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Exercise as an Adjunctive Intervention for Anxiety Symptoms and Anxiety Disorders: A Narrative Review of Recent Evidence and Practical Implications

Wiktor Buczko, ORCID <https://orcid.org/0009-0003-4213-1172>

wiktorbuczko1@gmail.com

CRIDO Radiology and Diagnostic Imaging Center, Gliwice, Poland

Natalia Paszke, ORCID <https://orcid.org/0009-0008-1638-130X>

natalia.paszke21@gmail.com

Provincial Specialist Hospital No. 5 named after St. Barbara, Sosnowiec, Poland

Piotr Wiśniewski, ORCID <https://orcid.org/0009-0004-0805-4772>

wisniewskipiotr lukasz@gmail.com

Municipal Hospitals Complex in Chorzów, Chorzów, Poland

Jan Gajewski, ORCID <https://orcid.org/0009-0002-4761-0300>

j.gajewski99@gmail.com

Municipal Hospital in Zabrze, Zabrze, Poland

Grzegorz Machelski, ORCID <https://orcid.org/0009-0003-5341-8208>

grzegorzomachelski@gmail.com

Municipal Hospital in Zabrze, Zabrze, Poland

Marzena Mędrek, ORCID <https://orcid.org/0009-0004-6668-7447>

marzenamedrek@onet.eu

Municipal Hospitals Complex in Chorzów, Chorzów, Poland

Mariola Mika, ORCID <https://orcid.org/0009-0004-4642-1318>

mariolamika4@gmail.com

Municipal Hospitals Complex in Chorzów, Chorzów, Poland

Kacper Mąkosa, ORCID <https://orcid.org/0009-0001-3218-2676>

Kmakosa023@gmail.com

Ludwik Rydygier Specialist Hospital in Kraków, Kraków, Poland

Corresponding Author

Natalia Paszke, natalia.paszke21@gmail.com

Abstract

Background. Anxiety disorders are common mental health conditions associated with impairment, avoidance behaviour and sensitivity to physiological arousal. Although treatment relies mainly on psychotherapy and pharmacotherapy, exercise is increasingly considered supportive.

Aim. This review analyses exercise as an adjunctive intervention for anxiety disorders, with emphasis on aerobic exercise, resistance training, mind-body practices and exercise combined with cognitive behavioural therapy.

Material and methods. Literature from 2017–2026 was prioritized using PubMed, Scopus, Web of Science and Google Scholar. Reviews, meta-analyses, randomized controlled trials, guidelines and observational studies on exercise and anxiety symptoms in adults were included.

Results. Exercise may reduce anxiety symptoms, although effects depend on activity type, patient characteristics, supervision and adherence. Aerobic exercise appears most applicable

because it is accessible and adaptable. Exercise combined with cognitive behavioural therapy may support behavioural activation and exposure to bodily sensations, especially in panic symptoms or high anxiety sensitivity. Resistance training and mind-body exercise may be useful, although evidence is less consistent.

Conclusions. Exercise should not replace psychotherapy or pharmacotherapy but may serve as an adjunctive component of anxiety treatment. Further research should clarify optimal protocols, intensity, adherence and safety.

Key words: anxiety disorders, physical activity, exercise therapy, aerobic exercise, cognitive behavioural therapy, resistance training

1. Introduction

1.1. Overview

Anxiety disorders are not a single clinical entity, but a group of conditions in which excessive fear, persistent worry, avoidance and physiological arousal become disproportionate to the actual threat (Craske et al. 2017; Penninx et al. 2021). Generalized anxiety disorder, panic disorder, social anxiety disorder and specific phobias differ in clinical presentation, yet they often share a chronic or recurrent course and can substantially impair social, occupational and physical functioning (Penninx et al. 2021). Sleep problems, fatigue, somatic complaints and reduced participation in everyday activities are also common, which means that anxiety is rarely limited to psychological distress alone (Penninx et al. 2021). The public health relevance of anxiety disorders is considerable. Analyses from the Global Burden of Disease Study indicate that mental disorders remain among the leading contributors to disability worldwide, with anxiety disorders accounting for a substantial proportion of years lived with disability (GBD 2019 Mental Disorders Collaborators 2022). This burden is particularly important because many patients do not receive timely, specialized treatment, and even those who do may experience residual symptoms or relapse (Alonso et al. 2018).

