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MBSR-Interventions in Teacher Education Programs

A Pilot Study among German Physical Education Students

Abstract

There is broad consensus in the fact that teaching is a highly stressful profession. The goal of the present pilot study is to examine the possible stress-reducing effects of a MBSR-course applied to Physical Education students. 38 Physical Education students participated in our study (21 in the experimental group and 17 in the control group). We conducted a pre-test (before the first MBSR-course), a post-test (after the last MBSR-course) and a follow-up (four weeks after the last MBSR-course). Data were collected with five tests: Life-Orientation-Test-Revised (LOT-R), Mindfulness Attention Awareness Scale (MAAS), Positive and Negative Affect Schedule (PANAS), Perceived Stress Questionnaire (PSQ) and Self-Efficacy (SWE). The results show an increase for the control group at the negative PANAS scale from pre- to posttest. Furthermore, our results give a hint that especially students with low pre-test scores might profit more from mindfulness trainings.

Zusammenfassung

Lehrerinnen und Lehrer arbeiten in einem stressauslösenden Arbeitsumfeld. Das Ziel der vorliegenden Pilotstudie ist es, mögliche stressreduzierende Effekte eines MBSR Kurses bei angehende Sportlehrerinnen und -lehrern zu untersuchen. 38 Lehramtsstudierende mit Unterrichtsfach Sport nahmen an unserer Studie teil (21 in der Experimentalgruppe und 17 in der Kontrollgruppe). Wir führten einen Pre-Test (vor dem ersten MBSR Kurstermin), einen Post-Test (nach dem letzten MBSR Kurstermin) und ein Follow-Up (vier Wochen nach dem letzten MBSR Kurstermin) durch. Die Daten wurden mit fünf Testverfahren erhoben: Life-Orientation-Test-Revised (LOT-R), Mindfulness Attention Awareness Scale (MAAS), Positive and Negative Affect Schedule (PANAS), Perceived Stress Questionnaire (PSQ) and Self-Efficacy (SWE). Die Ergebnisse zeigten nur auf der negativen PANAS Skala eine Zunahme bei der Kontrollgruppe vom Prä- zum Posttest. Darüber hinaus können unsere Ergebnisse als Hinweis gesehen werden, dass besonders die Studierenden mit niedrigen Pre-Test Werten signifikant von Achtsamkeitstrainings profitieren könnten.

Keywords

Mindfulness; MBSR; PE Teacher Education Program; Teacher Stress; Student Stress

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Introduction

Mindfulness and mindfulness-based stress reduction

According to Kabat-Zinn (1994), mindfulness is a particular form of paying attention on purpose and being aware of the present moment. The attention is focused on the unfolding of thoughts, feelings and experiences within the here and now without judging them, but being open for them. Mindfulness is about observing and noticing body sensations and emotions as a way of practicing self-compassion. Derived from Buddhist meditative traditions, mindfulness has taken root in the West and is taught in mindfulness-based stress reduction (MBSR) courses.

Originally, MBSR courses were developed for hospital patients as a complement to their medical treatment by Kabat-Zinn in the late 1970s. The main intention of this treatment was the relief of mental and physical suffering by means of reducing stress. The traditional format of delivery is eight weekly 2-2.5 hour sessions, which consist of mindful practices such as body-scan, sitting meditation, yoga, and awareness of breath practices accompanied by psycho-teachings, group-discussions and home exercises (Kabat-Zinn 1990). Over the past 40 years the interest in mindfulness has increased. Not only are mindfulness-based interventions used in cognitive therapy (Segal, Williams, and Teasdale 2002), but have also been adopted for other settings in which coping with stress is a primary concern.

Stress among university students

In a study by Ortenburger (2013) 68% of German Bachelor students reported increased levels of stress due to high workload, time-demand, and information overload. These students face increasing pressure, which in their perception directly affects academic performance and success. Ribeiro, Pereira, Freire, de Oliveira, Casotti and Boery (2018) conducted an international review on stress and quality of life among university students. They identified 142 articles published in English and took a closer look at 13 publications, which met their established criteria. Based on their findings, quality of life was frequently negatively associated to stress and its deterioration was explained by factors such as poor sleep quality, burnout, depression and ineffective coping with stress. The prevalence of sleeping problems is remarkably high among students and has significant effects on cognitive performance (Ahrberg, Dresler, Niedermeyer, Steiger, and Genzel 2012) related to the increase in multiple health issues. Since medical students represented the majority of the subjects in their review, Ribeiro et al. (2018) demand more research in other fields of knowledge.

Mindfulness for teachers

Teaching has become a highly stressful job. Occupational stressors within the teaching context can lead to work-related fatigue, low self-efficacy, anxiety and burnout (Sklaavik and Sklaavik 2011). Thus, an alarming high number of 73% of newly qualified teachers consider leaving the job early in their careers for example in the UK, due to a negatively perceived teaching and school climate (Association of Teachers and Lecturers 2015). Teacher coaching and school counseling are prevention approaches e.g. in Germany (Schaarschmidt and Fischer 2013).

