

"I felt filled up with beauty"

Attending a classical symphonic concert improved wellbeing

Vámosi, Marianne; Beck, Bolette Daniels; Andreassen, Chris Mathias; Angel, Sanne

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“I felt filled up with beauty.” Attending a classical symphonic concert improved veteran wellbeing

Marianne Vámosi

Department of People and Technology, Roskilde University, Denmark

mariannev@ruc.dk

 <https://orcid.org/0000-0002-7254-1506>

Bolette Daniels Beck

Department of Communication and Psychology, The Faculty of Social Sciences and Humanities, Aalborg University, Denmark

bolette@ikp.aau.dk

 <https://orcid.org/0000-0001-6542-8321>

Chris Mathias Andreassen

Clinical Trial Unit for Hematology, Rigshospitalet, Copenhagen, Denmark

Sanne Angel

Research Unit of Nursing and Healthcare, Institute of Public Health, Aarhus University, Denmark

angel@ph.au.dk

 <https://orcid.org/0000-0001-7669-6743>

Abstract

Purpose: The study aimed to investigate the effect of a Western classical symphonic concert on mental wellbeing in war veterans compared to a general audience. **Methods:** A quasi-experimental pre-post measurement study assessed psychological stress with the Immediate Stress State VAS scale. The Music Experience Questionnaire captured perceived bodily, emotional, and mental changes. **Findings:** Twenty-one veterans and a general audience of $n = 405$ participated in the study. Both groups found reduced stress from before to after the concert; in the general audience, it was significant ($p < .001$). 47% of the veterans experienced a high-stress state before the concert compared to 19% after the concert (versus 15% and 5% in the general audience). The veterans perceived significantly more safety, relaxation, and calm after the concerts and indicated a positive bodily state and presence change. In contrast, the public emphasized the aesthetical impact of the concert. **Originality:** The unique contribution of this study lies in its collaboration with veterans in the organization of the concerts. This adds significant value to the study, enlightening the audience with new knowledge in an underresearched field: the impact of music experiences on the wellbeing of veterans.

Keywords

veterans, ptsd, symphonic music, concert, mental health

Introduction

This study investigated whether attending a live symphonic concert could have a momentary relieving effect on veterans' mental health. The study was carried out in collaboration between the Aarhus Symphony Orchestra, Department of Public Health at Aarhus University, and Center for Documentation and Research in Music Therapy at Aalborg University.

Aarhus Symphony Orchestra wanted to bring the music out of the traditional symphony concert hall with its conventions and participants all dressed up. The idea was that a church would offer a space for guests who were not likely to visit a concert due to their life challenges. The idea was to provide relief, calmness, reflection and perhaps grief processing for such an audience, in the present study veterans.

Background

Music and health as a specific field of research has been gaining increased attention (Bonde et al., 2023; Fancourt & Finn, 2019; Jensen, 2017). With inspiration from Sweden, studies have generally looked at how "art on prescription" and the integration of art and music can improve the wellbeing and rehabilitation of vulnerable citizens (Jensen, 2022). In a systematic review of 20 studies, Jensen and Bonde (2018) found that participation in a spectrum of experiences from clinical to non-clinical artistic interventions can act as holistic approaches to improving health and wellness, and that engagement in specially designed art therapy activities can reduce physical and psychological symptoms. The authors recommended making participation in both art therapy and artistic experiences more accessible in both social and health contexts. This is supported by the finding of a Danish health survey including questions of music practices among 14,000 citizens, indicating a positive correlation between good physical and mental health and going frequently to live concerts (Jensen & Bonde, 2018).

As cultural development in Western societies is moving toward a more community-based approach, Ruud (2013) found that professional musicians have entered the health sector, and have been categorized as "health musicians" (Ruud, 2013). These musicians are typically trained musicians who in some cases may have undergone specialist training in interacting with particularly vulnerable citizens and in adapting their repertoire to people who need reassurance and aesthetic experiences more than strong and challenging musical experiences (Bonde, 2019).