Cognitive behavioural therapy and pharmacotherapy remain the main evidence-based treatment options. Current guidelines support CBT as a first-line psychological intervention, while selective serotonin reuptake inhibitors (SSRIs) and serotonin-noradrenaline reuptake inhibitors (SNRIs) are commonly recommended pharmacological options (Bandelow et al. 2022). Nevertheless, standard treatment does not fully address all practical barriers faced by patients. Limited access to psychotherapy, treatment discontinuation, fear of medication, comorbid somatic symptoms and low motivation may all complicate long-term recovery

(Alonso et al. 2018; Scholten et al. 2020). In this context, exercise has attracted increasing attention as a supportive intervention. Its potential value is not limited to biological mechanisms. Physical activity also provides structure, repeated exposure to bodily sensations, opportunities for behavioural activation and, in some settings, social interaction (Asmundson et al. 2013; Kandola et al. 2018). These aspects are clinically relevant because avoidance and fear of physiological arousal are central mechanisms in many anxiety presentations, especially panic symptoms and anxiety sensitivity (Kandola et al. 2018).

Recent reviews and meta-analyses suggest that exercise can reduce anxiety symptoms in adults with anxiety and stress-related disorders, although the evidence is heterogeneous and does not support one universal exercise prescription (Stubbs et al. 2017; Aylett et al. 2018; Ramos-Sanchez et al. 2021; Myśliwiec et al. 2025). Broader reviews of physical activity interventions also report benefits for anxiety, depression and psychological distress across different adult populations (Singh et al. 2023). Prospective evidence also suggests that physical activity may have preventive relevance. A meta-analysis of prospective cohort studies found that higher levels of physical activity were associated with a lower risk of incident anxiety, supporting the broader public health importance of movement-based strategies (Schuch et al. 2019). For this reason, exercise is best understood not as an alternative to established treatment, but as a possible adjunctive strategy that may be useful when adapted to the patient's symptoms, preferences and physical capacity.

In this review, physical activity is understood as any bodily movement that increases energy expenditure, whereas exercise refers to planned, structured and repeated activity performed to improve or maintain health or fitness (Caspersen et al. 1985; Bull et al. 2020). This distinction is important because some included studies evaluate structured exercise programmes, while others examine broader physical activity interventions.

1.2. Research Objective

The aim of this narrative review is to analyse the role of exercise as an adjunctive intervention in the management of anxiety disorders. Particular attention is given to aerobic exercise, resistance training, mind-body practices and exercise combined with cognitive behavioural therapy. The review also evaluates the clinical relevance, safety and practical applicability of exercise-based interventions from the perspective of sport science and mental health care.

1.3. Research Problems

Which forms of exercise are most commonly investigated as adjunctive interventions in individuals with anxiety symptoms or anxiety disorders?

How do different forms of exercise influence anxiety symptoms, avoidance behaviour, physiological arousal, adherence and psychological functioning?

Which exercise modalities appear most applicable in clinical, community and sport-related settings?

What are the main limitations and safety concerns associated with exercise interventions in patients with anxiety disorders?

2. Review materials and methods

2.1. Participants and Study Material

The study material consisted of scientific publications concerning adults with anxiety symptoms, diagnosed anxiety disorders or anxiety-related conditions. The review focused on studies evaluating exercise, physical activity or structured movement-based interventions as adjunctive strategies in mental health care.

Inclusion criteria comprised peer-reviewed publications addressing the effects, mechanisms, safety or practical implementation of exercise interventions in relation to anxiety symptoms or anxiety disorders. Priority was given to systematic reviews, meta-analyses, umbrella reviews, randomized controlled trials, clinical guidelines and large observational studies published between 2017 and 2026. Studies were excluded if they focused exclusively on children and adolescents, were not related to anxiety symptoms or anxiety disorders, lacked full-text availability, or represented non-peer-reviewed materials, case reports, conference abstracts or editorials.

