Attachment 1 Overview of the detected effectiveness studies on stress prevention and stress management with creative arts interventions
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ART THERAPY								
Study (Author/Year)	**Level of evidence**	**Object of Investigation**	**N/Sample**	**Design**	**Intervention**	**Data Collection**	**Analysis**	**Central Results**
Abbing et al. (2019)	Ib	Stress regulation and executive functioning in women treated with art therapy for anxiety	60 women with anxiety disorder M=44.4 years	Two arm-randomized-waitlist-controlled trial, pre-post-design	Anthroposophic art therapy, delivered by certified anthroposophic art therapists, with more than five years' experience in working with adults with anxiety. 10–12 sessions, 1h/ each session, over 3 months	Stress (response and recovery): heart rate (HR) heart rate variability (HRV) during a stress-evoking task, based on the Trier Social Stress Test (TSST), executive functioning (EF: emotion control, working memory, plan/organize and task monitor)	Repeated measures analysis for variance (RM-ANOVA)	No significant between group differences for stress response (p=.444) or stress recovery (p=.374)
Ayers et al (2018)	Ib	Evaluation of expressive writing for postpartum psychological health	564 women, 6-12 weeks postpartum M=32.8 years	Three arm-randomized-activegroup-controlled trial, pre-post-design.	Three groups: (a) expressive writing (15 min each day about a stressful event, but not too stressful) (b) control writing task (15 min each day objectivily about a familiar room) (c) normal postpartum care. All groups: 3 sessions in one week.	Mood: UWIST Mood Adjective Checklist (UMACL); mental Health: Hospital Anxiety and Depression Scale (HADS-D); physical Symptoms: Physical Health Questionnaire (PHQ-15) . quality of life: short form Quality of Life questionnaire (HRQOL-SF 36); stress: self-reported stress ratings (pre/post each session) in expressive writing condition (within-group analyses only).	Multilevel model (with group, time and their interaction)	No significant differences between groups (i.e., no main effect for group). Women in the expressive writing group rated their stress as significantly reduced after completing the task (i.e.; significant within-group change over time in the expressive writing group).
Beerse et al (2019)	Ib	Effectiviness of a mindful-based art therapy (MBAT) in a technology-assisted approach on stress and anxiety	15 full time university students1 11f/4m M=19.87 years	Two arm-randomized-active group-controlled pilot trial	Two groups: (a) experimental MBAT group condition (guided yoga and meditation, clay-based art) (b) neutral clay-manipulating task (NCT). Both with weekly groupspecific "self-care-challenges" for 15 min. 10 sessions over 10 weeks including two face-to-face Meetings (week 1 and 10)	Anxiety symptoms : GAD-7 self-report. Stress: Percieved Stress Scale (PSS-10), Saliva sample (pre/post ELISA kit method)	anxiety (primary outcome): two-way analysis of variance (ANOVA); stress: within-group paired-sample t tests	A significant within-group pre- and postchallenge decrease in cortisol concentrations at Week 10, t(3) = 13.01, p = .001; a nearly significant decrease in perceived stress: t(3) = 2.611, p = .0796. Between-group analysis generated no significant interactions between variables (anxiety/GAD-7: F(1, 14) = 0.04595, p = .8334);

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Björling et al (2019)	III	Participatory pilot of an art-based mindfulness intervention for adolescent girls with headache	8 adolescent girls with headache M=15.6 years.	Single-arm, mixed-method, non-experimental descriptive pilot study, pre-post-design.	Combined mindfulness - art therapy sessions (50 min/6 sessions). Twice-weekly for 3 Weeks.	Stress: Perceived Stress Scale (PSS-10), VAS for momentary stress; Headache: Diamond Headache Questionnaire (DHQ); qualitative outcomes: pre- and postintervention artwork.	repeated measures analyses of variance (ANOVA)	A significant within-group pre- and postchallenge decrease in number of headaches (p=.015) and momentary stress (p=.001). Nonsignificant for perceived stress.
Eaton et al (2017)	Ib	Effects of a coloring task on anxiety, mood, and perseverance	85 Students 71w/13m M=20.11 years	Two arm-randomized-activegroup-controlled trial, pre-post-design.	Two groups: (a) free choice, color an image using any colors (b) forced choice, copy the colors of a precolored image. One single session intervention.	Anxiety: State Scale of State–Trait Anxiety Inventory (SSTAI-SF) mood: Positive and Negative Affect Scale (PANAS).	Mixed analyses of variance (ANOVA)	A significant main effect of time (within-group; p =.003) whereby anxiety was significantly lower after coloring. There was a marginally significant Time x Choice interaction (between-group; p=.056).
Flett et al (2017)	Ib	Effect of coloring on psychological outcomes	104 female university students, M=19.73 years	Two arm-randomized-activegroup-controlled trial, pre-post-design.	Two groups: (a) coloring 10 pictures (with abstract zentangle style images, animal, nature motifs, mandalas) in a booklet called *Activities for stress reduction* (b) solving 10 riddles (with logic puzzles, Sudoku, word searches, reverse word search) in a booklet called *Activities for stress reduction.* Both: 7-day intervention / 10 min time-slot per day	Depressive Symptoms: Center for Epidemiological Studies Depression Scale (CES-D-20); Stress: Perceived Stress Scale (PSS-10); Anxiety: Hospital Anxiety and Depression Scale–Anxiety Subscale (HADS-AS-7); Resilience: Brief Resilience Scale (BRS-7); Flourishing: Flourishing Scale (FS-8); Mindfulness: Cognitive Affective Mindfulness Scale–Revised (CAMS-12).	t-test for independent samples, Analysis of covariance (ANCOVA)	Statistically significant between group effects (IG vs. CG) in Perceived stress: t(53) = 2.23, p=.0302/ F(1,100) = 4.10,p= .0456; Anxiety, t(53) = 3.07, p= .0034/ F(1,100) = 4.58, p= .034.
Futterman et al (2016)	IIb	Impact of making textile handcrafts on mood enhancement and inflammatory immune changes	47 women, all experienced textile handcrafters, M=53.5 years	Three arm-activegroup-controlled trial, quasi-experimental pre-post design.	Three groups:(a) textile art making, (b) quiet ego contemplation (neutral), (c) writing to maintain negative mood. One single session.	Mood: Positive and Negative Affect Scale (PANAS-SF); inflammatory immune response: saliva samples ((Kit 1-3902, Salimetrics, State College, PA).	repeated measures analyses of variance (ANOVA)	Textile art making promoted the strongest positive mood (significant between-group effect; p < .001) and and negative mood (significant within group effect after textile artmaking: p < .001). Only the writing task was associated with cytokine disturbance.