Veterans

Among people whose mental health often is threatened are soldiers returning after being in war (Ministry of Defence, 2013; Moore et al., 2023). Veterans form a specific vulnerable group of people with psychological challenges. In general, most veterans experience some form of after-reaction to deployment, but for some, these are severe and long-lasting. Traumatic war experiences can lead to psychological or mental problems, and according to a study of 610 soldiers, 5% of the participants developed significant after-reactions, like depression, anxiety and sleep disorders (Else et al., 2014). Veterans are particularly exposed to various psychological challenges (Baker et al., 2009; Fani, 2011) and are at greater risk of suicide (Kaplan et al., 2007; Ministry of Defence, 2013). Veterans are at particular risk of developing post-traumatic stress disorder (PTSD), which is the most frequently diagnosed mental disorder among veterans (Lyk-Jensen et al., 2012). After-reactions with PTSD symptoms seem to get worse with the severity of missions, and are

documented to occur in up to 13.7% of the participants, as registered up to six and a half years after returning home (Ministry of Defence, 2021).

The symptoms of PTSD include distressing memories, images and feelings, avoidance behavior, difficulty sleeping, irritability, depression, behavioral disturbances and psychosomatic symptoms (Maercker et al., 2013). Complex PTSD symptoms, such as affective dysregulation, negative self-perception and disturbances in relationships, are also observed (Maercker et al., 2013; Ministry of Defence, 2013). These debilitating conditions make it difficult to live a life of inclusion in civil society, which is a cost for the individual, the family, the network and society.

In addition to the PTSD diagnosis, it has been shown in Danish registries that almost 17% of veterans of the 26,000 deployed in the period 1992–2009 either have received a psychiatric diagnosis, have been medicated for a mental illness, or have been in treatment for substance abuse after returning home. Common to all these veterans was no registration for any of these problems before the first mission (Lyk-Jensen et al., 2012). Furthermore, it is recognized that mental disorders can develop over a long period of time (Ministry of Defence, 2020). There is thus a great incentive for a greater focus on the prevention of psychological after-reactions (Ministry of Defence, 2024).

The recognition of these consequences led to the first national policy in Denmark in 2010 (Ministry of Defence (2010) with the purpose of assuring that veterans who experienced health issues after demobilisation could get help. Based on this policy, several initiatives have been launched to reduce veterans' psychological challenges after deployment, including treatment of veterans with PTSD (Ministry of Defence, 2020).

Music therapy for veterans

When focusing on the mental health challenges and the treatment of veterans, one of the modalities has been music interventions and music therapy, especially in the US (Else et al., 2014). International research indicates that music therapy has a beneficial effect in relation to PTSD in war veterans (Else et al., 2014; Story, 2018). A scoping review from 2019 showed that music therapy could be a sustainable and effective option for treating veterans with mental disorders and improving emotion regulation, socialization and loneliness (Gooding & Langston, 2019). In addition, an American study of war veterans found that the participants could more easily access their emotions and reinterpret their traumas through songwriting with a professional musician or music therapist, than through conventional therapy (Hirschberg et al., 2020).

Music therapy has been used to reduce veterans' psychological challenges such as flashbacks, avoidance behavior, stress, dissociation, depression and anxiety (Beck & Mumm, 2015). These processes may regulate heightened arousal and modulate emotions, thereby achieving greater calm and healthy spontaneity rather than reacting automatically with fear and mistrust. Music can also provide access to inner resources, such as positive experiences of security, care, beauty and hope (Beck & Mumm, 2015). In an interview study including 41 experienced music therapists, Bensimon (2022) found that trauma treatment with music encompassed body integration, where music serves as a sensory stimulus that bypasses linguistic and logical mediation, and enables clients to live in peace with their body and feel whole.

