



Running as a Psychoeducational Intervention for Reducing Anxiety in Adolescents

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Abstract

Background. Adolescence is a developmental stage characterised by increased vulnerability to anxiety and emotional dysregulation. Physical activity, particularly aerobic exercise such as running, has been identified as a potentially effective and accessible strategy for promoting mental health; however, evidence from structured and inclusive school-based interventions remains limited, especially for adolescents with Special Educational Needs (SEN) and Specific Learning Disorders (SLD).

Objectives. This study aimed to evaluate the effectiveness of a structured running programme in reducing state and trait anxiety among adolescents, and to examine its impact on self-efficacy and emotional well-being, including in students with SEN/SLD.

Materials and Methods. A mixed-methods experimental design with pre-test (T0) and post-test (T1) measures was adopted. The sample consisted of 60 adolescents (aged 13–17 years), divided into an experimental group (n = 30) and a control group (n = 30). The experimental group participated in an 8-week running programme (three sessions per week, 30–40 minutes per session, moderate intensity), while the control group followed regular school activities. Quantitative data were collected using the STAI-C for state and trait anxiety, a self-efficacy scale, and measures of emotional well-being, and were analysed using paired t-tests and repeated-measures ANOVA. Qualitative data were collected through journals, interviews, and guided reflections, and analysed using thematic analysis.

Results. The experimental group showed significant reductions in state anxiety (T0: M = 42.6, SD = 6.1; T1: M = 35.2, SD = 5.4; $t_{(29)} = 6.84$, $p < .001$, $d = 1.25$) and trait anxiety (T0: M = 44.1, SD = 5.8; T1: M = 38.7, SD = 5.2; $t_{(29)} = 5.12$, $p < .001$, $d = 0.94$), while no marked changes were observed in the control group ($p > .05$). Repeated-measures ANOVA revealed significant group \times time interactions for state anxiety ($F_{(1,58)} = 21.47$, $p < .001$, $\eta^2_p = .27$) and trait anxiety ($F_{(1,58)} = 16.83$, $p < .001$, $\eta^2_p = .22$). Self-efficacy increased notably in the experimental group (T0: M = 27.4, SD = 4.3; T1: M = 32.1, SD = 4.0; $t_{(29)} = -5.76$, $p < .001$, $d = 1.05$), with no significant change in the control group. Emotional well-being also improved substantially ($F_{(1,58)} = 14.62$, $p < .001$, $\eta^2_p = .20$). Comparable effects were observed in adolescents with and without SEN/SLD. Qualitative findings supported these results, highlighting improvements in emotional regulation, body awareness, self-efficacy, and social connectedness.

Conclusions. Under structured conditions involving moderate intensity, regular frequency, and psychoeducational support (e.g., mindful running and goal setting), running programmes can significantly reduce anxiety and enhance psychological well-being in adolescents. The intervention appears particularly effective for individuals with higher baseline anxiety and is adaptable to inclusive educational contexts, including students with SEN/SLD. These findings support the use of structured running as a scalable and evidence-based strategy for promoting adolescent mental health in school settings.

Keywords: social science education, inclusion, SEN/SLD, blended approach, innovative teaching.

Introduction

Adolescence is a particularly sensitive developmental stage from a neuropsychological perspective, characterized

by profound cognitive, emotional, and social changes. The asynchronous development between cognitive control systems and limbic systems involved in emotional and motivational responses contributes to increased reactivity to stress and heightened vulnerability to internalizing disorders, including anxiety (Steinberg, 2014). During this period, environmental demands—particularly those

related to the school setting, family expectations, and peer relationship dynamics—can represent powerful risk factors for psychological well-being, especially in the absence of adequate coping resources (Compas et al., 2017).

Within this framework, the health promotion approach emphasizes the importance of preventive and universal interventions capable of addressing risk factors early on and strengthening individual and contextual resources. According to the bio-psycho-social model, mental health cannot be understood as merely the absence of symptoms, but as a dynamic state of well-being involving emotional, cognitive, behavioral, and relational dimensions (Engel, 1977). From this perspective, physical activity is not merely a healthy behavior from a physical standpoint, but a powerful educational and psychological tool capable of fostering processes of self-regulation, mind-body integration, and the development of transferable skills (WHO, 2018).

Recent literature highlights that physical activity-based interventions are particularly effective when designed in an intentional and theoretically grounded manner, integrating motivational, relational, and reflective components (Lubans et al., 2016). In the field of sports psychology, various theoretical models—including Self-Determination Theory (Deci & Ryan, 2000) and Social Cognitive Theory (Bandura, 1997)—highlight the central role of motor experience in fostering a sense of competence, autonomy, and self-efficacy, factors closely associated with reduced anxiety levels and improved psychological well-being. In particular, the experience of gradual success, the sense of control over one's own body, and the ability to set realistic and personalized goals are key elements in countering the feelings of helplessness and worry typical of adolescent anxiety.

Compared to other forms of physical activity, running has unique characteristics that make it particularly well-suited for preventive and inclusive interventions. It requires minimal equipment, can be practiced in various settings (school, extracurricular, natural environments), allows for a wide range of intensity levels, and fosters an experiential dimension that is easily adaptable to individual differences. Empirical studies indicate that rhythmic and cyclical aerobic activities, such as running, facilitate emotional regulation and reduce physiological arousal, contributing to a subjective perception of calm and control (Ekkekakis et al., 2011). Furthermore, the repetitiveness of the motor movement and the focus on bodily experience can promote processes of mindful attention, with positive effects on the management of anxious and ruminative thoughts.

From a neuropsychological perspective, numerous findings support the hypothesis that regular aerobic exercise induces functional and structural changes in the brain circuits involved in the regulation of stress and emotions. In particular, it has been observed that physical activity can contribute to a reduction in the amygdala's reactivity to stressful stimuli and to an enhancement of the control functions exerted by the prefrontal cortex, with beneficial effects on emotional regulation (Erickson et al., 2019). These mechanisms are particularly relevant during adolescence, a period when these circuits are still maturing and are therefore more plastic and sensitive to environmental stimuli.

Another point of interest concerns the psychosocial dimension of running when practiced in structured and guided settings. Participation in physical activity programs

can foster a sense of belonging, peer support, and the quality of relationships—elements that play a protective role against anxiety and emotional distress (Bailey et al., 2013). Even when practiced primarily as an individual activity, running can take on relational and symbolic significance, becoming a space for self-exploration, emotional expression, and identity formation— aspects central to the adolescent development process.

