as well as running motivation among middle and high school students (Silva et al., 2013; Xiang et al., 2021), the research regarding specifically university students' running motivation has been scarce. A study by Malchrowicz-Moško et al. (2018) examined the motivation to participate in a half-marathon among two groups of university students: domestic runners and, as the authors labelled them, sport-tourist university students. The study utilized a self-constructed questionnaire with items falling into four types of motivations: social, experience, specific sport discipline and result. The results showed that for both groups, the most important motivation was a result-oriented approach. In contrast, the groups differed in their least important motivation, which was social for local students and sport-specific discipline for sport-tourist students. Another study examining the running motivation of Singaporean students employed

semi-structured interviews with a sample of 10 students (6 male and four female), concluding that the three most essential motivations were to de-stress, for the sake of friends, and to achieve a personal goal (Koh, 2019). Although a couple of these studies may indicate some trends regarding the running motivation of university students, to the authors' knowledge, there haven't been enough studies using a larger sample or a standardized questionnaire to draw more meaningful conclusions on this topic. Moreover, sex differences were not explored in the university student population, whereas studies mentioned previously strongly indicated different motivations for running in men and women in general.

Therefore, this paper aimed to evaluate sex differences in university students' motivation for running. We hypothesized that psychological, health, and social factors would motivate female students more, contrary to achievement motives. This study aims to provide important insights into the motivational differences between male and female university students who engage in running, using a validated psychological framework (MOMS), which is scarce and will allow the comparison of similar results. By identifying the specific motives that drive students, this research supports the development of more targeted, inclusive, and effective campaigns for running in younger populations. Given the global decline in youth physical activity levels and the rise in sedentary lifestyles, understanding what motivates young adults to run is crucial for designing interventions that can promote long-term engagement in healthy behaviors and the creation of environments where both men and women feel equally supported and motivated to participate in physical activity programmes.

Methods

Participants

A total of 321 university students from various universities in Serbia volunteered to participate in the study (male, $n=162$; female, $n=159$), with an average age of 21.57 ± 3.1 years. Respondents have an average running experience of 1.83 ± 2.6 years, with a weekly training volume of 24.6 ± 22 km, and they attended nearly two races per year (1.85 ± 2.6).

Procedures

This was a quantitative, non-experimental study with cross-sectional design.

The participants completed the 56-item Motivations of Marathoners Scale (MOMS; Masters et al., 1993), which has demonstrated internal consistency (Cronbach's alpha range, 0.80 to 0.93), retest reliability (interclass correlation coefficient range, 0.71 to 0.90), and factorial validity of the subscales. Each item is scored using a seven-point Likert scale where participants score the degree of agreement with each point on the scale, for example, "motivation to run", ranging from 1 (it is not a motivation to run) to 7 (it is a very important reason to run). MOMS identifies four scales or categories that constitute motivation for running, along with nine subscales within these categories: psychological (life meaning, self-esteem, and psychological coping), achievement (personal achievement and competition with others), social (recognition and affilia-

tion), and physical (general health and weight concern).

The questionnaire was translated into Serbian by two language experts and was distributed to participants in an online format created using Google Forms. Subjects were also asked questions about the races they usually participate in, the years they have been involved in running, the number of races they participate in per year and the number of kilometers they run per week. The questionnaire was anonymous, and by completing it, participants constituted their informed consent to take part in the study. All procedures were in accordance with the ethical principles derived from the Declaration of Helsinki. This study was approved by the Ethics Committee of University of Belgrade (Decision No. 02-1770/22-1 from 12th June 2022). The research was conducted during April 2024.

Data Analysis

Prior to all analyses, the Kolmogorov-Smirnov test was performed to confirm the distribution's normality. Descriptive statistics (mean \pm standard deviation (SD)) were calculated for each of the nine MOMS subscales. A T-test for in-

dependent samples was used to compare responses between genders. Also, for the variables in this research, the Cohen's D effect size was calculated (0.0-0.19 - trivial, 0.2-0.5 - small, 0.5-0.8 - medium, >0.8 - large). The level of statistical significance was set at $p < 0.05$. All statistical analyses were performed using Microsoft Office Excel 2017 (Microsoft Corporation, Redmond, WA, USA) and SPSS 26 (IBM Corporation, Armonk, NY, USA).

