

Original Research

Teachers Experiences in Mindfulness and Fitness Program: A Pilot StudyTamerah Nicole Hunt ^{1, *}, Kylie Roberts ¹, Megan Byrd ¹, Kaytlyn Johnson ², Christina Gipson ¹

1. Georgia Southern University 1, PO Box 8076, Statesboro, GA, US; E-Mails:
thunt@georgiasouthern.edu; kroberts229@gmail.com; mbyrd@georgiasouthern.edu;
cgipson@georgiasouthern.edu
2. Indiana University Bloomington, 107 S Indiana Ave, Bloomington, IN, US; E-Mail:
kaytjohn@iu.edu

* **Correspondence:** Tamerah Nicole Hunt; E-Mail: thunt@georgiasouthern.edu

Academic Editor: Brandis Ansley**Collection:** [Stress, Burnout, and Trauma in Schools: Coping Strategies for Teachers, Staff, and Students](#)

OBM Integrative and Complementary Medicine
2024, volume 9, issue 1
doi:10.21926/obm.icm.2401002

Received: July 28, 2023**Accepted:** December 18, 2023**Published:** January 04, 2024**Abstract**

Current research shows that mindfulness and physical training programs have been shown to help reduce stress independently, however, limited research is available exploring the possible additive effects of implementing both training programs together [1, 2]. To test the feasibility and effectiveness of the Mind-Body Fitness program through a case-series pilot program, seven elementary school teachers completed a nine-week mindfulness and fitness program. The Perceived Stress Scale [3] was administered at three time points to measure changes in stress levels, and then a focus group was conducted at the conclusion of the program. Focus groups were analyzed using thematic analysis. Mean scores on the Perceived Stress Scale decreased over time. Three themes were identified 1) Perception of stress levels, 2) Integration of stress reduction, and 3) Program evaluation. A novel approach to the integration of mindfulness and fitness created a program with the benefits and strengths of both. Teachers believed the program helped reduce stress levels. The fitness component



© 2024 by the author. This is an open access article distributed under the conditions of the [Creative Commons by Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium or format, provided the original work is correctly cited.

highlighted the role of support systems in stress reduction, and the mindfulness component has a carry-over effect in managing stress in and out of the classroom.

Keywords

Mindfulness; schoolteachers; perceived stress; stress; psychological; personal satisfaction

1. Introduction

The National Center for Education Statistics reported that there were 3.5 million full- and part-time public-school teachers, including 1.8 million elementary school teachers during the 2017 to 2018 school year [4]. Eight percent of teachers are reported to leave the profession annually, with more than 50% quitting teaching before reaching retirement [5]. This high turnover rate can be attributed to factors such as stress, burnout, and other mental health related issues associated with being a teacher [6]. Additionally, newer challenges facing teachers have emerged because of a change in teaching modalities due to the COVID-19 pandemic. As such, Sanatamaria and colleagues note that regardless of experience, many teachers accumulated high levels of stress as a result of having to teach online [7]. Teachers face a number of demands both within the workplace and home which contribute to these ever-growing turnover rates.

When exploring the demands of the workplace, the primary roles for teachers are planning, preparing, and teaching of programs in order to achieve specific student outcomes in the classroom [8]. Classroom teachers are expected to implement a range of teaching programs, provide a child safe environment, monitor, evaluate and report student progress in key learning areas, maintain records of attendance and student progress as well as implement effective student management strategies. Teachers are typically responsible for their own classrooms as well as partaking in policy development, project teams and organization of co-curricular activities [8]. Additionally, many teachers experience limited access to the resources required to successfully manage the many additional imposed demands [8]. This combination of overwhelming job demands, and limited resources contributes heavily to the stress experienced by teachers at all levels and thus contributes to teacher burnout.

Teacher burnout is defined as “the response to chronic interpersonal stressors and is generally structured with three main components: emotional exhaustion, feelings of cynicism and detachment, and a lack of personal accomplishment” [9]. Teaching is an inherently stressful occupation with roughly 46% of teachers reporting that they feel high daily stress [10]. According to Prilleltensky et al., stress can be defined as “an imbalance between risk and protective factors...that may help or hinder a sense of well-being [11]. When looking closer at the work-related stress put on teachers it is also important to consider that teachers work with students that may experience undue emotional stress at home. This emotional stress can be experienced by teachers through their students via vicarious trauma. Vicarious trauma is defined as “the transformation that occurs in the inner experience of the therapist [or teacher] that comes about as a result of empathic engagement with clients’ [students] trauma material” [12]. The exposure to traumas experienced by their students can create additional stress, however, teachers are not limited to only classroom

stressors. Teachers' stress can also be attributed to their personal lives, in which they have roles and responsibilities associated with being a spouse or parent.