2.2. Procedure and Data Collection

The search was performed in June 2026 and included publications published between 2017 and 2026. Older foundational publications were also included when necessary to define key concepts or explain clinically relevant mechanisms. A literature search was conducted using PubMed, Scopus, Web of Science and Google Scholar. The search strategy included combinations of the following terms: “anxiety disorders”, “anxiety symptoms”, “exercise”, “physical activity”, “aerobic exercise”, “resistance training”, “mind-body exercise”, “yoga”, “tai chi”, “cognitive behavioural therapy”, “CBT”, “adjunctive therapy”, “mental health”, “sport”, “lifestyle psychiatry” and “public health”. The collected literature was organised according to the type of intervention and clinical relevance. The analysis focused on aerobic exercise, resistance training, mind-body exercise, exercise combined with cognitive behavioural therapy, population-specific findings, adherence, safety and methodological limitations. Reference lists of selected publications were also screened to identify additional

relevant studies. Due to the narrative character of the review, no statistical synthesis or formal risk-of-bias assessment was performed. Instead, the findings were interpreted descriptively and comparatively, with particular attention to their clinical relevance, safety and applicability in sport science and mental health practice. As this was a narrative review, the search was not intended to be exhaustive and no PRISMA flow diagram was prepared; studies were selected purposively according to relevance, level of evidence and applicability to sport science and mental health practice.

3. Review results

Selected recent evidence on exercise interventions and anxiety symptoms indicates that the clinical relevance of physical activity depends on the type of exercise, intervention intensity, supervision, baseline anxiety severity and patient adherence (Kandola et al. 2018; Singh et al. 2023). The findings are presented according to the main forms of exercise discussed in the literature: aerobic exercise, resistance training, mind-body exercise and exercise combined with cognitive behavioural therapy.

3.1. Aerobic Exercise

Aerobic exercise appears to be among the most frequently investigated and practically applicable forms of physical activity in relation to anxiety symptoms (Kandola et al. 2018; Stonerock et al. 2024). It includes activities such as walking, brisk walking, cycling, swimming and jogging, usually performed rhythmically and involving large muscle groups (Bull et al. 2020). Its usefulness in anxiety treatment is related not only to possible biological effects, but also to its accessibility, low cost and easy adjustment to the patient's physical capacity (Singh et al. 2023; Stonerock et al. 2024). A systematic review and meta-analysis including 15 studies and 675 participants found that aerobic exercise significantly reduced anxiety compared with waiting-list control conditions, with an effect size of -0.41 (95% CI: -0.70 to -0.12) (Aylett et al. 2018). The same review suggested that high-intensity exercise programmes may produce stronger effects than low-intensity programmes, although this conclusion was limited by the small number of studies and heterogeneity of intervention protocols (Aylett et al. 2018).

The potential anxiolytic mechanisms of aerobic exercise are multidimensional. Regular aerobic activity may improve autonomic regulation, stress-response adaptation, sleep quality and cardiorespiratory fitness (Kandola et al. 2018; Vancampfort et al. 2025). From a psychological perspective, it may also reduce avoidance of bodily sensations (Asmundson et al. 2013). This may be particularly relevant in patients with panic symptoms or high anxiety

sensitivity, in whom increased heart rate, sweating or faster breathing may initially be interpreted as dangerous (Kandola et al. 2018).

In practical terms, low- to moderate-intensity aerobic exercise may be the most realistic starting point for many patients with anxiety symptoms, especially those who are physically inactive or fearful of exertion. General recommendations of 150–300 minutes of moderate-intensity physical activity per week may be treated as a long-term target rather than an initial requirement (Bull et al. 2020; World Health Organization 2024).

