ORIGINAL ARTICLE

Potential of sport and physical activity in academic resilience of university students

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ABSTRACT

Resilience is universally recognized as a strength or asset, representing a desirable and beneficial quality, trait, or process with the potential to positively influence various aspects of an individual's performance, achievement, health, and well-being. This concept holds particular significance in the context of sports. A cross-sectional research was used in this study with efforts to find out whether there are differences in resilience levels among students based on their sports participation and to determine potential socio-demographic factors contributing to academic resilience. The study involved 379 students from several state universities in the Republic of Serbia (76.0% female and 24.0% male), aged 18 to 30 years (M = 21.67 ± 1.98). The Academic Resilience Scale (ARS) was used in the study, as well as a specific questionnaire for the purpose of this research, which contained inquiries about sociodemographic data of respondents and sport engagement. Results indicated that students engaged in sports show greater levels of academic resilience but there were no significant differences among students engaged in different type of sports (individual/group). The average grade of students was statistically significantly correlated with academic resilience levels. These results emphasize the importance of encouraging sports participation among students as a means to enhance both resilience and academic performance.

Keywords: Physical education, College students, Resilience, Sports, Academic achievement, ARS-30.

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INTRODUCTION

Students are a vulnerable category of the population facing numerous challenges, starting with the admission process to university. Many of them leave their parental homes and adapt to different living conditions, often in larger urban settings. They encounter new and more demanding academic requirements, establish new social connections, and many are in search of employment or already working, with some already having formed their own families. Experts from various fields and perspectives strive to illuminate numerous questions and uncertainties that students encounter. The completion of studies, as the ultimate goal of their academic journey, imposes a significant burden not only on the students themselves but also on their families. In this context, recent literature over the past two decades has seen a substantial number of authors analysing the topics of resilience and physical activity or sports engagement, both among students at faculties of sports and physical education and in the general student population.

High-quality education, especially higher education, is an important precondition for finding a job and success in the labour market, which further opens the possibility for career development and improving the quality of (Getzel et al., 2001). The students' engagement is an important factor for academic success and obtaining a university degree, which is confirmed by the results of numerous studies obtained by surveying students (Appleton et al., 2008; Kuh, 2001; Kuh, 2009; Maroco et al., 2016). Literature findings confirm the role of resilience in overcoming academic responsibilities (Yaure et al., 2020) and the World Health Organization (WHO) emphasizes the importance of engaging in physical activities and provides guidelines regarding the type of physical activity, the number of hours recommended for each age category, as well as the benefits (WHO, 2020).

As the concept of resilience is variously understood and defined in the literature (Radovanović et al., 2020), the concept of academic resilience is also subject to diverse interpretations and definitions. The most commonly cited definition of academic resilience, or resilience in academic contexts, is likely the probability that an individual, despite adversities faced, achieves success in educational or other circumstances (Fallon, 2010; Wang et al., 1994. in Tudor & Spray, 2018). Academic resilience is the ability of an individual to effectively cope with stress, pressure, and challenges in academic activities (Martin & Marsh, 2009). In this study, we adhere to the definition provided by the author Cassidy (2016), whose scale was utilized in the research, wherein academic resilience is characterized as an individual's capacity to navigate through temporary or persistent academic setbacks and overcome numerous adversities that jeopardize educational progress and success.

Resilience is universally recognized as a strength or asset, representing a desirable and beneficial quality, trait, or process with the potential to positively influence various aspects of an individual's performance, achievement, health, and well-being (Bartley et al., 2010. in Cassidy, 2016). This concept holds particular significance in the context of sports. Individuals participating in sports often face different stressors than non-athletic individuals (Pritchard & Wilson, 2005). Due to the presence of a highly evaluative environment, where outcomes are linked to both positive and negative consequences (Sarkar & Fletcher, 2014), these individuals face a diverse array of potential stressors, such as injuries, poor performance, and health issues (Arnold & Fletcher, 2021). These stressors have the potential to adversely affect athletes' mental well-being (Arnold & Fletcher, 2021). Given the nature of these challenges, resilience emerges as a fundamental psychological construct crucial for success (Durand-Bush et al., 2023). The crucial question is not whether athletes will confront adversity in sports, but rather how they will respond when faced with challenges (Galli & Gonzales, 2015).