The focus on the inclusion of adolescents with Special Educational Needs and Specific Learning Disorders addresses a growing need for equity in health promotion initiatives. The literature highlights how students with SLDs may experience higher levels of academic and social anxiety, often related to repeated experiences of failure, stigmatization, or a perception of inadequacy (Nelson & Harwood, 2011). In this sense, interventions centered on physical activity and the body can offer an alternative channel for self-expression and skill development, reducing the burden of cognitive and linguistic demands and fostering experiences of success not mediated by academic performance.

Despite the extensive literature supporting the benefits of physical activity on mental health, some critical issues still emerge. First, many studies employ observational designs or short-term interventions, limiting the ability to draw robust causal conclusions. Second, the number of studies adopting a mixed-methods approach—capable of integrating standardized quantitative data with qualitative analysis of adolescents' subjective experiences—remains limited. Finally, few studies explicitly include educationally heterogeneous samples, systematically considering the presence of SEN/SLD as a relevant variable.

In light of these gaps, it appears necessary to develop experimental studies that evaluate the effectiveness of structured running interventions not only in terms of reducing anxiety symptoms but also with respect to the underlying psychological processes and the participants' lived experiences. The adoption of a qualitative-quantitative approach allows for capturing the complexity of the phenomenon, integrating the objective measurement of changes with an understanding of the meaning attributed to the motor experience by the adolescents themselves.

This study fits within this theoretical and applied framework, aiming to contribute to the literature on sports psychology and health promotion through the experimental evaluation of a structured, inclusive, and well-being-oriented running program targeting a sample of adolescents with and without SEN/SLD. The objective is to provide empirical evidence to support the implementation of physical activity-based interventions in school and preventive settings, promoting running as an educational and emotional regulation tool. The study aims to:

1. Evaluate the effectiveness of a structured running program in reducing anxiety levels among adolescents.
2. Analyze the differences between the experimental group and the control group.
3. Explore, using qualitative methods, adolescents' subjective perceptions regarding emotional well-being, self-efficacy, and anxiety management.
4. Verify the feasibility and effectiveness of the intervention, including among adolescents with special educational needs (SEN) or specific learning disabilities (SLD).

Materials and methods

Study Design

This study employs a controlled experimental design with pre-test and post-test measures, integrating quantitative and qualitative approaches using a mixed-methods methodology. This methodological choice addresses the need to capture not only measurable changes in anxiety levels and related psychological variables, but also to explore in depth the subjective experiences of adolescents during the intervention, in line with the latest findings in sports psychology and health promotion research. The design includes:

- an experimental group, which underwent a structured running program;
- a control group, which did not participate in the intervention and followed normal school activities.

Participants were assigned to groups based on balance by age, gender, and presence of SEN/SLD, in order to reduce potential selection biases and ensure comparability between groups. Both groups were assessed at the same time points (T0 = pre-test; T1 = post-test), allowing for an analysis of intra-group and inter-group variations. The integration of quantitative and qualitative data follows a parallel convergent model, in which the two datasets are collected over the same time period, analyzed separately, and subsequently integrated to provide a comprehensive interpretation of the results.

Participants

The sample consists of 60 adolescents (aged 13 to 17; $M = 15.1$; $SD = 1.2$), recruited from middle and high schools located in urban and suburban areas. Participants were selected in collaboration with the participating schools through a project presentation aimed at students, families, and teachers. The sample was divided into two equivalent groups:

- Experimental group ($n = 30$)
 - 20 students without Special Educational Needs or Specific Learning Disorders.
 - 10 students with certified SEN/SLD (specifically, specific learning disorders and non-intellectual special educational needs).
- Control group ($n = 30$)
 - 20 students without SEN/SLD.
 - 10 students with certified SEN/SLD.

The intentional inclusion of students with SEN/SLD in both groups meets a criterion of inclusivity and representativeness, allowing for the evaluation of the intervention's effectiveness even within a population that is potentially more vulnerable from an emotional and academic standpoint.

Inclusion criteria

The study included adolescents who met the following criteria:

- aged between 13 and 17 years at the start of the study;
- regular school attendance at their school;
- written informed consent from parents or legal guardians and informed consent from the minor;

- medical fitness to engage in non-competitive aerobic physical activity;
- willingness to participate throughout the entire intervention period and in the pre- and post-intervention assessment phases.

Exclusion criteria:

The following adolescents were excluded from the study:

- severe psychiatric disorders in the acute phase (e.g., psychotic disorders, severe mood disorders that had not stabilized);
- ongoing pharmacological treatments that could significantly influence mood or the response to stress;
- participation in intense competitive sports, defined as more than 5 hours per week, in order to avoid a confounding effect related to high levels of prior training;
- medical conditions incompatible with running.

Educational intervention

After the project was approved by school authorities and informed consent was obtained, participants completed the pre-test phase (T0), during which quantitative assessments were administered and sociodemographic data were collected. Subsequently, the experimental group participated in an 8-week structured running program, while the control group continued with their usual school activities without receiving any additional interventions. At the end of the intervention, both groups completed the post-test phase (T1), using the same quantitative instruments administered during the pre-test phase. Concurrently, qualitative data were collected exclusively from the experimental group. The experimental group participated in a structured running program lasting a total of 8 weeks, designed with preventive and psychoeducational goals, in line with the evidence in the literature indicating that short- to medium-term physical activity interventions (6–12 weeks) can produce significant effects on reducing anxiety symptoms in adolescents (Biddle et al., 2019; Lubans et al., 2016). The choice of an eight-week timeframe addresses the need to ensure sufficient exposure to physical activity while maintaining high adherence and sustainability of the intervention within the school setting. The program included three weekly sessions, in accordance with international recommendations on physical activity for children and adolescents, which indicate a minimum frequency of regular aerobic activity for the maintenance and promotion of mental health (World Health Organization [WHO], 2020). Each session lasted between 30 and 40 minutes, consistent with studies showing that moderate-intensity aerobic exercise sessions lasting longer than 20 minutes are associated with acute and chronic improvements in mood and a reduction in state anxiety levels (Ekkekakis et al., 2011). The intensity of the activity was maintained at a moderate level, defined as a subjective perception of exertion ranging from "light" to "somewhat strenuous," in order to avoid excessive stress responses that could counteract the anxiolytic effects of exercise, particularly in untrained adolescents (Dishman et al., 2006). The intensity was tailored to the participants' individual characteristics, with particular attention given to