Emerson, Leyland, Hudson, Rowse, Hanley and Hugh-Jones (2017) have systematically reviewed mindfulness-based interventions for teachers targeted at occupational-stress relief. Across 13 eligible studies, the effects on stress, emotion regulation and self-efficacy have been examined. The largest effects are reported on improvements in emotion regulation. Therefore, MBSR may be most effective in preventing distress and enhance emotional well-being. Emerson et al. (2017) conclude that early intervention or prevention approaches may help (future) teachers to build up effective ways of coping with distress through improved emotional regulation.

Purpose of current study

Our pilot study addresses German Physical Education (PE) students with a view of becoming teachers. About 25% of their university program are classes with a physically active participation. Furthermore, PE students are usually actively involved in different fields of sports in their leisure time. It could well be that PE students perceive less distress, since sports and physical motion may lead to an increase of well-being and even happiness (Jansen and Hoja 2018). Nevertheless, there is evidence that PE teachers have to cope with particular stress-patterns e. g. exposure to noise and a decreasing physical fitness and participation-ability in a professional field that demands just that, ideally throughout the whole career as a PE teacher (Miethling 2011).

Castillo, Alvarez, Estevan, Queralt and Molina-Garcia (2017) recommend transformational teaching as a way to cope with Spanish PE teachers' occupational-stress and Raj (2017) suggests an improvement of workplace conditions for Indian PE Teachers. However, there is no study to our knowledge, which applies MBSR as an early intervention for PE students as part of their university education. Therefore, we raised the following questions with our pilot study:

1. Is it possible to integrate an MBSR course in an educational program for future PE teachers?
2. Can a MBSR course help to reduce the perception of the stress in (PE) students and enhance some aspects of emotional well-being?
3. Are there findings, which may lead to the assumption that MBSR could be a preventive approach for PE students and future PE teachers?

Methods

Participants

38 students (16 males, mean age = 23.38, $SD = 1.857$; 22 females, mean age = 23.45, $SD = 2.324$) from the same university in Germany participated. All students study Physical Education with a view of becoming a teacher and provided their written consent for participation. 21 students participated in the experimental group and the other 17 students participated in the control group. All students regularly practice sport, none of them had experience with meditation before. The experiment was conducted according to the ethical guidelines of the Helsinki declaration. This means that their participation was optional, that they were allowed to terminate their participation at any time and the data were collected anonymously. The students were tested in groups. Each test session lasted around 30 minutes.

Materials

Mindfulness Attention Awareness Scale (MAAS)

The MAAS consists of 15 items, which investigate the dispositional mindfulness as a one dimensional structure (Brown and Ryan 2003). Items are rated on a 6-point Likert scale from 1 (almost always) to 6 (almost never), a mean score is calculated. Cronbach's Alpha ranged between .80 and .90 in the German version of the MAAS (Bergomi et al. 2013; Michalak et al. 2008). The MAAS is useful in participants without meditation experience.

Life Orientation-Test-Revised (LOT-R)

The Life Orientation Test-Revised (LOT-R; Scheier, Carver, and Bridges 1994; German version by Glaesmer, Hoyer, Klotsche, and Herzberg 2008) is a self-report instrument. It measures individual differences in generalized optimism versus pessimism with 10 items (three positive optimism, three negative pessimism items, and four filler items) with a 5-point Likert-type scale ranging from 0 (strongly disagree) to 4 (strongly agree). Higher sum values indicate a stronger optimism or

pessimism, respectively (possible range 0–12). Cronbach's alpha was .69 for optimism and .59 for pessimism (Scheier et al. 1994).

Positive and Negative Affect Schedule (PANAS)

PANAS is a self-report questionnaire. It includes two 10-item scales to measure positive and negative affect. Each item can be rated on a scale from 1 (not at all) to 5 (very much). Cronbach's Alpha was 0.88 for the positive affect and 0.87 for the negative affect (Watson, Clark, and Tellegen 1988). The German version was developed from Krohne, Egloff, Kohlmann and Tausch (1996).

Perceived Stress Questionnaire (PSQ)

This questionnaire assesses subjectively experienced stress, independent of a specific occasion (Fliege et al. 2001). The PSQ is a twenty-item questionnaire with a 4-Likert scale, with 1 (almost never) until 4 (mostly). Cronbach's Alpha of the German version is at least 0.85.

Self-Efficacy (SWE)

The scale contains 10 items and asks for a general optimistic self-efficacy (Schwarzer and Jerusalem 1999). Cronbach's Alpha for the German population varies between .80 and .90.