Although the literature underscores a direct correlation between resilience and sports activities in university students (Cohu, 2005; Demir & Barut, 2020; Román-Mata, et al., 2020; Sarkar, & Fletcher, 2014; Xia, et al., 2020), findings also reveal that, in addition to a direct correlation, there is a mediating role between them, namely the needs for competence, autonomy, and belongingness (Xu et al., 2021), as well as the mediating role of internal motivation (Chacón-Cuberos et al., 2019). Findings from intervention-based studies also highlight the potential of structured physical and recreational programmes to enhance resilience in youth (Bloemhoff, 2006).

The aim of the present study was to determine the differences in academic resilience levels between active students, engaged in sports activities, and inactive students. The second aim of the research was to identify sociodemographic factors within the active student group that correlate with academic resilience levels.

MATERIALS AND METHOD

Participants

The study involved 379 students (see Table 1) from several state universities in the Republic of Serbia (76.0% female and 24.0% male), aged 18 to 30 years ($M = 21.67 \pm 1.98$). The largest group of respondents consisted of undergraduate students (89.2%).

Table 1. Sample characteristics.

		N	%
Gender	Male	91	24.0
	Female	288	76.0
Academic level	Undergraduate (Bachelor's)	338	89.2
	Graduate (Master's and Doctoral)	41	10.8
Academic year	First	57	15.0
	Second	92	24.3
	Third	113	29.8
	Fourth	45	11.9
	Extended	31	8.2
	Master's and Doctoral	41	10.8
Accommodation	Tenancy	191	50.4
	Student dorm	72	19.0
	Parents' or Relatives' accommodation	116	30.6

Instruments

The Academic Resilience Scale (ARS 30) (Cassidy, 2016) was used in the study. The scale has 30 items divided into three subscales: Perseverance (14 items), Reflecting and adaptive help-seeking (9 items), and Negative affect and emotional response (7 items). Items are scored on a 5-point Likert scale from probable (1) to unlikely (5). Students answer questions of the following type: *I would just give up, I would seek help from my tutors, I would probably get annoyed*, etc. Positively formulated items, such as e.g. *I would give myself encouragement*, are transformed so that high scores indicate greater resilience. Scores can be calculated for the three listed subscales as well as for the scale as a whole. The range of scores on a scale as a whole is from 30 to 150. Cronbach*'s α* on a scale level is .83 indicating good reliability.

In addition to the ARS 30 scale, a specific questionnaire was constructed for the purpose of this research, which contained questions about sociodemographic data of respondents and sport engagement. The socio-

demographic data collected encompassed gender, age, average grade, academic level, academic year, and accommodation type. Regarding sports, the questions were formulated to collect data on respondents' participation in sports activities and the specific types of sports they engaged in. When asked about the type of sport, respondents provided open-ended answers, subsequently categorized into group (team) or individual sport.

Procedure

A cross-sectional research was used in this study with efforts to find out whether there are differences in resilience levels among students based on their sports participation and to determine potential socio-demographic factors contributing to academic resilience. The survey was conducted in 2021 via the Internet, in the form of a Google questionnaire. The participants were recruited voluntarily through an announcement posted in several student groups on the social media platform Facebook. The purpose of the research was clearly explained to the students, and they were requested to fill out the instruments honestly, providing relevant data and indicating their level of agreement with the provided statements. It was also emphasized that participants could withdraw from the research at any time if they chose to do so. Written consent from the students was obtained for the study, and the research was conducted entirely anonymously and voluntarily.

The obtained results were computed using IBM SPSS software version 26 for statistical data processing. For the data analysis, we used descriptive statistical parameters: frequencies (f), percentages (%), means (M), and standard deviations (SD). For data analysis, ANOVA and t-tests were used for group differences, and Pearson's and Spearman's correlations for determining correlations between academic resilience levels and sociodemographic characteristics.

RESULTS

Descriptive statistics of academic resilience levels regarding the three subscales (Perseverance, Reflecting and adaptive help-seeking, and Negative affect and emotional response) and the total score of ARS-30 of the whole sample are presented in Table 2.

Table 2. Descriptive statistics of academic resilience levels of the whole sample (N = 379).

	Theoretical range of scores	Min	Max	M	SD
Perseverance	14-70	37.00	70.00	54.81	6.35
Reflecting and adaptive help-seeking	9-45	16.00	45.00	34.24	5.52
Negative affect and emotional response	5-35	11.00	35.00	24.35	5.17
Total score	30-150	72.00	145.00	113.40	13.17

The mean scores presented in Table 2 suggest that students from our sample exhibit moderately high levels of academic resilience across all subscales as well as the total score. High scores indicate a generally resilient student population as a whole, capable of effectively handling academic challenges that they confront.