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Giacobbi et al (2018)	Ib	Efficacy of a guided imagery based multi-behavior intervention intended to address psychological stress, food cravings, and physical activity	35 women; M = 45,5 years; BMI: M =31,43	Two arm-randomized waitlist-controlled trial, pre-post-design	Personalized guided imagery scripts (1:stress/regulation script, 2: foodcraving script, 3: general exercise script) were created and participants were instructed to practice guided imagery every day for 35 consecutive days. Initial meeting with a health educator. Weekly telephone conversations with a health educator.	Exercise behavior: Godin leisure-time exercise questionnaire (GLTEQ); Trait food cravings: trait food cravings questionnaire; Stress: Perceived Stress Scale (PSS); Exercise motivation: Exercise Motivation Scale (EMS)	Mann–Whitney U test , linear mixed effects models testing for time-by-group interactions	Nonsignificant changes in perceived stress and exercise motivation were observed
Glinzak (2016)	IIb	Effects of art therapy on distress levels of adults with cancer	73 patients being treated for cancer	Single arm, proxy pretest study, pre-post-design	Art therapy in 4 settings (oncology unit, infusion clinic, individual sessions, and open studio)	Disstress: Self-report distress thermometer, collected as part of an ongoing hospital evaluation of the art therapy program	paired sample t test, repeated measures of variance (ANOVA)	Distress decreased across all art therapy settings (p<.001). There was statistical significance between settings (p < .001): the art therapy open studio showed the largest mean decrease for stress post-art therapy.
Kaimal et al (2017)	IIb	Art therapist-facilitated open studio versus coloring: differences in outcomes of affect, stress, creative agency, and self-efficacy	36 healthy adults, 29f/7m; M=37.9 years	Two-arm-active group-controlled trial, without randomisation, pre-post-design, quasi-experimental study	Two groups with 2 individual one-hour sessions: (a) open studio condition: with art therapy concepts (b) coloring condition: no interaction with an art therapist, no processing of the images.	Affect: Positive and Negative Affect Schedule (PANAS-20), self efficacy: General Self-Efficacy Scale (GSE-10); stress: Perceived stress scale (PSS-10) anxiety: Stait-Trait Anxiety Inventory (STAI-10)	Repeated-measures factorial Analysis of Variance (ANOVA)	Both conditions resulted in lowered stress and reduced negative affect with non significant between group effects (Stress: $F(1, 28) = 0.52$, $p = .479$). The art therapist-facilitated open studio condition resulted in statistically significant improvements in positive affect $F(1, 28) = 4.99$, p=.034, creative agency, and self-efficacy compared to the coloring condition.
Lee et al (2017)	IIa	Effects of group art therapy on mothers of children with special educational needs	29 mothers of children with at least one kind of special educational need (SEN) M=41,46 years	Two arm-controlled study without randomisation, mixed methods, pre-post design with follow-up.	16 weekly sessions of art therapy over 4 month	Parental Symptoms (somatization, depression, general anxiety, and panic symptoms): Brief Symptoms Inventory (BSI–18); Parenting Stress: Parenting Stress Index (PSI/SF-36); Parent–Child Relationship: Parent–Child Relationship Questionnaire (PCRQ-40); Child Behavior Outcomes: Child Behavior Checklist (CBCL); Parental Mood and Related Areas: developed questionnaire; Parental Change: Self-reported (semi-structured interview)	Two-way Analysis of Variance (ANOVA)	None of the expected Group x Time interaction effects (i.e., betwee-group) were significant, and neither was the group or time main effect (i.e., within-group). The only differences were the main effect of group on some of the child behaviors

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Lee (2018)	IIa	Effects of coloring mandalas for anxiety-reducing mechanisms.	99 undergraduate students 70f/29m M=20.64 years	Four-arm controlled trial, quasi-experimental study, pre-post design.	Four groups after stress induction: (a) freely coloring a mandala, (b) coloring a mandala with preset colors, (c) freely drawing a mandala within a preset circle, and (d) control condition: coloring a rectangular grid with preset colors.	Anxiety: State Scale of the Stait-Trait Anxiety Inventory (S-STAI); Physiological Responses: pulse rate, heart rate; qualitative data: selfreport	one way analysis of variance (ANOVA)	Anxiety-reducing effect of the intervention task was found to be significant in all 3 mandala conditions as compared to the control condition.
Lindsey et al (2018)	III	Expressive arts and mindfulness: aiding adolescents in understanding and managing their stress	6 students with difficilties in managing stress 3f/3m	Single-arm non-experimental descriptive study, pre-post design with follow up.	12 h group intervention over 6 weeks	Self-efficacy: General Self-Efficacy Scale(GSES); depression, anxiety, stress: Depression Anxiety Stress Scales (DASS-21);	Friedman and Wilcoxon post-hoc tests	A significant pre/post (within-group) decrease in stress ($p = 0.016$) and anxiety ($p=0.031$). Nonsignificant decrease for depression.
Meghani et al (2018)	IIb	Outcomes of an 8-week mindfulness-based art therapy (MBAT) intervention for outpatients with cancer	18 outpatients with cancer 17f/1m M=33,3 years	Single arm, pilot study, pre-post-design	8 weekly sessions (2,5 h) sessions of Mindfulness-based art therapy (MBAT Walkabout Program: repeated structure of mixed-media collage construction).	Symptoms, Anxiety: Edmonton Symptom Assessment Scale-R (ESAS-R); Sleep: Pittsburgh Sleep Quality Index (PSQI); Health-related quality of life: Short-Form Health Survey (SF-36) Sense of coherence: Antonovsky's Sense of Coherence Orientation to Life Questionnaire; Spiritual well-being: Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being (FACIT-Sp)	paired t-tests for independent samples	Moderately significant decrease in anxiety ($p = .08$). Changes in pain, tiredness, drowsiness, nausea, and appetite not statistically significant. Significant improvement in peace (FACIT-SP-12; $p = .003$) and FACIT-SP-12 total score ($p = .001$).
Sezen et al (2018)	Ib	Group art therapy for the management of fear of childbirth (FOC)	30 women in the third trimester of pregnancy with moderate levels of FOC M= 27.15	Two arm-randomized-activegroup-controlled trial, pre-post-design.	Two groups: (a) six sessions (each 130 min) of group art therapy (with singing, drawing, mask-making, mandala making, puppet making, taking photographs, collage making) and (b) six sessions of psychoeducation for FOC.	FOC: Wijma Delivery Expectancy/ Experience Questionnaire (W-DEQ) Beck Anxiety Inventory (BAI-21); depression: Beck Depression Inventory (BDI-21)	two-way analysis of variance (ANOVA)	The BAI, BDI and WDEQ scores were found to be statistically significantly lower in the art therapy group ($p<0.001$)

