

The effectiveness and promotion of art therapy to health: A study on the health benefits of painting learning

Lingyan Zhang¹, Cheng Yao^{1*}, Lanqing Huang¹ and Yousheng Yao²

¹Zhejiang University, Hangzhou, 310037, China.

²Zhongkai University of Agriculture and Engineering, guangzhou, 510025, China.

*Corresponding author(s). E-mail(s): yaoch@zju.edu.cn;

Contributing authors: lingyan@zju.edu.cn; huanglanqing3@163.com;

yaoyousheng41@gmail.com;

Abstract

Learning to paint can help people relax, improve their focus and concentration, and reduce stress and anxiety. In addition, it can promote creative thinking and boost self-esteem and confidence. Although quantitative studies have shown the health benefits of painting, qualitative research has also found this positive impact. In-depth interviews have shown that painting helps people better understand themselves and their emotions, and express and process them creatively. However, painting students may face physical and psychological challenges, such as limited social circles and insufficient time. Therefore, in order to focus on the physical and mental health of students, a support system including mental health counseling, diet plans, and exercise programs is needed. At the same time, we also need to better understand and help students cope with challenges and stress. This article aims to explore how to create a healthy and happy atmosphere in art schools, focusing on three aspects: lifestyle, support services, and the college environment, to maximize the students' health and happiness. Using a semi-structured qualitative research method, 20 painting students were interviewed to understand their personalized experiences. Thematic analysis revealed a series of facilitating factors and obstacles, including: (1) Lifestyle facilitating factors: Valuing optimal health and happiness and practicing daily lifestyle; Lifestyle obstacles: Health lifestyle under practice and learning background. (2) Support enabling factors: Accessible sources of support within and outside the art college; Support obstacles: Lack of availability or appropriate recognition of support. (3) Environmental facilitating factors: Positive and enjoyable experiences, performance, and strong relationships and community; Environmental obstacles: Comparative and competitive experiences, negative performance feedback brought by pressure and challenges, psychological distress, and overwork. The results showed that learning to paint has a positive impact on health, especially in terms of mental health. Although further research is needed to determine the extent and scope of this impact, this is a promising field for those interested in painting or seeking other forms of art therapy. Additionally, researchers suggest incorporating health and well-being support into the overall composition of art school education and raising awareness so that all students can be fully informed of where to find the information and help they need. Finally, more thorough examination and evaluation of painting therapy is needed to optimize student health.

Keywords: Conservatoire, Health promotion, Education, Art, Wellbeing

1 INTRODUCTION

Art therapy, encompassing visual, musical, theatrical, and dance forms, has long been recognized as a comprehensive treatment approach that alleviates stress, mitigates symptoms of psychological

disorders, and enhances quality of life through creative expression[1, 2]. Among these therapeutic modalities, learning to paint stands out as a particularly beneficial activity, offering not only aesthetic and creative fulfillment but also significant health benefits. Recent studies have highlighted the prevalence of psychological distress among higher education students, with emotional health often being a more pressing concern than physical health[2]. This trend is particularly pronounced in art colleges, where students face unique challenges that impact both their physical and mental well-being [3, 4].

Art colleges represent a distinctive educational environment, characterized by intense creative demands and a focus on artistic excellence. While these institutions foster creativity and self-expression, they also expose students to significant health risks. Reports indicate that musculoskeletal issues and non-musculoskeletal problems, such as sleep disturbances, fatigue, and poor concentration, are common among art college students[4, 5]. Moreover, studies have identified a high prevalence of psychological anxiety among art creators, underscoring the need for effective interventions [6].

The unique learning environment of art colleges, which emphasizes artistic practice over academic coursework, may contribute to these health issues. Factors such as financial pressure, the demands of full-time study, and the inherent competitiveness of art colleges further exacerbate the challenges faced by students[7–9].

Despite growing awareness of the health challenges in art colleges, there remains a significant gap in understanding how the daily practices and environment of these institutions influence student health and well-being. To address this gap, it is essential to adopt a comprehensive health promotion approach that examines the "whole system" of the art college environment[10].

