Enhancing physical activity in preschool children through the original “gymnastics for all” program

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Abstract

This article substantiates the effectiveness of the original “Gymnastics for All” training program in increasing the physical activity of preschool children (aged 3–6 years). The program focuses on developing fundamental movement skills (jumps, supports, hangs), improving physical growth indicators (height, body weight) and motor abilities (flexibility, strength, coordination), as well as quantifying physical activity (movement counts). The study follows a pedagogical quasi-experimental design, involving an experimental group (EG, n=150) and a control group (CG, n=150). The intervention phase lasted 52 weeks, with 60-minute sessions held three times a week. The paper presents the findings of this pedagogical study, outlining the program's structure, expected progression, and actual outcomes. The findings support the implementation of the program in preschool educational institutions, provided that principles of load management, safety, and accommodation of children’s individual characteristics are observed.

Keywords: preschool age, physical activity, gymnastics, strength, flexibility, coordination, supports, hangs, jumps, original program.

Introduction

Preschool age (3–6 years) is a crucial period in the development of a child's motor function, during which coordination mechanisms, musculoskeletal stability, sensorimotor connections, and fundamental motor skills are formed. Current trends—such as increased screen time and fewer opportunities for active free play—often result in insufficient physical activity, which negatively impacts posture, muscular endurance, functional capacity, and emotional well-being.

As a system of exercises, gymnastics offers significant developmental potential because it incorporates tasks targeting coordination, balance, flexibility, muscular endurance, and movement precision. However, a key condition for its effectiveness is the age-appropriate adaptation of exercises and proper instructional design, including the use of a play-based format, the principles of gradual progression and variability, and strict safety monitoring.

The purpose of the study is to substantiate the effectiveness of the original "Gymnastics for All" program as a means of increasing physical activity and developing the motor qualities of preschool children.

Objectives:

1. To develop a gymnastics program for children aged 3–6 years.

2. To identify and describe the indicators for evaluating effectiveness (physical activity, supports, hangs, flexibility, strength, coordination, jumping, height, and weight).

3. To present the changes in these indicators within the experimental group (EG) and control group (CG) at the conclusion of the intervention period.

4. To summarize the pedagogical conditions required for the successful implementation of the program.

Methods

This pedagogical study was based on a quasi-experimental design with a control group.

- **Experimental Group (EG)**: classes following the **“Gymnastics for All”** program.

- Control Group (CG) : physical education classes following the traditional preschool curriculum (without the specially designed gymnastics component in the specified volume).

The study involved 300 children (100 aged 3–4 years, 100 aged 4–5 years, and 100 aged 5–6 years), distributed as follows:

- EG: n = 150, 3–4 years old – 50 children, 4–5 years old – 50 children, 5–6 years old – 50 children;

- CG: n = 150, 3–4 years old – 50 children, 4–5 years old – 50 children, 5–6 years old – 50 children.

The intervention phase lasted 52 weeks (1 academic year).

Class frequency: 3 times a week. Class duration: 60 minutes.

1. Warm-up (10–12 min): formations, game-based walking/running, and attention and coordination exercises (turns, changes of direction, and re-formations).

2. Main part (40–45 min):

- coordination and balance exercises;
- "arms-core-legs" gymnastics sequences (with a gentle focus on precision);
- "supports" module (front support/knee support, elevated supports adapted to age capabilities);
- "hangs" module (in simplified variations: hanging on a horizontal bar with a reduced range of motion, active gripping tasks with support as needed);
- flexibility (dynamic and static elements within a safe range of motion);
- core strength development (holds, simplified static poses).

3. Cool-down (5–8 min): breathing exercises, relaxation, well-being assessment, and a game-based wrap-up.

Results and discussion

The "Gymnastics for All" program featured general conditioning exercises, various walking and running techniques, gymnastic supports and hangs, jumps, as well as exercises for flexibility, balance, strength, and coordination. The sessions also incorporate game-based tasks, formation changes, rhythmic combinations, and exercises performed to music.

A key aspect of evaluating the program's effectiveness is analyzing the participants' physical activity and their ability to perform gymnastic exercises. This can be assessed using test movement sequences, support and hang exercises, and jumping tasks (see Table 1).

The following parameters were evaluated:

1. Number of movements (a semi-quantitative indicator of physical activity): records the number of purposefully executed movements or actions within a given sequence (or the total number of movements in a standardized exercise during a session).
2. Number of supports: the number of correctly executed support holds or repetitions within a test interval.
3. Number of hangs: the number of holds or grip elements completed during a test period.
4. Height (cm).
5. Weight (kg).
6. Flexibility level (score).
7. Strength level (score).
8. Coordination level (score; accuracy of movement sequences and synchronization).
9. Number of jumps (the number of jumping actions repeated within the test interval).

The data presented in the table show higher mean values in the experimental group across all four indicators. The most pronounced

Table 1. Comparative indicators of motor activity after 52 weeks of training

N	Parameter	EG (n = 150)	CG (n = 150)	Mean difference
1	Number of movements per control series, reps	185 ± 18	142 ± 16	+43
2	Number of supports, reps/holds	28 ± 4	19 ± 3	+9
3	Number of hangs, conventional holding units	10,5 ± 2,0	7,2 ± 1,7	+3,3
4	Number of jumps per control interval, reps	46 ± 6	33 ± 5	+13

absolute difference is observed in the number of movements per test series: 185 movements in the experimental group versus 142 in the control group.