3.2. Resistance Training

Resistance training is less extensively studied than aerobic exercise, but it may have specific relevance for selected patients with anxiety symptoms (Stonerock et al. 2024). Strength-based activity may improve perceived control, physical self-perception, physical self-efficacy and tolerance of bodily sensations (Gordon et al. 2017; Stonerock et al. 2024; Lewicka et al. 2025). These factors are clinically meaningful because anxiety disorders are often associated with avoidance, low confidence and heightened monitoring of internal bodily states (Craske et al. 2017; Penninx et al. 2021). Current evidence does not allow firm conclusions regarding the optimal dose, frequency or intensity of resistance training for anxiety disorders. However, a meta-analysis and meta-regression of randomized controlled trials found that resistance exercise training significantly reduced anxiety symptoms in both healthy participants and individuals with physical or mental illness (Gordon et al. 2017). In this analysis, 31 effects from 16 studies involving 922 participants showed a significant reduction in anxiety symptoms following resistance exercise training. The effect was larger among healthy participants than among individuals with physical or mental illness, although improvements were observed in both groups. Importantly, the anxiolytic effects were not significantly moderated by sex, age, programme length, session duration, training frequency or intensity, suggesting that different resistance training formats may have potential clinical relevance. Broader reviews of physical activity interventions also suggest that exercise can reduce symptoms of anxiety, depression and psychological distress, although many included studies do not isolate resistance training as a separate intervention or focus specifically on formally diagnosed anxiety disorders (Singh et al. 2023; Munro et al. 2026).

Despite these limitations, resistance training may be a useful option for patients who do not prefer aerobic exercise or who respond better to structured, goal-oriented activity. Its potential psychological value may result from gradual exposure to physical effort, improved strength and greater perceived control over bodily functioning (O'Connor et al. 2010; Stonerock et al. 2024). However, because the evidence base remains less developed than for aerobic exercise,

resistance training should currently be considered a complementary rather than primary exercise modality in the management of anxiety disorders.

3.3. Mind-Body Exercise

Mind-body exercise includes yoga, tai chi, qigong and similar practices combining movement, breathing, attentional control and relaxation (Cramer et al. 2018; Lin et al. 2024). These interventions may be particularly relevant for patients with elevated muscle tension, stress-related symptoms, sleep difficulties or preference for lower-intensity activity (Lin et al. 2024). Their clinical value may result from the integration of physical movement with self-regulation, interoceptive awareness and relaxation-based mechanisms (Cramer et al. 2018; Lin et al. 2024). Systematic reviews and meta-analyses suggest that mind-body exercise can reduce anxiety symptoms, although the available interventions differ substantially in structure, intensity, session duration and therapeutic components (Cramer et al. 2018; Dong et al. 2024; Lin et al. 2024). Among mind-body interventions, yoga has been most frequently examined in relation to anxiety symptoms. A systematic review and meta-analysis of randomized controlled trials (Cramer et al. 2018) included eight RCTs with 319 participants and found that yoga produced small short-term reductions in anxiety compared with no treatment and larger effects compared with active comparators. Small improvements in depressive symptoms were also reported. These findings suggest that yoga may be a useful supportive intervention for individuals with elevated anxiety levels, especially when patients prefer a gentle and structured form of physical activity.

However, the evidence should be interpreted with caution. Importantly, no clear effects were found in studies limited to patients with anxiety disorders diagnosed according to DSM criteria (Cramer et al. 2018). This distinction is clinically relevant because reductions in anxiety symptoms in non-diagnosed or mixed samples cannot be directly generalized to patients with generalized anxiety disorder, panic disorder or social anxiety disorder. Additionally, the authors emphasized limitations related to study quality and heterogeneity (Cramer et al. 2018). This makes it difficult to determine whether observed benefits result primarily from movement, breathing techniques, relaxation, mindfulness, social context or a combination of these factors.

Overall, mind-body exercise may be especially useful when high-intensity or performance-oriented activity is poorly tolerated. For some patients, yoga or tai chi may provide a gentler and more acceptable entry point into movement-based intervention than vigorous aerobic or strength training (Cramer et al. 2018; Dong et al. 2024; Lin et al. 2024). However, current

evidence remains insufficient to define disorder-specific protocols for generalized anxiety disorder, panic disorder or social anxiety disorder.

3.4. Exercise Combined with Cognitive Behavioural Therapy

Exercise combined with cognitive behavioural therapy represents a clinically plausible intervention model. One clinically relevant mechanism may be controlled exposure to exercise-induced physiological arousal. When exercise is introduced gradually and accompanied by psychoeducation, bodily sensations occurring during physical activity, such as increased heart rate, sweating and faster breathing, may be reinterpreted as normal and safe physiological responses. This may reduce fear of bodily sensations and support functional recovery in selected patients, particularly those with panic symptoms or high anxiety sensitivity (Broman-Fulks et al. 2004; Asmundson et al. 2013; Kandola et al. 2018).