Results

T-tests for independent samples revealed significant sex differences in one of the two health-related scales. In particular, the General Health Scale revealed a significantly higher score in female students compared to males, with a small effect size ($T_{319} = 3.94$; $p < 0.01$; $d = 0.44$). In contrast, no significant results, with a trivial effect size, were observed on the Weight Concern scale ($T_{319} = 1.69$; $p = 0.09$; $d = 0.19$). Descriptive data for both scales, as well as statistical significance, were presented in Figure 1.

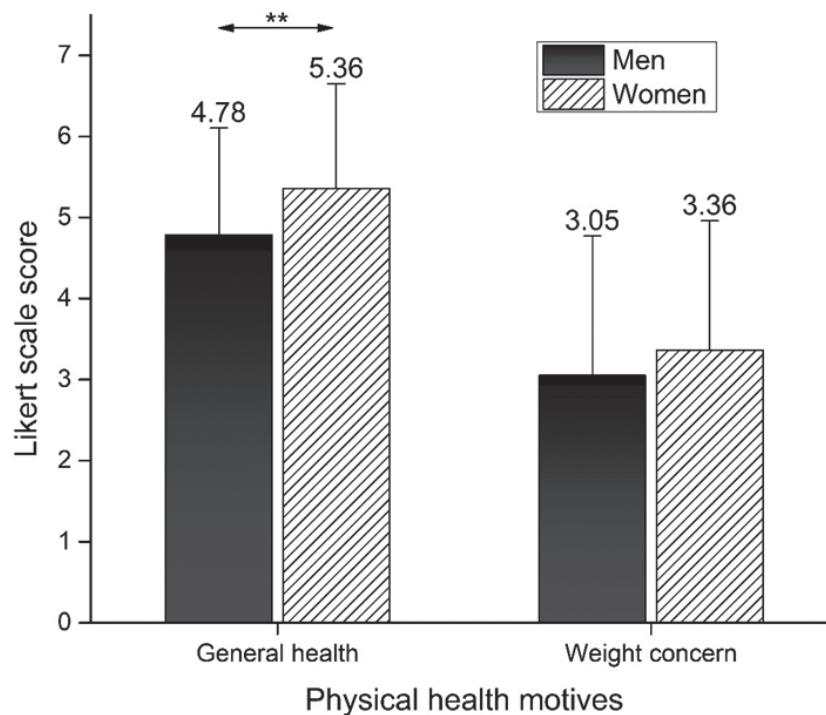


Figure 1. Results of physical health motives obtained from male and female students (** $p < 0.01$).

The Same T-tests for independent samples also revealed significant sex differences in one of the two sociological scales. In particular, the Affiliation scale revealed a significantly higher score in female students compared to males, with a small effect size ($T_{319} = 2.89$; $p < 0.01$; $d = 0.32$).

In contrast, no significant results, with a trivial effect size, were observed on the Recognition scale ($T_{319} = 0.48$; $p = 0.63$; $d = -0.05$). Descriptive data for both scales, as well as statistical significance, were presented in Figure 2.

