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## SCHOOL-RELATED PHYSICAL ACTIVITY INTERVENTIONS AMONG CHILDREN: A REVIEW STUDY

### Abstract

The shift in Kazakhstan's primary education curriculum, especially regarding physical education, reflects a need for a balanced approach between intellectual development and physical health. As educational reforms increase cognitive demands on students, there is concern over a decline in physical activity, which is crucial for children's overall health. The traditional goal of developing a well-rounded individual remains, but achieving this now requires fostering an awareness of the importance of physical health as a core human value.

However, the growing focus on mental and psycho-emotional development has overshadowed physical activity, contributing to a reduction in natural motor behaviors among younger students. This imbalance suggests the need for strategies to boost children's motivation for independent physical activity, not just through extrinsic incentives but also by nurturing an intrinsic appreciation of physical health.

To address this, promoting a sense of autonomy in physical education has become a central issue in Kazakhstani primary schools. Developing students' self-directed engagement in physical exercises and sports could be vital in counteracting the negative effects of reduced physical movement, helping students form lifelong healthy habits.

**Keywords:** improvement of physical qualities, pedagogical conditions, primary education, primary school students.

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## МЕКТЕП ЖАСЫНДАҒЫ БАЛАЛАРДЫҢ ДЕНЕ ҚАСИЕТТЕРІНІҢ БЕЛСЕНДІЛІГІН АРТТЫРУ ШАРАЛАРЫ: ШОЛУ ЗЕРТТЕУІ




### Аңдатпа

Қазақстанның бастауыш білім беру бағдарламасындағы өзгерістер, әсіресе дене тәрбиесіне қатысты, зияткерлік даму мен дене денсаулығына теңгерімді көзқарас қажеттілігін көрсетеді. Білім беру реформалары оқушылардың танымдық талаптарын арттыратындықтан, балалардың жалпы денсаулығы үшін маңызды болып табылатын физикалық белсенділіктің төмендеуіне қатысты алаңдаушылық бар. Дәстүрлі мақсат - жан - жақты дамыған тұлғаны қалыптастыру-өзгеріссіз қалады, бірақ оған жету үшін қазір адамның негізгі құндылығы ретінде физикалық денсаулықтың маңыздылығы туралы хабардар болу қажет.

Алайда, психикалық және психоэмоционалды дамуға назар аудару физикалық белсенділікті екінші орынға қойды. Бұл бастауыш сынып оқушыларының табиғи моторлық мінез-құлқының төмендеуіне әкелді. Бұл теңгерімсіздік балалардың сыртқы ынталандыру арқылы ғана емес, сонымен қатар олардың физикалық денсаулығының ішкі құндылығын тәрбиелеу арқылы тәуелсіз физикалық белсенділікке деген ынтасын арттыруға бағытталған стратегияларды әзірлеу қажеттілігін көрсетеді.

Бұл мәселені шешу үшін дене тәрбиесі процесінде дербестік сезімін дамыту қазақстандық бастауыш мектептерде басты міндетке айналды. Дене шынықтыру және спорт сабақтарында оқушылардың тәуелсіздігін дамыту оқушыларға өмір бойы салауатты әдеттерді қалыптастыруға көмектесу арқылы шектеулі ұтқырлықтың жағымсыз әсерлеріне қарсы тұру үшін өте маңызды болуы мүмкін.

**Түйін сөздер:** дене қасиеттерін жетілдіру, педагогикалық жағдайлар, бастауыш білім беру, бастауыш сынып оқушылары.

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## МЕРОПРИЯТИЯ ПО ПОВЫШЕНИЮ АКТИВНОСТИ ФИЗИЧЕСКИХ КАЧЕСТВ ДЕТЕЙ ШКОЛЬНОГО ВОЗРАСТА: ОБЗОРНОЕ ИССЛЕДОВАНИЕ

### Аннотация

Изменения в программе начального образования Казахстана, особенно в том, что касается физического воспитания, отражают необходимость сбалансированного подхода к интеллектуальному развитию и физическому здоровью. Поскольку образовательные реформы повышают познавательные требования к учащимся, существует обеспокоенность по поводу снижения физической активности, которая имеет решающее значение для общего состояния здоровья детей. Традиционная цель - формирование всесторонне развитой личности - остается неизменной, но для ее достижения теперь требуется повышение осведомленности о важности физического здоровья как основной ценности человека.