CBT remains one of the main evidence-based treatments for anxiety disorders (Bandelow et al. 2022), while exercise may support behavioural activation, self-efficacy and repeated exposure to interoceptive cues (Kandola et al. 2018; Frederiksen et al. 2021). This combination may be particularly relevant in patients with panic symptoms or high anxiety sensitivity, where physiological sensations such as increased heart rate, faster breathing and sweating are often misinterpreted as threatening (Kandola et al. 2018). A systematic review evaluating physical exercise as an add-on treatment to CBT concluded that this approach appears feasible and potentially useful, but the evidence remains limited (Frederiksen et al. 2021). In this review, six of eight included studies reported findings in favour of adding physical exercise to CBT, although two studies did not demonstrate additional benefits. The authors suggested that add-on exercise may be most promising in clinical populations when performed regularly several times per week across several weeks. Available studies do not yet define the optimal timing, frequency, intensity or supervision of exercise when combined with psychological treatment. Therefore, exercise should not be presented as a replacement for CBT, but rather as a possible supportive component that may strengthen behavioural activation, interoceptive exposure and self-efficacy mechanisms. The heterogeneity of study designs, anxiety diagnoses, exercise protocols and outcome measures prevents firm conclusions regarding standardised implementation. Future studies should clarify whether exercise is more effective when used as regular adjunctive training, acute exercise around exposure sessions or behavioural experiments targeting fear of bodily sensations.

3.5. Population-Specific Findings

The effects and acceptability of exercise interventions may vary across populations. In older adults, anxiety symptoms often coexist with chronic disease, reduced mobility, social

isolation and functional decline, which may influence both exercise tolerance and adherence (Goodarzi et al. 2024). A meta-analysis of 11 randomized controlled trials including 770 older participants found that physical activity significantly reduced anxiety symptoms (SMD = -0.60 , 95% CI: -0.88 to -0.32) (Goodarzi et al. 2024). However, moderate heterogeneity was reported ($I^2 = 67\%$), and shorter interventions lasting less than 10 weeks did not show statistically significant improvement (Goodarzi et al. 2024). These findings suggest that exercise programmes for older adults may require longer duration, gradual progression and adaptation to functional capacity.

Exercise interventions may also be relevant in younger adults and university settings, where anxiety symptoms are often reported and may be related to academic stress, lifestyle instability and reduced regular physical activity (Lin and Gao 2023). A meta-analysis of nine studies found that physical exercise significantly reduced anxiety symptoms in college students (SMD = -0.55 , 95% CI: -0.76 to -0.35 , $p < 0.001$) (Lin and Gao 2023). Subgroup analyses suggested beneficial effects for both aerobic exercise (SMD = -0.39 , 95% CI: -0.74 to -0.04) and yoga (SMD = -0.76 , 95% CI: -1.14 to -0.39) (Lin and Gao 2023). These findings support the potential role of campus-based and sport-oriented mental health programmes, particularly when interventions are accessible, low-cost and matched to student preferences. However, results from student samples should not be directly generalized to all patients with clinically diagnosed anxiety disorders.

3.6. Practical Implementation, Safety and Limitations

Across different forms of exercise, the reviewed evidence does not support one universal prescription for all anxiety disorders. Exercise programmes should be adapted to symptom severity, physical fitness, comorbidities, patient preference, fear of bodily sensations and access to supervision (Kandola et al. 2018; Stonerock et al. 2024; Vancampfort et al. 2025). In many patients, short low- or moderate-intensity sessions may be more realistic than immediate implementation of general population activity targets (Bull et al. 2020; World Health Organization 2024).