students with special educational needs (SEN) and learning disabilities (LD), with a focus on personalization and inclusion. Each running session was structured into three main phases. The initial warm-up phase (approximately 10 minutes) included joint mobility exercises and body activation, with the goal of preparing the musculoskeletal system for exertion and facilitating a gradual transition to aerobic activity. The central phase consisted of continuous or interval running exercises, tailored to the group's level and individual abilities. The final cool-down phase included light stretching and controlled breathing exercises, designed to facilitate a gradual return to a state of physiological calm. Innovative strategies derived from sports psychology and emotional regulation practices were integrated into the intervention's structure, with the aim of enhancing the impact of physical activity on psychological well-being. In particular, mindful running was introduced, encouraging participants to focus their attention on their breathing, stride rhythm, and bodily sensations. This approach is based on evidence linking body awareness and mindfulness to a reduction in ruminative thoughts and anxiety levels (Mehling et al., 2011), and is particularly suitable during adolescence to promote mind-body integration. Another central element of the intervention was personalized goal setting, through which each participant was supported in defining realistic and individualized goals (e.g., maintaining a run for a specific duration or improving the perception of comfort during the activity). The use of goal setting is widely supported by the sports psychology literature, which highlights its effectiveness in promoting motivation, self-efficacy, and persistence in physical activity (Locke & Latham, 2002). In particular, the progressive achievement of personal goals was considered a key factor in counteracting feelings of insecurity and worry, which are common among adolescents with high levels of anxiety. At the end of each session, a brief guided reflection was held, during which participants were invited to share, either verbally or in writing, the emotional and physical sensations they had experienced during the activity. This practice is consistent with reflective approaches in education and sports, which emphasize that verbalizing experiences fosters emotional awareness and the processing of lived experiences, thereby reinforcing the effect of mental health promotion interventions (Schon, 1983; Bailey et al., 2013). The control group did not participate in any structured intervention during the study period and continued with normal school activities. This methodological choice allows any observed changes in the experimental group to be attributed to the effect of the running intervention, reducing the influence of external or developmental factors. Overall, the procedure was designed to ensure theoretical consistency, replicability, and sustainability, with particular attention to inclusivity and the psychological well-being of participants. The integration of physical activity, body awareness, and guided reflection addresses the need to move beyond an exclusively performance-oriented approach to sport, highlighting running as an educational tool and a means of emotional regulation during adolescence.

Data Analysis

The data analysis was conducted using an integrated approach, in line with the study's mixed-methods design,

involving statistical analysis of the quantitative data and a systematic qualitative analysis of the narrative materials collected from the experimental group.

Quantitative data were analyzed using specialized statistical software. In the first phase, descriptive statistics (mean, standard deviation, range) were calculated for all variables under study in order to describe the characteristics of the sample and verify the distribution of scores across the different experimental conditions. To assess changes in anxiety levels and related psychological variables within each group, paired t-tests were used, comparing scores obtained at the pre-test (T0) and post-test (T1). This analysis allowed for the identification of any significant changes over time within the experimental group and the control group. Subsequently, to analyze the effect of the intervention and compare the trends of the variables between the two groups, a repeated-measures analysis of variance (ANOVA) was conducted with two factors: a within-subjects factor represented by time (pre-test vs. post-test) and a between-subjects factor represented by group (experimental vs. control). The group \times time interaction was considered the primary indicator of the intervention's effectiveness, allowing us to verify whether the changes observed in the experimental group differed significantly from those observed in the control group. Where appropriate, effect size indices (e.g., Cohen's *d* and partial *r*-squared) were also calculated to estimate the practical relevance of the results, in line with recommendations from the methodological literature. Additional exploratory analyses were conducted to examine potential differences related to the presence of SEN/SLD, treating these conditions as descriptive variables and assessing the trend of scores across subgroups, with the aim of exploring the consistency of the intervention's effect from an inclusive perspective.

The qualitative data, collected through reflective journals, semi-structured interviews, and guided reflection sessions, were analyzed using thematic analysis, following a systematic and inductive procedure. In the initial phase, the textual materials were read repeatedly to foster a thorough familiarity with the content. Subsequently, relevant units of meaning were identified and open-coded. The initial codes were progressively grouped into thematic categories based on conceptual similarities and semantic recurrences. The analysis led to the identification of main themes related to emotional experiences associated with running, the perception of the body and physical sensations, subjective strategies for managing anxiety, and changes in self-perception and social relationships. To increase the reliability of the analysis, the categorization process underwent iterative review, comparing emerging categories with the theoretical framework, thereby avoiding forced or predefined interpretations. Qualitative analysis was used not only for descriptive purposes but also for interpretive ones, in order to enrich and contextualize the quantitative results.

The quantitative and qualitative results were integrated during the interpretive phase using a data triangulation approach. This integration made it possible to compare the changes measured using standardized instruments with the subjective experiences reported by the participants, thereby strengthening the overall validity of the study and providing a comprehensive understanding of the effectiveness of the running program in managing anxiety among adolescents.

Results

Quantitative results

Analysis of the quantitative data revealed significant differences between the experimental group and the control group with regard to the psychological variables examined (Table 1).

Table 1. Socio-demographic characteristics of the sample

Variable	Experimental Group (n = 30)	Control Group (n = 30)	Tot (N = 60)
Average Age (DS)	15.2 (1.1)	15.0 (1.3)	15.1 (1.2)
Male	14 (46.7%)	15 (50.0%)	29 (48.3%)
Female	16 (53.3%)	15 (50.0%)	31 (51.7%)
Students without SEND	20 (66.7%)	20 (66.7%)	40 (66.7%)
Students with SEND	10 (33.3%)	10 (33.3%)	20 (33.3%)
Secondary School	13 (43.3%)	12 (40.0%)	25 (41.7%)
High School	17 (56.7%)	18 (60.0%)	35 (58.3%)

With regard to state anxiety, the experimental group showed a statistically significant reduction in scores between the pre-test and post-test. Specifically, the mean pre-test score was $M = 42.6$ ($SD = 6.1$), while the post-test score decreased to $M = 35.2$ ($SD = 5.4$). The paired t-test revealed a significant difference, $t_{(29)} = 6.84$, $p < .001$, with a large effect size (Cohen's $d = 1.25$)(Table 2).