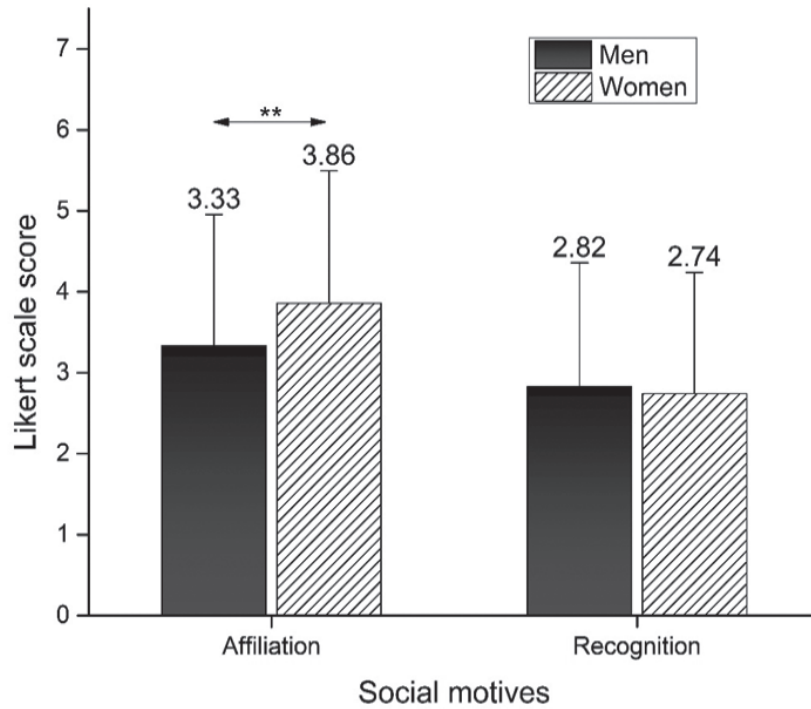


Figure 2. Results of social motives obtained from male and female students (** $p < 0.01$)

Regarding the achievement scales, T-tests for independent samples revealed significant sex differences in the Competition scale, with male students scoring significantly higher than females, with a medium effect size ($T_{319} = 4.82$;

$p < 0.01$; $d = -0.54$). Conversely, no significant results, with a trivial effect size, were observed on the Personal Goal scale ($T_{319} = 1.35$; $p = 0.18$; $d = 0.15$). Descriptive data for both scales, as well as statistical significance, were presented in Figure 3.

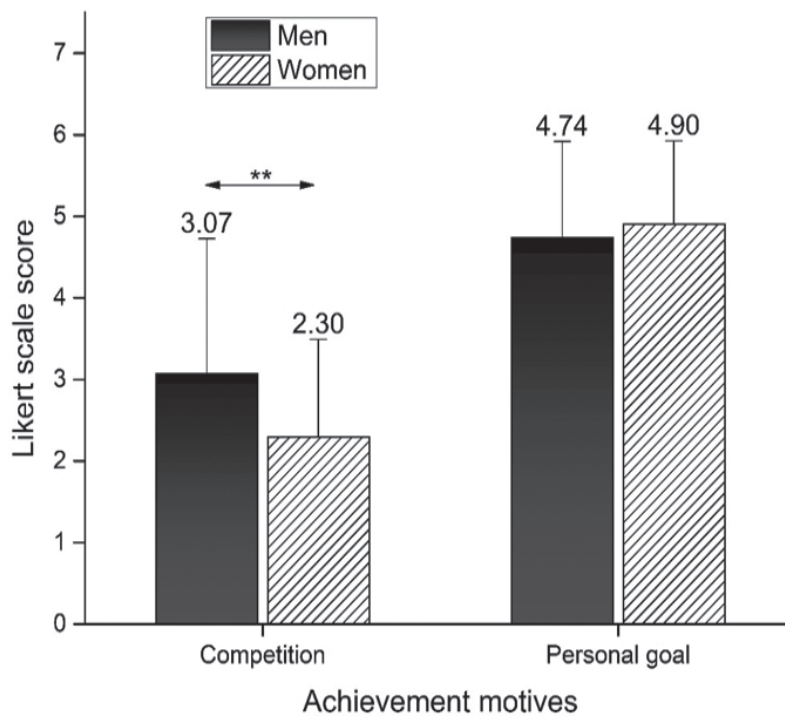


Figure 3. Results of achievement motives obtained from male and female students (** $p < 0.01$).