Classical symphonic music and health

Among the past decades' increasing services of music for health for veterans, especially in the USA (Else et al., 2014), several programs offer special tickets for veterans to concerts,

for example, the San Diego Symphonics program “Notes of gratitude - music for our military” (San Diego Symphony, n.d.). Attending classical concerts has been associated with lowered stress hormones (Fancourt & Williamon, 2016), and a recent study on public responses to Western classical symphonic music have shown that the concert audience seems to synchronise their breathing, pulse and level of agitation during the concert, measured with physiological measures during the concert (Tschacher et al., 2023). Classical music is used in the music therapy method Guided Imagery and Music (GIM), where one listens to Western classical music and explores the images and experiences that arise during the listening (Grocke, 2019). Story and Beck (2017) described in a pilot study how GIM created changes in PTSD symptoms in four out of five female victims of sexual abuse during military service. In a randomized controlled trial (RCT) with adult victims of childhood sexual abuse, a significant reduction of PTSD symptoms and physiological responsivity to trauma scripts were found after group intervention with trauma-focused group Music and Imagery (Rudstam et al., 2022). Another RCT demonstrated noninferiority of trauma-focused individual Music and Imagery on trauma symptom reduction compared to verbal psychotherapy, in refugees (Beck et al., 2021). In a series of pilot studies using visual analogue scales, Theorell et al. (2019) found a reduction of the experience of daily worrying after listening to live, high-quality professional performances of classical chamber music among children and adults.

Based on the positive impact of classical music on trauma symptoms and mental health quality in populations in Western countries, we wanted to explore how participation in the symphonic concert could contribute to mental relief in Danish veterans. Therefore, the aim of this study was to investigate how music in form of a Western classical symphonic concert can influence war veterans’ wellbeing with comparison to a general audience.

Methods

The study was designed as a quasi-experimental pre-post measurement study, with a group of veterans and a comparison group of general concert audience.

Participants

In cooperation with two local veteran centers organized by the Danish Defense, the veterans and their families were invited to the concert with free tickets. The general audience was invited for a reduced price.

Preparation of the concert

A representative from the veterans was invited to examine the concert locations beforehand. Two focus group discussions were performed before and after the concerts with focus on veterans’ special needs for security and predictability. From these discussions the arrangers of the concert took the advice to avoid stress, and all unpredictable noise and actions. They informed the veterans about the conditions of participating in a symphony concert, with many people sitting closely with a limited physical distance, and a special entrance and exit only for veterans was prepared. Furthermore, a specific area in each of the churches was reserved for the veterans and their family members. Here, limited possibilities for lying down and listening to the concerts while resting were all used.

The concert intervention

Two classical concerts in the cathedrals in Aarhus and Viborg were performed. These took place in November 2020. The theme of the concerts was “Vellyd” (which has a double meaning in Danish of “sound for wellbeing” and “good sound”), and the concert also built on the aim of providing “comfort”. Aarhus Symphony Orchestra and the Institute of Public Health Aarhus University arranged the concerts in cooperation with the local Veterans Center. The symphonic orchestra included a harp and percussion. The music program contained songs of Purcell, Dowland and Handel, together with Rautavaara’s *Cantus Arcticus* and Respighi’s *The Birds*, both compositions that include bird sounds. The concerts started with Dowland’s “Flow My Tears” with a countertenor singer, and gradually built up to a dramatic peak with classical percussion instruments in the Rautavaara piece. The concert ended with increasingly calm pieces. The music performance was combined with projections and subdued lighting.

Data collection

The data collection had to be easy for the participants, and had to be carried out on the spot. Using SurveyXact, a special app was constructed, including two questionnaires. Information was given visually by a poster with a QR code in the church before the concert, and participation in the investigation was voluntary. To reduce recall bias and to keep a high participation rate, all participants were encouraged to fill out all questions in the two questionnaires immediately after the concert before leaving the concert hall. Data was collected via the audience’s mobile phones, and the duration was about ten minutes before and ten minutes after the concert. Basic demographic data such as age and gender were collected in the veteran group. No data on time since participating in war actions, educational level, or occupation were collected in the veteran group. No demographic data were available in the general audience group, for practical reasons.

Immediate stress state

To assess stress levels before and after the concert, two scales were used: the visual analogue scale (VAS) the Immediate Stress State (ISS) (Beck, 2012). ISS consists of eight VAS scales with lines of 10 cm with pairwise opposite words at each end of the line, assessing mood, energy level, perceived stress, worries, tension, pain, restlessness, and safety. Scoring the VAS scale is done by marking the point on the line that seems to fit the momentary psychophysical experience best. Scores under five indicate high stress perception, and scores on five and higher than five indicate medium to low stress perception. A total score is found by multiplying the eight scores and dividing by eight. The scale has previously been used in a music therapy study before and after GIM therapy sessions with classical music, and demonstrated a good internal consistency (Cronbach’s alpha = 0.9; Beck, 2012).