Academic resilience in the context of sports

The first objective focused on investigating differences between resilience levels among students based on their involvement in sports activities. The results of the t-test are presented in Table 3.

Table 3. Differences on the academic resilience scale regarding engagement in sports.

	Group	M	SD	SE_M	t(377)	*p-value*	d
Perseverance	Active (N = 234)	55.62	6.32	0.41	2.94	.003	.11
	Inactive (N = 145)	53.65	6.39	0.53			
Reflecting and adaptive hep-seeking	Active (N = 234)	34.51	5.60	0.37	1.12	.26	.11
	Inactive (N = 145)	33.86	5.46	0.45			
Negative affect and emotional response	Active (N = 234)	24.83	5.06	0.33	2.23	.03	.11
	Inactive (N = 145)	23.62	5.27	0.48			
Total score	Active (N = 234)	114.97	13.28	0.87	2.75	.01	.11
	Inactive (N = 145)	111.12	13.15	1.09			

According to the t-test results presented in Table 2, there are significant differences for Perseverance (p = .003), Negative affect and emotional response (p = .03), and the total score (p = .01), where students engaged in sports demonstrate higher levels of resilience. No statistically significant differences were found for the subscale Reflecting and adaptive help-seeking (p = .26).

Based on the presented results, differences in resilience related to engagement in sports are evident. Therefore, our next objective was to investigate whether there are differences based on the type of sport. Considering that the research included a large number of students engaged in various types of sports, we classified participants into those engaged into individual and group (team) categories. The t-test results are displayed in Table 4.

Table 4. Differences on the academic resilience scale regarding the type of sport.

	Group	M	SD	SE_M	t(232)	*p*-value	d
Perseverance	Individual (N = 184)	55.41	6.26	0.46	-1.17	.24	.16
	Group (N = 50)	56.58	6.33	0.90			
Reflecting and adaptive help-seeking	Individual (N = 184)	34.66	5.93	0.44	0.43	.67	.16
	Group (N = 50)	34.28	4.10	0.58			
Negative affect and emotional response	Individual (N = 184)	24.72	5.17	0.38	-0.77	.44	.16
	Group (N = 50)	25.34	4.68	0.66			
Total score	Individual (N = 184)	114.78	13.69	1.01	-0.67	.50	.16
	Group (N = 50)	116.20	11.32	1.60			

Although the previous analysis demonstrated that students engaged in sports exhibit higher levels of resilience on two out of three subscales and the overall score, the results indicate that there are no such differences concerning the type of sport. According to the data from Table 4, no statistically significant differences were found in resilience levels between students engaged in individual sports and those participating in team sports (p > .05).

Academic resilience in the context of sociodemographic characteristics

Since our previous analyses showed that students actively engaged in sports show greater levels of academic resilience, our next aim was focused on determining differences in sociodemographic characteristics of students who are engaged in sports.

First of all, we wanted to examine whether there are differences in resilience levels between male and female students who are engaged in sports activities. The results are presented in Table 5.

Table 5. Differences between male and female students on the academic resilience scale.

	Group	M	SD	SE_M	t(241)	*p*-value	d
Perseverance	Male (N = 78)	54.64	7.23	0.82	-1.61	.11	.14
	Female (N = 165)	56.02	5.67	0.44			
Reflecting and adaptive help-seeking	Male (N = 78)	33.45	6.20	0.70	-2.05	.04	.14
	Female (N = 165)	35.01	5.21	0.41			
Negative affect and emotional response	Male (N = 78)	25.53	5.06	0.57	1.49	.14	.14
	Female (N = 165)	24.49	5.08	0.40			
Total score	Male (N = 78)	113.62	14.97	1.70	-1.06	.29	.14
	Female (N = 165)	115.52	12.09	0.94			

Based on the t-test results presented in Table 4, the only significant difference is observed in the Reflecting and adaptive help-seeking ($p < 04$), indicating that females have higher scores than males. There were no other significant differences in the academic resilience scores regarding gender ($p > .05$).