Proper and timely management of teacher stress allows for the prevention of burnout which can positively affect teacher attrition. Stress management interventions that help people learn to cope with stressors focus on the goals of enabling problem-resolution or expressing one's emotions in a healthy manner [13]. Coping strategies are essential tools for stress reduction. Coping can be defined as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" [14]. Currently, there are a number of coping techniques being identified to aid in stress reduction, including the implementation of mental health training programs and physical training.

One mental health training program that can be used to decrease stress is mindfulness training. Bishop and colleagues describe mindfulness as the ability to focus attention on the present moment while possessing an orientation of openness, curiosity and non-judgement [15]. These programs are aimed to encourage the participants to become aware of their judgmental thoughts and unconscious expectations in order to ground themselves in the present moment. Mindfulness is traditionally associated with relaxation techniques, many of which are cultivated out of historical traditions. In a systematic review of mindfulness-based interventions in teachers, there was a reduction in stress seen alongside enhanced mood regulation and increased teacher self-efficacy following their participation in a mindfulness training program [16]. Additionally, this review suggested that programs for teachers be structured specifically around decentering self-awareness, regulation of attention and self-compassion [16]. While mindfulness has been seen to help with stress reduction, there are alternatives to choose from.

In addition to mindfulness training, the incorporation of physical activity into one's routine has been shown beneficial in reducing one's stress. The implementation of physical activity in the form of fitness training programs has been shown to be positively associated with overall mental health [17], mental well-being [18], and social and emotional well-being [19]. Specifically in a sample of teachers, the implementation of fitness training programs has shown a positive relationship between their physical health status, their mental health, their perceived stress levels, and their coping behaviors [2]. Independently, both mindfulness and physical training programs have the potential to decrease perceived stress.

Research addressing the effect of mindfulness on fitness routines [20, 21] and the integration of multiple methods of stress reduction [20-22] are present in the literature, however few have taken an experimental approach to examining the integration of mindfulness and physical activity. Many of the studies discuss the barriers to each type of activity and hypothesize that the integration of multiple techniques would decrease the barriers to enhance the effectiveness of an integrated program. Through a comprehensive search of the current literature, limited peer-reviewed research examines the benefits of integrating mindfulness and physical activity together to reduce stress and other aspects of well-being.

Examination of the scarce literature available that integrates mindfulness and fitness programming appears to support the feasibility of the integration and improvements in outcome measures such as wellness and mindfulness. In a parallel trial design intervention to assess an audio-recorded mindfulness-based physical activity intervention, participants were given a recorded audio to listen to while exercising. Sala and colleagues [23] found that the intervention resulted in clinically meaningful differences in physical activity during a 1-week follow-up compared with the control

condition. Further, a study by DeBruin et al., [24] completed a six-week program that integrated mindfulness, exercise, and yoga for participants who expressed complaints of symptoms of burnout and stress. Twenty-four participants completed 2-hour sessions that included 20 minutes of fitness, 20 minutes of yoga, and 80 minutes of mindfulness. This study found reductions in physical and mental workability, anxiety, depression, stress, and sleep quality and positive and negative affect. While these studies provided a foundation and feasibility of an integrated mindfulness and fitness program [23], and a mindfulness, yoga, and fitness program (Mindful2work, [24]), respectively, the rationale for time allocations of each intervention, asynchronous nature of the intervention, inclusion of participants who were seeking physician help for symptoms of burnout, the ability to conduct real-world assessment, and outcome of stress reduction was lacking.

Current research shows that mindfulness and physical training programs have been shown to help reduce stress independently, however, limited research is available exploring the possible additive effects of implementing just mindfulness and physical activity training programs together [1, 2] to create a seamless integration for a holistic approach to self-care and stress reduction. As additional research is necessary to understand the integration of two well-established stress reduction techniques in real-world settings, the Mind Body Fitness program was developed. Therefore, the purpose of this study was to test the feasibility and effectiveness of the Mind-Body Fitness program through a case-series pilot program. Additionally, the perceived stress levels of the participants (elementary school teachers) were collected before, during, and following the implementation of the nine-week program.

2. Materials and Methods

2.1 Participants

Participants were recruited from local elementary schools in the southeastern region of the United States to participate in a nine-week mindfulness and fitness program. Eight teachers from one public elementary school consented to participate, however one dropped out due to lack of childcare. Thus, seven participants were included in the data and participated in the focus group. All seven participants identified as female, ranging in age from 22 years to 55 years (M age = 41.29, SD = 10.77). Of the seven participants, two (29%) reported having heard of or participated in a mindfulness training program while four (57%) reported having previously participated in a fitness program. Pseudonyms were used to protect the identities of the respondents (Table 1).

Table 1 Participant Demographic Data.