Finally, T-tests for independent samples revealed significant sex differences in all three psychological scales, indicating higher scores in female students than males. In particular, Psychological Coping ($T_{319}=5.11$; $p<0.01$; $d=0.57$), and Self-esteem ($T_{319}=4.74$; $p<0.01$; $d=0.53$) scales showed

moderate effect sizes, while Life Meaning scale showed small effect size ($T_{319}=3.66$; $p<0.01$; $d=0.41$). Descriptive data for both scales, as well as statistical significance, were presented in Figure 4.

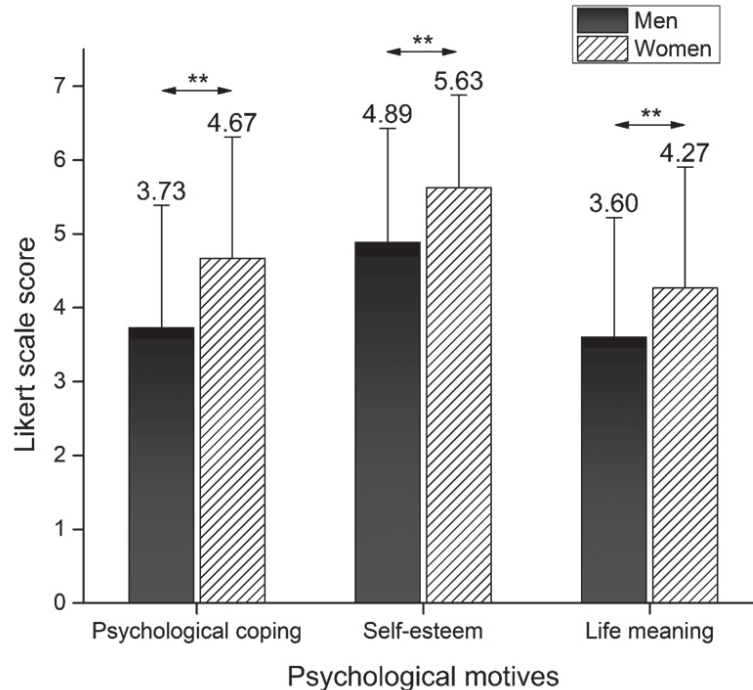


Figure 2. Results of psychological motives obtained from male and female students (** $p<0.01$).

Discussion

The primary objective of this research was to investigate sex differences in running motivation among university students, aiming to enhance understanding of motivational patterns in this demographic. In line with our hypothesis, female students' motivation for running mostly relies on psychological and health motives. Conversely, male students only differentiate themselves from their female colleagues in competition motives.

In recent years, physical activity levels among young people have declined significantly (Ekelund et al., 2011), while sedentary lifestyle habits have become increasingly prevalent (Pate et al., 2011). This behavioral shift has been linked to a range of negative health outcomes, including cardiovascular disease, metabolic disorders, reduced academic performance, and diminished self-esteem (Tremblay et al., 2011). Running from the other side is a physical activity that offers numerous physical and psychological benefits, while it is a low-cost and time efficient activity, widely accessible for everyone (Oja et al. 2024). Motivation is able to predict participation in exercise (Teixeira et al., 2012). Furthermore, since motivation differs between men and women, an investigation according to these norms is required in order to uncover the differences and the specific characteristics of these groups for promoting successful running among academic students and improving their lifestyle.

According to the statistical results, psychological motives, like coping with stress and boosting self-esteem, are especially important, particularly for female students, who scored higher in these areas. This interpretation aligns with evidence that physical activity interventions can reduce stress, anxiety, and depressive symptoms in undergraduates (Huang et al., 2024). Although general health and affiliation also mattered more to women, they had a smaller effect size. On the other hand, motives like Recognition and Personal Goal didn't show a statistically significant difference between men and women and seemed to matter less overall. Interestingly, competition stood out as a stronger motivator for male students, suggesting they're more driven by the challenge and performance aspects of running.