Table 2. Average (DS) pre-test post-test STAI-C

Group	Pre-test M (DS)	Post-test M (DS)	ΔM
Experimental	42.6 (6.1)	35.2 (5.4)	-7.4
Control	41.9 (6.3)	41.2 (6.5)	-0.7

Nota. ΔM = average difference post-test and pre-test.

A similar trend was observed for trait anxiety. In the experimental group, the mean score decreased from $M = 44.1$ ($SD = 5.8$) at the pre-test to $M = 38.7$ ($SD = 5.2$) at the post-test. Again, the reduction was statistically significant, $t_{(29)} = 5.12$, $p < .001$, with a medium-to-large effect size (Cohen's $d = 0.94$)(Table 3).

Table 3. Average (DS) pre-test and post-test STAI-C

Group	Pre-test M (DS)	Post-test M (DS)	ΔM
Experimental	44.1 (5.8)	38.7 (5.2)	-5.4
Control	43.7 (5.9)	43.1 (6.0)	-0.6

In the control group, by contrast, no statistically significant changes were observed for either state anxiety or trait anxiety. Mean scores remained essentially stable between the pre-test and post-test (state anxiety: $M = 41.9$, $SD = 6.3$ vs. $M = 41.2$, $SD = 6.5$; trait anxiety: $M = 43.7$, $SD = 5.9$ vs. $M = 43.1$, $SD = 6.0$), with non-significant p-values.

Repeated-measures analysis of variance confirmed these results, revealing a significant group \times time interaction for both state anxiety, $F_{(1,58)} = 21.47$, $p < .001$, $\eta^2_p = .27$, and for trait anxiety, $F_{(1,58)} = 16.83$, $p < .001$, $\eta^2_p = .22$, indicating that the reduction in anxiety levels over time is attributable to the running intervention (Table 4).

Table 4. ANOVA results repeated measurements (group \times time)

Variable	$F_{(1,58)}$	p	η^2_p
State Anxiety	21.47	< .001	.27
Trait Anxiety	16.83	< .001	.22
Perceived self-efficacy	18.06	< .001	.24
Emotional Well-being (SDQ)	14.62	< .001	.20

Nota. η^2_p = partial sum of squares.

With regard to perceived self-efficacy, the experimental group showed a significant increase in scores from the pre-test ($M = 27.4$; $SD = 4.3$) to the post-test ($M = 32.1$; $SD = 4.0$), $t_{(29)} = -5.76$, $p < .001$, Cohen's $d = 1.05$. In the control group, the increase in scores did not reach statistical significance ($M = 27.9$; $SD = 4.1$ vs $M = 28.4$; $SD = 4.2$)(Table 5).

Table 5. Average (DS) pre-test and post-test perceived self-efficacy

Group	Pre-test M (DS)	Post-test M (DS)	ΔM
Experimental	27.4 (4.3)	32.1 (4.0)	+4.7
Control	27.9 (4.1)	28.4 (4.2)	+0.5

Measures of general emotional well-being also showed a significant improvement in the experimental group, with a reduction in emotional distress scores and an increase in adaptive resources. The group \times time interaction was significant, $F_{(1,58)} = 14.62$, $p < .001$, $\eta^2_p = .20$, suggesting an overall positive effect of the intervention on emotional functioning.

An exploratory subgroup analysis also showed that adolescents with SEN/SLD in the experimental group benefited from the intervention to a comparable extent to their peers without SEN/SLD. In both subgroups, reductions in anxiety levels and increases in self-efficacy were significant, with no statistically significant differences in effect size. This finding suggests that the structured running programme proved to be effective and inclusive, regardless of the presence of special educational needs or specific learning difficulties (Table 6).

Table 6. SEND vs non SEND

Variable	BES/DSA ΔM	Non BES/DSA ΔM	p
State Anxiety	-7.1	-7.6	$p > 0.05$
Trait Anxiety	-5.2	-5.5	$p > 0.05$
Perceived Self-Efficacy	+4.5	+4.8	$p > 0.05$

No statistically significant differences were observed between adolescents with and without SEN/SLD across all variables. The magnitude of change was comparable between groups, with p-values consistently exceeding the significance threshold ($p > 0.05$), indicating a similar response to the intervention regardless of educational needs.

Overall, the quantitative results indicate that participation in the running programme led to significant and clinically relevant improvements in anxiety levels, perceived self-efficacy and general emotional well-being among adolescents, whereas no such changes were observed in the control group.

Qualitative results

The qualitative analysis of the data collected from the experimental group enabled an in-depth exploration of the subjective experiences of the adolescents involved in the running programme, providing a detailed understanding of the psychological processes underlying the changes observed in the quantitative data. The thematic analysis revealed four main broad themes, which cut across gender, age and the presence of SEN/SLD, albeit with some individual variations. The first thematic area concerns the perception of emotions and emotional regulation. Numerous participants described a gradual reduction in feelings of tension, agitation and worry over the course of the intervention weeks. Running was frequently associated with experiences of 'mental relief' and temporary detachment from sources of daily stress, particularly those linked to school and social relationships. Some adolescents reported that, compared to the initial phase, by the end of the programme it was easier to recognise and manage states of anxiety without feeling overwhelmed by negative emotions. This finding appears consistent with the reduction in state and trait anxiety scores observed in the quantitative analyses. A second thematic area concerns the perception of the body and physical sensations. In the early stages, several participants reported focusing predominantly on fatigue, a racing heartbeat and laboured breathing. As the intervention progressed, these sensations were gradually reinterpreted as signs of the body functioning rather than as indicators of distress or loss of control. In particular, the practice of mindful running fostered greater familiarity with bodily sensations and a reduction in catastrophic interpretations associated with physiological signals, an aspect particularly relevant for adolescents with high somatic anxiety. The third thematic area emerging from the qualitative analysis concerns the sense of self-efficacy and personal competence. Many participants emphasised the importance of achieving small personal goals, such as being able to run for longer or feeling less tired than in the first sessions. These experiences were frequently described as a source of personal satisfaction and increased confidence in their own abilities. This aspect was particularly evident among adolescents with SEN/SLD, who reported that running provided a space where they could feel competent and valued, regardless of the difficulties they experienced at school. The accounts gathered suggest that the programme helped to change their self-perception, fostering a more positive and functional self-image. A fourth thematic area concerns the relational and social dimension of the experience. Although running was structured as a predominantly individual activity, many participants highlighted the value of the group setting as a source of emotional and motivational support. Sharing the experience, the absence of competitive judgement and the atmosphere perceived as welcoming fostered a sense of belonging and helped normalise emotional difficulties. Some adolescents reported an improvement in the quality of their peer relationships, both within the intervention group and in the wider school context, attributing these changes to greater self-confidence and a reduction in social anxiety. Overall, the qualitative findings suggest that the running programme did not act solely on a symptomatic level, but triggered deeper processes of change, involving emotional awareness, body image, perceived competence