Participant	Occupational History			Prior Knowledge or Experience		Perceived Stress Scale Scores		
	Age	Title	Years of Experience	Mindfulness	Fitness	#1	#2	#3
Latrice	38	Teacher	13	No	No	14	18	14
Diana	22	Teacher	<1	Yes	No	11	11	10

Emma	50	Teacher	29	Yes	Yes	10	8	8
Latoya	39	Teacher	13	No	Yes	21	13	11
Danelle	47	Teacher	N/A	No	No	18	5	3
Alice	38	Paraprofessional	4	No	Yes	8	10	9
Nevaeh	55	Paraprofessional	8	No	Yes	12	10	14

Approval from the University’s Institutional Review Board (IRB) was obtained prior to any data collection.

2.2 Procedures

Following Institutional Review Board approval, participants were recruited through purposive sampling. To participate, teachers had to be a public-school teacher employed in the same county as the supporting University. Individuals were excluded if they were an administrator, employed through a private school, or outside of the respective county. Prior to the start of the program, participants who had agreed to participate were provided welcome packets that included information about the program as well as questionnaires regarding health and medical information. At the initial meeting, researchers collected the welcome packets and met with the participants to explain the research goals and answer any questions. Participants then completed an informed consent form and were enrolled into the mindfulness and fitness program.

Each day of the program included a thirty-minute fitness component and a thirty-minute mindfulness component twice a week for nine weeks. Teachers were given the Perceived Stress Scale (PSS; [3]) a total of three times: at week one, week four, and week nine to assess the impacts of mindfulness and physical activity on their stress levels. Data was de-identified by assigning each participant a pseudonym. At the conclusion of the nine weeks, a focus group was conducted via Zoom. The focus group was led by three members of the research team and all seven participants who completed the program and lasted approximately one hour. Participants were asked questions pertaining to their evaluations and perceptions of the program, and stress levels. After completion, a transcript of the focus group was sent to participants for member checks. See Figure 1 for more details.

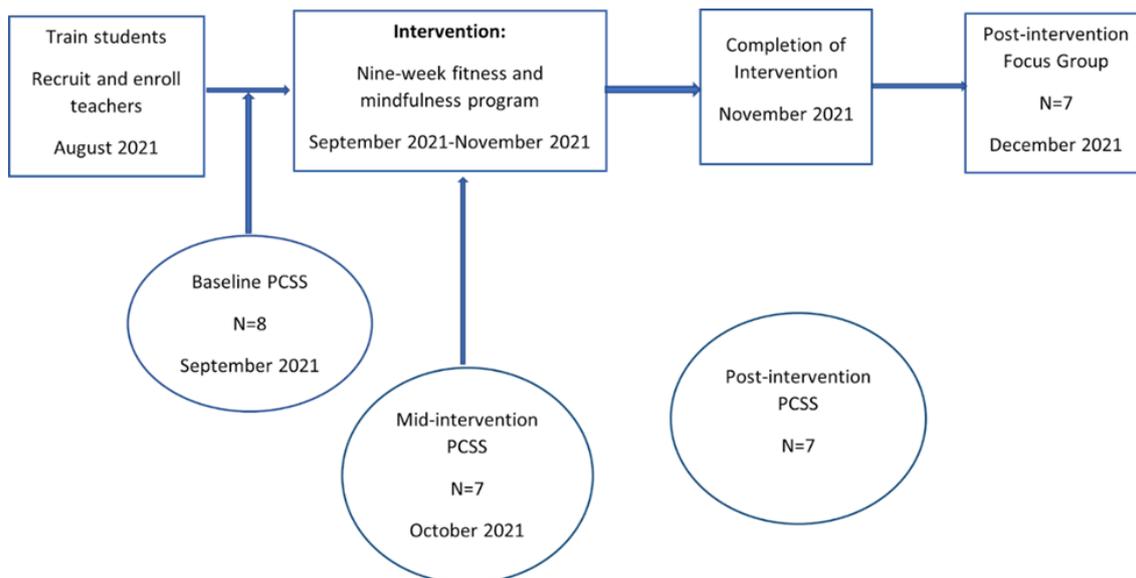


Figure 1 Study timeline.

2.3 Instruments

2.3.1 Mind Body Fitness Program

The Mind Body Fitness Program is a holistic approach to stress reduction that integrates mindfulness and physical activity. The program took place twice per week on Monday and Wednesday afternoons for one hour, with thirty minutes for the fitness component and thirty minutes for the mindfulness component. Components were sequential, with the fitness component happening first, followed immediately by the mindfulness component. All participants completed both parts of the program each day and were encouraged to incorporate what they learned. Sessions were led by upper-level undergraduate students in a service-learning course who were trained in all components of the program and supervised by faculty. See Table 2 for the full list of mindfulness and fitness topics corresponding to each week of the program.

Table 2 Mindfulness and Fitness intervention schedule.