The music experience questionnaire

This questionnaire (MUSEQ) was designed to evaluate one’s reactions directly after a music experience (Beck, 2022). Possible experiences of change in body, emotions, and cognitive states in relation to a musical experience such as a music performance or music listening was assessed with 25 questions. The respondents were asked to fill in their agreement with questions on a five-point Likert scale from “to a great extent” to “to a rare degree.” Three of the questions were negative and were reversed to obtain a total score. The questionnaire (MUSEQ) has not yet been validated, but was translated to English (Beck,

2024). The MUSEQ has four subscales: Positive bodily change, Positive emotional change, Positive aesthetic change and Agency.

Statistical methods

Descriptive statistics (percentages, medians, and means) were used to describe the subscales and total scores of the Immediate Stress State scale and the Music Experience questionnaire. As data were not normally distributed, and log transformations did not help, standard deviation or confidence intervals could not be calculated, and a two-sample Wilcoxon rank-sum test was used to assess the association between the group of veterans and the comparison group of the general audience in relation to pre- and post-measures of stress. Signed ranks tests were used for within groups assessment. The alpha level was set to 5%. STATA version 17 was used for the analysis.

Ethics

Pursuant to Danish law, the study was conducted in accordance with the Declaration of Helsinki. Informants received written and oral study and participant information, and were assured of complete anonymity and that cancelling participation at any time without any consequences was possible. The study was registered at Aarhus University, at the General Data Protection Regulation.

Results

In the two concerts, the combined number of the participants in the survey was 426, of which 21 were veterans and 405 were members of the general audience. The veteran group included 20 males and one female, and the age span was 30–60 years. The veterans represented two different veteran communities from two different cities. Of the 21 veterans, seven had a diagnosis of PTSD and the diagnostic status of the remaining six veterans was unknown. The general audience included people from all age groups.

Data assessment

The answering percent of the questionnaires was 69.5–87.3%, which is acceptable. The absence of data increased from 12–15% in the initial pre-concert assessment to circa 30% in the post-concert assessment.

Table 1 demonstrates a generally positive change in the immediate stress state from before to after the concert in both groups; although the participants from the general audience scored higher (indicating a lower stress state) in the pretest compared to the veterans. The veterans showed on average a total score of 5.5 to 6.4 (a difference of 0.9) from before to after the concert, with the largest difference on the subscales Safety (from feeling unsafe to feeling safe), Energy (from tiredness to energy) and Tension (from tension to relaxation). In the general audience, the average total score changed from 6.6 to 7.9 (a difference of 1.3), with the largest differences in Tension and Restlessness (from feeling restless to feeling calm).

When dichotomizing the ISS data in two groups of middle to low (5 or > than 5) and high stress percentages (< 5), it was found that 47% of the veterans experienced high stress before the concert versus 19% after the concert. In the general audience, 15% experienced high stress before the concert and 5% after the concert. This means that half of the participants in the veteran group felt highly stressed before the concert, and changed

Table 1 Immediate stress state mean and median in veterans and the general audience before and after the concert.

Immediate Stress State item	Group	Before the concert			After the concert		
		N	Mean	Median	n	Mean	Median
Mood	Veterans	18	5.4	6	16	6.3	7.5
	General audience	350	6.5	7	290	8.1	9
Safety	Veterans	18	4.8	4	16	6.4	7
	General audience	354	7.6	8	290	8.4	9
Worries	Veterans	17	6.7	7	16	6.8	7.5
	General audience	354	6.1	7	290	7.6	8
Energy	Veterans	7	3.4	3	7	5.4	6
	General audience	351	6.7	7	290	8.3	9
Tension	Veterans	17	4.4	5	16	6.4	6.5
	General audience	8	4.9	5	8	8.3	8.5
Restlessness	Veterans	7	4.3	4	7	5.3	5
	General audience	346	6.7	7	290	8.1	9
Stress	Veterans	17	6.2	6	16	6.8	7
	General audience	349	7.3	8	290	7.8	9
Pain	Veterans	17	6.2	6	16	6.8	7
	General audience	8	8.0	8.5	8	8.4	9
Total score	Veterans	17	5.2	5.5	16	6.4	6.3
	General audience	346	6.6	6.8	290	7.9	8.3

considerably during the concert. Most of the general audience experienced less stress than the veterans before the concert, and only a small part felt highly stressed after the concert, but as a consequence of the large sample, the general audience changed more (mean difference 1.5 versus 0.8).