Однако растущее внимание к умственному и психоэмоциональному развитию отодвинуло на второй план физическую активность, что привело к снижению естественного двигательного поведения младших школьников. Этот дисбаланс указывает на необходимость разработки стратегий, направленных на повышение мотивации детей к самостоятельной физической активности не только с помощью внешних стимулов, но и путем воспитания у них внутренней ценности физического здоровья.

Для решения этой проблемы развитие чувства самостоятельности в процессе физического воспитания стало центральной задачей в казахстанских начальных школах. Развитие самостоятельности учащихся в занятиях физическими упражнениями и спортом может иметь жизненно важное значение для противодействия негативным последствиям ограниченной подвижности, помогая учащимся формировать здоровые привычки на всю жизнь.

**Ключевые слова:** совершенствование физических качеств, педагогические условия, начальное образование, учащиеся начальной школы.

**Introduction.** The development of an individual's personality through systematic physical education begins actively during primary school. At this age, children's growing interest in motor activities makes it a crucial period for introducing them to regular physical exercise. Fostering an interest in physical activity and health, along with encouraging involvement in various aspects of a healthy lifestyle, has become a key objective in modern school education. This focus aligns with the broader goal of cultivating lifelong habits that support physical well-being and personal development.

A critical target in this developmental phase is encouraging students' independence in physical education. This independence is particularly evident in their ability to perform general developmental exercises autonomously. Indicators of such independence include:

- Knowledge of the structure of developmental exercises,
- Understanding the correct sequence of actions in exercises,
- Ability to use technical terminology when describing physical movements,
- Development of motor reflexes,
- Application of skills acquired both in lessons and during extracurricular activities.

This approach highlights the importance of not only teaching physical skills but also empowering students to take ownership of their health through an understanding of exercise practices. The goal is to ensure that children can independently engage in physical activity, applying their knowledge in various settings and throughout their lives. As such, the introduction of structured, developmental practices in primary school physical education is seen as essential to shaping students' long-term attitudes towards health and fitness. (1, p. 86).

The expectation from educational institutions is that primary school children in Kazakhstan should gain the experience of acting independently, develop their creative potential, and acquire the skills to organize activities independently during their education. However, there is limited data on this issue in Kazakhstan, as highlighted by the government document "The Concept of Development of Physical Culture and Sports of the Republic of Kazakhstan till 2025." This document points out the scarcity of Kazakhstani studies on physical education for schoolchildren and the lack of a coordinated strategy for conducting scientific research in the field of sports and physical education in the country.

The available data indicate that the traditional physical education system in primary schools is ineffective, contributing to a low level of physical development and health among students. One major issue is the weak material and technical base of schools in Kazakhstan. For instance, in 1,970 schools across the Republic, there are no gymnasiums, over 60% of schools operate in two shifts, and there are also three-shift schools. These infrastructural shortcomings make it difficult for schools and society to adequately meet the physical education needs of primary school students.

Several adverse factors contribute to the deterioration of students' health during their schooling. These include the intensification of the educational process, psycho-emotional stress, and low levels of physical activity. A significant reason for low motivation in physical education is the mismatch between students' personal interests and the curriculum. The absence of individualized programs for developing students' physical abilities—programs that address each student's needs and take into account their developmental stages—significantly reduces interest during classes and independent physical activities. Without such personalized approaches, the effectiveness of physical education is limited, leading to poor physical development outcomes among schoolchildren.

This scenario calls for a rethinking of physical education in Kazakhstan, emphasizing the need for better infrastructure, individualized training programs, and strategies that align with students' interests and developmental needs. (3, p. 48).