Adherence remains a key practical challenge. Anxiety-related avoidance, fatigue, low confidence, fear of negative evaluation, social anxiety and somatic concerns may reduce participation (Kandola et al. 2018; Penninx et al. 2021). Home-based activity may be more acceptable for some patients, whereas supervised or group-based programmes may provide structure and accountability for others (Stonerock et al. 2024; Vancampfort et al. 2025). From a sport science perspective, cooperation between physicians, physiotherapists, exercise

specialists and mental health professionals may help translate general recommendations into realistic and individualised exercise plans (Vancampfort et al. 2025).

Recent critical reviews emphasize that the clinical usefulness of exercise for anxiety depends not only on efficacy, but also on acceptability, supervision and realistic implementation in routine care (Stonerock et al. 2024; Vancampfort et al. 2025). This is particularly important because anxiety-related avoidance and fear of bodily sensations may reduce participation even when exercise is theoretically recommended (Asmundson et al. 2013; Kandola et al. 2018).

Exercise is generally safe for most adults with mild to moderate anxiety symptoms, but clinical context should guide implementation. Medical consultation or preparticipation screening may be appropriate before structured or vigorous exercise in patients with known cardiovascular, metabolic, renal or respiratory disease, and patients with severe psychiatric symptoms or other significant medical conditions (Riebe et al. 2015; Bull et al. 2020; World Health Organization 2024).

The current evidence also has methodological limitations. Many studies assess anxiety symptoms rather than formally diagnosed anxiety disorders, which limits direct clinical interpretation (Aylett et al. 2018; Cramer et al. 2018; Stonerock et al. 2024). Intervention protocols differ in type, intensity, duration, supervision and adherence, and follow-up periods are often short (Frederiksen et al. 2021; Ramos-Sanchez et al. 2021). It remains unclear whether different anxiety disorders require different exercise protocols or whether specific modalities are more suitable for particular clinical profiles. Overall, exercise should be understood as an adjunctive and individualised intervention that may support symptom reduction and functional recovery, but should not replace psychotherapy or pharmacotherapy when these are clinically indicated (Bandelow et al. 2022; Stonerock et al. 2024).

To facilitate comparison between exercise modalities, Table 1 summarizes the main evidence, potential clinical relevance and key limitations of the exercise-based interventions discussed in this review. The table is intended to support practical interpretation rather than provide a formal systematic ranking of effectiveness.

Table 1. Summary of exercise modalities as adjunctive interventions for anxiety symptoms and anxiety disorders.

Exercise modality	Main evidence discussed in this review	Potential clinical relevance	Main limitations and cautions
Aerobic exercise	Most consistently supported modality; may reduce anxiety symptoms, especially compared with inactive controls (Aylett et al. 2018; Ramos-Sanchez et al. 2021; Stonerock et al. 2024).	Accessible, low-cost and adaptable to different fitness levels.	

May be especially useful as an initial adjunctive intervention when introduced gradually.

Optimal dose, intensity and duration remain unclear. Physiological arousal may initially increase anxiety in patients with panic symptoms or high anxiety sensitivity.

Resistance training Evidence suggests reductions in anxiety symptoms, but the literature is less developed than for aerobic exercise (Gordon et al. 2017; Stonerock et al. 2024; Lewicka et al. 2025).

May suit patients who prefer structured, goal-oriented activity. May support self-efficacy, perceived control and tolerance of effort. Anxiety-specific trials are limited. Optimal training prescription is not clearly established.

Mind-body exercise Yoga, tai chi and qigong may reduce anxiety symptoms, but findings are heterogeneous (Cramer et al. 2018; Dong et al. 2024; Lin et al. 2024). May be acceptable for patients with somatic tension, sleep problems or preference for lower-intensity movement.

Effects of movement, breathing, relaxation, mindfulness and social context are difficult to separate.

Exercise combined with CBT Add-on exercise may support CBT, especially when used regularly over several weeks (Kandola et al. 2018; Frederiksen et al. 2021). May strengthen behavioural activation, self-efficacy and exposure to bodily sensations. Evidence remains limited. Optimal timing, frequency, intensity and supervision are unclear.

Figure 1 shows proposed mechanisms and practical determinants of exercise as an adjunctive intervention for anxiety symptoms and anxiety disorders. Exercise may influence anxiety through biological mechanisms, such as autonomic regulation, stress-response adaptation and improved sleep, as well as psychological mechanisms, including behavioural activation, self-efficacy, exposure to bodily sensations and reduced fear of physiological arousal. The clinical usefulness of exercise is also influenced by practical determinants such as supervision, adherence, patient preference, physical capacity and comorbidities. These pathways should be interpreted as proposed mechanisms rather than confirmed causal relationships.

