



Justification for the system of corrective measures to improve the physical condition of adolescent girls through health-enhancing recreational physical activity

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Abstract. Deviations from the body weight norm are becoming increasingly common among children. This is an urgent problem that limits the health level of a significant number of children, adolescents, and youth, which requires urgent intervention. The aim of the study was to create a system of corrective measures to improve the physical condition of underweight adolescent girls through health-enhancing recreational physical activity. To find out the peculiarities of designing a comprehensive programme of health-enhancing activities for underweight girls, an expert assessment was conducted, which included methodological features of developing programmes based on the use of health fitness and criteria for programme effectiveness. The involvement of experts in the study allowed to identify approaches that are appropriate to use for correcting physical conditions in 12-13-year-old underweight girls. It was found that the most effective approaches are regular physical exercise and changes in eating behaviour. The most effective means of improving physical condition, according to experts, are strength fitness, functional training, dance aerobics, and stretching. The results of the expert assessment showed that the system of corrective measures should include physical exercises, including health fitness, psychological correction, and motivational training. The methodological features and criteria for the effectiveness of the system of corrective measures were identified, and the experts' opinions on these issues were consistent. The obtained data became the basis for building a programme of health-enhancing activities, the distinctive features of which are the consideration of the physical condition and physical activity of underweight girls. The developed programme should be implemented in practice as a part of extracurricular physical education activities, which will improve the physical development, fitness, and performance of secondary school girls

Keywords: expert assessment; programme; fitness; body weight; underweight

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Introduction

The problem of abnormal body weight is ubiquitous among children, adolescents, young, mature, and elderly people. In most cases, researchers choose overweight or obese individuals as the object of study. Nevertheless, examination of the problem of underweight among adolescent children indicates its prevalence and negative health outcomes. The adolescent population is considered a particularly vulnerable age group. Insufficient body weight can lead to severe physiological and psychological problems, such as gastrointestinal diseases, hormonal disorders, reproductive disorders, a weakened immune system, deteriorated physical condition (physical development, performance, fitness), chronic fatigue, depression, etc. The negative outcomes can be prevented through the implementation of preventive and corrective programmes, which should include health fitness, psychological correction, and motivational training. However, the relationship between insufficient body weight and the participation of adolescents in physical activity has rarely been the subject of scientific research.

Researchers emphasise the fact that both overweight and underweight children have a low level of physical activity. In particular, F.F. Ma & D.M. Luo (2023) argued that a simple increase in physical activity and the transition from a sedentary to a healthier lifestyle can bring the mass of obese children to the age-related norm. C. Liang *et al.* (2022) emphasised a decrease in both participation in physical activity and interest in it among underweight children. This trend is likely due to the fact that underweight adolescents have lower levels of physical fitness, which affects their ability to participate in physical exercise programmes. According to O. Andrieieva *et al.* (2022), the means of health-enhancing recreational physical activity are effective for the correction of physical condition indicators. The majority of the scientific community agrees with this opinion. L.Ya. Chekhovska *et al.* (2023) reviewed existing developments on body weight management in primary and secondary school students. The researchers pointed to a significant number of scientific studies aimed at preventing and eliminating body weight disorders in children. Both Ukrainian and foreign researchers, such as A.K.G. Tan *et al.* (2019), studied the level of physical activity in the adolescent population. In particular, attention was drawn to the role of exercise in the formation of a healthy lifestyle and obesity management.

S. Trachuk *et al.* (2023) examined the possibility of improving the health status of adolescent girls through health-enhancing recreational physical activity. G. Battaglia *et al.* (2021) also pointed out the importance of planning targeted motor programmes considering the characteristics of body weight disorders in children and adolescents. G. Chen *et al.* (2022) established that children and adolescents with a body mass index above or below the normal range have significantly lower physical fitness compared to students with a normal body weight, which requires the development of measures such as improving the quality of physical education lessons and promoting a balanced diet and regular exercise, which should be carried out in a targeted manner. M. Palchuk *et al.* (2023) found that moderate physical activity is prevalent among girls aged 12-13. Only 15% of girls demonstrated a high level of physical activity, which emphasises the relevance of finding effective

methods to encourage adolescent girls to participate in organised physical activity. L. Tolvanen *et al.* (2023) note that despite the significant prevalence of underweight among adolescent girls, which is comparable to the prevalence of overweight, most health-enhancing programmes are focused on preventing and combating obesity. At the same time, these recommendations do not address the problem of underweight. Despite the high prevalence of this problem among adolescent girls, there are no professional publications on appropriate recommendations aimed at correcting their physical condition, which makes research in this area relevant. The aim of this study was to develop a comprehensive health fitness programme as a basis for the correction of physical condition indicators in secondary school children.