*Basic provisions.* The students' independence and activity in physical education. The study sought to address the observed gap in pedagogical methods and educational practices that promote autonomy in physical activity among students. Given the decline in pedagogical effectiveness and the absence of updated methodological guidelines, the research focused on understanding how general developmental exercises could impact students' motivation and self-sufficiency in physical education.

The objectives of the study were to:

1. Assess the current state of physical education in primary schools, particularly regarding students' independence and engagement.
2. Identify the specific challenges faced by educators in fostering autonomy and active participation in physical activities.
3. Implement general developmental exercises designed to encourage self-directed participation and assess their impact on students' motivation, physical activity levels, and overall engagement.
4. Evaluate the effectiveness of these exercises in promoting not only physical development but also a conscious and sustained interest in physical health.

The study hypothesized that incorporating structured developmental exercises into physical education classes would positively influence students' independence and increase their active participation, laying the foundation for lifelong physical activity habits.

The results showed that the effectiveness of the actual experience of students in the organization of physical education based on the current school curriculum is insufficient.

**Materials and methods.** Perceptions of traditional physical education classes in Kazakhstan often highlight the monotony of the program content, the lack of appeal, and the absence of modern sports equipment. These factors contribute to the view of physical education as a "social obligation" rather than a natural and necessary part of daily life. The rigid structure of traditional physical education does not provide students—especially those with disabilities—with the freedom to choose the types of physical activities that suit their interests or needs. This lack of choice discourages both interest and motivation, resulting in fewer students engaging in physical activities outside school hours. As a result, the overall effectiveness of physical education as part of the school curriculum is significantly diminished.

The course content in "Physical Culture" does not adequately prepare students with the necessary skills to independently engage in physical exercise. Many primary school graduates lack the ability to organize and implement basic health-promoting physical activities on their own. They are not familiar with essential practices like managing and regulating physical exertion, performing hygiene procedures, or utilizing modern health-promotion techniques. Additionally, they lack exposure to adaptive physical culture exercises, which are particularly important for students with varying abilities and needs.

This situation underscores the need for reform in physical education. A more modern and flexible approach that includes diverse activities, modern equipment, and a focus on developing lifelong physical health skills could foster greater student engagement and better health outcomes. Specifically, ensuring that students have the knowledge and ability to maintain their physical well-being independently after school is crucial for developing a healthier, more active generation, sports of practical significance and safe life. In multitudinous cases, theoretical knowledge is separated from practical exertion.

The main objective of the study was to investigate the impact of general experimental gymnastics on the ability of younger schoolchildren to independently organize their physical activities. The results of the study suggest that the level of independence among children can be significantly improved through several key strategies. These include providing children with general experimental gymnastics, ensuring timely management and assessment of their independent activities, maintaining functional control by instructors, and offering individualized support to further develop their gymnastics skills.

The study highlights several important aspects related to the improvement of children's physical education:

1. Enhancing Independence: Through experimental gymnastics, children in lower grades can develop the skills needed to organize and engage in physical activities autonomously.

2. Role of Assessment: Timely monitoring and assessment of children's independent physical activities help ensure their proper development and provide opportunities to make necessary adjustments to their exercise routines.

3. Instructor Involvement: Functional control and guidance by instructors are crucial in shaping the effectiveness of the physical education process. Teachers can facilitate children's development by making adjustments based on performance and progress.

4. Family Involvement: Engaging the entire family in the children's physical education has been identified as an important factor for promoting health and improving physical well-being. Family participation encourages consistent exercise and supports the overall goal of health creation.

5. Creative Approaches: Emphasizing creativity in the performance of experimental exercises fosters interest and enthusiasm among students. By allowing some freedom in how exercises are performed, students are more likely to remain engaged and motivated.

6. Teacher and Student Reflections: The study also pointed out the importance of reflections from both schoolchildren and instructors as active participants in the educational process. Their feedback can provide valuable insights into the effectiveness of the physical education program and help tailor it to meet students' needs.