More specifically, the results show that women tend to express stronger motives, such as general health ($p<0.01$), psychological coping ($p<0.01$), self-esteem ($p<0.01$) and life meaning ($p<0.01$). In contrast, men were more motivated by competition ($p<0.01$). In general, these results align with previous research findings, even though they are not entirely comparable, due to differences in measurement instruments (Kilpatrick et al., 2005). According to Kilpatrick et al. (2005), younger men tend to value extrinsic motives, like competition and achievement, while women tend to be motivated by appearance, health, and emotional balance, aligning with intrinsic or psychological motives. According to self-determination

theory (Frederick & Ryan, 1993), women often demonstrate higher intrinsic motivation for physical exercise when this is aligned with internal satisfaction and mental health, rather than external performance outcomes. The results of this research also show that women are more motivated by affiliation than men ($p < 0.01$), which also comes in alignment with the previous theoretical framework (Frederick & Ryan, 1993; Kilpatrick et al., 2005), which indicates that women appreciate social interaction and they want to participate in running activities in order to feel the sense of group belonging (McGannon & Spence, 2010). This is also relevant to student integration and belonging because engagement in campus recreation activities can contribute to students' sense of belonging and intention to remain enrolled (Miller & Croft, 2022).

Personal goal achievement had no statistically significant effect, although previous research shows that personal goal achievement is an important running motive for students (Koh, 2019). Although evidence syntheses show a generally positive link between physical achievements and academic outcomes among university students (Trott et al., 2024), many universities still do not have clearly defined, evidence-informed strategies for promoting physical activity within broader student success efforts (Scroggs et al., 2025).

Whereas previous researches demonstrated that recognition is an important motive for men, who are motivated more by extrinsic motives, meaning they are involved in running for the competing with others, achieve goals and be recognized by other (Kilpatrick et al., 2005; Malchrowicz-Moško et al., 2020). In the current research ($p = 0.63$), recognition didn't have a statistically significant effect. A possible explanation for this could be that men at a younger age don't prioritize recognition, because maybe they focus more on enjoyment through competition and personal goal achievement ($p = 0.18$). Additionally, weight concern had no significant statistical effect ($p = 0.09$), although previous research indicated that women are highly motivated by body image (McGannon & Spence, 2010). One possible explanation is that other motives, such as stress reduction, affiliation, or enjoyment, may have become more dominant in recent years, reflecting a shift in health-related attitudes among young women.

In conclusion, the findings suggest that psychological (coping and self-esteem) and social (affiliation) motives are stronger drivers of running participation, particularly among female students. In contrast, achievement-related motives like competition are more relevant for males. Finally, the Weight Concern scale showed no significant differences and appears to be less influential overall.

Limitations

Some limitations of the study should be acknowledged. Firstly, with an average running experience of only 1.83 years, the sample may not be representative of more experienced runners among the students. Secondly, the larger sample containing students differentiated by running discipline (e.g., 10k or half marathon) should broaden the research. Finally, this study only included students from Serbia. Similar studies, including students from different regions, should further increase the knowledge on this topic.

Conclusion

In line with our hypothesis, we can conclude that female students' motivation for running mostly relies on psychological and health motives. In contrast, male students only differentiate themselves from their female colleagues in competition motives. Future research could also include more experienced long-distance runners from different disciplines and examine student samples from other countries to achieve a better generalizability of the findings.

Practical implications

The results of this study suggest that universities and running program organizers should tailor their approaches to reflect gender-specific motivations and promote inclusivity. Female students who scored higher in psychological coping, self-esteem, life meaning, affiliation, and general health should focus on stress-relief benefits, promote self-confidence, and create supportive social environments, such as women-led running groups, mental health-oriented fun runs, or peer mentoring programs. For male students, who showed a stronger motivation for competition, programs could incorporate goal-setting workshops, leaderboard-based challenges, or time trials to maintain engagement. To foster an inclusive environment, both genders should be represented equally in promotional materials and leadership roles, and event formats should offer both competitive and non-competitive categories. Additionally, health and physical education programmes should include modules on diverse motivations for exercise to encourage empathy and understanding across gender lines. At the same time, student counselling centres can actively recommend running as a coping strategy, especially for female students seeking emotional balance.

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Conflict of interest

The authors declare no conflicts of interest.

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