Procedure

The investigation took place between April and July 2018. The students of the experimental group received the mindfulness-based stress reduction training in seven weekly sessions that lasted 1.5 hours in each session. The control group participated in lessons about training science according to their curriculum. None of the students in both groups quit the study or the program.

The mindfulness-based stress reduction intervention included the following elements: mindfulness eating, body scan, emphasizing the breath, sitting meditation and walking meditation. The tests were applied before the seven weeks of intervention (pre-test), immediately after the seven weeks (post-test) and in a follow-up after four more weeks without any specific mindfulness-based training. During those four weeks the experimental group and the control group were participating in similar lesson assignments.

Statistical Analysis

To investigate the influence of the mindfulness-based stress reduction training among Physical Education students, seven repeated measures Anovas were calculated with group as a between subject factor and test time (before the intervention; directly after the intervention) as a within subject factor. We used IBM SPSS 25. The dependent variables were the following: PANAS positive and negative, Life orientation score optimistic and pessimistic, mindfulness, self-efficacy and perceived stress.

Second, the sustainability of the training was examined while comparing the pre-test data with the follow-up data for each measurement. For this, seven repeated measures Anovas were run with group as a between subject factor and test time (before the intervention; four weeks after the intervention) as a within subject factor and the seven dependent variables mentioned above.

Lastly, from a more explorative point of view, a correlation was calculated between the respective pre-test data and the difference between both post-test and pre-test and follow-up and pre-test for the experimental as well as the control-group differentially.

Results

Comparison pre-test – post-test

First of all, for all seven dependent measurements there were no group differences in the pre-test data. From the seven Anovas only the one of the *PANAS negative* revealed significant results. There was no main effect of test time, $F(1, 36) = .416, p = .523, \eta_p^2 = .011$ and “group”, $F(1, 36) = 0.10, p = .919, \eta_p^2 < .001$ but a significant interaction between both factors, $F(1, 36) = 4.39, p = .043, \eta_p^2 = .109$. There was no significant difference between pre and post-test for the experimental group $t(20) = .878, p = .390$, but a significant increase in the negative mood for the control group, $t(16) = -3.147, p = .006$, see figure 1.

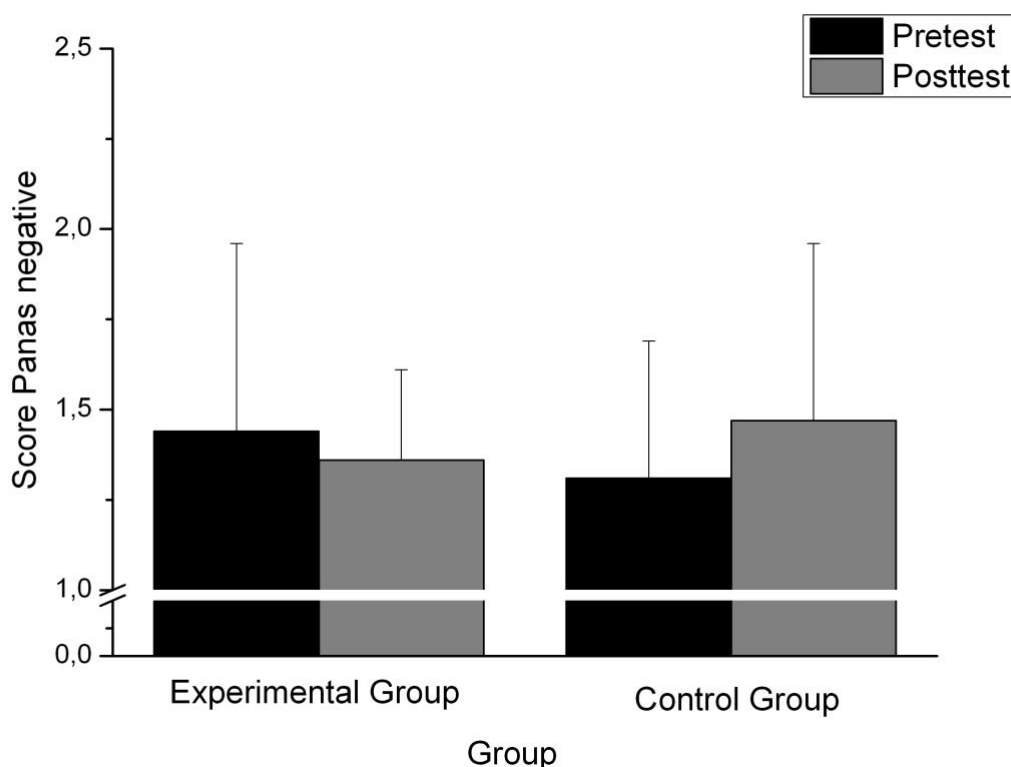


Figure 1: Means and standard deviation of the PANAS negative score for the pre- and post-test for the experimental and the control group

Comparison pre-test – follow-up

From the seven Anovas only the analysis of the *self-efficacy* revealed a significant main effect of test time, $F(1, 35) = 5.589, p = .024, \eta_p^2 = .138$ but no other significant effect. The self-efficacy was for both groups higher in the follow-up $t(M = 30.76, SD = 3.10)$ than in the pre-test ($M = 29.84, SD = 3.29$).