Materials and Methods

The analysis and generalisation of scientific and methodological literature data were used to provide justification for the direction of the study and to clarify unresolved issues. In this study, the method of expert assessments was used to identify the features of the methodological justification for the use of health fitness, psychological correction, and eating behaviour modification in comprehensive programmes aimed at improving physical condition in underweight girls. The research was conducted from September 2022 to May 2023. The group of experts consisted of nine professionals in the fields of health fitness, sports nutrition, and psychology who were experienced in working with the adolescent population (Kyiv, Ukraine). The survey was anonymous and conducted using Google Forms. The expert evaluation sheet on the development of the system of corrective measures to improve physical condition in underweight adolescent girls by means of health fitness included the following questions: which approaches are appropriate for using to correct the indicators of physical condition in underweight girls aged 12-13; which means of health fitness should be included in the programme for correcting the indicators of physical condition in underweight adolescent girls; what are the methodological features of the health fitness programme for girls aged 12-13 years; what can form the basis of the criteria for the effectiveness of comprehensive programmes for the group of girls considered in the study.

In the expert assessment, the preference ranking method was used. This method expects the experts to rank the evaluated items in descending order of importance. The ranking of each item is determined by its total score; the higher the score, the more important the object is considered to be. To ensure the reliability of the experts' opinions, a concordance coefficient (W) was calculated. This coefficient measures the degree of consistency of experts' opinions. The process of expert assessment by the ranking method involved creating an expert table for the preference method and calculating the coefficient of concordance of expert opinions using the following equation:

$$Wp = \frac{12 \times S}{m^2(n^3 - n)}, \quad (1)$$

where S is the sum of the squared deviations of the sums of ranks assigned to each assessed item from the average rank value, calculated using the equation:

$$S = \sum_{j=1}^n \left(\sum_{i=1}^m R_{ij} - \frac{m(n+1)}{2} \right)^2, \quad (2)$$

where m is the number of experts; n is the number of items to be assessed; Σ is the sum; and R is the rank of the j -th item assigned to it by the i -th expert. The quality of the expert assessment was determined based on the calculated concordance coefficient, which ranges from 0 (no agreement between experts) to 1 (complete agreement of experts). If the coefficient Wp is equal to or greater than the reference concordance coefficient Wrp , set at 0.7, the expert assessment is considered valid and successful. Conversely, if Wp was less than Wrp (0.7), the most divergent opinions (those considered to be those of less competent experts) were removed in order to improve the assessment procedure. The results of the expert assessment showed that the system of corrective measures should include physical exercises, including health fitness, psychological correction, and motivational training. The consistency of the experts' opinions was tested using Kendall's W , and the statistical significance was tested with Friedman's χ^2 with multiple comparisons. The level of statistical significance was 0.05 ($p < 0.05$).

The duration of the programme was 9 months. The programme was designed using the algorithmic method, which included the assessment of physical condition indicators, their comparison with the proper norms, the programming of physical activity, and the application of proper methods of medical and pedagogical control. The programme design took into account the general principles of physical education, conditioning training, and health-enhancing recreational physical activity. The transformative pedagogical experiment involved a total of 69 underweight girls aged 12-13 years. The study was conducted in compliance with the principles of the Declaration of Helsinki (2013). All parents of adolescent girls signed an informed consent to participate in the study. The study was conducted in accordance with the Research Plan of the National University of Ukraine on Physical Education and Sport for 2021-2025 3.1. "Theoretical and technological principles of health-enhancing recreational physical activity and healthy lifestyle of different population groups" (state registration number 0121U107534).