As seen in Table 2, the comparison of group scores before and after the concert indicated that stress levels were significantly different both pre-concert ($p = .002$) and post-concert ($p = .01$). When comparing immediate stress states before and after the concert within groups, the difference between pre- and post-concert in the general audience is statistically significant on all scores ($p < .001$), which proves that the concert has had a positive effect on this group. For the veterans the total stress score did not change significantly, but a significant difference is seen for the subscales Safety, Tension and Restlessness.

Concerning the Music Experience Questionnaire, unfortunately there was an error in the app, which was used for data collection, leaving out items 24 and 25, which means that only two of the four subscales (Positive Aesthetic change and Positive Bodily Change) could be included in the analysis. The remaining questions are analysed as single items.

Table 3 shows that the veterans scored non-significantly higher compared to the general audience on the subscale for Positive bodily change. This scale is made up of the following statements: “I felt a pleasant warmth inside me,” “The music gave me energy,” “I was very aware of my body or parts of it while listening to music,” “The music gave me goosebumps or a tingling sensation down my spine,” “The music made me relax,” “The music diverted

Table 2 Changes of immediate stress state in veterans and general audience.

Immediate Stress State items	Before the concert	After the concert	Pre-post the concert	
	Veterans and general audience	Veterans and general audience	Within the veterans' group	Within the general audience
Mood	.088	.047	.137	<.001
Safety	<.001	.011	.028	<.001
Worries	.255	.234	.441	<.001
Energy	.121	.003	.504	<.001
Tension	.002	.036	.021	<.001
Restlessness	.01	.118	.018	<.001
Stress	<.001	.035	.054	<.001
Pain	.158	.145	.211	<.001
Total score	.002	.01	.063	<.001

Note. Two-sample Wilcoxon rank-sum (Mann–Whitney) tests were applied for calculations between groups. Signed ranks tests were used for calculations within groups.

me from physical discomfort (e.g. pain, nausea, tension),” “I felt like moving to the music” and “The music made me pleasantly sleepy.”

On the scale of positive aesthetic change, the general audience scored the highest and the veterans the lowest, but there is not much difference between the groups. This scale is made up of the following statements: “I liked the music,” “I could not connect with the music. It just wasn’t me,” “The music sounded familiar,” “The music was beautiful” and “I experienced inner visual images while listening to the music.” The mean of the total score was calculated by dividing the sum by 23 instead of 25. The groups’ total scores are similar (3.6). There is a significant difference between the two groups according to Positive aesthetic change ($p = .02$), favoring the general audience.

In Table 4, the remaining questionnaire statements are presented with group differences. The veteran group has a very high mean score on the statement “I felt very present” (4.2 out of 5 possible), as did the general audience (4.1). The other high mean scores in the public were on the statements “The music distracted me from negative thoughts” (4.0) and “Hearing the music put me in a better mood” (3.9). Looking at the negative items (9 and 22), the veterans seem to be negatively affected by the music to a greater extent than the audience (1.5 versus 0.5–0.6).

Table 3 Mean, medians and significance tests of MUSEQ total score and subscales.

	Veterans			General audience			Between groups
	n	Mean	Median	n	Mean	Median	P
Subscore: Positive bodily change	15	3.5	3.5	284	3.2	3.3	.137
Subscore: Positive aesthetical change	16	3.7	3.8	284	4.0	4.2	.026
Total score	15	3.6	3.4	284	3.6	3.7	.613

Note. MUSEQ = Music Experience Questionnaire. Two-sample Wilcoxon rank-sum (Mann–Whitney) test were applied for between groups difference. Total MUSEQ score, mean and median are based on data from item 1–23 (out of 25 items).

Table 4 Mean and medians of single MUSEQ items in veterans and general audience.