Explorative analysis:

1. Correlation between pre-test and the difference scores for the experimental group
There was a negative correlation between the pre-test and the difference score between the post-test and the pre-test for the PANAS positive ($r = -.445, p = .043$) and negative ($r = -.875, p < .001$). Furthermore, there were four negative correlations between the pre-test and the difference score

between the follow-up and the pre-test for PANAS positive ($r = -.645, p = .001$), and negative ($r = -.731, p < .001$), and self-efficacy ($r = -.430, p = .05$), and physical expressed stress ($r = -.474, p = .047$).

2. Correlation between pre-test and the difference scores for the control group

There was a negative correlation between the pre-test and the difference score between the post-test and the pre-test for experienced stress ($r = -.689, p = .002$). Additionally, there was one negative correlation between the pre-test and the difference score between the follow-up and the pre-test for the PSQ, ($r = -.501, p = .048$).

Discussion

First of all, this study demonstrates that it is possible to integrate a MBSR course into an education program of Physical Education students. All students of the experimental group were grateful that they were able to participate. Although, the results of our study are quite limited, they indicate, that only in the control group, the negative mood worsened during the semester. This was not the case for the experimental group, whose participants received a mindfulness intervention. Beside this, effects in measurements of life satisfaction did not change, indicating, that rather stable measurements of life satisfaction can hardly be changed within a course of seven weeks, especially in healthy students. Furthermore, our data of the explorative analysis give a hint that it might be interesting to investigate in future studies, if students who have lower scores in emotional well-being and higher scores in stress perception profit more from a mindfulness-based intervention.

Mindfulness and stress among students

As mentioned above, we only retrieved small effects. Our study needs to be considered as a pilot study in which we found out that it is possible to integrate a MBSR course in an educational program for future PE teachers. The students, young sporty people, who are physically active and do a lot of sport during their course of studies and in their leisure time, were open to engage themselves in the MBSR intervention. We assume that there are some reasons, why we have not been able to find an impact on outlasting variables such as life orientation:

First of all, the mindfulness intervention applied to the experimental group lasted only 1.5 hours each session. This is rather short in comparison to the original MBSR program, in which one session lasts 2 to 2.5 hours. Second, in order to obtain strong results (in the sense of significant differences for the experimental group in comparison to the control group) one would need to know how regularly the participants of the experimental group did their homework exercises. Although, we asked the students to do their homework and to write down their practice time, they did not complete their homework books. This gives a hint that Physical Education students agreed to participate in a MBSR course, but that the regular practice at home without their group is difficult for them.

The reasons for this are very speculative: One reason might be that it was not easy for them to practice alone at home without the support and the instruction of the MBSR teacher, because mindfulness-based stress reduction is fairly new and unknown to them. Since the whole concept of mindfulness only works, if it is carried out almost every day during the intervention phase, we believe that studies with a closer control of student homework have to follow. To what extent students can really take longer lasting profit out of a MBSR intervention, will have to be examined in studies with a higher number of students and a tracking of how mindfulness entered the students' daily routines. Clearly, this study has shown that the students were open-minded regarding such an intervention.

Limitations

Our pilot study is limited by several aspects: first of all, the participants of the study were not assigned randomly to the two groups, since the experimental group consisted of students from one specific seminar held within their university education program to become a PE teacher and the control group consisted of students from a different seminar. The test persons were not blinded, i.e. the students knew whether they were part of the experimental or the control group. Moreover, the control group did not receive training comparable to the mindfulness intervention, but no specific training at all. In order to gain results that are more meaningful in the future, there is need for investigations with a higher number of participants. Lastly, mindfulness is a very broad term and there are several aspects as well as several measurement instruments, the MAAS is only one of them. Although the MAAS is a widely used questionnaire for the investigation of mindfulness, it only allows investigation of mechanisms involving very specific aspects of mindfulness, namely acting awareness (Coffey and Hartman 2008).

Conclusions

In general, the present pilot study gives a hint, that mindfulness interventions may offer a helpful tool for students at university. In our case, it could prevent that the students' mood dropped. It has to be examined in more detail, how often MBSR practices must be carried out, to display enhancing effects. Because our pilot study gives a hint that students with lower pre-test scores might profit more from the MBSR course, individual differences will have to be studied on a larger group of students to predict stronger tendencies. In further studies we plan to combine quantitative methods with qualitative research (e. g. interviews) and try to conduct a mixed method design.

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Compliance with Ethical Standards

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.