This approach, guided by the principles of health literacy and the healthy environment model, emphasizes the importance of embedding health commitments into the cultural, structural, and daily life aspects of educational institutions[11–13].

This study aims to explore the health and well-being experiences of art college students within their institutional context, focusing on the facilitating factors and obstacles to optimal health and well-being[3, 14]. By adopting a health promotion framework, this research seeks to identify the key factors that influence student health and to propose actionable strategies for creating a healthier and more supportive educational environment. Specifically, this study addresses the following research questions:

1. How do art college students perceive their health and well-being in relation to their daily practices and the institutional environment?
2. What are the key facilitating factors and obstacles to optimal health and well-being among art college students?
3. How can art colleges enhance their health promotion initiatives to better support student health and well-being?

This study contributes to the existing body of literature by providing a comprehensive analysis of the health and well-being of art college students[15, 16]. It highlights the complex interplay between individual behaviors, support services, and environmental factors, offering valuable insights for educators, policymakers, and health professionals. By emphasizing the importance of a holistic health promotion approach, this study aims to inform the development of targeted interventions that address the unique needs of art college students. The remainder of this paper is organized as follows: The Materials and Methods section describes the research design, participants, data collection, and analysis procedures. The Results section presents the findings of the study, including the key themes identified through thematic analysis. The Discussion and Conclusion sections interpret the results, highlight the implications for health promotion in art colleges, and suggest directions for future research.

2 MATERIALS AND METHODS

This study employs a mixed-methods approach to explore the health and well-being of art college students, focusing on the interplay between lifestyle, support services, and the educational environment. The research design integrates both qualitative and quantitative data collection methods to provide a comprehensive understanding of the factors that influence student health and well-being. Specifically, the study utilizes semi-structured interviews and standardized questionnaires to gather in-depth insights and measurable data, respectively.

3 Research Objectives

The primary objectives of this study are:

1. To identify the key factors that promote and hinder optimal health and well-being among art college students.
2. To explore how these factors interact within the context of the art college environment.
3. To provide recommendations for enhancing health promotion initiatives in art colleges.

4 Participants

A total of 20 art college students, comprising 15 females and 5 males, participated in this study. Participants were recruited through targeted email invitations and social media advertisements disseminated by the research team. The recruitment criteria included current enrollment in an art college and an interest in participating in a study focused on health and well-being[17, 18]. The diverse gender representation was aimed at capturing a broad range of experiences and perspectives, although the female-dominated sample may introduce some gender bias.

5 Procedure and Data Collection

The qualitative component of the study involved in-depth semi-structured interviews designed to capture the nuanced experiences and perceptions of participants regarding their health and well-being. Each interview was individually conducted at the participant's convenience, ensuring a comfortable and confidential environment.

The interviews were conducted by a trained member of the research team and lasted between 15 and 47 minutes. All interviews were audio-recorded with the participants' consent and later transcribed verbatim for analysis. The interview schedule was flexible, allowing interviewers to probe deeper into topics of interest as they arose during the conversation.

This survey collected demographic data and self-report measures, including the WHO-5 for subjective well-being[19, 20], the WHOQoL-BREF for quality of life in different domains, and a brief self-efficacy scale for assessing self-efficacy. The WHO-5 is a 5-item scale, while the WHOQoL-BREF includes 26 items covering four domains. The self-efficacy scale has three items. All scales showed acceptable reliability. The survey also collected general and specific demographic information from participants(Table 1).

6 Data Analysis

6.1 Qualitative Analysis

The qualitative data from the interviews were analyzed using thematic analysis, a method that involves identifying patterns and themes within the data. The analysis process consisted of the following steps:

1. All interviews were transcribed verbatim, and the research team thoroughly reviewed the transcripts to become familiar with the data.
2. Using NVivo10 software, the transcripts were coded into meaningful segments, with each segment assigned a descriptive label. The coding process was iterative, allowing for the refinement of codes as new themes emerged.
3. Codes were grouped into broader themes based on their conceptual similarities. Themes were developed through an inductive approach, allowing the data to drive the identification of key concepts and patterns.
4. The identified themes were reviewed and validated by the research team to ensure consistency and accuracy. Discrepancies were resolved through discussion and reference to the original data.