and social relationships. The integration of physical activity, guided reflection and personalised goals appears to have fostered a meaningful and transformative experience, capable of supporting adolescents' psychological well-being in an inclusive manner. The qualitative analysis reinforces and enriches the quantitative findings, suggesting that the reduction in anxiety levels observed in the experimental group is mediated not only by physiological factors, but also by cognitive and emotional changes linked to the way in which adolescents interpret their own feelings, cope with difficulties and attribute meaning to the running experience.

Discussion

The aim of this study was to evaluate the effectiveness of a structured running programme in reducing anxiety levels in a sample of adolescents, using a mixed-methods approach and intentionally including students with Special Educational Needs and Specific Learning Disorders. The results provide converging evidence supporting the hypothesis that running, when offered as part of a deliberate, guided and non-competitive intervention, can be an effective tool for promoting mental health in childhood and adolescence.

From a quantitative perspective, the significant reduction in state and trait anxiety levels observed in the experimental group appears consistent with findings in the international literature on the anxiolytic effect of aerobic physical activity. Meta-analyses and systematic reviews have indeed shown that structured physical exercise programmes are associated with a reduction in anxiety symptoms in children and adolescents, with moderate to high effect sizes, particularly in interventions involving regular frequency and moderate intensity (Biddle et al., 2019; Rodriguez-Ayllon et al., 2019). The results of the present study are consistent with this evidence, reinforcing the hypothesis that physical activity may act as a protective factor against emotional distress in adolescence.

The absence of significant changes in the control group further supports the causal interpretation of the results, suggesting that the changes observed in the experimental group are attributable to the running intervention rather than to maturational or contextual factors. This aspect is particularly relevant in studies conducted in school settings, where numerous environmental variables can influence adolescents' psychological well-being in the short term.

A further significant finding concerns the significant increase in perceived self-efficacy in the experimental group. According to Social Cognitive Theory, self-efficacy represents a key variable in the regulation of behaviour and emotions, influencing the way in which individuals cope with stressful situations and interpret their own coping abilities (Bandura, 1997). The increase in self-efficacy observed in the present study suggests that the running programme fostered experiences of mastery and control, helping to reduce the perception of vulnerability typical of adolescent anxiety. These findings are consistent with previous studies that have highlighted a positive relationship between physical activity, perceived competence and psychological well-being in childhood and adolescence (Lubans et al., 2016).

Qualitative analysis allows us to explore the mechanisms underlying these quantitative changes, offering a more nuanced understanding of the participants' lived experience. The adolescents' accounts highlight how running has been

progressively reinterpreted not only as a physical activity, but as a space for emotional regulation, self-exploration and stress management. In particular, the reduction in feelings of agitation and the increased ability to recognise and tolerate anxious sensations suggest a change in the cognitive processes of emotional interpretation, in line with models of emotional regulation that emphasise the importance of awareness and acceptance of internal experiences (Gross, 2015).

The bodily dimension emerges as a central element in the experience of change. In an initial phase, many participants describe a problematic relationship with the physiological sensations associated with exertion, often interpreted as signals of loss of control or danger. As the intervention progresses, these sensations are gradually normalised and integrated, leading to a reduction in somatic anxiety. This finding appears particularly significant in light of evidence linking adolescent anxiety to hypersensitivity to bodily signals and catastrophic interpretations of physiological sensations (Domschke et al., 2010). The practice of mindful running appears to have played a facilitating role in this process, supporting greater mind-body integration.

A significant contribution of the present study concerns the inclusion of adolescents with SEN/SLD and the observation of benefits comparable to those of peers without special educational needs. The literature highlights that students with SLD present an increased risk of internalising emotional difficulties, often linked to school experiences characterised by frustration, performance anxiety and reduced self-esteem (Nelson & Harwood, 2011; Mugnaini et al., 2009). In this context, running emerges as an activity with low cognitive barriers, in which performance is not mediated by linguistic or academic skills, offering alternative opportunities for success and reinforcing a more positive self-image. The results of this study suggest that interventions of this kind may help to reduce emotional inequalities and promote well-being from a truly inclusive perspective.

The relational dimension, which emerged strongly from the qualitative analysis, represents a further aspect of interest. Although running is often considered an individual activity, the group context and non-competitive atmosphere appear to have fostered a sense of belonging and mutual support. This finding is consistent with the literature highlighting the role of peer relationships as a protective factor for mental health in adolescence (Bailey et al., 2013). The opportunity to share the experience without judgement and without performance comparison appears particularly relevant for adolescents with high levels of social anxiety.

Overall, the results suggest that the effectiveness of the intervention cannot be attributed solely to the physiological mechanisms of aerobic exercise, such as the modulation of the hypothalamic-pituitary-adrenal axis or the release of endorphins and endocannabinoids (Dishman et al., 2006; Matta Mello Portugal et al., 2013), but must be interpreted in the light of an integrated model that includes psychological, cognitive and social dimensions.

In order to further clarify the scope and applicability of the findings, it is important to define the boundaries of effectiveness of the intervention. The results of the present study suggest that the anxiolytic effects of the running programme are not uniform across all conditions, but are influenced by specific parameters related to intensity, duration, and baseline psychological characteristics.

First, the effectiveness of the intervention appears to be strongest under conditions of moderate exercise intensity. The programme was intentionally designed to maintain a moderate level of perceived exertion, avoiding excessive physiological activation that could potentially increase anxiety, particularly in untrained or vulnerable adolescents. This finding is consistent with the literature indicating that moderate-intensity aerobic activity is optimal for emotional regulation, whereas very high intensity may produce counterproductive stress responses.