MUSIC THERAPY								
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Bremner (2016)	Ib	Effects of reiki with music compared to music only among people living with HIV (PLWH)	29 PLWH 3f/25m/1d M=49,65 years	Two-arm-randomized-activegroup controlled trial, pilot study mixed-methods experimental design, pre-post-design with follow up.	Two groups: (a) reiki combined with music (b) music only group; 6 sessions in 6 weeks.	Stress, anxiety, depression: Center for Epidemiological Studies Depression Scale (CES-D), State Trait Anxiety Inventory (STAI-Y), visual analog scales (VAS) for pain and anxiety physiological measures: blood pressure, heart rate, hemoglobin, salivary alpha-amylase (sAA), and salivary cortisol; self-report: qualitative, semi-structured interviews, at the 10 week-follow-up visit.	two-way analyses of variance (ANOVAs) with repeated measures or mixed factors	Significant between-group effect for self-reported stress (p= .0001) and anxiety (p = .016). Qualitative findings indicated that reiki and music therapy helped reduce to stress, anxiety, and depression.
De la Torre-Luque et al (2016)	Ib	Acute stress recovery through listening to melomics relaxing music	24 healthy adults 20f/4m; M=23.05 years	Two-arm-double-blind randomized-acitve group controlled trial, pre-post-design.	After laboratory-based acute stress induction two randomized groups during recovery period: (a) listening to relaxing music generated by the Melomics computer system (b) silent resting. Both single session/15 minutes.	Stress: Heartrate variability (HRV); psychiatric symptomatology and anxiety: State-Trait Depression Inventory (STAI-T), Brief Symptom Inventory (BSI), Global Severity Index (GSI), Positive, Symptom Total (PST), Positive Symptom Distress Index (PSDI).	independent Analyses of Variance (ANOVAS)	Participants who listened to relaxing music during the recovery stage showed higher levels of sample entropy than controls; no significant between group effects for psychological symptomatology.
De la Torre-Luque et al (2017)	Ib	Effects of preferred relaxing music after acute stress exposure	58 students 30f/28m M=21,74 years	Two-arm-double-blind randomized-activegroup-controlled trial, pre-post design.	After laboratory-based stress induction two randomized groups during recovery period: (a) listening to preferred music to become relaxed (b) silent resting. Both single session/15 minutes.	Stress: Cardiovascular parameters (Heartrate (HR), heartbeat variability based on interbeat interval (RMSSD); Psychopathological symptoms: Brief Symptom Inventory (BSI); Anxiety: State-Trait Anxiety Inventory (STAI); Depressive symptoms: State-Trait Depression Questionnaire (ST-DEP); Additional measures: Brief Version of the Fear of Negative Evaluation Scale Straightforward Item (BFNE-S), Stanford Sleepiness Scale (SSS), Positive Affect and Negative Affect Schedule (PANAS).	independent Analyses of Covariance (ANCOVA)	Participants in the experimental group exhibited higher levels of heart-derived high frequency power, and greater sample entropy in the recovery period. A significant Phase × Group interaction ($p < .05$) was observed for all subjective variables (anxiety-related state, depression-related state, and negative affect), pointing to lower levels for the experimental group.
Garcia (2017)	Ib	Effects of prenatal music stimulation on state/trait anxiety in full-term pregnancy and its influence on childbirth	409 pregnant women in third trimester M=31 years	Two-arm randomized controlled trial, pre-post design.	Two groups: (a) music stimulation during non-stress test (NST) (b) no music stimulation during NST	Anxiety: State Scale of the Stait-Trait Anxiety Inventory (S-STAI)	Multivariate analysis with binary logistic regression.	Listening to music during the NST resulted in a statistically significant decrease for anxiety in the study group ($p < .001$).