Our next aim was focused on examining resilience levels in relation to the sociodemographic characteristics of active participants. First of all, we wanted to examine whether resilience improves with the age of participants, their academic level, their academic year, and their average grades. Pearson's correlation was used to determine the correlation between academic resilience levels and age, while Spearman's correlation was used to determine the correlation with academic level, academic year, and average grade. The results are presented in Table 6.

Table 6. Correlations between academic resilience and age, academic level, academic year, and average grade.

	Perseverance	Reflecting and adaptive help-seeking	Negative affect and emotional response	Total score
Age	-.11	-.11	-.02	-.11
Academic level	-.04	-.02	.01	-.03
Academic year	-.08	-.04	-.05	-.06
Average grade	.19*	.18*	.09	.21**

*Note. * - Significance level at p < 05; ** - Significance level at p < .01.*

Table 7. Differences in academic resilience levels in relation to the type of accommodation.

	Type of accommodation	N	M	SD	F	df	*p*-value
Perseverance	Tenancy	118	55.93	6.46	0.53	2	.59
	Student dorm	49	55.63	6.20			
	Parents' or relatives' accommodation	76	54.99	5.93			
Reflecting and adaptive help-seeking	Tenancy	118	34.51	6.07	0.48	2	.62
	Student dorm	49	35.12	5.77			
	Parents' or relatives' accommodation	76	34.12	4.63			
Negative affect and emotional response	Tenancy	118	24.36	5.27	0.98	2	.38
	Student dorm	49	25.16	5.02			
	Parents' or relatives' accommodation	76	25.33	4.82			
Total score	Tenancy	118	114.80	13.88	0.20	2	.82
	Student dorm	49	115.92	13.97			
	Parents' or relatives' accommodation	76	114.43	11.22			

As shown in Table 6, correlation analyses revealed that there were no statistically significant correlations when it came to the age of the participants, academic year, or their academic level ($p > .05$). When it comes to the average grade of participants, very weak positive correlations were noted with Perseverance ($r_s = .19$) and Reflecting and adaptive help-seeking ($r_s = .18$), while a weak correlation was noted with the total score ($r_s = .21$). The correlations between these variables indicate that with the higher grade, there's also an increase in resilience levels regarding Perseverance, Reflecting and adaptive help-seeking, and total resilience scores.

We also wanted to investigate whether the resilience levels were different between students living in different types of accommodation. Descriptive measures and ANOVA results are shown in Table 7.

As presented in Table 7, ANOVA analysis showed no significant differences in academic resilience levels between students living in tenancy, student dorms, and parents' and relatives' accommodation ($p < .05$).

DISCUSSION

The objectives of the research were to examine academic resilience in students in relation to engagement in sports and physical activity and their sociodemographic characteristics.

Similar to the results of previous studies (Lipowski et al., 2016; Wiedenman et al., 2023), our results indicated that students engaged in sports show greater levels of academic resilience. The results also showed that the type of sport (individual/group) was not statistically significantly correlated with academic resilience. From these results, it can be noticed that academic resilience is tightly connected to sports participation in general, but not that much to the type of sport itself. Other studies also confirm that there are no significant differences found in resilience levels between individual and team sport athletes (Bingol & Bayansalduz, 2016; Blanco-García et al., 2021; Boghrabadi et al, 2015; Onturk et al., 2020). Since athletes need to develop themselves in competitive settings, regardless of whether they participate in team or individual sports, resilience emerges as a crucial part of those settings (Bas & Gundogdu, 2021). Unlike in other fields, e.g. healthcare workers, athletes voluntarily opt to demonstrate resilience traits as a means of preserving their performance despite potentially challenging circumstances (Fletcher & Sarkar, 2012; Sarkar, 2017). It is believed that certain behaviours can be generalized from sports into academic areas. Participation in athletic activities implies adherence to rules of fair competition, a willingness to work with others for common goals, and the ability to persist during losses. Thus, these behaviours can provide rational tools for greater academic efforts (Braddock et al., 1991).

When it comes to the socio-demographic characteristics of participants, we tested whether there are differences between male and female students in academic resilience levels. The results showed that female students had better reflect and adaptive-seeking behaviours than male students. However, there is no clear consensus on which gender is more willing to seek help. Some findings indicate that females tend to seek psychological help more often than males (Nam et al., 2010) and also show higher resilience scores (Shenu & Mokgwathi, 2008), although other studies suggest they may seek help less frequently due to exhibiting shy behaviours (Molla, 2022). While female students from our sample may exhibit better adaptive behaviours and resilience in academic settings, their tendencies regarding seeking help can vary depending on the context and the type of assistance needed.