6.2 Quantitative Analysis

The quantitative data were analyzed using statistical software (SPSS). Descriptive statistics were used to summarize demographic information and self-reported health measures. Inferential statistics, including t-tests and correlation analyses, were employed to examine differences and relationships between variables. The reliability of the standardized instruments was assessed using Cronbach's alpha, ensuring acceptable levels of internal consistency.

Table 1 Demographic and descriptive information about the sample and between group statistics.

| | Bachelor (n D 83) | | | Master (n D 16) | | | Welch's t-test statistics | |
|---|-------------------|-------|--------|-----------------|-------|--------|---------------------------|----------|
| | Mean | SD | Range | Mean | SD | Range | Between groups | |
| Age (years) | 21.78 | 4.92 | 17-52 | 25.56 | 2.76 | 21-31 | t(97)=-2.97,p=0.004 | ns,p>0.2 |
| Time per week doing side job (hours) | 6.86 | 4.74 | 1-20 | 9.4 | 3.45 | 6-15 | | |
| Total time studying main instrument (years) | 11.16 | 4.17 | 1-21 | 14.06 | 4.51 | 3-23 | t(97)=-2.52,p=0.013 | ns,p>0.5 |
| Amount of daily musical practice(hours per day) | 2.77 | 1.37 | 2-23 | 3 | 1.24 | 1-6 | | |
| Amount of daily other study (hours per day) | 1.44 | 1.17 | 1-7 | 1.12 | 0.67 | 0-2 | | ns,p>0.3 |
| Number of concerts played per year (pre Covid-19)a | 2.98 | 1.36 | 0-6 | 4.38 | 1.26 | 2-6 | t(97)=-3.81,p=0.001 | ns,p>0.6 |
| Psychological issues in relation to musical activitiesb | 2.61 | 0.61 | 0-6 | 2.54 | 0.66 | 1-3 | | |
| Physical issues in relation to musical activitiesb | 2.23 | 0.83 | 1-4 | 2 | 0.82 | 1-3 | | ns,p>0.3 |
| Continued practice despite physical discomfortc | 3.52 | 1.54 | 1-3 | 3.5 | 1.41 | 1-5 | | ns,p>0.9 |
| Covid related anxiety about musical activityd | 1.46 | 0.5 | 1-5 | 1.44 | 0.51 | 1-2 | | ns,p>0.8 |
| WQB QoL (Raw) | 4.31 | 0.74 | 1-2 | 3.86 | 0.66 | 3-5 | t(97)=-2.17,p=0.034 | ns,p>0.4 |
| WQB General Health (Raw) | 3.69 | 0.78 | 2-5 | 3.87 | 0.74 | 36-100 | | ns,p>0.6 |
| WQB Physical Health (%) | 74.45 | 15.38 | 2-5 | 72.14 | 16.98 | 54-96 | | |
| WQB Psychological Health (%) | 69.62 | 14.96 | 21-100 | 74.17 | 14.1 | 42-100 | | ns,p>0.2 |
| WQB Social Relationships (%) | 75.22 | 17.57 | 4-96 | 76.92 | 17.73 | 47-96 | | ns,p>0.7 |
| WQB Environment (%) | 78.29 | 14.56 | 33-100 | 75 | 12.99 | 42-100 | | ns,p>0.4 |
| WHO-5 (%) | 61.82 | 15.56 | 39-100 | 60.57 | 21.56 | 24-96 | | ns,p>0.7 |
| ASKU (Raw) | 3.75 | 0.68 | 1-5 | 3.73 | 0.57 | 1-5 | | ns,p>0.9 |

aCoded scale per year: 1= one to three, 2= four to six, 3 = seven to 10, 4= 11 to 20, 5= 21 to 39, 6= 40+ concerts.

bCoded scale: 1= currently, 2= in the past, 3 = never.

cCode scale: 1= Never, 2<once per month, 3= 1-3 times per month, 4= 1-3 times per week, 5= almost daily.

dCovid Anxiety 1 = Yes, 2 = no.