Week	Date	Fitness	Mindfulness
1	Sept 13th	Cardio	<i>Introduction to Mindfulness</i>
	Sept 15th	Gymnastics	
2	Sept 20th	Strength	<i>Focusing on the present</i>
	Sept 22nd	Cardio	
3	Sept 27th	Gymnastics	<i>Work life balance</i>
	Sept 29th	Strength	
4	Oct 4th	Cardio	<i>Relaxation</i>

	Oct 6th	Gymnastics	
5	Oct 11th	Strength	<i>Body Acceptance</i>
	Oct 13th	Cardio	
6	Oct 25th	Gymnastics	<i>Self-Acceptance and Self Compassion</i>
	Oct 27th	Strength	
7	Nov 1st	Cardio	<i>Attention and Attitude</i>
	Nov 3rd	Gymnastics	
8	Nov 8th	Strength	<i>Learning to Let Go and Detachment</i>
	Nov 10th	Cardio	
9	Nov 15th	Gymnastics	<i>Stress Relief</i>
	Nov 17th	Strength	

2.3.2 Perceived Stress Scale (PSS)

To measure perceived stress levels, participants completed the Perceived Stress Scale [3] three times (weeks 1, 4, 9). The PSS has 10 questions and is answered on a Likert-type scale of 0 (never) to 4 (very often) based on how they felt over the course of the past month [3]. PSS scores are obtained by reverse scoring responses to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. Higher scores are indicative of higher levels of perceived stress [3]. The PSS demonstrates an adequate internal consistency reliability of $\alpha = 0.78$ in a sample of 2,387 American adults [25]. This scale was used to measure stress levels as a result of participating in both fitness and mindfulness sessions.

2.3.3 Semi-Structured Interview Guide

Researchers developed a semi-structured interview guide that consisted of 11 questions aimed at fostering a meaningful conversation and discussion about their experiences in the program and its influence on their perceived stress (see Figure 2). The single focus group allowed the researchers to create an open conversation with the participants where they were encouraged to explore and describe their experiences in their own terms.

Semi-structured Interview Guide

1. Have you ever completed mindfulness training or exercises before this program?
If so, what did those look like?
2. What do you think you gained from the program?
 - a. What was the most beneficial thing you learned from this program?
 - b. What was the least beneficial
3. How well did the program increase your knowledge of mindfulness?
4. Do you believe the program increased your ability to incorporate mindfulness into your life? If so, in what ways?
5. Do you believe that the fitness component or mindfulness component help reduce your stress?
 - a. If yes, please provide why?
 - b. If not, please provide why?
6. What did you like about the program?
7. What did you dislike about the program
8. Was one component of the program more beneficial than the other
9. Can you reflect on how the mindfulness sessions impacted the stressors in your life?
10. What suggestions do you have for additions to this program to make it more beneficial?
11. Overall, what did you think about this program?

Figure 2 Interview Guide.

2.4 Data Analysis and Interpretation

The data collected from the focus group was analyzed through thematic analysis [26]. The focus group was recorded via Zoom with additional field notes recorded by the authors throughout the duration of the interview. The recording was then transcribed and analyzed by each of the researchers to allow for independent identification of common themes [26]. Data was analyzed following the steps outlined by Pitney and Parker [26]. Researchers completed a preliminary exploratory analysis of the data without judgment of the content. After the initial exploratory analysis, we categorized the data according to the research questions. Following the separation of data into the two main categories, researchers began to unitize the data and assign labels or codes. Following the assignment of codes, researchers met for peer debriefing to compare the data to ensure all parties agreed. Once all parties agreed, thematization took place to allow for identification of any patterns. During thematization, specific themes were identified. Credibility and trustworthiness were established through sound and respected data collection and analysis techniques [27]. Additionally, the use of member checks and the transcription provided by Zoom allowed for further development of the credibility and trustworthiness of these themes.

All data were examined for outliers. Descriptive statistics were calculated for demographic questions and PSS scores. PSS scores were analyzed descriptively using means and standard errors given the small sample size. Data was analyzed using SPSS 21.0.

3. Results

3.1 Perceived Stress Scale

Scores on the PSS revealed that teachers' stress levels decreased throughout the program. Through the three data points, the average changed from 13.43 to 10.71 to 9.86. As the sample size is small, statistical significance was not reached due to normality violations, however, the data demonstrated that the teachers did have a reduction in stress overall.

3.2 Thematic Analysis

Thematic examination of the teachers' perceptions of the Mind Body Fitness Program on stress levels and experience within the program resulted in two themes: Perception of stress and Integration of stress reduction techniques.