Item	Veterans			General audience		
	n	Mean	Median	n	Mean	Median
No 4: The music distracted me from negative thoughts	16	3.6	4	284	4.0	4
No 9: The music brought back unpleasant memories*	16	3.5 (1.5)	4	284	4.4 (0.6)	5
No 11: Hearing the music put me in a better mood	16	3.8	4	284	3.9	4
No 18: The music brought back positive memories	16	3.8	4	284	3.5	4
No 19: I felt very present	16	4.2	4	284	4.1	4
No 20: I thought about important people in my life	16	3.4	3.5	284	3.3	4
No 21: The music diverted me from negative emotions	16	3.8	4	284	3.3	4
No 22: The music was, unpleasantly, overwhelming*	16	3.5 (1.5)	4	284	4.5 (0.5)	5
No 23: The music brought me a sense of meaning or purpose	16	3.8	4	284	3.3	3

Note. The items marked with * are scored reversed, the reversed mean value in brackets. The remaining MUSEQ items are included in the subscore total values.

Discussion

Summing up the findings, the concert was indicated to be a positive experience for both veterans and the general audience, with both groups having a lower stress score after the concert than before. This is consistently significant for the large audience, and regarding the veterans, the results are more mixed, with several items demonstrating significant difference.

Regarding the Music Experience Questionnaire, a high MUSEQ total score was found in both groups (3.6–3.61). The veterans scored slightly higher than the audience on Positive bodily change, and lower than the audience on the Positive aesthetic change scale. No significant difference between the veterans and the general audience were found.

Comparing the changes in Immediate Stress State to other music intervention studies, the results point in the same direction, namely that music seems to decrease stress levels. The change of ISS total stress scores (0.9–1.2) in the present study are comparable to the changes after Guided Music and Imagery sessions (1.0–1.2) and choir singing (1.2–1.7) (Beck, 2012; Buchhave et al., 2014). As could be expected, the veterans scored significantly higher stress before the concert than the general audience did, and they did experience a change in stress state, with significant changes in Relaxation, Energy and Safety ($p < .05$), and a total stress score approaching significance ($p = .06$). Increased relaxation and a feeling of safety is especially meaningful when thinking about regulation of symptoms of posttraumatic stress such as hypervigilance and elevated startle response. Some veteran participants simply fell asleep or felt deeply relaxed (quoted from the focus group interview): “I just lay there and relaxed a little to all the sounds and I also think it was insane that all of a sudden two hours had passed, where did they go?”

As an example of how the veterans could experience stress reduction, we quote another participant:

So, I simply had such a high heart rate, and it was not relaxing in any way, so I had some thoughts that I should just get over this. Yes, it was simply so funny to look at my answer after the concert, how that had gone from max tense to not tense at all that is, all the stress gone. I still had the feeling in my body the next morning...I think up until the day after; I could still physically feel that I had just gotten a little down in gear. It was cool!

These quotes highlights the momentary stress reduction during and after the concert.

Looking at the Music Experience Questionnaire results, it is striking that the veterans scored high on the Positive bodily change subscale compared to the general audience. It corresponds with the ISS results of increased relaxation, energy and safety. The experience of presence and embodiment is one important goal of trauma-focused therapy such as the concept of “presentification” in contrast to being “out of the body” or dissociated (Van der Hart et al., 2006). Veterans scored higher on negative items in the MUSEQ than the general audience (such as experiencing feeling overwhelmed, and thinking about unpleasant memories), which could be interpreted as a reaction to the high volume and powerful passages in the concert that could possibly remind of negative experiences. The soft beginning and ending of the concert were designed to frame and hold such experiences that could possibly be processed in a safe environment. The positive experiences scored in both questionnaires indicate that the general feeling of the concert gave the veterans an overall sense of safety and relaxation.