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Giodarno et al (2020)	IIa	Effect of music therapy on preoperative anxiety in pediatric oncology patients undergoing invasive procedures (ip)	48 parent-child dyads	Two arm-controlled study without randomisation, pre-post design	Two different types of preoperative preparation for IP: (a) MT intervention bedside in a hospital room included active and receptive techniques or (b) standard care	Anxiety: Modified Yale Pre-operative Anxiety Scale (m-YPAS)	paired t-tests for independent samples	Significant differences in preoperative anxiety score between the two groups (p = .001)
Hides et al (2019)	Ib	Efficacy and outcomes of a music-based emotion regulation mobile app in distressed adolescents/ young adults	169 young adolescents/ young adults with at least mild mental distress (Kessler 10 score>17), 134f/35m, M=19.9 years,	Two arm-randomized waitlist-controlled trial, pre-post-design, follow-up	By using the Music eScape App participants were assisted with identifying, expressing and managing emotions while using music from their own musiclibrary over a period of 6 months.	Emotion Regulation (primary outcome): Difficulties in Emotion Regulation Scale (DERS-SF); Mental distress and well-being: Kessler 10 Psychological Distress scale (K10 scale), Mental Health Continuum-Short Form (MHC-SF); Music measures:10 items designed for this study explored level of music education, involvement of participants, Healthy-Unhealthy Music Scale	Linear mixed models (intent-to-treat) for all outcomes; time and group main effects and time by group interaction.	Improvements in mental distress, well-being, and emotion regulation were found in both groups over 6 months (no sign. between-group effects). For mental distress, moderating effects were found for gender (F4,254=3.09; p=.02). Mean decrease in mental distress from baseline to 1 month only for females (meandifference=−4.50, p<.001).
Innes et al (2018)	Ib	Effects of Meditation versus Music Listening on Perceived Stress, Mood, Sleep, and Quality of Life	60 adults with subjective cognitive decline (SCD), 51f/9m; M=60,58 years	Two-arm-randomized-activegroup controlled trial, pre-post-design with follow up.	Two groups: (a) Kirtan Kriya Meditation (KK), (b) music listening (ML); both groups: 12 min/daily for 12 weeks; instructions on a program CD, observed and accomanied by a trainer via telephone.	Perceived stress: Perceived Stress Scale (PSS-10); sleep quality: Pittsburgh Sleep Quality Index (PSQI); mood: Profile of Mood States (POMS-65); well-being: Psychological Well Being Scale (PWBS); health-related quality of life: MOS Short Form-36; subjective memory function and objective cognitive performance: Memory Functioning Questionnaire (MFQ), Trail Making Test Parts A and B (TMT), 90-second Wechsler Digit-Symbol Substitution Test (DSST)	Repeated Measures Analysis of Variance (ANOVA)	No significant between group effects for ML compared to KK in perceived stress. Participants in both groups showed significant improvement in psychological well-being and in multiple domains of mood and sleep quality at follow-ups (p's≤0.05).

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Kahloul et al (2017)	Ib	Effects of music therapy under general anesthesia	140 patients scheduled for abdominal surgery, M=51,7 years	Two-arm-randomized controlled, double-blind trial, pre-post-design	During sugery patients in the intervention group (M group) had a headphone linked to an MP3 player with different types of music samples to satisfy all tastes. Patient choice was respected in all cases. Music started immediately after anesthesia induction	Data related to surgery: type and duration of surgery; hemodynamic parameters: heart rate, systolic, diastolic; quality of awakening: Riker scale; pain on waking: Visual Analogue Scale (VAS); patient satisfaction: EVAN-G scale ; primary end point was patient satisfaction 24 hours after surgery. Secondary end points: intraoperative hemodynamic stability, intraoperative awareness, postoperative pain and anxiety.	Analysis of Variance (ANOVA)	Regarding the hemodynamic profile found more stability in group M for systolic arterial blood pressure ($p < .001$). A calm recovery was more often noted in group M ($p<10^{-3}$). The average Visual Analog Scale (VAS) score was lower in the intervention group ($p<10^{-3}$). Satisfaction rate significantly higher among the experimental group ($p<10^{-3}$).
Kim et al (2018)	Ib	Affective and autonomic response to dynamic rhythmic entrainment	30 healthy students 25f/5m M=26.9	Two-arm-active group-randomized controlled, trial, pre-post-design	Two groups: After a brief mental stress task, both groups listened to a live music therapy relaxation technique. (a)While a biofeedback device was utilized to enable real-time synchronization of relaxing music to the listener's pulse in the entrained-tempo condition, (b)the tempo in the CG was fixed to 70 beats per minute.	Wellbeing: VAS; Stress: VAS; two parameters of cardiovascular autonomous nervous system (ANS) reactivity: pulse rate (PR) and blood volume pulse amplitude (BVP-A).	multilevel modeling (time by group intection)	The entrained-tempo condition led to a significantly stronger increase in peripheral blood flow ($p < .01$) and subjective well-being ($p = .036$). No between-group differences were observed for changes in pulse rate and self-rated stress level (both $p > .05$)
Koelsch et al (2016)	Ib	Impact of acute stress on hormones and cytokines, and how recovery is affected by music-evoked positive mood	143 healthy students 71f/72m; M=24.9 years	Two arm-randomized-doubleblind active group-controlled trial, pre-post design	Two groups: Stress induction: Participants took a single full vital capacity breath of a gas mixture of 35% CO2 and 65% O2. Directly after the CO2 challenge, participants lay down in supine position, closed their eyes, and were presented via headphones either (a) with a musical stimulus (instrumental music) or (b) with the control stimulus (melodic sequences of random tones of the chromatic scale).	Anxiety, depression, fatigue, vigor: Profile Of Mood States (POMS); stress: CO2 stress test, blood pressure, biochemical analyses of blood samples (cortisol, ACTH, Interleukin-6, Noradrenaline, Leptin , Somatostatin).	Mulktivariat e Analysis of Variance (MANOVAs), paired t-tests for independen t samples	Between group effect: the music stimulus had a significant influence on the recovery of cortisol levels, as indicated by an interaction between time point x stimulus group for cortisol ($p< 0.02$). Mood plays a causal role in the modulation of responses to acute stress. Sig. increase in positive mood $p= 0.001$.