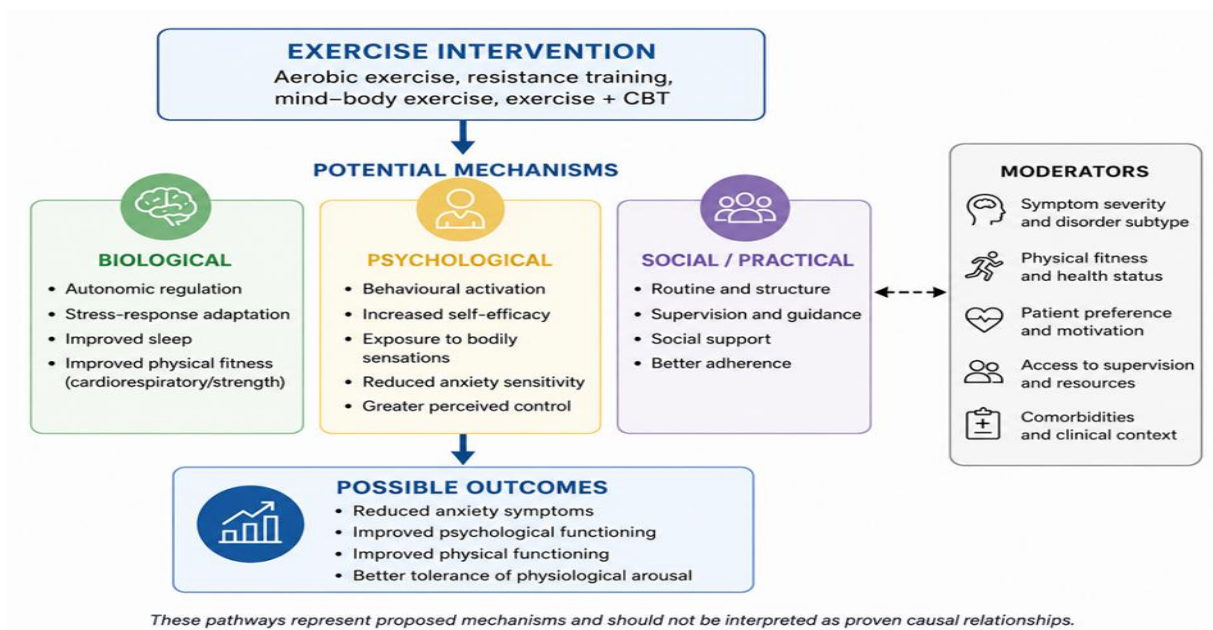


Figure 1. Proposed mechanisms and practical determinants of exercise as an adjunctive intervention for anxiety symptoms and anxiety disorders

4. Discussion

The reviewed literature indicates that exercise may support the management of anxiety symptoms, but its effects depend on the type of activity, the patient's clinical profile, supervision and adherence (Kandola et al. 2018; Ramos-Sanchez et al. 2021; Stonerock et al. 2024). Aerobic exercise currently has the clearest practical support because it is accessible, low-cost and easy to adapt to different levels of physical fitness (Aylett et al. 2018; Bull et al. 2020; Ramos-Sanchez et al. 2021; World Health Organization 2024). However, exercise should be understood as an adjunctive strategy, not as a replacement for psychotherapy or pharmacotherapy in clinically significant anxiety disorders (Bandelow et al. 2022).

A clinically important issue is patients' reactions to physiological arousal. Increased heart rate, sweating and faster breathing may initially intensify anxiety in individuals with panic symptoms or high anxiety sensitivity. When introduced gradually and supported by psychoeducation, exercise may help patients reinterpret these sensations as safe physiological responses rather than signs of danger (Asmundson et al. 2013; Kandola et al. 2018). This mechanism is especially relevant for patients whose anxiety is maintained by fear of bodily sensations, although it should not be generalized to all anxiety disorders.