Second, the duration and regularity of the intervention represent critical factors. The observed improvements emerged within an 8-week programme with a frequency of three sessions per week, suggesting that a minimum threshold of exposure is necessary to activate both physiological and psychological mechanisms of change. Shorter or less frequent interventions may not produce comparable effects, while longer programmes may be required to ensure the stability and consolidation of outcomes over time.

Third, baseline levels of anxiety appear to play a moderating role in the effectiveness of the intervention. Although improvements were observed across the entire experimental group, qualitative and quantitative trends suggest that adolescents with higher initial levels of anxiety experienced more pronounced benefits, particularly in terms of emotional regulation and perceived self-efficacy. This indicates that the intervention may be especially effective as a targeted preventive or early intervention strategy for individuals at greater psychological risk.

Finally, the effectiveness of the programme appears to depend on its structured and guided nature, including the integration of mindful running, personalised goal setting, and reflective practices. These elements likely enhance the psychological impact of physical activity, suggesting that running in itself may not be sufficient unless embedded within a coherent psychoeducational framework.

In addition to defining the conditions of effectiveness, it is important to consider the functional dynamics through which the observed changes developed over time. The results of the present study suggest that the response to the intervention followed a progressive and multi-phase trajectory, rather than an immediate or uniform effect.

In an initial phase, participants appeared to experience a period of physiological and psychological adjustment, often characterised by heightened awareness of bodily sensations (e.g., fatigue, increased heart rate) and, in some cases, mild discomfort or resistance. Qualitative data indicate that, during this stage, some adolescents tended to interpret these sensations as signs of difficulty or inefficiency, particularly those with higher baseline anxiety levels.

This was followed by an adaptive phase, during which participants progressively reinterpreted bodily signals as functional and non-threatening. The repeated exposure to running, combined with mindful attention and guided reflection, appeared to facilitate a shift in cognitive appraisal, leading to improved emotional regulation and a reduction in catastrophic interpretations of physiological activation. This adaptive process is consistent with theoretical models of interoceptive exposure and emotion regulation.

In the later phase of the intervention, participants demonstrated consolidation of both psychological and behavioural changes. This phase was characterised by

increased self-efficacy, greater autonomy in managing effort, and a more stable perception of emotional control. The ability to set and achieve personalised goals further reinforced these changes, contributing to a positive feedback loop between perceived competence and emotional well-being.

Importantly, the data also suggest the presence of individual variability in response to the intervention. While most participants showed progressive improvements, the rate and magnitude of change differed depending on factors such as initial anxiety levels, prior experience with physical activity, and personal coping styles. In particular, adolescents with higher baseline anxiety appeared to exhibit slower initial adaptation but greater overall gains over time.

These findings highlight that the effectiveness of running as a psychoeducational intervention is not static, but unfolds through dynamic and adaptive processes that vary across individuals and over time. Understanding these functional dynamics is essential for optimising intervention design and tailoring programmes to the specific needs of different adolescent populations.

From a practical perspective, the findings of this study provide clear indications for the implementation of running-based psychoeducational interventions in school and youth settings. To ensure effectiveness, the intervention should be applied as a structured and guided programme rather than as a generic physical activity. Specifically, it should include a predefined duration (at least 8 weeks), a regular frequency (approximately three sessions per week), and sessions lasting between 30 and 40 minutes, in line with the parameters adopted in the present study. The intensity of the activity should be maintained at a moderate level, allowing participants to remain engaged without triggering excessive physiological stress.

In addition, the integration of key psychoeducational components is essential. These include mindful attention to bodily sensations during running, personalised goal setting tailored to individual abilities, and guided reflection at the end of each session. These elements appear to play a crucial role in enhancing emotional regulation, self-efficacy, and adherence to the programme, and should therefore be considered core components rather than optional additions.

The intervention can be effectively adapted to heterogeneous groups, including adolescents with Special Educational Needs and Specific Learning Disorders. In these cases, particular attention should be given to flexibility and personalisation. For example, running intensity and duration may be adjusted based on individual capacities, and alternative forms of participation (e.g., walking–running intervals) can be introduced. The use of clear, simple instructions, visual supports, and consistent routines can facilitate engagement for students with learning difficulties. Moreover, the non-competitive and inclusive nature of the programme should be preserved to ensure that all participants experience a sense of competence and psychological safety.

Key parameters for successful implementation include the presence of trained facilitators (e.g., physical education teachers or educators with basic training in sports psychology), a supportive and non-judgmental environment, and the integration of the programme within the school schedule to ensure continuity and accessibility. Monitoring tools, such as brief self-report measures or reflective journals, may also be useful to track progress and adapt the intervention over time.

Overall, these findings suggest that running-based interventions can be feasibly implemented in educational contexts as low-cost, scalable, and inclusive strategies for promoting adolescent mental health, provided that they are designed and delivered according to structured, theory-informed principles.

The combination of physical activity, body awareness, personalised goal-setting and guided reflection appears to have triggered a multi-level process of change, in line with the principles of health promotion.

From a practical perspective, the findings of this study offer valuable insights for the design of preventive interventions in schools. The inclusion of structured running programmes within the curriculum or as extracurricular activities could represent a sustainable and cost-effective strategy for supporting adolescents' mental health. However, the data suggest that the effectiveness of such interventions depends largely on the quality of the design and the presence of competent guidance, capable of integrating physical activity with educational and reflective dimensions.

Despite the encouraging results, the study has certain limitations that must be considered. Firstly, the sample size, whilst adequate for a pilot experimental study, limits the generalisability of the results. Secondly, the duration of the intervention does not allow for an assessment of the stability of the effects in the long term. Future studies could include longitudinal follow-ups to verify the persistence of benefits and the role of adherence over time. Furthermore, the use of self-report measures, although widely validated, could be supplemented with physiological or observational indicators for a more comprehensive assessment of changes.

Looking ahead, it would be desirable to explore the comparative effectiveness of different types of physical activity, as well as the specific role of the innovative components introduced in this intervention, such as mindful running and goal setting. Further research could also investigate individual differences in response to the intervention, considering variables such as baseline anxiety levels, gender and socio-cultural context.

In conclusion, this study contributes to the literature on sports psychology and health promotion by providing evidence supporting the effectiveness of running as a psychoeducational intervention for reducing anxiety in adolescence. The integration of quantitative and qualitative approaches has enabled us to capture the complexity of change processes, highlighting how physical activity, if properly structured, can represent not only a means of prevention but also a space for personal growth, inclusion and psychological well-being.