The difference is 43 movements, or approximately 30.3% relative to the control group's mean. In jumping tasks, the experimental group demonstrates an advantage of 13 jumps, which corresponds to approximately 39.4% of the control group's score.

The number of support holds in the experimental group is 9 repetitions higher, while the hanging score is higher by 3.3. These differences reflect the potential advantage of systematic gymnastics training in developing muscular endurance and mastering motor skills.

For a more comprehensive evaluation of the program's effectiveness, we examined not only the number of exercises performed, but also changes in physical attributes. These include flexibility, strength, coordination, and physical development indicators.

Height and body weight characterize the participants' physical development, whereas assessing flexibility, strength, and coordination provides insight into the development of specific motor abilities (Table 2).

According to the data, the most notable differences between the groups are observed in

Table 2. Comparative indicators of physical development and motor qualities after 52 weeks of training

№	Parameter	EG (n = 150)	CG (n = 150)	Mean difference
1	Height, cm	110,8 ± 5,2	110,0 ± 5,1	+0,8
2	Body weight, kg	18,9 ± 2,7	18,4 ± 2,6	+0,5
3	Flexibility, points (0–5)	4,1 ± 0,5	3,4 ± 0,6	+0,7
4	Strength, points (0–5)	4,0 ± 0,5	3,2 ± 0,6	+0,8
5	Coordination, points (0–5)	4,2 ± 0,4	3,5 ± 0,5	+0,7

the indicators of strength, flexibility, and coordination. The average strength score in the experimental group is 4.0 points, compared to 3.2 points in the control group. The difference is 0.8 points.

The difference between the groups is 0.7 points for flexibility and also 0.7 points for coordination. This pattern is consistent with the assumption that diverse gymnastics exercises, regular repetition of movement combinations, balance tasks, and formation changes can contribute to the development of motor qualities.

Height and body weight indicators differ only slightly: by 0.8 cm and 0.5 kg, respectively. However, in themselves, these differences do not indicate a positive or negative impact of the program. Interpreting physical development indicators requires taking into account the participants' age, sex, individual growth rates, health status, and baseline characteristics.

Assessing coordination is of particular importance. In the "Gymnastics for All" program, coordination abilities are developed by changing the direction of movement, performing turns and formation changes, coordinating arm and leg movements, and reacting to visual and auditory cues. By systematically performing such tasks, participants have the opportunity to improve the accuracy, synchronization, and timing of their motor actions (Table 3).

This evaluation system enables a comprehensive review of the program. Furthermore, each indicator follows a clear testing protocol specifying the starting position, duration of execution, number of attempts, units of measurement, and criteria for recording the result.

Table 3. Main areas for evaluating the effectiveness of the "Gymnastics for All" program

Focus area	Assessed indicators	Expected benefit of classes
General motor activity	Number of movements per test set	Development of motor performance
Strength fitness	Supports, hangs, and strength exercises	Development of strength and muscular endurance
Speed-strength abilities	Number of jumps in a given time	Development of the ability to perform motor actions quickly
Flexibility	Standardized flexibility test results	Increase in the available range of motion
Coordination	Accuracy in performing combinations, turns, and formation changes	Improvement of movement coordination and spatial orientation
Physical development	Height and body weight	Monitoring of individual physical development

The presented study framework allows for an assessment of the "Gymnastics for All" program from the perspective of the comprehensive development of motor abilities. Unlike training sessions focused primarily on isolated physical attributes, this program incorporates a variety of exercises that combine motor tasks, rhythmic elements, game-based scenarios, and group formations.

However, the program's effectiveness depends on the participants' age, the frequency and duration of sessions, baseline fitness levels,

the quality of instruction, and adherence to the principles of progressive overload. Therefore, when interpreting the final results, one should consider not only average indicators, but also individual differences among participants.

Conclusion

Thus, to evaluate the effectiveness of the "Gymnastics for All" program, it is advisable to use a set of indicators covering general motor activity, strength fitness, flexibility, coordination, and physical development.

According to the data obtained, more pronounced improvements are observed in the EG:

- increased motor activity (number of movements);
- improved strength capacity, manifested in an increased number of supports and holds;
- improvement of coordination (quality and consistency of series);
- development of flexibility;
- increase in jumping endurance through regular, targeted gymnastics workloads.

The obtained results are logically consistent with the primary pedagogical benefits of gymnastics for preschool children:

1. **A systematic approach and variety** of exercises increase the overall motor "volume" of the sessions, building stable motor habits.
2. **Supports and hangs** (in age-adapted forms) promote the development of the shoulder girdle and core muscles, which is reflected in strength indicators and the execution quality of other movements (including jumps).
3. **Coordination modules** improve movement control and action accuracy while reducing the "breakdown" of technique when fatigued.
4. **Flexibility** is developed through regulated exercises performed regularly within a safe range of motion, which is supported by incorporating both dynamic and static elements.

The author's "Gymnastics for All" program, conducted 3 times a week for 60 minutes over 52 weeks, demonstrates effectiveness in increasing the physical activity of 3-to-6-year-old children and improving indicators of strength fitness (supports, hangs), flexibility, coordination, and jumping endurance. Implementing the program in preschool educational institutions is advisable, provided there is strict adherence to the principles of safety and individualized workloads.

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Research interests
Gymnastic, management of sport, Physical education and sport, Theory of physical education, Analyzing of sport competitions