6.3 Ethical Considerations

Ethical approval for this study was obtained from the relevant institutional review board. All participants provided informed consent prior to participating in the study. Confidentiality and anonymity were ensured by assigning unique identifiers to each participant and by storing data securely. Participants were informed of their right to withdraw from the study at any time without penalty.

7 RESULTS

Eighteen sub-themes emerged from the analysis, divided into lifestyle drivers and barriers (Table 2), support service drivers and barriers, and environmental drivers and barriers.

Participants overwhelmingly emphasized the importance of health and well-being in their lives, with 90% recognizing these factors as crucial for their artistic performance and overall happiness. For instance, one student noted, "Listening to your body and paying attention to any pain is key" (S1007, PhD student). Many students (75%) reported adopting healthy lifestyles, including regular exercise (55%) and healthy eating habits (35%). One student described her routine: "I bike to and from the university every day, run, and go to the gym. It has a significant impact on my creative work and helps me pay more attention to my diet and health" (S1010, UG2). Some students (25%) consciously prioritized their health needs, while others (15%) highlighted the importance of regular and adequate sleep. Specific practices and learning strategies to maintain health and well-being were also mentioned, such as combining art theory with creation (35%). One student shared, "Combining art theory with creation was enlightening and did not require sacrificing one aspect for the other" (S1007, PhD student).

8 Lifestyle Barriers

The majority of participants (85%) identified various lifestyle barriers, including difficulties in maintaining a healthy diet due to time constraints (25%), lack of exercise time (15%), and excessive alcohol consumption (15%). One student lamented, "I added a 'tire' around my waist due to drinking and now feel unhealthy" (S1008, UG3). Other challenges included irregular schedules (15%), financial pressure (20%), and a general decline in physical and emotional health since entering art school (15%). Physical health issues were prevalent, with 70% of participants reporting challenges related to physical exercise. Half of these students (50%) experienced injuries, such as repetitive strain injury (RSI), while others (25%) reported body abuse due to prolonged painting sessions. One student described, "I've had RSI for four years, with excruciating pain in almost every part of my arm" (S1008, UG3).

9 Support Services Enablers and Barriers

Support Services Enablers Almost all students believe they have found sufficient sources of support to optimize their health and well-being (n=19, 95%). This includes both accessing direct support and knowing where to find support, such as from teachers/coaches, healthcare professionals or the art school welfare team. It has been of great help to my health and well-being. Some may think it's just lying down and breathing, but it's not just about releasing tension and improving efficiency, it's also a universal feeling of happiness. Of course, if I have a major issue, I will talk to my teacher. I may go out of the art school to see my GP, or if it involves a specific area, I will go see a psychologist. I may also go see the mental health officer, even if I haven't talked to her before, I just go to use her services. From day one, she made it very clear, "If you have emotional or physical issues, I'm on the fifth floor. This is my job. I'm here to serve you." A few students also described seeking support from counselors or professionals through yoga, exercise, or antidepressants. Over 80% of students (n=16) reported that the entire art school has specific provisions for health and well-being. 70% (n=14) of them think this indicates that the art school cares and provides good health and well-being. Many activities are offered, such as sponsored swimming and basketball clubs, and running clubs, which show that the school is making a huge effort to keep students healthy and happy. According to some students, students are more easily aware of each other, so they are more encouraged to interact with each other than to rely on staff encouragement. Students are satisfied because they feel they can get adequate attention and support, also thanks to the assistance of faculty and other students. In fact, 40% of students (n=8) reported attending specific seminars or initiatives at the art school, such as

Table 2 Demographic and descriptive information about the sample and between group statistics.