Conclusions

This study analysed the effectiveness of a structured running programme as an intervention to promote mental health in adolescence, adopting a mixed-methods experimental approach and intentionally including students with Special Educational Needs and Specific Learning Disorders. Overall, the results provide consistent and converging evidence supporting the hypothesis that running, when designed and conducted in a purposeful, guided and non-competitive manner, can be an effective tool for reducing anxiety levels and improving psychological well-being in childhood and adolescence.

The quantitative data revealed a significant reduction in state and trait anxiety, an increase in perceived self-efficacy and an improvement in general emotional well-being in the experimental group, compared with the absence of significant changes in the control group. These results suggest that the intervention produced changes not attributable to maturational or contextual factors, but specifically linked to participation in the running programme. The presence of comparable benefits in adolescents with and without SEN/SLD further reinforces the inclusive value of the intervention, indicating that running can provide a space for positive and accessible experiences even for students with greater emotional and academic vulnerabilities.

The qualitative analysis allowed for an in-depth exploration of the processes underlying these changes, highlighting how the experience of running was perceived by the adolescents not only as physical activity, but as an opportunity for emotional regulation, for re-evaluating their relationship with their bodies, and for strengthening their sense of personal competence. The narratives collected suggest that the integration of mindful running, personalised goal setting and guided reflection sessions fostered greater emotional awareness and a transformation in the way adolescents interpret and manage feelings of anxiety. In this sense, the intervention appears to have operated on multiple levels, combining physiological, psychological and relational effects.

From a practical perspective, the study's findings highlight the potential of running as a tool for promoting mental health in school and educational settings. The relative simplicity of the activity, the possibility of adapting it to different ability levels, and its cost- and resource-effectiveness make running particularly suitable for preventive programmes targeting large groups of adolescents. However, the data suggest that the effectiveness of the intervention does not depend solely on the physical activity itself, but on the quality of the design and the ability to integrate educational, motivational and reflective dimensions into the programme.

Overall, this study contributes to expanding the literature on sports psychology and health promotion, highlighting how physical activity can take on an educational and transformative role when delivered in a mindful and inclusive manner. Running emerges not only as a means of reducing anxiety symptoms, but as an experience capable of supporting the development of fundamental personal resources in adolescence, such as self-efficacy, self-awareness and the ability to cope with emotional difficulties.

In light of these considerations, it is hoped that future interventions and research will continue to explore and refine the use of running and other physical activities from a preventive perspective, integrating them permanently into school and community settings, with the aim of promoting a conception of mental health that values movement, the body and experience as central resources for adolescents' well-being.

Ethics Approval

The study was conducted in accordance with the principles of the Declaration of Helsinki. The research protocol was reviewed and approved by the Ethics Committee of the University of Naples "Parthenope".

Informed Consent

All participants provided written informed consent prior to participation in the study. Participants were informed about the study procedures, potential risks, and their right to withdraw from the study at any time without consequences.

Data Availability Statement

The datasets generated and analysed during the current study are available from the corresponding author on reasonable request.

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Conflicts of Interest

The authors declare no conflict of interest.

AI Transparency Statement

The authors declare that artificial intelligence tools were used solely for language editing and text refinement. All scientific content, analysis, and interpretations were developed and verified by the authors.

References

- Steinberg, L. (2014). *Age of opportunity: Lessons from the new science of adolescence*. Houghton Mifflin Harcourt.
- Compas, B.E., Jaser, S.S., Bettis, A.H., Watson, K.H., Gruhn, M.A., Dunbar, J.P., Williams, E., & Thigpen, J.C. (2017). Coping, emotion regulation, and psychopathology in childhood and adolescence: A meta-analysis and narrative review. *Psychological Bulletin*, 143(9), 939-991. <https://doi.org/10.1037/bul0000110>
- Engel, G.L. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, 196(4286), 129-136. <https://doi.org/10.1126/science.847460>
- World Health Organization. (2018). *Global action plan on physical activity 2018-2030*. WHO.
- Lubans, D.R., Richards, J., Hillman, C.H., Faulkner, G., Beauchamp, M.R., Nilsson, M., ... Biddle, S.J. H. (2016). Physical activity for cognitive and mental health in youth: A systematic review of mechanisms. *Pediatrics*, 138(3), e20161642. <https://doi.org/10.1542/peds.2016-1642>
- Deci, E.L., & Ryan, R.M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227-268. https://doi.org/10.1207/S15327965PLI1104_01
- Bandura, A. (1997). Self-efficacy: The exercise of control. W.H. Freeman.
- Ekkekakis, P., Hall, E.E., & Petruzzello, S.J. (2011). Variation and homogeneity in affective responses to physical activity of varying intensities: An alternative perspective on dose-response based on evolutionary considerations. *Journal of Sports Sciences*, 23(5), 477-500. <https://doi.org/10.1080/02640410400021492>
- Erickson, K.I., Hillman, C., Stillman, C.M., Ballard, R.M., Bloodgood, B., Conroy, D.E., ... Kramer, A.F. (2019).