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Kongsawatvorakul et al (2016)	Ib	Effects of music therapy in patient anxiety undergoing large loop excision of transformation zone (LLETZ)	73 women undergoing LLETZ performed under local anesthesia, M=44.0 years	Two arm-randomized-controlled trial, pre-post design.	Music group patients listened to classical songs via headphones	Anxiety: State Scale of the Stait-Trait Anxiety Inventory (S-STAI-20); pain: visual analog scale (VAS)	paired t-tests for independent samples	Music therapy did not significantly reduce postoperative anxiety (p = .27) or pain (p =.64) in patients undergoing the LLETZ procedure.
Lee et al (2016a)	Ib	Effects of Music Therapy on the Cardiovascular and Autonomic Nervous System in Stress-Induced University Students	64 Students 45f/19m M=19,61	Two arm-randomized-activegroup-controlled trial, pre-post design.	Two groups: participants in both groups were exposed to a series of stressful tasks. After that (a) experimental group listened to classical music for 20 minutes and (b) the control group rested for 20 minutes.	Stress: Initial measurement included cardiovascular indicators (blood pressure and pulse), autonomic nervous activity (standard deviation of the normal-to-normal intervals [SDNN], normalized low frequency, normalized high frequency, low/high frequency), and subjective stress.	paired t-tests for independent samples	No significant between group effects. The experimental group and the control group showed significant differences in all variables (within groups), including systolic blood pressure (p = .026), diastolic blood pressure (p = .037), pulse (p < .001), SDNN (p = .003), normalized low frequency (p < .001), normalized high frequency (p = .010), and subjective stress (p = .026).
Lee et al (2016b)	Ib	Effects of listening to meditative music on state anxiety and heart rate variability (HRV) of patients during the uptake phase before PET scans.	80 patients scheduled for a PET scan, 40f/40m, M= 59.03 years	Two arm-randomized controlled trial, pre-post design.	The intervention was listening to meditative music while they lay on the bed during the uptake phase before PET scanning in the private uptake room with dim lighting and consistent comfortable temperature.	Anxiety: State-Trait Anxiety Inventory-State scale (STAI-S-20), Heartrate variability (HRV)	paired t-tests for independent samples	No significance between goups. Significant reduction in anxiety ($t = -4.40$, $p < 0.001$) and heart rate ($t = -6.28$, $p < 0.001$) of the experimental group compared to the control group.
Litchke et al (2018)	IIb	Mental health benefits of a service-learning group drumming between college students and children with autism spectrum disorder (ASD)	19 students 13f/6m, M=27.4 years	Single arm, pre-post-design, quasi-experimental	Dyadic group drumming (Drumtastic®) among college students partnered with children with ASD. One hour twice a week over 4 weeks	Depression, anxiety: Hospital Anxiety and Depression Scale (HADS-14); Stress: Perceived Stress Scale (PSS); Resilience: Connor Davis Resilience Scale (CDR); enjoyment of a physical activity: Physical Activity Enjoyment Scale (PACES-18)	paired sample t-test for independent samples	Significant findings on two subscales of the Perceived Stress Scale: 1) handling unexpected events, $t(18) = 2.535$, $p=.021$ and 2) controlling important life experiences, $t(18) = 2.364$, $p=.030$.

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Liu et al (2019)	Ib	Effects of mindfulness-based stress reduction (MBSR) combined with music therapy (MT) on pain, anxiety, and sleep quality in patients with osteosarcoma	101 patients 35f/56m M=15.9	Two-arm randomized controlled trial, pre-post-design.	Combined MBSR + MT intervention (8 sessions): MT was first conducted by a professional music therapist for 30 minutes,followed by a course of MBSR guided by a psychologist trained in MBSR. Then, the participants were allowed to enjoy music for another 30 minutes.	Pain: Wong-Baker Faces Pain Rating Scale (WBRS); anxiety: Hamilton Anxiety Rating Scale (HAM-A); Sleep quality: Pittsburgh Sleep Quality Index (PSQI)	paired t-tests for independent samples	Significant decrease in anxiety in MBSR + MT icompared to control group after the intervention (t = 8.140, p < 0.001)
Millet et al (2017)	Ib	Comparative effectiveness of two distraction-based music therapy interventions on reducing preoperative anxiety in young pediatric surgical patients and their caregivers	40 pediatric patients and caregivers (M=32.58 years 13f/27m) dyads undergoing ambulatory surgery	Two arm-randomized-activegroup-controlled trial, pre-post design.	Two groups: (a) active or (b) passive intervention group for a preoperative music therapy session with pediatric patients and caregivers. Single session.	pediatric anxiety: modified Yale Pediatric Anxiety Scale (mYPAS); caregivers anxiety: short-form Stait-Trait Anxiety Inventory-Y6 (STAI-SF-6).	one-way analysis of covariance (ANCOVA), paired t-tests for independent samples	No significant differences between groups. Results indicated a significant reduction in preoperative anxiety for both patients and their caregivers regardless of intervention type. There was a significant difference pre to post in pediatric patients with-in group for levels of preoperative anxiety (p = .001).
Ortega et al (2019)	Ib	Effect of music therapy for pain and anxiety management in nasal bone fracture reduction	NN patients with displaced nasal fractures who required a reduction	Two arm-randomized--controlled trial, pre-post design.	The music group heard music through headphones during the pre-, intra-, and postprocedural periods of the intervention	Anxiety: Physiological variables (blood pressure and heart rate), State-Trait Anxiety Inventory (STAI); pain: VAS	paired t-tests for independent samples	The music group exhibited significantly lower levels of systolic blood pressure (p = .0001), anxiety (p < .0001), and pain (p = .0004) than the control group.
Osmanoglu et al (2019)	IIb	Effect of classical music on anxiety and well-being	15 Students 7f/8m	Single arm, pre-post-design, quasi-experimental	Listening to classical music according to a music listening schedule, every day over a 60-day period.	Anxiety: State Scale of the Stait-Trait Anxiety Inventory (S-STAI); wellbeing: Psychological Well-being Scale (PWB)	paired sample t-test	No significant pre-post difference in State Anxiety Scale (p = .211); significant pre-post difference in Trait Anxiety Scale (p = .004). Significant pre-post differences in dimensions of Psychological Well-being Scale.