The significantly higher Positive aesthetic change score in the general audience compared to the veterans could perhaps indicate that the appreciation of the aesthetic qualities of the music was generally more in the focus, such as recognizing the music, liking the music, and experiencing inner imagery (daydreaming) with the music. This could possibly relate to the fact that the concert audience probably was familiar with classical concerts and experienced less need for stress reduction. This corresponds to another study using the MUSEQ, where parents with newborn babies had higher MUSEQ total scores and Positive aesthetic change scores after a classical chamber music concert at the hospital than participants with cancer illness (Beck, 2022). Another quote from a veteran participant, however, also demonstrates a high degree of appreciation of the music: “That music and that voice – it hit me, and I felt filled up with beauty, I don’t know how. It was touching, the sounds were fantastic, and there was an atmosphere in the music.”

Effect on veterans’ mental health

The study set out to find out whether participating in a specially prepared classical concert could impact the mental health of veterans. We found a stress reducing effect of the music. Other determinants of the positive results, such as being invited to a specially prepared classical concert, having influence on the concert event via focus group interviews, being asked about one’s needs, and being personally invited as a VIP, could interact with the effect of the music itself. The experience of overcoming the common fear of large crowds of people typical for persons with PTSD, sharing the music with others in the same situation, and finding safety and relaxation during the event, could possibly be a reminder of one’s social capabilities and give a sense of mastery. Furthermore, the experience of how music can influence one’s bodily and mental state profoundly is also a unique experience that

could serve as a reference point for the motivation for more live concerts and could generate new ways of using music as a source of wellbeing in daily life. This is supported by the quote: “I found it relaxing, but then, the day after, it was forgotten. It works the whole evening, but when waking up the next day, the stress is back. But I have begun to listen more to classical music.” Thus, a momentary relieving effect on veterans’ psychological challenges is supported in the questionnaire data, whereas this quote indicates a longer-term influence of the total setup.

Strengths and limitations

The strengths of the study was the originality of the study, as to our knowledge no similar studies have been published to date. Another strength was the unique concert setup, where the veterans were involved in the design process, being asked in the focus groups about how the set-up should be, to be able to attend and feel safe. Furthermore, a high participation rate and inclusion of a comparison group of participants (the general audience) qualified the results. The use of an app and mobile phones for quick data calculation served the needs of the veterans well.

There were some limitations to the study, such as a limited sample size of the veteran group, which might have influenced the statistical change of pre-post stress state. Due to the design of the study, no randomization of participants was possible. Furthermore, the two questionnaires used were not yet validated. The dichotomization of the Immediate Stress State scale had scores at the midpoint (5) included in the low stress condition, and this is a reason why the results have to be interpreted with caution. The errors in the data collection prevented the full statistical analysis of subscales of the MUSEQ. The lack of demographic data in the general audience group blurred the comparison with the veterans’ group.

Future perspectives

The initiative from Aarhus Symphonic orchestra generated interesting results, and one could speculate if repeated concerts would increase the effect and create more stable effects of improved wellbeing and mental health over time. It would be interesting to carry out studies with larger groups of veterans, repeated concerts, other types of music, and conducting data with validated questionnaires and physiological measurement, such as heart rate variability and stress hormones. Interview studies could ask for changes in the use of (classical) music for self-care, changes in interest for going to concerts, the effect of the memory of the concert, and possible change of the feeling of inclusion in society.

War veterans with or without PTSD diagnosis are in a high risk of being traumatized and marginalized. To increase quality of life among veterans, treatment should be seen from a broad health promotion perspective where non-pharmacological interventions including specifically designed music experiences such as music concerts, choir singing, and music therapy could be beneficial.

Conclusion

A group of 21 veterans as well as a general audience (n = 406) attending a specially designed classical symphonic music concert experienced a decrease of immediate stress state from before to after the concert ($p < .001$ in the general audience). Among the veterans the experience of the ISS subscales tension, restlessness and unsafety changed significantly ($p < .05$). Veterans experience of high stress (scores < 5) decreased from

47% to 19% from pre- to post-concert. Both groups of participants reported a high total score on the Music Experience Questionnaire indicating a positive influence of the music on bodily, emotional and mental states. The veterans specifically experienced increased Positive bodily change and a sense of presence during the concert, and in the general audience, the aesthetic experience (Positive aesthetical change) had a high mean score.

The results indicate that specially designed Western classical music concerts may be supportive for the mental health of veterans. More research on music and veteran health is warranted.

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Conflicts of interest

The authors declare no conflict of interest.

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