IMPORTANCE OF PHYSICAL ACTIVITY IN NATURAL ENVIRONMENTS FOR MENTAL AND PHYSICAL RECOVERY OF STUDENTS IN PERFORMING ARTS

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Abstract
Physical activity in natural environments offers an important means of mental and physical recovery and may help reduce psychological strain, relieve muscle tension, and improve recovery; therefore, the study examines how often students in performing arts use outdoor physical activity as forms of recovery and identifies differences in gender in perceived mental and physical effects. The sample included 144 students from faculty of performing arts (60 men and 84 women). Data came from questionnaire. Differences in gender underwent assessments with Pearson's chi-square test and Cramer's *V*, while ordinal items underwent analysis with the Mann-Whitney U test ($\alpha = .05$). Walking or hiking emerged as the most common activity in both groups (men 80.0%, women 84.5%). Statistically significant differences appeared in frequency of using outdoor physical activity and in perceived reduction of muscle tension ($p < .01$), which the Mann-Whitney U test confirmed ($p < .05$). No significant gender differences appeared in perceived reduction of psychological stress ($p > .05$). The findings highlight the importance of physical activity in natural environments for recovery of performing arts students. Support for regular participation may improve recovery and help prevent health problems.

Key words: Gender differences, health prevention, muscle tension, performing arts students, psychological strain.

Introduction

Students in performing arts are exposed to unique combinations of psychological and physical demands, including intensive practice schedules, performance pressure, repetitive movement, and elevated injury risk, all of which can compromise recovery and long-term wellbeing (Marko et al., 2025). Research shows that music students report stress, anxiety, constant tiredness, and other health problems during demanding periods (Araújo et al., 2017; Perkins et al., 2017). Music students experience musculoskeletal pain and playing-related disorders, with physical and psychosocial factors contributing to symptom development and persistence (Cruder et al., 2021; Bruyneel et al., 2024). In this population, recovery (i.e., strategy) is important for protecting health and preserving performance quality (Azor et al., 2024).

Physical activity in natural environments may represent an important form of recovery because it combines the general benefits of movement with the restorative effects of contact with nature. Recent research indicates that green exercise and other nature-based interventions are associated with improvements in mood, anxiety, positive affect, perceived stress, and broader indicators of mental health and quality of life (Coventry et al., 2021). These findings suggest that outdoor physical activity may offer practical, health-promoting recovery strategy for performing arts students facing both psychological strain and musculoskeletal overload in modern higher education; therefore, this study examines how often students in performing arts use outdoor physical activity as forms of recovery and identifies differences in gender in perceived mental and physical effects.

Materials and Methods

The study included 144 students from the Academy of Arts (i.e., Faculty of Performing Arts) enrolled in bachelor's and master's programs. The population of faculty (full) comprised 157 students, so the research sample represented 91.7% of all students. The sample contained 60 men and 84 women, corresponding to 41.7% and 58.3% of respondents. In relation to faculty population, the study captured 89.6% of all men (60 of 67) and 93.3% of all women (84 of 90). Across study years, coverage ranged from 89.3% to 92.9%, which indicates strong representation across all cohorts. The largest subgroup included first-year bachelor's students ($N = 38$; 26.4% of sample), followed by

second-year bachelor's students (*N* = 33; 22.9%), second-year master's students (*N* = 26; 18.1%), third-year bachelor's students (*N* = 25; 17.4%), and first-year master's students (*N* = 22; 15.3%) (Table 1).
With faculty populations of 157 students, the minimum required sample for 95% confidence level and 5% margin of error was 112. The sample included 144 students, covering 91.7% of population, with an estimated margin of error of ±2.36%; therefore, the sample may be considered representative of the Faculty of Performing Arts (i.e., Academy of Arts) student population.

Tab. 1: Characteristics of sample by study level and gender

Study year/ level	Men (*N*)	Women (*N*)	Sample (*N*)	Students at faculty	%
Bachelor's study - 1st year	16	22	38	41	92.7
Bachelor's study - 2nd year	11	22	33	36	91.7
Bachelor's study - 3rd year	12	13	25	28	89.3
Master's study - 1st year	10	12	22	24	91.7
Master's study - 2nd year	11	15	26	28	82.9

Data collection used questionnaire focused on regenerative role of physical activity in natural environments after music practice. The instrument examined frequency of outdoor activity as recovery strategy, the type of outdoor activity used during the year, perceived character of regeneration after music load, perceived reduction of psychological stress after music performance, and perceived reduction of muscle tension and pain after intensive music periods.
Data analysis used descriptive and inferential statistics, as well as sample adequacy statistics. Descriptive analysis included absolute frequency (*N*) and relative frequency (*%*). Percentages for questionnaire responses were calculated separately within the male and female groups to support direct comparisons. Sample adequacy was assessed by calculating the minimum required sample size for finite population, the coverage rate, and the estimated margin of error. Pearson's chi-square tests assessed differences in gender in categorical items, and Cramer's *V* quantified effect sizes (.10 small, .30 medium, .50 large). In terms of ordinal variables, the analysis used the Mann-Whitney U test after recoding responses in ordinal numeric scales. Statistical significance was set at $\alpha = .05$.