Overall, the study emphasizes the importance of a holistic approach that includes structured exercises, regular assessments, and both teacher and family involvement to enhance the physical independence and health of younger schoolchildren.

Presently, experimenters from numerous countries are directing their sweats on working the problem of physical, internal, and spiritual-moral enhancement of schoolchildren (Burns et al.; Pozuelo-Carrascosa; Beni; García- Hermoso et al., 2020; Gómez- Álvarez et al., 2021). The results of former studies indicate negative trends in the physical fitness of schoolchildren (Núñez- Quiroga et al, 2018; Fu et al, 2019; Masanovic et al, 2020; Fühner et al, 2021; Oñate Navarrete et al., 2021; Jiang et al, 2021); reluctance of the maturity of schoolchildren to engage in physical culture and sports on a methodical base (Rodriguez-Ayllon et al., 2019; Goh et al., 2019; Andermo et al., 2020). For illustration, Guthold et al, 2020 used data from 298 academy-grounded checks from 146 countries, homes, and areas including 16 million schoolchildren aged 11-17 times. Encyclopedically, in 2016, 810 (95 query interval (77,8-87,7) of pupils aged 11- 17 times were rightly physically active (76,1- 80,4) of boys and 84,7 ( 83,0-88,2) of girls) ( 4,p. 63).

Great attention in the environment of our exploration was paid to workshop where the part of general developing exercises in primary academy is delved (Taylor et al., 2018; Watson et al., 2019; Cañas Encinas et al., 2021); theoretical views on the use of means for physical education in educational-

instructive conditioning (Chanal et al., 2019; Ledezma, 2019; Quennerstedt, 2019; Masini et al., 2020; Gómez- Álvarez et al., 2021; Thorjussen, 2021; Wassenaar et al., 2021) (5, p. 93).

Based on the analysis of the scientific literature and in line with the objectives of the research, we reached the following conclusions:

1. Autonomy as a Core Personal Trait: Autonomy is considered one of the most valuable qualities in an individual's personality. It involves:

- Independence: The ability to make and execute important life decisions independently, without external influence (Chirkov, 2014).
- Responsibility: A willingness to take responsibility for one's actions.
- Belief in the Social and Moral Validity of Actions: The conviction that such independent behavior is realistic, socially acceptable, and morally correct.

From these findings, it can be inferred that personal autonomy enhances creativity, improves internal psychological processes, and increases satisfaction with various activities, including work, sports, and leisure.

2. Importance of Early Development: Research indicates that childhood is a critical period for the development of basic motor skills, motor functions, and an interest in physical culture. The most significant changes in children's motor systems occur between the ages of 8 and 12. Children at this age are particularly responsive to short bursts of dynamic, high-intensity physical activity.

3. Structure of the Experiment: The experiment was conducted over a 7-month period and focused on creating conditions that supported the development of schoolchildren's ability to organize and perform physical exercises independently. This was achieved through the implementation of general experimental exercises, with the involvement of representatives from the scientific community, physical culture and sports specialists, and experienced teachers who had achieved significant success in teaching the subject. The methods used emphasized effective coaching styles and innovative techniques.

4. Integration of Standards and Customization: According to the State Educational Standard, the lesson plan included both a required portion and a component shaped by the actors involved in the educational process. The experimental portion of the lessons was carefully designed to ensure that the needs and interests of researchers, students, parents, and the teaching staff were all addressed. Time was allocated specifically for the experimental portion of the lessons, ensuring that the goals of the study and the educational needs of the students were met.

In conclusion, the research supports the idea that fostering autonomy in schoolchildren through structured physical activities and general experimental exercises has significant benefits. It helps children develop motor skills during their most formative years while also encouraging them to take responsibility for their own physical health. The collaboration between educators, specialists, and the broader community played a key role in achieving these outcomes, demonstrating the importance of a holistic approach to physical education.