Resistance training and mind-body exercise may be useful in selected patients, although the evidence is less consistent than for aerobic activity. Strength-based exercise may improve perceived control, physical self-efficacy and tolerance of bodily sensations, whereas yoga, tai

chi and similar practices may be more acceptable for individuals with somatic tension, sleep difficulties or preference for lower-intensity movement (Gordon et al. 2017; Cramer et al. 2018; Dong et al. 2024; Lin et al. 2024). However, these modalities should currently be viewed as complementary options rather than clearly established stand-alone exercise prescriptions for anxiety disorders.

The main limitation of the current literature is that many studies assess anxiety symptoms rather than formally diagnosed anxiety disorders. This restricts direct generalization to patients with generalized anxiety disorder, panic disorder or social anxiety disorder (Cramer et al. 2018; Stonerock et al. 2024). Recent critical reviews also emphasize that evidence for exercise in anxiety remains promising but heterogeneous, and that implementation barriers should be considered before translating findings into routine care (Stonerock et al. 2024; Vancampfort et al. 2025). Future research should focus on disorder-specific protocols, long-term adherence, safety and practical implementation in clinical, community and sport-related settings (Stubbs et al. 2017; Singh et al. 2023; Vancampfort et al. 2025).

5. Conclusions

This narrative review indicates that exercise may reduce anxiety symptoms and support psychological functioning when used as an adjunctive component of care. Its clinical value depends on activity type, symptom severity, patient preference, supervision, physical capacity and long-term adherence. Exercise should not be regarded as a stand-alone treatment for clinically significant anxiety disorders, but as a supportive strategy complementing psychotherapy, pharmacotherapy and broader lifestyle-based interventions (Bandelow et al. 2022).

Among the reviewed modalities, aerobic exercise has the clearest practical applicability. Walking, cycling, swimming and other moderate-intensity activities are accessible, low-cost and adaptable to different fitness levels (Bull et al. 2020; World Health Organization 2024). However, the optimal dose, intensity and duration remain unclear, and gradual progression is particularly important in patients with panic symptoms or high anxiety sensitivity, who may initially misinterpret exercise-induced physiological arousal as threatening (Aylett et al. 2018; Kandola et al. 2018; Ramos-Sanchez et al. 2021).

Exercise combined with cognitive behavioural therapy appears promising, especially when it supports behavioural activation, self-efficacy and controlled exposure to bodily sensations, but current evidence is insufficient to define standardised CBT-exercise protocols (Frederiksen et al. 2021). Resistance training and mind-body exercise may also be beneficial in selected patients, particularly when they improve perceived control, somatic tension or

acceptability of movement-based interventions, although evidence for these modalities remains less consistent than for aerobic exercise (Gordon et al. 2017; Cramer et al. 2018; Lin et al. 2024).

Overall, exercise interventions should be individualised and implemented with clinical caution. Further research should focus on disorder-specific protocols, optimal exercise prescription, safety, supervision and strategies improving long-term adherence. From a sport science and public health perspective, exercise may represent a relatively inexpensive and scalable adjunctive strategy applicable in clinical, community, university and sport-related settings (Singh et al. 2023; Vancampfort et al. 2025).

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Authors' Contributions

Conceptualization: Natalia Paszke, Wiktor Buczko, Jan Gajewski.

Methodology: Piotr Wiśniewski, Marzena Mędrek.

Formal analysis: Marzena Mędrek, Mariola Mika.

Investigation: Grzegorz Machelski.

Writing - original draft preparation: Natalia Paszke, Piotr Wiśniewski.

Writing - review and editing: Kacper Mąkosa, Wiktor Buczko, Grzegorz Machelski.

Supervision: Kacper Mąkosa, Jan Gajewski, Piotr Wiśniewski.

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The authors report that there are no conflicts of interest.

Declaration of the use of generative AI and AI-assisted technologies in the writing process

During the preparation of this manuscript, OpenAI ChatGPT was used to support language editing, stylistic refinement and improvement of clarity. The authors reviewed, verified and edited all AI-assisted outputs and take full responsibility for the scientific content, interpretation of findings and final version of the manuscript.

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