3.2.1 Theme 1: Perception of Stress

The first theme that emerged was the teachers' perception of stress. This theme emerged as the teachers described various stressors that occurred in their daily lives and their ability to cope with those stressors improved throughout the program. When asked about stress in general, Latrice said, "I think it's been the pandemic all around and [the principal] sees how stressed out we are, how overwhelmed we are, how things will change literally from 7:30 am by 2:45, it's completely different from what you have been told previously that morning".

The participants also described how the program helped decrease their stress levels. Neveah mentioned that "when you feel better, when you feel good about yourself, you know you tend to have less stress in your life". It was also explained by Latrice with "just managing the stress even better, and just sometimes not going to be like oh wait a minute that's out of my control, why am I even worried about it? I'm just gonna have to let that go." The teachers reported that stress was a present yet manageable factor in each of their lives, and the program was helping them better manage and therefore decrease their stress levels.

Social support played a large role in stress reduction, adherence to program and engagement. This was captured by all participants describing sources of social support from the other participants, student instructors, and program instructors. This was evident by Emma stating, "you get to work out with your friends, you get the chat, catch up, even while you work out, I mean you can still chat, and you know, it's a group, it's fun", and "um, we knew each other from the school, but you know once you work out with somebody you know them a little on a different level". While Emma stated, "and having a community of people you're working out with, I mean that is accountability. I mean you knew that your people and our group were depending on us being there, so". These quotes highlight the social benefits of the program and may have led to our rates of 100% attendance and no dropout indicates that the time of the program and length is indeed feasible for teachers. The findings of the focus group also demonstrate participant satisfaction, reduced stress levels which illustrate the effectiveness of the Mind-Body Fitness program.

3.2.2 Theme 2: Integration of Stress Reduction Techniques

This theme was defined as the teachers' ability to integrate stress reduction strategies into daily activities. During the course of the program, mindfulness activities included focusing on the present, work/life balance, relaxation, body image, self-compassion, acceptance/attitude, learning to let go/detachment and stress reduction, while the fitness component included gymnastics, strength and cardio. When exploring these factors outside of the program, Emma mentioned that "Diana and Latrice and I are all in the same hallway so we would all chat about it in our hallway..." Latoya explained this as, "I learned how to just not worry about so much. If I can't do it today then I just can't do it today" Latrice stated "And if she was going through something that was stressful, I would bring up the things that we had just talked about, or maybe learned weeks before in the classroom. The same with like, if I was talking to my sister a lot of the things started just coming out of my mouth as though, I was up there teaching that mindfulness class". Diana reported "[the program] really forced me to like put school aside and like since it was at a certain time just get out of the classroom like the work would still be there the next day, I could do it later and like focus on myself, rather than just my job, so to say". Aside from putting away their occupation, duties and responsibilities, there were also changes in their personal lives. The program clearly extended beyond the program and into their everyday lives.

Utilization of focusing on self as a strategy was defined as the teachers' discussion of using the mindfulness strategy of focusing on self to reduce stress. This was incorporated into their daily activities. Focusing on self was a key aspect of mindfulness introduced in the program. Participants reported that they started to focus on themselves following the mindfulness program. Diana reported "it [the program] really forced me to like put school aside and like since it was at a certain time just get out of the classroom like the work would still be there the next day, I could do it later and like focus on myself, rather than just my job, so to say". Aside from putting away their occupation, duties, and responsibilities, there were also positive changes in their personal lives. Latrice reported that they "really enjoyed it. I looked forward to it, because it was the time of the day where I didn't have to be mom, I didn't have to be Miss Latrice I could just be Latrice and just worry about self and not have to worry about anyone else".

Overall, the quotes from the participants during the focus group provide evidence that the participants not only enjoyed the program but also learned concrete tools for stress management. Additionally, participants developed an interest in physical activity through learning new exercises in a comfortable environment. Because the participants discussed both components as adding to their experience and their confidence in their ability to maintain these tips and tools after the conclusion of the program, it is our interpretation of these quotes that the Mind Body Fitness program was successful in reducing stress as a result of integrating physical activity and mindfulness together.

4. Discussion

To test the feasibility and effectiveness of the Mind-Body Fitness program, we created a case-series pilot program, which included a measure of stress and a focus group following nine weeks of an integrated mindfulness and fitness intervention. Results from the PSS demonstrated decreases in stress over the course of nine weeks and the focus group demonstrated that the program is

feasible and effective, while also providing participant enjoyment. All participants attended all sessions and no participants dropped out once the program began.

Stress is ever present in teachers' lives with teacher stress having been highlighted in literature for decades [28-30]. Participants discussed the general stress that was present both in their personal and professional lives. It has been identified that the COVID-19 pandemic itself can be experienced as a trauma [31]. Adding pivoting to virtual learning, increased social isolation and decreased social support increased experienced stress [31]. During the initiation of this study, significant national and world stress was occurring which could have a traumatizing effect for everyone. Teachers are being faced with additional stress with limited resources available for management. As a result, many teachers are leaving the profession to decrease stress in their lives.