| Variable | Study Sample | | Topp[20] (Normative Data; German sample) | | Baumann[21] (General HE Students) | | Antonini[?] (Music HE Students) | |
|----------------------------------|------------------|--|---|---------------------------|--------------------------------------|----------------------------|------------------------------------|---------------------------|
| | Mean (SD) | Statistic | Mean (SD) | Statistic | Mean (SD) | Statistic | Mean (SD) | Statistic |
| WHO-5 (%) | 61.63 (16.46) | 66.3 t(92)=-4.66, p = 0.008 | 16.8 (2.6) | t(96)=-3.74, p < 0.001 | 72.90 (14.90) | ns, p > 0.4 | 69.46 (12.79) | t(96)=2.93, p = 0.004. |
| WQB - Physical Health (Raw) | 5.86 (2.49) | | | | | | | |
| WQB - Physical Health (%) | 74.09 (15.57) | 15.7 (2.4) ns, p = 0.07 | | | 73.60 (14.40) | t(94)=-2.14, p = 0.35 | 69.09 (12.54) | ns, p > 0.4 |
| WQB - Psychological Health (Raw) | 15.25 (2.38) | | | | | | | |
| WQB - Psychological Health (%) | 70.34 (14.85) | | | | | | | |
| WQB - Social Relationships (Raw) | 16.07 (2.80) | 14.4 (2.9) t(89) = 1.67, p < 0.001 | | | 74.00 (18.30) | ns, p > 0.4 | 77.02 (17.19) | ns, p > 0.4 |
| WQB - Social Relationships (%) | 75.46 (17.51) | | | | | | | |
| WQB - Environment (Raw) | 16.45 (2.28) | 13.0 (2.3) t(94)=14.76,p < 0.001 | | | 74.00 (13.80) | t(93) = 2.55, p = 0.012 | 72.83 (15.64) | t(93)=3.34, p = 0.001 |
| WQB - Environment (%) | 77.77 (14.31) | | | | | | | |

counseling for performance anxiety and health seminars, which helped them achieve their health and well-being goals. Participants in the discussion identified specific support mechanisms they feel can help achieve health and well-being in multiple ways, including accessing or knowing where to find sufficient sources of support, such as teachers, healthcare professionals, and the art school mental health team. Additionally, most students feel their art school provides good care, understanding, and support for health and well-being.

10 Support Services Barriers

Almost all students (95%) reported having sufficient support to optimize their health and well-being. Sources of support included teachers, healthcare professionals, and the art school welfare team. One student highlighted, "If I have a major issue, I can talk to my teacher or see a psychologist. The mental health officer is always available" (S1016, graduate). Over 80% of students (n=16) noted that the art school provided specific provisions for health and well-being, such as sponsored sports clubs and health seminars. Despite the availability of support, over half of the students (55%) felt that support was insufficient. Some students (35%) reported feeling unsupported, while others (35%) lacked awareness of available support. One student expressed disappointment: "I had tendinitis and didn't know where to seek help" (S1014, PhD student). Additionally, 50% of participants believed that art school students had a lower level of health awareness.

11 Environmental Enablers and Barriers

11.1 Environmental Enablers

Nineteen students reported motivational factors in the art school environment, including success and enjoyment (75%), positive emotions (50%), and supportive relationships (30%). One student described the supportive community: "People work on projects together and communicate in different classes, groups, and activities" (S1003, UG3).

11.2 Environmental Barriers

All participants reported facing environmental challenges, primarily related to competition and pressure[22, 23]. More than half of the students (55%) experienced psychological distress, with 30% reporting mental illness. One student said, "I don't get enough feedback, and after a year and a half, I don't want to perform anymore" (S1009, UG2). Other challenges included excessive pressure to succeed and the neglect of mental health in the art college environment, as shown in the figure 1.

This study identified several key factors influencing the health and well-being of art college students. Lifestyle factors, such as healthy habits and exercise, were seen as crucial for maintaining well-being. However, students faced significant barriers, including time constraints and physical health issues. Support services were available but often insufficient or unknown to students. The art college environment provided both motivational factors and substantial challenges, particularly related to competition and mental health. These findings highlight the need for a comprehensive health promotion approach in art colleges to address these complex interrelated factors.