Results and Discussion

According to the results of the expert assessment, it was found that it is advisable to include physical exercises, in particular health fitness, along with psychological correction and motivational training in the system of correctional means. The involvement of experts in the study allowed to identify approaches that are appropriate to use for correcting physical conditions in 12-13-year-old underweight girls. According to the agreed opinion of the experts ($W = 0.82$; $\chi^2 = 51.67$; $p < 0.05$), regular physical activity and eating behaviour modification were the most effective approaches. Experts believed it is advisable to use psychological correction and motivational training. In contrast, the use of medications took the last place in the ranking of approaches to correction of physical condition in underweight girls aged 12-13 years (Fig. 1). It should be noted that experts agreed on the low effectiveness of the use of hygienic factors and dietary nutrition.

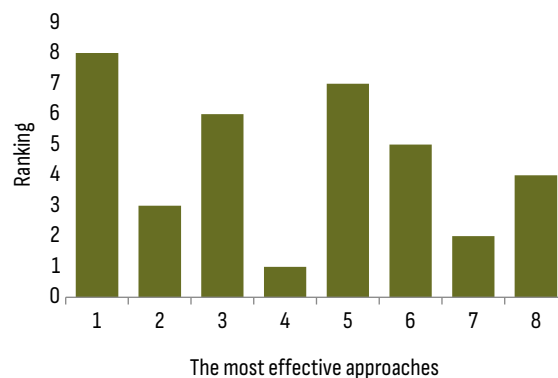


Figure 1. Ranking of the approaches to improving physical condition in 12-13-year-old underweight girls
Note: 1 – regular physical activity; 2 – hygienic factors (body hardening procedures); 3 – means of psychological correction; 4 – medication; 5 – eating behaviour modification; 6 – motivational training; 7 – dietary methods; 8 – natural forces
Source: made by the authors

The authors of the study asked experts about the means of health fitness that, in their opinion, should be included in the programme to improve the physical condition of underweight adolescent girls. Statistical analysis showed a high consistency of experts' opinions ($W = 0.81$; $\chi^2 = 80.57$; $p < 0.05$), who indicated exercise promoting muscle gain, in particular strength exercise (such as bodyweight exercises, exercises with a resistance band, body bars, stuffed balls, free weights, etc.), as well as functional training as the most effective means (Fig. 2). Functional training involves the deepest stabilising muscles, which play a key role in performing everyday movements and improving intermuscular coordination and balance.

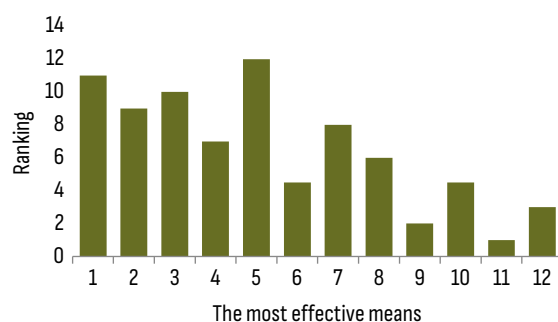


Figure 2. Ranking of the means of health fitness to be included in the programme for the improvement of physical condition in underweight adolescent girls
Note: 1 – functional training; 2 – stretching; 3 – dance aerobics; 4 – zumba; 5 – strength training; 6 – yoga; 7 – pilates; 8 – aqua fitness; 9 – aerobics (slide, step); 10 – exercise ball aerobics; 11 – spinning; 12 – Tae Bo aerobics
Source: made by the authors

In the course of the study of methodological features of the health fitness programme for underweight girls aged 12-13 years, it was found that experts consider it most effective to take into account the individual characteristics of participants ($W = 0.79$; $\chi^2 = 56.59$; $p < 0.05$). Experts emphasise

the importance of taking into account such methodological features as the possibility of simultaneously solving a wide range of health improvement tasks; compliance with the rules of self-control and injury prevention; variety and interchangeability of means; and a high degree of innovation and emotionality (Fig. 3).