To combat the increases in teacher stress, many school systems are beginning to implement stress management programs. Presently, there is limited research available on the reduction of teacher stress following a program that incorporates both a mindfulness and fitness training program, however, there are correlations between our study and other studies in the teacher population. When examining mindfulness, our results were similar to the results of Beshai et al., who reported a significant reduction in stress following the implementation of a mindfulness-based intervention [32].

Research also supports that exercise can be an effective component of stress management programs and there are well-documented physical and psychological health benefits of exercise when compared to other stress management techniques [33]. This intervention, which included a combination of both a mindfulness and fitness training program provided appropriate skills and was effective in decreasing the teachers' perceived stress. This was observed through decreases in the PSS as well as comments from teachers such as when Diana commented, "like working out helps reduce my stress but then the mindfulness part helped me to like not be stressed". While previous research has focused on the implementation of either mindfulness or fitness training programs for stress reduction, these results demonstrate that use of such programs together can be beneficial in the teacher population.

The positive results from the program highlight its effectiveness when merging mindfulness and fitness. Participants used examples of techniques gained and used from both the fitness and mindfulness sessions. The fitness component appears to highlight the support systems involved in stress reduction, while the mindfulness component has a carry-over effect on their activities of daily living, such as in the school setting. Participants said that the mindfulness component helped them deal with stressors while at work, and the fitness component kept them coming back to the program. The social aspect of both components led to accountability and enjoyment. This is similar to the findings of Salas et al. [24], where participants indicated that the mindfulness component of their intervention increased their accountability. Future iterations of the program will include more integration between the fitness and mindfulness components so that they are seen as one program, as opposed to two separate aspects. For example, participants will be reminded during the fitness component to use the mindfulness techniques they have learned and have concrete examples of how to incorporate mindfulness into physical activity during the mindfulness component of the program.

Mindfulness training has increased familiarity and research as it is used to combat stress and mental health challenges, however, our participants stated that they had heard of mindfulness but didn't know what it was and how to use it. They were surprised that they liked it and could utilize it

in their everyday lives. Participants believed they were handling their stress better and were having unscripted thoughts about things they learned in the class. This is consistent with studies that identified improvements in stress following mindfulness practice [15, 16]. Two major mindfulness strategies that were identified and utilized included being present in the moment and focusing on self.

During educational preparation for teachers, few programs include the importance of self-care during professional practice [34]. Compounding vicarious trauma and internalizing stress to support their students and fellow teachers leads to a limited ability to focus on self and be in the present moment [35]. Being present in the moment is one of the key tenets of mindfulness. Mindfulness is described as “being aware of the present moment” and “purposefully focusing on what is happening in the moment without judgment” [15, 36]. This program provided strategies that specifically encouraged the teachers to focus on self and overall well-being with a non-judgmental approach. This is consistent with a systematic review of sixteen studies that found that mindfulness-based interventions were effective in addressing threats to teacher well-being, such as stress and burn-out [37].

Decreased stress levels and adherence to routine was also obtained through social support observed during the program. The participants spoke highly of the encouragement and support that they received from the instructors, students, their principal, each other, and one participant even reported receiving support from her daughter. Additionally, the participants reported enjoying the accountability and the communication or social aspect of the program (in both the mindfulness and fitness components) as these pieces fed into their overall enjoyment of the program. This is consistent with the research that found that support systems during interventions enhance adherence to programming [38, 39], program enjoyment [40], and overall satisfaction with the program [41]. The effects of social support on stress reduction are well-researched in the literature [41]. Similar to the trauma experienced following the COVID-19 pandemic, social support might have been more beneficial with the previously established social isolation following COVID-19.

4.1 Limitations

This pilot study found that the integration of a mindfulness and fitness program decreased teacher stress through the inclusion of specific mindfulness strategies and social support. The program was enjoyable for the participants and resulted in strong program adherence and resultant decreased stress. However, this study is not without limitations.

First, participants were all teachers from the same rural elementary school and were female which limits the generalization of findings to other populations. Despite this small population, data was collected with purposeful reason to monitor the perceived stress of the participants over the course of the program. As every school may have its own individual culture and environment, the stressors and potential stress management strategies may not be consistent across different schools or school districts.

Second, stress was a subjective measure of perceived stress for the teachers and obtained via self-report. As stress is an ever-present aspect for any person, the perception of stress from any individual may change based on circumstances. While it is anticipated that teachers may have increases in stress during peak times throughout the school year, the teachers confirmed that they felt that their stress decreased as a result of the program strategies.

Although participants spoke about the benefits of the program and the impact the physical and mindfulness components had in reducing their stress, there was no control group, thus, conclusions about cause and effect cannot be made. Additionally, it is unknown if one aspect was more impactful, or if it was a result of both components, to explain the participants' experiences. It is possible that some participants perceived more of an impact from the mindfulness components, while others the physical components, but overall, the participants' stress was positively impacted.