Study (Author/Year)	Level of evidence	Object of Investigation	N/Sample	Design	Intervention	Data Collection	Analysis	Central Results
Ozgundondu et al (2019)	Ib	Effects of progressive muscle relaxation combined with music on stress, fatigue and coping styles amongst intensive care unit (ICU) nurses	56 ICU nurses with at least 3 months experiences M=27,75 years	Two arm-randomized-activegroup-controlled trial, pre-post design with follow up.	Two groups: (a) 20 min session progressive muscle relaxation combined with music for 8 weeks in group sessions, (b) a single-time face-to-face attention-matched education for 20 min	Stress: Percieved Stress Scale (PSS); fatigue: Fatigue severity scale (FSS); coping styles: Brief COPE	analysis of Variance (ANOVA), Mann-Whitney U test	Between the study groups, statistical testing revealed no significant difference for the baseline and week 4 assessments, while a significant reduction was observed in favor of the intervention group ($p < 0.05$) at weeks 8 and 12 of the study.
Öztürk et al (2017)	Ib	Effect of listening to music on patient`s anxiety and pain perception during urodynamic study	62 patients 29f/33m, M=50.02 years	Two arm-randomized--controlled trial, pre-post design.	Listening to music during Urodynamics study (UDS)	Anxiety: State Scale of the Stait-Trait Anxiety Inventory (S-STAI), Beck Anxiety Inventory (BAI-20), blood pressure (SBP, DBP), heart rate (HR); pain: Visual Analogue Scale (VAS)	t-tests for independent samples	No statistically significant between groups in SBP, DBP, HR; statistically significant between groups in anxiety (STAI and BAI) and pain (VAS) (Ps < .0001).
Pfeifer et al (2019)	IIa	Effect of combined depth relaxation music therapy and Hypnomusictherapy in a natural setting (DRMT/HMT)	84 students, 74f/10m M=24.2	Two-arm-activegroup-controlled trial, pre-post design.	Two groups: (a) Depth Relaxation Music Therapy (DRMT) and Hypnomusictherapy (HMT) combined session in a natural setting, (b) seminar in the same natural setting, both 16 min and both sessions followed by a 6:30-min period of silence. Change of groups after one week pause.	Level of relaxation: VAS; subjective time, self, space: State Scales on subjective time, self, space (STSS); Boredom: Multidimensional State Boredom Scale (MSBS); mind-wandering: The Daydreaming Frequency Scale (DDFS)	paired sample t-test	No significant between group effect for relaxation ($p < 0.546$). There was significantly ($p < 0.001$) increased relaxation after DRMT/HMT- induced silence as compared to before), as well as after vs. before the seminar condition ($p < 0.001$).
Robb et al (2016)	Ib	Effect of a parent-delivered Active Music Engagement (AME) intervention for young children with cancer and their parents	16 dyads with children with cancer (M=5.4 years) and their parents (M=35 years)	Two arm-randomized-activegroup-controlled pilot trial, pre-post design.	Two groups (both accompanied by a music therapist): (a) parent delivered AME (an interactive, music-based play intervention); (b) Audio-Storybooks (ASB) Attention control condition with several illustrated children's books with audio recorded narration; one session daily over the first 3 consecutive days of inpatient chemotherapy	Emotional disstress (child) via positive facial affects in a behavioral coding form (see Robb, 2000), emotional disstress (parents): Events Scale-Revised (IES-R); mood: Profile of Mood States-Short Form (POMS-SF);	t-tests for independent samples; Analysis of Covariance (ANCOVA)	Emotional distress was significantly lower for AME children ($p=.040$), but not the parents ($p=.723$).

Study (Author/Year)	Level of evidence	Object of Investigation	N/Sample	Design	Intervention	Data Collection	Analysis	Central Results
Rossi et al (2018)	Ib	Effect of music interventions on infants undergoing painful medical procedures	80 fullterm healthy newborns (aged 1-3 days)	Two arm-randomized--controlled trial, pre-post design.	The infants were exposed to the three music interventions: (Mozart's Sonata for two pianos K.448, Beethoven's Moonlight Sonata and heartbeat sound recordings (70 bpm)) in the first three days of life, while lying in a supine position, asleep and at the same time of the day (late morning). Single session for 40 min, carried out 1 h after feeding. Music started 10 min before the beginning of a painful procedure, continued for 20 min after.	Stress, pain: Heartrate (HR), oxygen saturation level (O2Sat) and infant's pain perception	two-factor mixed design Analysis of Variance (ANOVA)	Infants who were exposed to the three music interventions displayed a significant reduction in heart rate and in pain perception and an increase in oxygen saturation, as compared to the control group (ps < .001).
Son et al (2019)	Ib	Effects of aromatherapy combined with music therapy on anxiety, stress, and fundamental nursing skills in nursing students	98 sophomore female nursing students	Three arm-doubleblind-randomized active group-controlled trial, pre-post design.	Three groups: (a) aromatherapy, (b)music therapy, (c) aromatherapy + music therapy; single session for 55min.	Anxiety: Revised Test Anxiety Scale, State Scale of the Stait-Trait Anxiety Inventory (S-STAI); stress: Percieved stress Scale (PSS);	Shapiro–Wilk test for dependent variables	There was no significant difference between the combined aroma and musictherapy group compared to the the separate intervention groups. Significant within-group decreases in state anxiety, test anxiety and stress among all three groups (Ps < 0.05).
Uggla et al (2018)	Ib	Effects of music therapy for children undergoing haematopoietic stem cell transplants (HSCT)	38 children 15f/23m M=6.8 years	Two arm-randomized-waitlist-controlled pilot trial, pre-post-design with follow up.	Musictherapy,twice a week over a period of 4 to 6 weeks, 45 min.	HRQoL (pain, nausea, procedural anxiety, treatment anxiety, worry, cognitive problems, perceived physical appearance, communication): Pediatric Quality of Life Inventory 4.0 generic core scales (PedsQL-27)	paired t-test, Wilcoxon's signed-rank test	Significant between group effect for physical function in the music therapy group (adjusted p = 0.04); significant within group improvements in all domains (p = 0.015) in the waitlist control group after the intervention
Yinger (2016)	IIa	Effect of music therapy for young children undergoing immunizations	58 children (M= 56,6 months) undergoing immunizations and their parents	Two arm-randomized controlled trial, quais-experimental, post test only design.	Musictherapy during immunization	Stress, pain: Child-Adult Medical Procedure Interaction Scale-Revised (CAMPIS-R)	series of Mann–Whitney U-tests was	Significant differences between groups in rates of child coping (p =.001) and distress behaviors (p = .003) and parent distress-promoting behaviors (p = .005). No significant differences between groups in parents' ratings of children's pain.