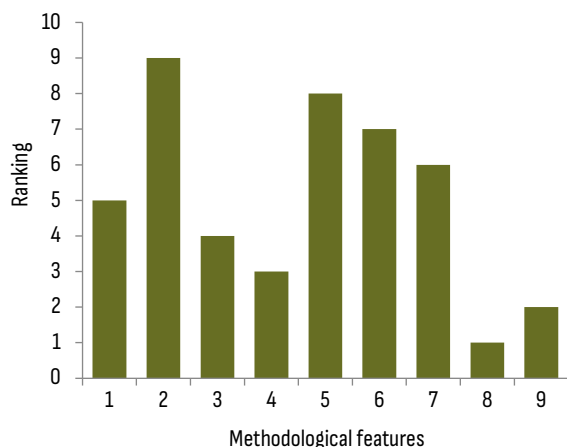


Figure 3. Ranking of the methodological features of the health fitness programme for underweight girls aged 12-13 years

Note: 1 – monitoring of parameters of physical condition; 2 – taking into account individual characteristics of participants; 3 – observance of rules of self-control and prevention of injuries; 4 – providing selective influence on the body; 5 – possibility of simultaneous solutions to a wide range of health-enhancing tasks; 6 – high degree of innovation and emotionality; 7 – variety and interchangeability; 8 – possibility of exact dosing of training loads; 9 – ability to transform for the differentiation of loads

Source: made by the authors

An examination of the criteria for the effectiveness of comprehensive programmes for underweight girls aged

12-13 years, which should be the basis for assessing their impact on physical condition, showed that efforts should be directed primarily to changing eating behaviour and value orientations ($W = 0.81$; $\chi^2 = 51.15$; $p < 0.05$). In addition, the criteria for effectiveness should include the formation of motivation for regular physical exercise and the reduction of stress and school anxiety (Fig. 4). The experts' opinion along with the data of the analysis of practical experience were used as the basis to develop a comprehensive health fitness programme for underweight girls aged 12-13 years, the parameters of which are presented in Table 1.

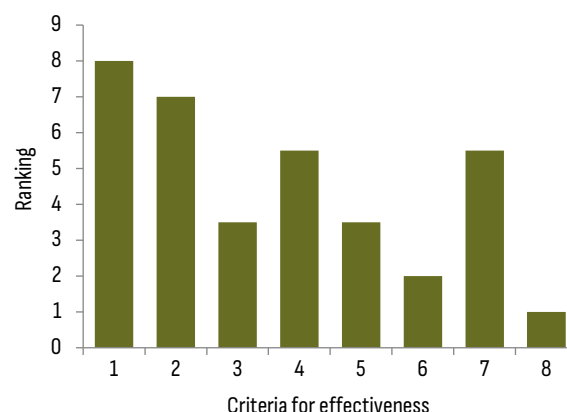


Figure 4. Ranking of the criteria for effectiveness of comprehensive programmes for underweight girls aged 12-13 years

Note: 1 – change in eating behaviour; 2 – change in value orientations; 3 – normalisation of body weight; 4 – development of motivation for regular physical exercise; 5 – increase in physical activity; 6 – improvement of physical condition; 7 – reduction of stress and school anxiety; 8 – improvement of exercise testing results

Source: made by the authors

Table 1. Parameters of targeted organised physical activity for adolescent girls aged 12-13 years

Parameters	Conditioning	Health-enhancing recreational activities
Frequency	3 times a week	daily
Duration	45-60 min	from 20 min on weekdays up to 120 min on weekends
Means	dance aerobics, functional training, strength training, stretching, mental fitness	walks, short hikes, park orienteering, recreational games with friends and family
Intensity	moderate	low
Heart rate zones for aerobic training loads	120-140 bpm	up to 100 bpm
Intensity of strength training loads (perceived exertion ratings)	12 to 14 on the Borg scale	8 to 10 on the Borg scale

Source: made by the authors

The developed programme was designed to flexibly take into account the peculiarities of the current situation related to quarantine restrictions and the legal regime of martial law, provide opportunities for both offline and on-line group training, and include daily independent classes (with a duration of up to 20 min), once a week group psychological correction classes, nutritional correction, and weekend recreational activities for girls and their families and friends. The content of the programme included such

areas of health fitness as dance aerobics, functional training, strength fitness, stretching, and mental fitness. Given the significant interest of teenage girls in dance classes, dance aerobics was included in the programme. In addition, the health fitness classes included static exercises of local impact with body weight and dosed weights. This made it possible to differentiate physical activity depending on the individual characteristics of the girls. For the first two months of the programme, the girls were recommended

to perform strength exercises to train the lagging muscle groups using equal amounts of static and dynamic loads.