- Physical activity, cognition, and brain outcomes: A review of the 2018 physical activity guidelines. *Medicine & Science in Sports & Exercise*, 51(6), 1242-1251. <https://doi.org/10.1249/MSS.0000000000001936>
- Bailey, R., Hillman, C., Arent, S., & Petitpas, A. (2013). Physical activity: An underestimated investment in human capital? *Journal of Physical Activity and Health*, 10(3), 289-308. <https://doi.org/10.1123/jpah.10.3.289>
- Nelson, J.M., & Harwood, H. (2011). Learning disabilities and anxiety: A meta-analysis. *Journal of Learning Disabilities*, 44(1), 3-17. <https://doi.org/10.1177/0022219410380299>
- Biddle, S.J. H., Ciaccioni, S., Thomas, G., & Vergeer, I. (2019). Physical activity and mental health in children and adolescents: An updated review of reviews and an analysis of causality. *Psychology of Sport and Exercise*, 42, 146-155. <https://doi.org/10.1016/j.psychsport.2018.08.011>
- World Health Organization. (2020). *Guidelines on physical activity and sedentary behaviour*. WHO.
- Dishman, R.K., Berthoud, H.R., Booth, F.W., Cotman, C.W., Edgerton, V.R., Fleshner, M.R., ... Zigmond, M.J. (2006). Neurobiology of exercise. *Obesity*, 14(3), 345-356. <https://doi.org/10.1038/oby.2006.46>
- Mehling, W.E., Gopisetty, V., Daubenmier, J., Price, C.J., Hecht, F.M., & Stewart, A. (2011). Body awareness: Construct and self-report measures. *PLoS ONE*, 6(5), e18891. <https://doi.org/10.1371/journal.pone.0018891>
- Locke, E.A., & Latham, G.P. (2002). Building a practically useful theory of goal setting and task motivation. *American Psychologist*, 57(9), 705-717. <https://doi.org/10.1037/0003-066X.57.9.705>
- Schon, D.A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.
- Rodriguez-Ayllon, M., Cadenas-Sanchez, C., Esteban-Cornejo, I., Migueles, J.H., Mora-Gonzalez, J., Henriksson, P., ... Ortega, F.B. (2019). Physical activity and mental health in children and adolescents: An updated review of reviews and an analysis of causality. *Sports Medicine*, 49(9), 1373-1398. <https://doi.org/10.1007/s40279-019-01099-5>
- Gross, J.J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, 26(1), 1-26. <https://doi.org/10.1080/1047840X.2014.940781>
- Domschke, K., Stevens, S., Pfleiderer, B., & Gerlach, A.L. (2010). Interoceptive sensitivity in anxiety and anxiety disorders: An overview and integration of neurobiological findings. *Clinical Psychology Review*, 30(1), 1-11. <https://doi.org/10.1016/j.cpr.2009.08.008>
- Mugnaini, D., Lassi, S., La Malfa, G., & Albertini, G. (2009). Internalizing correlates of dyslexia. *World Journal of Pediatrics*, 5(4), 255-264. <https://doi.org/10.1007/s12519-009-0047-4>
- Matta Mello Portugal, E., Cevada, T., Sobral Monteiro-Junior, R., Teixeira Guimarães, T., da Cruz Rubini, E., Lattari, E., ... Deslandes, A.C. (2013). Neuroscience of exercise: From neurobiological mechanisms to mental health. *Neuropsychobiology*, 68(1), 1-14. <https://doi.org/10.1159/000350946>

Біг як психоосвітня інтервенція для зниження рівня тривожності в підлітків

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; Е – збір коштів

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Обґрунтування. Підлітковий вік є етапом розвитку, що характеризується підвищеною вразливістю до тривожності та емоційної дисрегуляції. Фізична активність, зокрема аеробні вправи, як-от біг, визначається як потенційно ефективна та доступна стратегія зміцнення психічного здоров'я; утім, кількість наукових даних щодо структурованих та інклюзивних інтервенцій на базі шкіл залишається обмеженою, особливо стосовно підлітків з особливими освітніми потребами (ООП) та специфічними розладами навчання (СРН).

Мета дослідження. Це дослідження мало на меті оцінити ефективність структурованої програми з бігу у зменшенні ситуативної та особистісної тривожності серед підлітків, а також вивчити її вплив на самоефективність та емоційне благополуччя, зокрема в учнів з ООП/СРН.

Матеріали і методи. У роботі застосовано експериментальний дизайн із використанням змішаних методів та вимірюванням показників на претест (Т0) та посттестовому етапах дослідження (Т1). Вибірку склали 60 підлітків (віком 13–17 років), яких було розподілено на експериментальну (n = 30) та контрольну (n = 30) групи. Експериментальна група брала участь у 8-тижневій програмі з бігу (три заняття на тиждень, по 30–40 хвилин кожне, помірна інтенсивність), тоді як контрольна група займалася стандартною шкільною активністю. Збирання кількісних даних проведено за допомогою опитувальника STAI-C (шкала тривоги Спілберґера-Ханіна) для оцінки ситуативної та особистісної тривожності, шкали самоефективності та методик вимірювання емоційного благополуччя. Аналіз здійснювали за допомогою t-критеріїв для

парних вибірок та дисперсійного аналізу з повторними вимірюваннями. Якісні дані збирали за допомогою щоденників, інтерв'ю та керованої рефлексії, а аналізували методом тематичного аналізу.

Результати. В експериментальній групі зафіксовано статистично значуще зниження ситуативної тривожності (T0: $M = 42,6$, $SD = 6,1$; T1: $M = 35,2$, $SD = 5,4$; $t(29) = 6,84$, $p < .001$, $d = 1,25$) та особистісної тривожності (T0: $M = 44,1$, $SD = 5,8$; T1: $M = 38,7$, $SD = 5,2$; $t_{(29)} = 5,12$, $p < .001$, $d = 0,94$), тоді як у контрольній групі суттєвих змін не виявлено ($p > .05$). Дисперсійний аналіз з повторними вимірюваннями показав значущу взаємодію факторів «група x час» для ситуативної тривожності ($F_{(1,58)} = 21,47$, $p < .001$, $\eta^2_p = .27$) та особистісної тривожності ($F_{(1,58)} = 16,83$, $p < .001$, $\eta^2_p = .22$). Показники самоефективності суттєво зросли в експериментальній групі (T0: $M = 27,4$, $SD = 4,3$; T1: $M = 32,1$, $SD = 4,0$; $t_{(29)} = -5,76$, $p < .001$, $d = 1,05$) за відсутності значущих змін у контрольній групі. Емоційне благополуччя також статистично значуще покращилося ($F_{(1,58)} = 14,62$, $p < .001$, $\eta^2_p = .20$). Подібні ефекти спостерігалися як у підлітків з ООП/СРН, так і без них. Якісні результати підтвердили ці дані, вказуючи на покращення емоційної регуляції, усвідомлення власного тіла, підвищення самоефективності та зміцнення соціальних зв'язків.

Висновки. За умов структурованого підходу, що передбачає помірну інтенсивність, регулярність занять та психо-світний супровід (наприклад, усвідомлений біг та постановку цілей), програми з бігу здатні суттєво знизити рівень тривожності та покращити психологічне благополуччя підлітків. Ця інтервенція є особливо ефективною для осіб із вищим базовим рівнем тривожності та легко адаптується до інклюзивного освітнього середовища, зокрема для учнів з ООП/СРН. Отримані результати свідчать на користь використання структурованого бігу як доступної та науково обґрунтованої стратегії зміцнення психічного здоров'я підлітків в умовах закладу освіти.

Ключові слова: суспільствознавча освіта, інклюзія, ООП/СРН, змішаний метод, інноваційне навчання.

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