We also tested whether the age of participants, their average grades, academic levels, and academic years are correlated with academic resilience levels. Similar to the gender variable, there still remains a lack of

clear consensus regarding the connection between age and resilience levels within the sporting context. In this research, we found no significant correlations between age and academic resilience levels. These findings are in line with some research findings (Chacón-Cuberos et al., 2021; Onturk et al., 2020; Togo et al., 2018), while others found that higher levels of resilience are evident among older athletes (Blanco-García et al., 2021; Codonhato et al., 2018). Concerning the maturity of participants, our results showed that there are no significant correlations between resilience and academic levels, nor with academic years. Assuming that resilience develops gradually over time, it is reasonable to expect that older participants, not only in age but also in terms of higher years and academic levels, have confronted a wider range of challenges during time that can potentially boost their resilience levels. Hunter (2012), for example, suggests that students who are closer to graduation might experience higher anxiety levels since they transition into a phase where they will take greater responsibilities as adults. The variability in the research findings could stem from the diverse personal and social characteristics of individuals rather than simply their age or life phase.

Our results also showed that the average grade of students is statistically significantly correlated with academic resilience levels, indicating that students with higher average grades show greater levels of academic resilience. These findings align with previous studies (Abubakar et al., 2021; Tope-Banjoko et al., 2020). Based on these results it seems that resilient students tend to exhibit better learning and stress-coping abilities, which, in turn, contribute to higher academic achievements. It is possible that students who achieve higher grades possess certain attributes such as effective stress management, perseverance, and adaptability, which are indicative of higher levels of resilience. This reciprocal relationship suggests that fostering resilience among students could be beneficial for enhancing their academic achievements.

Lastly, we aimed to verify whether students living in different types of accommodation exhibit different academic resilience levels. Analyses showed no significant differences between students living in tenancy, student dorms, and parents' and relatives' accommodation. It is essential to note that while our study did not find significant differences in academic resilience levels among students living in various types of accommodation, other studies have reported contradictory findings. Khoroshikh and Andreeva (2019) observed that students living in dormitories exhibited higher levels of psychological distress compared to those living in tenancy or with their parents. Furthermore, Avila and Acena (2020) identified high levels of resilience among students living with their parents. These differences in results could be attributed to various factors, including cultural differences, socio-economic backgrounds, and the specific measures used to assess resilience and psychological distress.

This research has certain limitations, in addition to a smaller sample size, the results of engagement in sports activities relied on the participants' self-perception. Based on their engagement in sports activities, students from our sample were categorized into two groups: active and inactive. The active group included students who trained three or more times per week. In a study conducted by Román-Mata et al. (2020), student engagement in physical activities was classified according to WHO guidelines. Their findings indicated that meeting the minimum recommended duration of 150 minutes of physical activity per week is correlated with enhanced levels of resilience among students. Further, it is also necessary to examine wider contextual factors that could contribute to academic resilience levels in students. Future research should focus on examining the mediating role of internal factors, such as motivation, expectations, and self-efficacy, as well as risk and protective factors (Bostani, & Saiiari, 2011; Chacón-Cuberos et al., 2019; Gupta, & McCarthy, 2022; Xia et al., 2020; Hill et al., 2021; Xu et Yang, 2024).

CONCLUSION

The findings of the study confirm that students who participate in sports exhibit higher levels of resilience across all domains. Among the examined sociodemographic variables, a higher level of resilience was found in some domains among female participants. There was also a positive correlation between resilience levels and higher average academic grades.

These results emphasize the importance of encouraging sports participation among students as a means to enhance both resilience and academic performance. Future research should explore some underlying mechanisms that could contribute to the increased resilience levels observed in students who are athletes, as well as investigate the impact of different types of physical activities and other sociodemographic factors. Longitudinal studies could also provide additional insights into the long-term effects of continuous engagement in sports on both resilience and academic achievements.

AUTHOR CONTRIBUTIONS

Ana Drobac (corresponding author) made substantial contributions to the conception of the work, acquisition and analysis of data, translation, and preparation for publication. Vesna Radovanović (co-author) made substantial contributions to the conception of the work, as well as to data analysis and interpretation. Jasmina Kovačević (co-author) made significant contributions to the conceptualization of the theoretical framework and the analysis of the literature.

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DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

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