The programme included exercises with additional weights, such as dumbbells (1-4 kg), fitness bands, resistance bands, medicine balls (1-3 kg), body bars (up to 6 kg), etc. To ensure effective mastery of complex exercise, the technique of movements was corrected during the performance of the exercise. The transition to the study of the next step was carried out after a 2-3-times correct repetition of the previous movement. The comprehensive programme for underweight 12-13-year-old girls included exercises for the development of correct posture, which is of great importance for the normal functioning of both individual systems and the body as a whole because an increase in growth rate combined with poor posture can cause a number of significant defects in the musculoskeletal system. To develop flexibility, stretching was used, which included dynamic, static, and dynamic-static exercises.

It was also planned to inform the parents about the organisation of rational nutrition and physical activity for adolescent girls. This information included sending daily email messages during a month-long period. For parents, the daily letter contained brief information on health issues and recommendations for eating behaviour modification. For girls, the letter included guidance on fluid intake, recommendations for healthy nutrition, an overview of techniques of psychological self-control and psychological correction, physical activity regimens, methods of self-control during health fitness classes, etc. Participants were encouraged to use any of the messengers for feedback. The programme was designed using a block principle, including introductory-diagnostic, practical, and control-correctional blocks, which differed in their aim and objectives, the means of health fitness used, and organisational and methodological instructions for participants.

The programme also included psychological correction classes, during which adolescent girls learned various methods of self-control to improve their self-esteem, change eating habits, and relieve high levels of anxiety and internal stress. The programme included 10 sessions of psychological correction (2 hours per week), followed by 4 more sessions (1 hour per week) to consolidate the effect. There were a total of 14 sessions for almost 3 months. The use of motivational training in the developed programme contributed to a change in the patterns of adolescents' dietary behaviours, which is a successful guarantee not only of normalising body weight but also of improving physical condition. The frequency of the motivational training classes, which lasted for 40 min was once a week.

The effectiveness of the developed programme was evaluated in the course of a transformative pedagogical experiment. Significant differences ($p < 0.05$) were identified in the majority of physical fitness indicators characterising strength, flexibility, and coordination abilities. Notable positive changes (with statistical significance, $p < 0.05$) were observed in various indicators of physical fitness (shuttle run (4x9 m), long jump from a standing position, sprint run for 30 m, run for 60 m, lifting the torso in a sitting position for 30 s, torso tilt forward from a sitting position). There was an improvement in the physical performance of these girls. An assessment of the eating behaviours of underweight adolescents also demonstrated positive changes.

The study showed a statistically significant decrease in the number of eating disorders among underweight girls aged 12-13 ($p < 0.05$). It turned out that after the study, there were noticeable changes in the value orientations of underweight girls. An analysis of the values of motives for various types of health-enhancing recreational physical activity in 12-year-old underweight girls revealed a tendency to strengthen cognitive-developing and creative motives and weaken prestige motives. Among 13-year-old underweight girls, a statistically significant increase was observed in the values of health, psychological, and recreational motives.

The importance of using such approaches is emphasised in the research studies addressing body weight disorders. Such developments are relevant due to the significant prevalence of underweight among adolescents (generally about 8-9%), especially in Eastern Europe, and there has been a slight upward trend over the past decade, as reported, for instance, by M. Garrido-Miguel *et al.* (2021) and C.A.S. Alves Junior *et al.* (2023). As correctly noted by J.K. Singh *et al.* (2021), the adolescence period is critical because it is during this period that rapid growth and development occur, and therefore adolescents need more attention. Health and nutrition behaviours are developed during this period, making adolescents more vulnerable to health problems than other age groups. Taking into account the physical and psychological state of 12-13-year-old girls, the authors of this study agree with this opinion. The importance of the influence of family and friends on the development of eating behaviour was also discussed by D. Levchenko (2023). The attitude of the family during childhood and adolescence can dramatically change the further development of eating culture in a child. That is why part of the developed system of corrective measures was to inform not only the girls themselves but also their parents about healthy eating.