Future research could test these limitations with a randomized controlled trial or control group and test the impact of each component and combination of both.

5. Conclusions

As teachers play an irreplaceable role in society and the lives of future generations, it should be a concern to all that teachers are experiencing high levels of burnout and stress, causing them to leave the profession. This study demonstrated that teachers are experiencing high levels of stress, but with a proper outlet and tools, such as mindfulness and fitness, these levels can be mitigated. By equipping our teachers with stress reduction techniques, we can hopefully decrease their stress levels and continue to support teachers in the profession.

Acknowledgments

The authors would like to acknowledge the teachers that participated in the study as well as the Bulloch County School system that supported this work.

Author Contributions

Each author contributed to 1) study design, 2) data collection, 3) data analysis and interpretation 4) drafting of this manuscript.

Funding

This research was supported by a grant from Georgia Southern University Faculty Service Committee.

Competing Interests

The authors have declared that no competing interests exist.

References

1. DiCarlo CF, Meaux AB, LaBiche EH. Exploring mindfulness for perceived teacher stress and classroom climate. *Early Child Educ J.* 2020; 48: 485-496.
2. Snyder K, Hill M, Lee M, Crawford TN, Orlowski M. The relationships between physical health and chronic disease, stress, and resource strain in head start employees. *Workplace Health Saf.* 2020; 68: 190-201.
3. Cohen S. Perceived Stress Scale [Internet]. Menlo Park, CA, US: Mind Garden; 1994. Available from: <https://www.mindgarden.com/132-perceived-stress-scale#horizontalTab1>.

4. National Center for Education Statistics. Characteristics of Public School Teachers [Internet]. Washington, DC, US: National Center for Education Statistics; 2023. Available from: <https://nces.ed.gov/programs/coe/indicator/clr>.
5. Abitabile AW. Making teachers stick: January 2020 [Internet]. Reston, VA, US: National Association of Secondary School Principals (NASSP); 2022. Available from: <https://www.nassp.org/publication/principal%20-leadership/volume-20/principal-leadership-january-2020/making-teachers-stick-january-2020/#:%20~:text=In%20the%20United%20States%2C%208,five%20reasons%20for%20teacher%20attrition>.
6. Flook L, Goldberg SB, Pinger L, Bonus K, Davidson RJ. Mindfulness for teachers: A pilot study to assess effects on stress, burnout, and teaching efficacy. *Mind Brain Educ.* 2013; 7: 182-195.
7. Santamaría MD, Mondragon NI, Santxo NB, Ozamiz Etxebarria N. Teacher stress, anxiety and depression at the beginning of the academic year during the COVID-19 pandemic. *Global Mental Health.* 2021; 8: e14.
8. National Academies of Sciences, Engineering, and Medicine. Changing expectations for the K-12 teacher workforce: Policies, preservice education, professional development, and the workplace. Washington, D.C.: National Academies Press; 2020.
9. Genoud PA, Waroux EL. The impact of negative affectivity on teacher burnout. *Int J Environ Res Public Health.* 2021; 18: 13124.
10. Turner C. Teachers are stressed, and that should stress us all [Internet]. Washington, DC, US: National Public Radio (NPR); 2016. Available from: <https://www.npr.org/sections/ed/2016/12/30/505432203/teachers-are-stressed-and-that-should-stress-us-all>.
11. Prilleltensky I, Neff M, Bessell A. Teacher stress: What it is, why it's important, how it can be alleviated. *Theory Pract.* 2016; 55: 104-111.
12. Pearlman LA, Saakvitne KW. Trauma and the therapist: Countertransference and vicarious traumatization in psychotherapy with incest survivors. New York, NY, US: W. W. Norton & Company; 1995.
13. Glezer S, Liu C. Work, stress, coping, and stress management. Oxford, UK: Oxford University Press; 2017. doi: 10.1093/acrefore/9780190236557.013.30.
14. Lazarus RS, Folkman S. Stress, appraisal and coping. New York, NY, US: Springer; 1984.
15. Bishop SR, Lau M, Shapiro S, Carlson L, Anderson ND, Carmody J, et al. Mindfulness: A proposed operational definition. *Clin Psychol.* 2004; 11: 230-241.
16. Emerson LM, Leyland A, Hudson K, Rowse G, Hanley P, Hugh Jones S. Teaching mindfulness to teachers: A systematic review and narrative synthesis. *Mindfulness.* 2017; 8: 1136-1149.
17. Bize R, Johnson JA, Plotnikoff RC. Physical activity level and health-related quality of life in the general adult population: A systematic review. *Prev Med.* 2007; 45: 401-415.
18. Thompson Coon J, Boddy K, Stein K, Whear R, Barton J, Depledge MH. Does participating in physical activity in outdoor natural environments have a greater effect on physical and mental wellbeing than physical activity indoors? A systematic review. *Environ Sci Technol.* 2011; 45: 1761-1772.
19. Lubans DR, Smith JJ, Morgan PJ, Beauchamp MR, Miller A, Lonsdale C, et al. Mediators of psychological well-being in adolescent boys. *J Adolesc Health.* 2016; 58: 230-236.

