

**Table E1:** Study characteristics

Author	Design (Unit of allocation; number of trial arms)	Sample (Participants (n); mean age / age range (years); gender (% female); clinical status; setting)	Anxiety Outcome (Outcome measure; state, trait, disorder specific, PO, SO)	Intervention duration (Weeks)	Time of assessment (Post Intervention (PI); Follow-up)	Results for Anxiety Outcome (Intervention Mean (SD) for anxiety outcomes)	PA Intervention	Format of intervention (Group / individual; supervised; unsupervised; delivered by qualified / non-qualified personnel)	Intervention specifics (Exercise intensity; intervention duration (weeks); session frequency (per week); session duration (minutes))
<b>Bonhauser et al. (2005)</b>	Cluster; 2	School students (n=198); 15.53; all genders (51.5%); non-clinical; school setting	HADS; anxiety symptoms score; state; SO	40	PI; N.A.	Intervention: 7.63 (N.A.) Control: 8.40 (N.A.)	3 steps: 1) minimum activity no weight transfer (stretching) 2) weight transfer activities, large muscle movements (fast walking, running, jumping) 3) sport practice: depending on the unit: women chose: dance, aerobics, track practice and volleyball; men chose: soccer, basketball, track practice, volleyball	Group; supervised; teachers; unclear	Not reported (likely moderate); 40; 1; 90
<b>Broman-Fulks &amp; Storey (2008)</b>	Individual; 2	Psychology students (n=35); 18.91 (1.62) / 18-27; all genders (80%); above non-clinical mean of anxiety sensitivity; non-clinical; laboratory	ASI-R; anxiety sensitivity; PO	2	PI (after each session); 1 week	Intervention: 30.75 (10.94) Control: 32.83 (16.88)	Aerobic exercise; jogging or walking on treadmill	Individual; supervised in laboratory, qualified	60–90% of predicted max HR; 2; 3; 20 exercise + 5 min cool down
<b>Eather et al.(2019)</b>	Individual; 2	Students (n=53); 20.38 (1.88) / 18-25; all genders (66%); non-clinical; university setting	STAI-SF; not specified; SO	8	PI; N.A.	Intervention: 14.39 (2.37) Control: 14.20 (1.83)	HIIT; combination of aerobic (shuttles, skips, bear walks) and core resistance exercises (push-ups, squats, sit-ups) with bodyweight or equipment; 30sec/30sec (work/rest) Variety of HIIT programs; Sport HIIT, Gym HIIT, Combat HIIT, Brain HIIT)	Group; supervised by female researcher; qualified	High intensity – 85% max HR; 8; 3; 8 (weeks 1-4), 10 (weeks 5-6), 12 (weeks 7-8)

<b>Fidelix et al. (2019)</b>	Individual; 2	Obese adolescents (n=62); HIG 14.71 (1.14), LIG 14.64 (1.18) / 13-18; all genders, (54.8%); non-clinical; community setting	STAI; state / trait; PO	24	PI; N.A.	HIG: State: 38.00 (13.26) / Trait: 37.43 (11.37) LIG: State: 38.54 (13.16) / Trait 40.92 (11.12)	Combination of multidisciplinary behavioural intervention (clinical, nutritional and psychological counselling) plus low (LIG group) and high intensity (HIG group) aerobic exercise on a treadmill	Unclear; supervised; not reported, group sessions for nutritional and psychological counselling, individual for clinical counselling; qualified	High intensity = ventilatory threshold (VT1) and low intensity 20% below VT1; 24; 3; isocaloric; LIG 52.30 min (6.52), HIG 38.40 min (4.36)
<b>Lima et al. (2022)</b>	Cluster; 4	High school students (n=1296); 13-19; all genders (55.8%); non-clinical; school setting PE class	SAS-A; social anxiety; SO	24	PI; N.A.	Doubling PE classes 53.6 (14.8) Doubling PE + workshop 53.9 (14.9) Workshop only 53.8 (14.5) Control 53.3 (13.7)	1) Doubling PE classes; 2) Doubling PE classes + workshop with PE teacher	group; supervised by PE teacher; qualified	1) not reported (likely low to moderate); 24; 4; 50 2) not reported (likely low to moderate); 24; 4; 50 plus 5 workshop lectures for PE teachers of 240 min each
<b>Lucibello et al.(2019)</b>	Individual; 2	Students (n=42); 19.4 (1.44) / 18-30; all genders (80.9%); non-clinical; exercise facility at university laboratory	BAI; anxiety severity at onset STAI-6; state / trait; PO	9	PI; N.A. STAI every week before last session and 10 min after last session and for CG	Not reported	Exercise group; cycling	Unclear; supervised; member of research team; qualified	Moderate to vigorous intensity 70-75% max HR; 9; 3; 33
<b>Lucibello et al. (2020)</b>	Individual; 2	Students (n=46); 19.9 (2.2) / 18-30; all genders (63%); non-clinical; exercise facility at university laboratory	BAI; anxiety severity; PO Resting-state proinflammatory cytokines - biological marker for anxiety and depression	11	PI; N.A.	HIIT group 4.6 (5.8) Placebo 6.0 (8.7)	HIIT – cycling (stationary cycle ergometer); 20min intervals (alternation 1min at 90-95% max HR and 80% max W and 1min rest at 30% of max W)	Group (2-3 students); supervised by member of the research team; qualified	High intensity 90-95% max HR; 9; 3; 25
<b>Maurer et al. (2020)</b>	Individual; 2	Sedentary healthy individuals (n=59); 24.2 (4.2); all genders (50%); non-clinical; community setting	STAI; state / trait; PO	24	PI; N.A.	Not reported	Aerobic exercise – running on treadmill (2 sessions) and outside (1 session)	Individual; supervised by research team member (2 sessions per week); unsupervised (1 session per week); unclear	Vigorous intensity 75-80% max HR repeated intervals of 3-5mins; 24; 3; 25-45