According to the results reported by B.E. Holstein *et al.* (2022), the prevalence of underweight among 11-15-year-old adolescents was significantly higher among girls than boys. The results obtained by the authors provide additional evidence of the greater vulnerability of girls to weight loss, especially in early adolescence (12-13 years). This fact is confirmed by the findings of K. Dereń *et al.* (2021), who established that this particular age period is sensitive to social behaviour disorders, which are manifested by eating disorders, bad eating habits, and unhealthy body image. Similar arguments are presented by the authors in this study. The impact of being underweight on the health of adolescent girls is significant. This can lead to increased vulnerability of various body systems, more frequent illnesses, decreased immunity and resistance against infections, nervous breakdowns, depression, decreased mental and physical performance, and reduced physical activity. Similar results were obtained in the authors' current research. G. Drosopoulou *et al.* (2021) emphasised the need to address this problem as body weight disorders are a factor that significantly worsens the psychosocial health of children and adolescents. The research findings obtained by the authors significantly extended the existing knowledge on supporting mental health in underweight children. Physical exercise classes are useful for relieving stress, reducing fears and anxiety, and restoring communication with peers. Furthermore, M. Zeiler *et*

al. (2023) emphasised that underweight negatively affects the motivation to exercise. In the same study, psychological correction classes were used to correct the moral status of underweight girls, which is an integral part of the whole complex, to achieve a sustainable result.

D. Manzano-Sánchez *et al.* (2023) reported the low level of physical activity in underweight people, which confirms the relevance of developing programmes such as the one described in this article. To develop the programme, the block principle was used, which has proven to be effective in earlier studies by O. Andrieieva *et al.* (2022). In programming classes, the need to follow a certain sequence of stages was taken into account. Similar approaches to planning health-enhancing activities, designing a clear system of classes, and ensuring continuity in learning exercises for people with body weight disorders were outlined by M. Palchuk *et al.* (2023). According to the World Health Organization (2020) statement, 81% of children and adolescents do not meet recommended levels of physical activity. Thus, a sedentary lifestyle, insufficient or high body mass index, and a lack of physical activity are among the main risks for adolescent health, as habits acquired in childhood are essential for long-term healthy growth. This was the basis for the development of a preventive and corrective exercise programme for underweight girls in this study. The method of expert assessment was used to justify the means and methodological features of its implementation. The appropriateness of using expert assessment for justification of health-enhancing programmes was reported by D. Maltsev *et al.* (2022).

The implementation of the developed fitness programme allowed for the identification of qualitative and quantitative changes in the physical condition of the study participants, which complemented the data reported by G. Chen *et al.* (2022). The main changes were observed in the indicators of physical fitness (agility, speed and speed-strength qualities, strength, and flexibility), which is consistent with the results of the study by M. Palchuk *et al.* (2023). Furthermore, positive changes were found in the physical performance of underweight girls. The findings of this study expanded the data reported by O. Yarmak *et al.* (2023) on the possibility of using health fitness means to correct physical conditions and normalise body weight in early adolescent children. It was found that the main focus of exercise classes for underweight adolescent girls should be on the development of general endurance and strength. This is consistent with the research findings reported by R.A. Lima *et al.* (2021). These researchers emphasised that insufficient physical activity in adolescents is accompanied by negative changes in such physical qualities as strength, speed, and endurance. There were also equally pronounced changes in the functional status of the cardiovascular and respiratory systems. Adolescent children with low physical activity are characterised by lower efficiency of functional systems, including the cardiovascular and respiratory systems, and low physical performance. This also confirms the reasonability of using health fitness programmes

(including strength, functional, mental, and aerobic exercises). Taking individual characteristics of physical condition into account will help to harmonise physical development and improve the quality of life for adolescent girls.