20. Blair Kennedy A, Resnick PB. Mindfulness and physical activity. *Am J Lifestyle Med.* 2015; 9: 221-223.
21. Tsafoou KE, De Ridder DT, van Ee R, Lacroix JP. Mindfulness and satisfaction in physical activity: A cross-sectional study in the Dutch population. *J Health Psychol.* 2016; 21: 1817-1827.
22. Ulmer CS, Stetson BA, Salmon PG. Mindfulness and acceptance are associated with exercise maintenance in YMCA exercisers. *Behav Res Ther.* 2010; 48: 805-809.
23. Sala M, Geary B, Baldwin AS. A mindfulness-based physical activity intervention: A randomized pilot study. *Psychosom Med.* 2021; 83: 615-623.
24. De Bruin EI, Formsma AR, Frijstein G, Bögels SM. Mindful2Work: Effects of combined physical exercise, yoga, and mindfulness meditations for stress relieve in employees. A proof of concept study. *Mindfulness.* 2017; 8: 204-217.
25. Cohen S, Williamson G. Perceived stress in a probability sample of the United States. In: *The Social Psychology of Health: Claremont Symposium on Applied Social Psychology.* Newbury Park, CA, US: Sage; 1988. pp. 31-67.
26. Pitney WA, Parker J. *Qualitative research in physical activity and the health professions.* Champaign, IL, US: Human Kinetics; 2009.
27. Castleberry A, Nolen A. Thematic analysis of qualitative research data: Is it as easy as it sounds? *Curr Pharm Teach Learn.* 2018; 10: 807-815.
28. Von der Embse NP, Sandilos LE, Pendergast L, Mankin A. Teacher stress, teaching-efficacy, and job satisfaction in response to test-based educational accountability policies. *Learn Individ Differ.* 2016; 50: 308-317.
29. Kyriacou C, Sutcliffe J. Teacher stress: A review. *Educ Rev.* 1977; 29: 299-306.
30. Kyriacou C. Teacher stress: Directions for future research. *Educ Rev.* 2001; 53: 27-35.
31. Sullivan F, Hillaire G, Larke L, Reich J. Using teacher moments during the COVID-19 pivot. *J Technol Teach Educ.* 2020; 28: 303-313.
32. Beshai S, McAlpine L, Weare K, Kuyken W. A non-randomised feasibility trial assessing the efficacy of a mindfulness-based intervention for teachers to reduce stress and improve well-being. *Mindfulness.* 2016; 7: 198-208.
33. Jackson EM. Stress relief: The role of exercise in stress management. *ACSMs Health Fit J.* 2013; 17: 14-19.
34. Baker L. Self-care amongst first-year teachers. *Networks Online J Teach Res.* 2020; 22. doi: 10.4148/2470-6353.1328.
35. Caringi JC, Stanick C, Trautman A, Crosby L, Devlin M, Adams S. Secondary traumatic stress in public school teachers: Contributing and mitigating factors. *Adv Sch Ment Health Promot.* 2015; 8: 244-256.
36. Klingbeil DA, Renshaw TL. Mindfulness-based interventions for teachers: A meta-analysis of the emerging evidence base. *Sch Psychol Q.* 2018; 33: 501-511.
37. Hwang YS, Bartlett B, Greben M, Hand K. A systematic review of mindfulness interventions for in-service teachers: A tool to enhance teacher wellbeing and performance. *Teach Teach Educ.* 2017; 64: 26-42.
38. Carter A, Alexander AC. A qualitative exploration of womens' experiences who belong to a "fitness community". *Am J Health Educ.* 2020; 51: 22-30.
39. Fraser SN, Spink KS. Examining the role of social support and group cohesion in exercise compliance. *J Behav Med.* 2002; 25: 233-249.

40. Graupensperger S, Gottschall JS, Benson AJ, Eys M, Hastings B, Evans MB. Perceptions of groupness during fitness classes positively predict recalled perceptions of exertion, enjoyment, and affective valence: An intensive longitudinal investigation. *Sport Exerc Perform Psychol.* 2019; 8: 290-304.
41. Maher JP, Gottschall JS, Conroy DE. Perceptions of the activity, the social climate, and the self during group exercise classes regulate intrinsic satisfaction. *Front Psychol.* 2015; 6: 1236.