DANCE MOVEMENT THERAPY								
Study (Author/Year)	**Level of evidence**	**Object of Investigation**	**N/Sample**	**Design**	**Intervention**	**Data Collection**	**Analysis**	**Central Results**
Aithal, Karkou et al (2019)	IIa	Effectiveness of dance movement psychotherapy on parenting stress in caregivers of children with autism spectrum disorder	12 mothers (M=29.6 years) of children with asd (M=7.2 years)	Two arm-waitlist-controlled feasibility trial, mixed methods, pre-post-design	6 DMT group sessions of 90 minutes in 2 weeks (first author = intervention facilitator)	Stress: Parenting Stress Index-Short Form (PSI-SF), depression: Hamilton Depression Rating Scale (HAM-D)	Multivariate Analysis of Covariance (MANCOVA)	Significant differences for post-therapy condition between the experimental and control group on the Parental Distress PSI-SF. (F (1, 426) = 21.88, p < .01)
Esmail et al (2019)	Ib	Effects of Dance/Movement Training vs. Aerobic Exercise Training on cognition, physical fitness and quality of life in older adults	41 healthy inactive older adults 30f/11m; M=67,48 years)	A three -arm, randomized, active-waitlist-group-controlled, parallel assignment, open label trial, pre-post-design.	Three groups: (a) DMT Program (b) Aerobic Exercise Training (AET) program (c) passive waitlist control group 12-week (3x/week, 1hr/session)	*Primary outcomes* Cognition: Dual-task, N-back, and Digit Stroop; *Secondary outcomes* Physical fitness: VO2 peak test, Rockport One-Mile test, estimative equation; Health-related QoL: depression: Geriatric Depression Scale (GDS) anxiety: State-Trait Anxiety Inventory (STAI) lifestyle: Health Promoting Lifestyle Profile-2 (HPLP2) mental health: Mental Health Contin- uum-Short Form (MHC); nutrition : Short Di- etary Screener Questionnaire (DSQ) sleep: Pitts- burgh Sleep Quality Index (PSQI) pain: Brief Pain Inventory (BPI)	One-way ANOVA, Welch's ANOVA, repeated measures ANOVA	Nonsignificant between group effects for cognition or physical fitness; no significant effect for DMT outcomes; significant group effect for State anxiety (STAI, sign. group × time interaction (F(2,37) = 5.01, p < .05) with the CG having the only significant improvement.
Ho et al (2016)	Ib	Effectiveness of dance movement therapy (DMT) on improving treatment-related symptoms	139 women with breast cancer waiting adjuvant radiotherapy	Two arm- waitlist controlled-randomized single-blind trial, pre-pst design, Follow up	6 DMT group sessions (1,5h each, twice per week) over 3 weeks	Stress: Perceived Stress Scale (PSS-10); depression, anxiety symptoms: Hospital Anxiety and Depression Scale (HADS), Brief Fatigue Inventory; pain: Brief Pain Inventory, sleep disturbance: Pittsburgh Sleep Quality Index; Qualitiy of life: Functional Assessment of Cancer Therapy Breast Scale	t-test for independent samples, chi-square tests	DMT showed significant effects on buffering the deterioration in perceived stress (p = .0039). No significant intervention effects were found on anxiety, depression, fatigue,sleep disturbance, and quality of life (p > .05).
Ho et al (2018)	Ib	Effects of DMT on the diurnal cortisol rhythms of breast cancer patients undergoing radiotherapy treatment and the role of perceived stress in producing such effects	121 women with breast cancer waiting adjuvant radiotherapy	Two arm- waitlist controlled-randomized single-blind trial, pre-post design, Follow up; secondary data analysis of a RCT (Ho, 2016)	6 DMT group sessions (1,5h each, twice per week) over 3 weeks	Stress, cortisol level: Saliva sample (pre/post ELISA kit method), Perceived Stress Scale (PSS-10)	t-test for independent samples, multigroup latent growth modeling of the cortisol measures	DMT did not show an significant effect on diurnal cortisol slope. Baseline perceived stress significantly moderated the intervention effect of DMT on diurnalcortisol slope. At high levels of baseline perceived stress, the DMT group showed post intervention a steeper cortisol slope than the control group.