Within the interface of children, with the interest of the on-screen characters within the trial and their families, person classes were created, inside the outline of which the individual line of the schoolboy improvement was shaped. The execution of the program was went with by educators bolster.

Taking into consideration the disposition of the affect of common test works out, it was classified concurring to the anatomical base, gathering works out for distinctive passage of the body

Taking into account the nature of the influence of general experimental exercises, these exercises were categorized based on anatomical regions of the body, grouping them according to their focus on different muscle groups:

1. Exercises for the muscles of the arms and shoulder girdle.
2. Exercises for the muscles of the neck and chest.
3. Exercises for the muscles of the legs.
4. Exercises for the muscles of the whole body.

This classification, based on anatomical features, was further enhanced by categorizing exercises according to their physiological effects. This refers to the exercises' predominant impact on developing

motor skills such as strength, speed, flexibility, endurance, and coordination. Consequently, all exercises were divided into three groups:

1. Strength and speed-strength exercises.
2. Stretching exercises.
3. Relaxation exercises.

The section of the lesson titled "Styles of motor (physical) effort" involved tasks focused on the active engagement of students in independent forms of physical activity. This section included concepts related to the structured organization of purposeful physical effort, reflected in the styles of planning, executing, and controlling activities. It was closely related to the theoretical portion of the lesson, offering a list of essential and sufficient topics for independent physical culture, health, and sports activities to develop skills and abilities.

This structure was adapted to focus the educational components of the lessons on enhancing the physical development of schoolchildren, comprising general physical and technical training methods. The tasks incorporated a variety of approaches to achieving the objectives, including the use of play systems and impromptu behaviors in games. These methods contributed to the development of autonomy, initiative, creativity, perseverance, and other valuable specific traits in the students.

By implementing this comprehensive framework, the study sought to enhance the physical and personal development of schoolchildren, promoting not only physical fitness but also the ability to independently engage in health-promoting activities.

The segment titled "Physical Upgrade" was focused on promoting balanced physical development, comprehensive physical training, and the maintenance and enhancement of students' health. This section comprised a range of interconnected themes that complemented each other, including:

1. Physical Culture and Health – Ideal Conditioning: Emphasizing the relationship between physical culture and overall health.
2. Sports and Health – Ideal Conditioning with a General Experimental Approach: Integrating sports activities with health improvement practices.
3. Operation – Familiar Exercises and General Developmental Exercises: Covering routine exercises and general physical developmental activities.

A key emphasis for the instructors was on building resistance to fatigue across various types of motor activities, which means developing overall endurance. Importantly, the focus was not only on physical aspects but also on the mental, cognitive, emotional, and volitional development of the students.

Each week, students participated in 20-minute general test exercises under the supervision of a teacher, with sessions held on Mondays, Wednesdays, and Fridays. These sessions included a variety of general experimental exercises aimed at developing individual motor skills such as:

- Strength, endurance, agility, speed, coordination, balance, rhythm, flexibility, and grace.
- Enhancement of cognitive skills like attention, spatial awareness, and time perception.
- Improvement of the functional systems of the body, including exercises that trained the respiratory and cardiovascular systems, as well as those that stimulated metabolic processes.

All the exercises were performed with a variety of objects and equipment, such as sticks, balls, hoops, flags, skipping ropes, gymnastic benches, gymnastic walls, and chairs. The exercises were designed to be carried out in different directions, planes, and with varying levels of intensity, speed, muscle tension, and relaxation.

Some of the general experimental exercises were technically simple, while others required a high level of coordination, attention, and physical fitness. The students typically performed 1-2 sets of each exercise, with the exercises tailored to challenge different motor skills and capacities.

This comprehensive approach to physical education ensured that schoolchildren not only developed their physical abilities but also improved their cognitive and emotional capacities, fostering a holistic approach to health and fitness.