12 CONCLUSION

This study provides valuable insights into the health and well-being of art college students, identifying key factors that influence their overall health. The findings highlight the importance of a holistic approach to health promotion, integrating individual lifestyle choices, support services, and environmental conditions. While students recognize the importance of maintaining a healthy lifestyle and have access to various support services, they also face significant challenges, including time constraints, financial pressures, and a highly competitive environment. The research identified several key findings:

1. Students emphasized the importance of healthy habits, such as regular exercise and balanced diets, in supporting their well-being. However, they also reported barriers, including time constraints and unhealthy lifestyle choices due to academic pressures.
2. Although support services were available, many students were unaware of these resources or felt they were insufficient. This highlights the need for better communication and accessibility of health and well-being support within the art college environment.

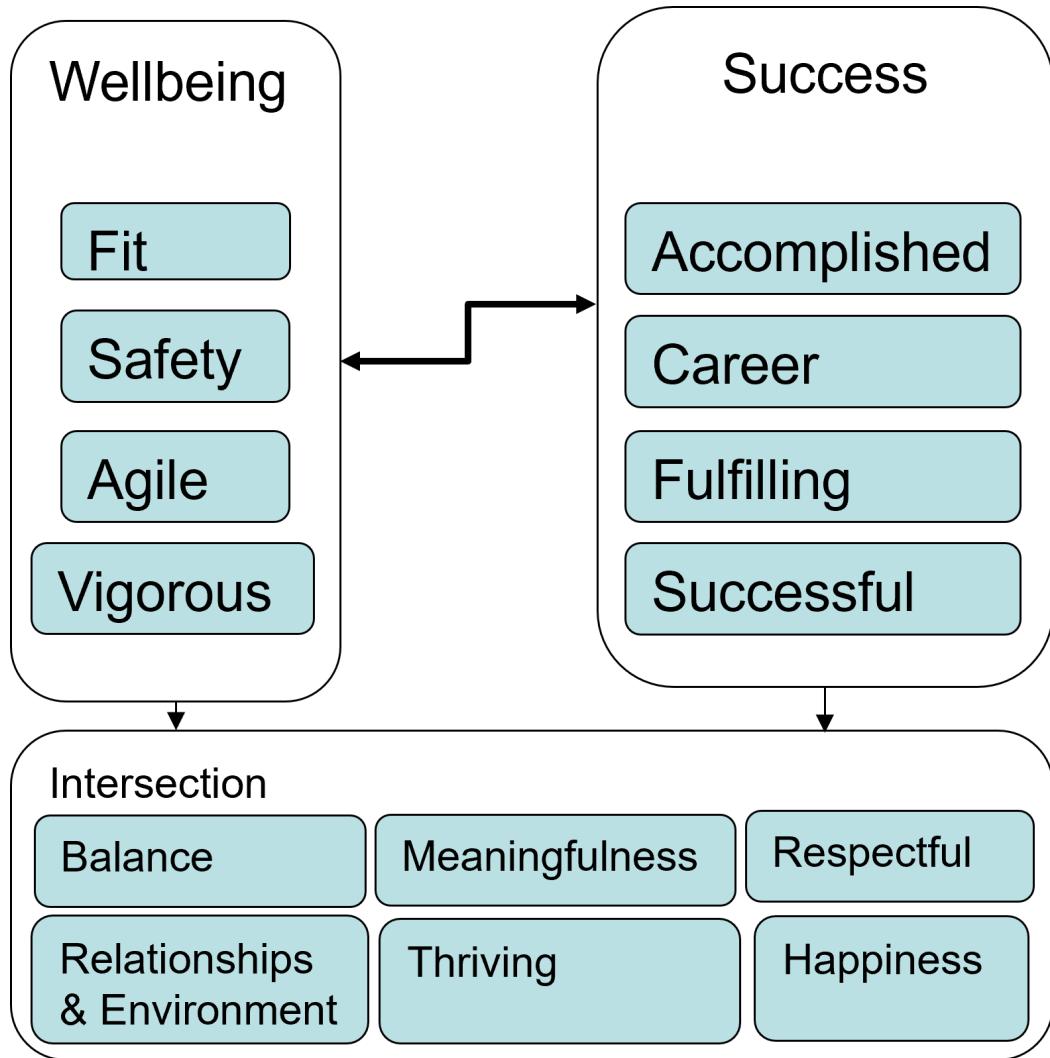


Fig. 1 Visualization of themes emerged from the qualitative analysis of students' flipcharts

3. The art college environment, while supportive in many ways, also presented significant challenges, including competition, stress, and the neglect of mental health. These factors can negatively impact students' overall well-being.