<b>Norris et al. (1992)</b>	Individual; 3	Secondary school students (n=60); 16.7; all genders (48%); non-clinical; school setting	Multiple Affect Adjective Check List; PO	10	PI; N.A.	High Intensity: 4.21 (2.08) Moderate Intensity: 7.80 (2.25) Flexibility: 5.46 (2.59) Control: 6.25 (4.14)	Aerobic exercise to music for high and moderate intensity groups flexibility group – flexibility training	Group; supervised by research team member; qualified	High intensity 70-75% max HR, moderate intensity 50-60% max HR intensity and flexibility groups; 10; 2; 25-30
<b>Parker et al. (2016)</b>	Individual; 4	Help seeking young people (n=176); 17.6 (2.4) / 15-25; all genders (61%); clinical – elevated symptom levels; community setting	BAI; anxiety severity; PO	6	PI; N.A.	Behavioural activation-PA: 6.06 (1.05); Lifestyle Psychoeducation: 7.88 (1.06); Problem solving therapy 7.06 (1.08); Supportive Counselling 6.88 (1.03)	Behavioural Activation based on PA: (psychoeducation on exercise and mood/anxiety); PA chosen by participant	Individual; unsupervised; not reported (research psychologists)	Not reported; 6; 1; self-reported activity time
<b>Philippot et al. (2022)</b>	Individual; 2	Adolescent inpatients (n=40); 15.2 (1.2) for the intervention group; 15.5 (1.8) for the control group / 12-19; all genders (62.5%); clinical; psychiatric setting	HADS-A; anxiety; PO; STAI state / trait; SO	6	PI; N.A.	Intervention group: 11.3 (6.4) Control group: 10.7 (5.5)	Exercise group (add-on treatment); 8% cardiovascular; 20% strength training; aerobic group games – team sports and racket sports; cycling and indoor climbing WU + CD (muscle stretching)	Group; supervised; qualified	Moderate intensity 40-59% HRR; 5-6; 3-4; 60
<b>Sabourin et al. (2015)</b>	Individual; 4 Two groups: high and low AS; each group randomly assigned to IG or CG	High and low anxiety sensitivity students (n=154); 18.89 (1.59) / 17-23; only female (100%); non-clinical; university setting	ASI: anxiety sensitivity measured 10 weeks after 3 days CBT; PO	14	PI; N.A.	Not reported	Cognitive Behavioural Therapy with running as interoceptive exposure component	Group; supervised; not reported (for CBT) individual: unsupervised (for running)	3 consecutive days; 3 x 60min (CBT) not reported; 14; 3; 10 (Running)
<b>Zhang J. et al. (2021)</b>	Individual; 2	Students with SAS score $\geq 50$ (n=160); IG 15.7 (2.05), CG 15.9 (1.07) / 12-18; all genders (49.3%); non-clinical; community setting	SAS; PO	8	PI; N.A.	Intervention: 56.83 (10.96) Control: 60.81 (9.51)	Psychological counselling and outdoor exercise (and routine community health education) Outdoor exercise	Group; supervised; qualified (designed by sport experts)	Moderate intensity 65-73% max HR; 8; 1; 60 (psychological counselling) 8; 2; 50 (outdoor exercise)
<b>Zhang Y. et al. (2021)</b>	Individual; 2	Sedentary women (n=70); IG 22.61 (2.19), WL 22.83 (2.25) / 18-30;	STAI; state / trait; SO	9	PI; N.A. mid-treatment as well	Intervention -4.73 Control: -2.69 mean difference significant $p = .002$	Online HIIT plus health education HIIT; body-weight training,	online (ZOOM), exercise groups; supervised; qualified	high intensity RPE BORG Scale; 6; 2; 60 (HIIT), 6; 1; 60 (health education)

only female; non-  
clinical; online  
setting

cardiopulmonary  
training, muscular  
endurance training

*Note.* ASI = Anxiety Sensitivity Index; ASI-R = Anxiety Sensitivity Index Revised; BAI = Beck Anxiety Index; CBT = Cognitive Behavioural Therapy; CD = Cool Down; CG = Control Group; HADS = Hospital Anxiety Depression Scale; HADS-A = HADS anxiety subscale; HIG = High-intensity Group; HIIT = High Intensity Interval Training; HR = Heart Rate; HRR = Heart Rate Reserve; IG = Intervention Group; LIG = Low-intensity Group; N.A. = Not Applicable; PA = Physical Activity; PE = Physical Education; RPE BORG Scale = Rating of Perceived Exertion BORG Scale; PO = primary outcome; SO = secondary outcome; SAS = Self-rating Anxiety Scale; SAS-A = Social Anxiety Scale for Adolescents; STAI = State and Trait Anxiety Inventory; STAI-6 = State and Trait Anxiety Inventory (6 items); STAI-SF = State and Trait Anxiety Inventory Short Form; VO<sub>2</sub> = measure of the volume (V) of oxygen (O<sub>2</sub>) inhaling during exercise; VT = Ventilatory Threshold; W = Watt (power); WL = Waitlist; WU = Warm-up.