Study (Author/Year)	Level of evidence	Object of Investigation	N/Sample	Design	Intervention	Data Collection	Analysis	Central Results
Kuroda et al (2018)	IIb	Stress, emotions, and motivational states among traditional dancers in New Zealand and Japan	84 traditional dancers (50 traditional Japanese and 34 New Nealand dancers), f70/m14; M=48.66 years	Two-arm controlled trial, pre-post-design, quasi-experimental study	Two groups: (a) NOSS group performed a sequence of standard Nihonbuyo movements (i.e., Mai and Odori) during the session, (b) Kapa Haka group performed a combination of Waiata, Kanikani, and Haka. Both one single session.	Motivational dominance: Paratelic Dominance Scale (PDS-30), Telic State Measure (TSM-8); stress, negative somatic emotions: Tension and Effort Stress Inventory (TESI- 8)	t-test for independent samples	For arousal-seeking, the Kapa Hakagroup scored significantly higher than the NOSS group, suggesting that the New Zealanders also tended to seek more arousal than the Japanese dancers, t(82)=-2.65, p<0.10. On the serious-playful dimension,the Kapa Haka group scored significantly higher than the NOSS group; New Zealanders were more playful than the Japanese, t(82)=-4.27,p<0.001
Lopez (2017)	Ib	Effects of Biodanza on stress, depression, and sleep quality in young adults with perceived stress	95 students 70f/25m, M=22.18 years	Two arm- waitlist controlled-randomized trial, pre-post design	4 Biodanza sessions (90 min, once a week, over 4 weeks)	Depression: Hospital Anxiety and Depression Scale (HADS-14); stress: Perceived Stress Scale (PSS-10); sleep quality: Pittsburgh Sleep Quality Index (PSQI)	t-test for independent samples	Biodanza had a significant positive effect on depression and perceived stress (both outcomes: $p < 0.05$).
Mama et al (2016)	Ib	Effects of SALSA (SAving Lives Staying Active) on psychosocial outcomes	50 women M=41.9 years, BMI (M)=29.7 kg/m^2	Two arm-randomized activegroup controlled- trial, pilot study, pre-post design	Two groups: (a) latin dance (1h/twice a week over 4 weeks, teached by a professional dance instructor) and an internet based dietary education intervention; (b) internet-based education group to promote vegetable consumption.	Self-efficacy: Exercise Self-Efficacy Saclae (ESE-18);motivational readiness; Godin Leisure-Time Exercise Questionnaire (GSLTPAQ); stress: Weekly Stress Inventory (WSI); social support: Social Support and Exercise Survey (SSES)	repeated measures analysis of variance (ANOVA)	Increases in motivational readiness for exercise and a decrease in the number of stressful events ($p < .05$); Changes in motivational readiness for exercise varied by group ($p = .043$).
Vrinceanu et al (2019)	Ib	Comparing the effect of dance/movement training to aerobic exercise training on the cortisol awakening response in healthy older adults	40 healthy older adults 30f/10m, M=67.45 years	Three arm-randomized-active-waitlist-group controlled trial, pre-post design, secondary data analysis and publication of a RCT (Esmail, 2019; Vriceanu, 2017)	Three groups: (a) Dance Movement Therapie, (b) Aerobic exercise Training (high intensity activity on a recumbent bicycle), (c) waitlist control group. (a) and (b) in small groups, 3 times a week over 3 months. All sessions 60-min.	Cortisol level: Saliva sample (pre/post ELISA kit method); Cardiorespiratory fitness and mobility: Maximal aerobic power (MAP); cognition: Mini-mental state examination (MMSE); Psychological assessments: Geriatric depression scale (GDS), State-trait anxiety inventory (STAI), short form health survey (SF12), Lubben Social Network Scale – Revised (LSNS-R), Pittsburgh Sleep Quality Index (PSQI).	mixed design Analysis of Variance (ANOVA)	A significant group x time interaction effect ($F(2,34)= 5.79$, $p = .01$) was found, with the DMT group showing lower salivary cortisol values post-training (the other two groups showed no change from baseline)

Study (Author/Year)	Level of evidence	Object of Investigation	N/Sample	Design	Intervention	Data Collection	Analysis	Central Results
Vrinceanu et al (2017)	Ib	Effect of Dance-Movement-Therapy on cortisol awakening response as a sign of stress reduction	40 healthy older adults M=67.5	Three arm-randomized-active-waitlist-group controlled trial, pre-post design. secondary data analysis of a RCT (Esmail, 2019)	Three groups: (a) waiting list, (b) DMT; (c) Cardiovascular Training (high intensity activity on a recumbent bicycle). 3 times a week over 3 months.	Cortisol level: Saliva sample (pre/post ELISA kit method);	mixed design Analysis of Variance (ANOVA)	A group x time interaction was found (F(2,35)=5.256, p=.01) with the DMT group showing lower salivary cortisol values post-training, while the other two groups showed no change from baseline. The change in cortisol seen in the DMT group is unrelated to fitness improvement.
Wiedenhofer et al. (2017)	IIa	Impact of non-goal-directed improvisational dance versus goal-directed improvisational dance in reducing perceived stress, well-being, general self-efficacy, and body self-efficacy	57 Students, 44f/12m M=23.21	Two arm-avtive group controlled study without randomisation, pre-post design	Two groups: (a) Participants in the experimental group (EG) performed non-goal-directed improvisational dance movements, (b)participants in the control group (CG) improvised to the same music in a goal-directed way with the help of colored paper sheets serving as targets. Single session for 50 min.	Perceived Stress: PSQ30 questionaire; wellbeing: Heidelberg State Inventory (HSI-24); self-efficacy: General Perceived Self-Efficacy Scale (GSE scale); body-self-efficacy: Self-Efficacy-Scale (BSE).	Mulktivariat e Analysis of Variance (MANOVAs), t-tests for paired samples	Perceived stress in the experimentalgroup significant more reduced than in controlgroup F(56,1)=4,71, p=.034. No difference in wellbeing.

DRAMA THERAPY								
Study (Author/Year)	**Level of evidence**	**Object of Investigation**	**N/Sample**	**Design**	**Intervention**	**Data Collection**	**Analysis**	**Central Results**
Moore et al (2016)	Ib	Effect of a novel theatre-based program with older adults	13 older adults 9f/4m M=76,6	Two arm-randomized activegroup controlled- trial, pilot study, pre-post design with follow-up	Two groups: (a) a 6-week Drama Workshop (DW) program (one session/week) or (b) timeequivalent Backstage Pass (BP)	Empathy and compassion: Toronto Empathy Questionnaire (TEQ); Santa Clara Brief Compassion Scale (SCBCS), Multifaceted Empathy Test (MET); Mood: Geriatric Depression Scale-Short Form (GDS); Anxiety: Beck Anxiety Inventory (BAI)	Analysis of Variance (ANOVA), t-tests for paired samples	No significant treatment effect for anxiety scores (BAI: p = 0.82). Follow-up analyses within the DW group indicated greater anxiety and less happiness after each class were related to increases in self-esteem (anxiety: r=0.83, p=0.04; happiness: r=−0.94, p<0.01;

Notes: Evidence levels are defined according to the Agency for Healthcare Research and Quality (AHRQ); CATs are demarcated from mere arts interventions by color: CATs appear in green, mere arts interventions in black