The findings suggest several practical implications for art colleges:

- Art colleges should develop comprehensive health promotion programs that address both physical and mental health. This includes providing accessible and well-publicized support services, such as counseling and mental health resources.
- Health and well-being should be integrated into the curriculum, ensuring that students receive education on maintaining a healthy lifestyle and managing stress.
- Creating a supportive and inclusive environment can help mitigate the negative impacts of competition and stress. This includes fostering a sense of community and providing opportunities for students to engage in social and recreational activities. Future research should focus on:
 - Conducting longitudinal studies to track the long-term impact of health promotion initiatives and the evolution of students' health and well-being over time.
 - Including a more diverse sample of students, including different genders, art disciplines, and academic levels, to ensure that findings are representative and applicable to a broader population.

- Developing and evaluating specific interventions aimed at improving health and well-being in art colleges, such as mindfulness programs, stress management workshops, and peer support networks.

This study underscores the importance of addressing the complex interplay between lifestyle, support services, and environmental factors in promoting the health and well-being of art college students. By adopting a comprehensive health promotion approach, art colleges can create environments that support students in achieving their full potential as artists and individuals. Future research and

practice should continue to explore innovative strategies to enhance health and well-being in this unique educational setting.

DECLARATIONS

Ethics approval and consent to participate

Not applicable.

Conflict of interest

No potential conflict of interest was reported by the authors.

Dataset to be available

All data generated or analysed during this study are included in this published article.

Consent for publication

Not applicable.

Funding

Not applicable

References

- [1] Barrable, A., Papadatou-Pastou, M., Tzotzoli, P.: Supporting mental health, wellbeing and study skills in higher education: an online intervention system. *International Journal of Mental Health Systems* **12**(1), 54 (2018). <https://doi.org/10.1186/s13033-018-0233-z>
- [2] Stewart-Brown, S., Evans, J., Patterson, J., Petersen, S., Doll, H., Balding, J., Regis, D.: The health of students in institutes of higher education: an important and neglected public health problem? *Journal of Public Health* **22**(4), 492–499 (2000). <https://doi.org/10.1093/pubmed/22.4.492>
- [3] Reuter, P.R., K., F.: Prevalence of generalized joint hypermobility, musculoskeletal injuries, and chronic musculoskeletal pain among american university students. *PeerJ* (2019). <https://doi.org/10.7717/peerj.7625>
- [4] Fernandez, A., Aubry-Rozier, B., Vautey, M., Berna, C., Suter, M.R.: Small fiber neuropathy in hypermobile ehlers danlos syndrome/hpermobility spectrum disorder. *Journal of Internal Medicine* **292**(6), 957–960 (2022). <https://doi.org/10.1111/joim.13539>
- [5] Nguyen, A.X.-L., Xiang, L., Chhibber, R., Blanchard, H., Tikhonova, S., Zafran, H., Miller, C.-A., Bergevin, Y.: Student-led interprofessional global health course: learning impacts during a global crisis. *BMC Medical Education* **23**(1), 166 (2023). <https://doi.org/10.1186/s12909-023-04116-4>
- [6] Plage, S., Cook, S., Povey, J., Rudling, E., te Riele, K., McDaid, L., Western, M.: Connection, connectivity and choice: Learning during covid-19 restrictions across mainstream schools and flexible learning programmes in australia. *Australian Journal of Social Issues* **58**(1), 212–231 (2023). <https://doi.org/10.1002/ajs4.228>
- [7] Six, S.G., Byrne, K.A., Aly, H., Harris, M.W.: The effect of mental health app customization on depressive symptoms in college students: Randomized controlled trial [original paper]. *JMIR Ment Health* **9**(8), 39516 (2022). <https://doi.org/10.2196/39516>
- [8] Stallman, H.M.: Psychological distress in university students: A comparison with general population data. *Australian Psychologist* **45**(4), 249–257 (2010). <https://doi.org/10.1080/00050067.2010.482109>