Results
Differences in gender emerged in the frequency (*N*) with which students used physical activity in natural environments for recovery after music practice. Men participated in such activity 1 - 2x/ week (55.0%), whereas women selected this frequency less often (28.6%) and rather indicated ≥3 times/ week (27.4%) or <1x/ month (25.0%). Differences in gender reached statistical significance ($p < .05$) and reflected medium effect sizes (Table 2).
With respect to type of activity, walking, hiking, and general outdoor walks predominated in both groups, accounting for 80.0% of men and 84.5% of women. Other forms of outdoor activity, including winter sports, cycling, and running, appeared only at irregular intervals. Distributions of outdoor physical activities did not differ significantly by gender ($p > .05$).
Regarding the perceived nature of recovery following music-related strain, men allocated their responses between combined physical and psychological recovery and psychological recovery (50.0% each). Women indicated that outdoor physical activity contributed in equal measures to physical and psychological recovery (70.2%). Differences in gender achieved statistical significance ($p = .0025$) and reflected medium effect sizes.
In the evaluation of roles of outdoor physical activity in reducing psychological stress after music performance, both groups expressed positive perceptions. Men selected the response "to great extents" (45.0%), whereas women chose "to great extents" (42.9%) and "to very great extents" (32.1%). Neither the chi-square tests nor the Mann-Whitney U test identified statistically significant differences in gender in this domain ($p > .05$).
Distinct patterns emerged in assessments of reduced muscle tension and pain following an intensive music period. Women indicated strong physical recovery effects, in particular, through the response "to great extents" (50.0%), whereas men selected "to moderate extents" (45.0%). Difference in gender reached statistical significance in both the chi-square tests and the Mann-Whitney U test ($p < .05$), suggesting stronger perceptions among women regarding the physical restorative benefits of outdoor physical activity.

Discussion
The study extends growing evidence that recovery in performing arts students should be understood as both psychological and physical process. In this sample, students reported regular engagement in outdoor physical activity in natural environments, with walking and hiking as the dominant choices

among both men (80.0%) and women (84.5%). This pattern has practical importance because these activities remain accessible, low-cost, and easy to fit into demanding academic and artistic routines. The preference for restorative forms of movement rather than competitive exercise may hold special value for students facing continuous rehearsal, performance, and study demands (Guerriero et al., 2025).

Tab. 2: Comparisons of results by gender

Analysis	χ^2 / U	p	**Interpretation**
Q1: Frequency of outdoor activity use	$\chi^2 = 21.6$	.000079	Sign. gender difference
Q2: Type of outdoor activity	$\chi^2 = 6.78$	.237802	No sign.
Q3: Character of recovery after music strain	$\chi^2 = 14.32$	.002505	Sign. gender difference
Q4: Reduction of psychological stress	$\chi^2 = 6.47$ / $U = 2088$	.091041/ .0618	No sign.
Q5: Reduction of muscle tension and pain	$\chi^2 = 24.58$ / $U = 1936.5$	.000061/ .0135	Sign. gender difference

Positive ratings for stress reduction align with recent literature showing that music students experience anxiety, fatigue, and high-performance pressure (Vengurlekar et al., 2023). Recent research indicates that physical activity in natural settings can support emotional regulation, lower perceived stress, and improve wellbeing, which strengthens its relevance as recovery strategy for this population (Coventry et al., 2021). Although the present analysis does not indicate statistically significant differences in gender in perceived psychological stress reduction, the responses across both groups suggest that outdoor activity may offer similar mental restorative benefits for male and female students (Nel & Tshikovhele, 2018; Zhang et al., 2023).

The study highlights differences in gender in recovery experience. Women indicated that outdoor activity supported physical and psychological recovery in equal measures and reported stronger reductions in muscle tension and pain after intensive music periods. This trend deserves attention because current evidence identifies performing arts students as group at elevated risk of musculoskeletal pain and playing-related disorders (Marko et al., 2025) with both physical load and psychosocial stress contributing to symptoms (Cruder et al., 2021; Bruyneel et al., 2024). One possible explanation involves greater sensitivity to changes or more effective use of outdoor movement for releasing accumulated tension. Even so, the cross-sectional and self-reported nature of the data limits causal interpretation (Derelioğlu et al., 2025)

In practical terms, the study supports the inclusion of simple nature-based movement, in particular, walking, in health-promotion and recovery programs for performing arts students. This idea fits with intervention-based research showing that targeted physical programs can improve musculoskeletal outcomes in this population (Azor et al., 2025). Higher education institutions may therefore benefit from promoting regular outdoor activity via recovery education, timetable design that protects time for regeneration, and wellbeing initiatives focused on sustainable self-care (Tekin & Yarar, 2021).

Conclusion

Physical activity in natural environments appears to offer recovery strategy for performing arts students, supporting mental and physical wellbeing. Walking and hiking emerged as the most common activity, underscoring the accessibility and practicality of nature-based movement within demanding study routines. Both men and women reported beneficial effects on psychological stress, while women perceived stronger relief from muscle tension and pain. These findings emphasize the preventive and restorative value of regular outdoor activity. Higher education institutions should, therefore, promote simple, sustainable forms of movement in nature to enhance recovery, protect health, and sustain long-term performance capacity in students.

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Souhrn
Studie se zaměřila na význam pohybové aktivity v přírodním prostředí pro psychickou a fyzickou regeneraci studentů múzických umění. Výzkumný soubor tvořilo 144 studentů, kteří vyplnili dotazník zaměřený na frekvenci venkovní aktivity, její formy a vnímané regenerační účinky. Nejčastější aktivitou byla chůze a turistika. Analýza ukázala statisticky významné rozdíly mezi pohlavími ve frekvenci využívání pohybové aktivity v přírodě a ve vnímaném snížení svalového napětí a bolesti, výrazněji u žen. Naopak v oblasti redukce psychického stresu se rozdíly nepotvrdily. Výsledky podporují zařazení jednoduchých forem pohybu v přírodě do podpory zdraví, regenerace a dlouhodobé výkonnosti studentů vysokých uměleckých škol.

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