Conclusions

The development of programmes for the management of body weight disorders in children remains relevant. The involvement of experts in the study allowed to identify approaches that are appropriate to use for correcting physical conditions in 12-13-year-old underweight girls. It was found that the most effective approaches were regular physical exercise and eating behaviour modification ($W = 0.82$; $\chi^2 = 51.67$; $p < 0.05$). The system of corrective measures should include physical exercises, including health fitness, psychological correction, and motivational training. Among the means of health fitness, the most effective were strength training, functional training, dance aerobics, and stretching ($W = 0.81$; $\chi^2 = 80.57$; $p < 0.05$). The methodological features and criteria for the effectiveness of the system of corrective measures were identified. The experts' opinions on these issues were consistent ($W = 0.81$; $\chi^2 = 51.15$; $p < 0.05$). Thus, the effectiveness criteria substantiated by the experts became the basis for evaluating the impact of the proposed health-enhancing programme for underweight adolescents.

The experts' recommendations were used as the basis for designing the 9-month health fitness programme that included health fitness (conditioning training), health-enhancing recreational physical activity (daily independent exercise and weekend recreational activities with family and friends), psycho-correctional sessions (once a week), nutritional guidance, and motivational training. The implementation of the comprehensive training programme that included fitness, psychological correction, and nutritional behaviour modification resulted in qualitative and quantitative improvement of physical health in 12-13-year-old underweight girls. There was a statistically significant increase ($p < 0.05$) in girls' health-oriented motivation to exercise. Positive changes were observed in their eating behaviour as well as in their value system, including improved self-perception and body image, which led to more appropriate self-esteem. These findings emphasise the effectiveness of the developed programme for underweight adolescent girls and support its implementation in the physical education and health-enhancing activities of out-of-school educational institutions working with this population. Future research will be focused on the development of recommendations for the correction of physical condition indicators in overweight adolescent girls.

Acknowledgements

None.

Conflict of Interest

None.

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Обґрунтування системи корекційних заходів із підвищення фізичного стану дівчат-підлітків засобами оздоровчо-рекреаційної рухової активності

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Анотація. Відхилення від норми маси тіла набувають усе більшого поширення серед дитячого контингенту. Зазначене постає актуальною проблемою, яка лімітує рівень здоров'я значної кількості дітей, підлітків, молоді, що потребує невідкладних утручань. Метою дослідження було створити систему корекційних заходів для підвищення рівня фізичного стану дівчат-підлітків із дефіцитом маси тіла засобами оздоровчо-рекреаційної рухової активності. З метою з'ясування особливостей побудови комплексної програми оздоровчих занять для дівчат із недостатньою масою тіла було проведено експертне опитування, що включало методичні особливості розробки програм на основі використання засобів оздоровчого фітнесу та критерії ефективності програми. Залучення експертів до дослідження дозволило встановити підходи, які доцільно використовувати для корекції показників фізичного стану дівчат 12-13 років із недостатньою масою тіла. З'ясовано, що найбільш ефективними підходами є регулярна рухова активність та зміна харчової поведінки. Найбільш ефективними засобами для підвищення фізичного стану експерти вважають силовий фітнес, функціональний тренінг, танцювальну аеробіку та стретчинг. За результатами експертного опитування встановлено, що в систему корекційних засобів доцільно включати фізичні вправи, засоби оздоровчого фітнесу, засоби психокорекції, мотиваційне навчання. Визначено методичні особливості та критерії ефективності системи корекційних засобів, думка експертів із цих питань виявилася узгодженою. Отримані результати стали основою для побудови програми занять, відмінними рисами якої є урахування особливостей фізичного стану та рухової активності дівчат із дефіцитом маси тіла, на основі чого було визначено розподіл та зміст педагогічних засобів у процесі занять із використанням засобів оздоровчого фітнесу. Розроблену програму доцільно впровадити на практиці в процес позашкільних занять із фізичного виховання, що сприятиме покращенню фізичного розвитку, підготовленості та працездатності дівчат середнього шкільного віку.

Ключові слова: експертна оцінка; програма; фітнес; вага тіла; дефіцит ваги