- [9] Kenning, D.: Art world strategies: neoliberalism and the politics of professional practice in fine art education. *Journal of Visual Art Practice* **18**(2), 115–131 (2019). <https://doi.org/10.1080/14702029.2018.1500112>
- [10] Følling, I.S., Joramo, K., Helvik, A.: Participants' stories about long-term achievement 60-months after attending a healthy life centre programme (the vend-risk study) - a qualitative study. *International Journal of Qualitative Studies on Health and Well-being* **18**(1), 2162984 (2023). <https://doi.org/10.1080/17482631.2022.2162984>
- [11] Dooris, M., Powell, S., Farrier, A.: Conceptualizing the 'whole university' approach: an international qualitative study. *Health Promotion International* **35**(4), 730–740 (2019). <https://doi.org/10.1093/heapro/daz072>
- [12] Sørensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., Brand, H., Consortium Health Literacy Project, E.: Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health* **12**(1), 80 (2012). <https://doi.org/10.1186/1471-2458-12-80>
- [13] Nutbeam, D.: Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International* **15**(3), 259–267 (2000). <https://doi.org/10.1093/heapro/15.3.259>
- [14] Sarkar, M., Fletcher, D.: Psychological resilience in sport performers: a review of stressors and protective factors. *Journal of Sports Sciences* **32**(15), 1419–1434 (2014)
- [15] Strand, M.: Examining Well-being Among College Students with Attention-Deficit/Hyperactivity Disorder (ADHD) and Co-Morbid Diagnoses: An Integrative Approach to Understanding Mental Health. Unpublished manuscript (2016)
- [16] Wagner, A., Werners, B., Pieper, C., Eilerts, A.-L., Seifried-Dübon, T., Grot, M., Junne, F., Weltermann, B.M., Rieger, M.A., Rind, E.: Exploring transfer potentials of the improvejob intervention for strengthening workplace health management in micro-, small-, and medium-sized enterprises in germany: A qualitative study. *International Journal of Environmental Research and Public Health* **20**(5) (2023). <https://doi.org/10.1093/heapro/daz072>
- [17] Yang, D., Zhang, X., Zhang, J.: Exploration of landscape painting in the treatment of anxiety disorder in art education. *International Journal of Neuropsychopharmacology* **25**(Supplement 1), 84–85 (2022). <https://doi.org/10.1093/ijnp/pyac032.114>
- [18] Yang, L., Zikos, V.: Healthy mind in healthy body: Identifying the causal effect of mental health on physical health. *Economics Letters* **213**, 110358 (2022). <https://doi.org/10.1016/j.econlet.2022.110358>
- [19] Bech, P., Olsen, L.R., Kjøller, M., Rasmussen, N.K.: Measuring well-being rather than the absence of distress symptoms: a comparison of the sf-36 mental health subscale and the who-five well-being scale. *International Journal of Methods in Psychiatric Research* **12**(2), 85–91 (2003). <https://doi.org/10.1002/mpr.145>
- [20] Topp, C.W., Stergaard, S.D., Søndergaard, S., Bech, P.: The who-5 well-being index: A systematic review of the literature. *Psychotherapy & Psychosomatics* **84**(3), 167–176 (2015)
- [21] Baumann, M., Amara, M.-E., Karavdic, S., Limbach-Reich, A.: First-year at university: the effect of academic employability skills and physical quality of life on students' well-being. Unpublished manuscript (2014)
- [22] Warren, E., Bevilacqua, L., Opondo, C., Allen, E., Mathiot, A., West, G., Jamal, F., Viner, R., Bonell, C.: Action groups as a participative strategy for leading whole-school health promotion: Results on implementation from the inclusive trial in english secondary schools. *British Educational Research Journal* **45**(5) (2019). <https://doi.org/10.1080/10486801.2018.1528769>

- [23] Weinstein, A.R., Onate, A., Kruse, G., Cohen, M.: Opportunities and challenges for a standardized curriculum in a student-run clinic network. *Medical Teacher*, 1–6 (2023). <https://doi.org/10.1080/0142159X.2023.2166478>