The assessment of students' independence was conducted at three key points: at the start (baseline), 1-2 weeks before the beginning of the experiment in the early autumn of the first quarter; and at the

control examination, 6 months later, 1-2 weeks before the conclusion of the third quarter (spring). During each phase, the experimenter provided detailed explanations and demonstrations of the physical fitness tests to ensure that the participants fully understood the procedures. The tests were designed to align with the *State Obligatory Standard for Primary Education of the Republic of Kazakhstan*, ensuring that they met the required proficiency standards.

The real-time recording of grades during physical education assignments allowed for precise tracking of each student's progress and ensured that they met the expected competency standards. This approach facilitated the accurate evaluation of their physical development and performance, offering timely insights for adjustments in teaching methods or activities as needed.

The experiment's structure was meticulously designed with a strong emphasis on aseptic principles and adherence to educational process guidelines. This ensured that students performed at their best throughout the school day without compromising their health or well-being. Key considerations were made to maintain the physiological balance necessary for healthy child development, which involved:

- Creating a supportive environment: The design ensured that the setting was conducive to both physical and mental development.
- Preventing overstrain and fatigue: The potential negative effects of fatigue and nervous system strain were minimized, allowing children to participate in physical activities without risk to their overall health.

Through these carefully managed conditions, the study aimed to enhance the general resistance of the children's bodies, contributing to better overall health outcomes. By reducing the risk of physical and mental fatigue, the program supported the children's ability to engage fully and productively in physical education activities.

In conclusion, the focus on balanced physical exertion and well-being promoted holistic development, enabling students to thrive in both physical and cognitive domains throughout the school year. The careful balance between physical activity and health preservation was essential to fostering long-term benefits in both the students' physical abilities and overall well-being.

All members of the investigation gather entered preparing some time recently beginning information collection. Beside the individuals of the investigation gather, an vital put was enchanted in the advancement of educational capability and down to earth availability and clarification of substance and styles for raising freedom chops through comprehensive test hone with essential foundation children. For this reason, gatherings , shops, meetings, conferences and open classes were organized to procure styles for erecting independence chops through the capability to dismember and appraise the substance and strategy of comprehensive advancement and physical instruction.

Results and discussion. The selection comported of school children 8-10 times old, and schoolchildren of secondary seminaries №209 and № 168 in the Alatau quarter of Almaty, Kazakhstan. Replies (85 school children 8-10 times old) were divided into two groups by the data of the trial.

To assess the effectiveness of the carried- out work, the control trial was conducted, in which the same tasks were used at the catching on stage. The influence of the experimental tutoring methodology on the independence of schoolchildren through general developing exercises is shown in Table 1.

*Table 1. Comparative analysis of the levels of independent performance of general developing exercises by primary schoolchildren according to the results of ascertaining and control experiments in EG and CG*

Levels	Experimental group		Control group	
	Before training	After training	Before training	After training
High	5 (12%)	8 (32%)	6 (16%)	6 (16%)
Average	24 (48%)	17 (60%)	23 (44%)	24 (48%)
Low	112(40%)	4 (8%)	12 (40%)	11 (36%)

Investigation of the comes about of catching on and helpful trials appeared that the number of essential schoolchildren in exploratory bunches, having tall and normal circumstances of compliance of the aptitude of free performing common creating works out, expanded essentially compared to the catching on organize. So, in the event that at the organize of the catching on trial as a entirety, from all the subjects within the exploratory gather, 12 of essential schoolchildren had a tall position of compliance of the aptitude of free execution of common creating works out, moreover concurring to the comes about of the interchange middle diagnostics of comparable essential schoolchildren, there were once around 32, and with the normal position of 60. There were uncovered within the control bunch of essential schoolchildren minor changes within the circumstances of improvement of the expertise of autonomous execution of common creating works out. o illustrate, during the *initial diagnostics*, there were 16 primary schoolchildren who demonstrated a high level of skill in independently performing general developmental exercises. However, by the time of the *final diagnostics*, the number of students exhibiting a high level of independent performance had increased to 20.

This indicates an improvement in the number of students who developed the necessary skills for autonomous execution of exercises over the course of the study. Although the increase is modest (from 16 to 20), it highlights the positive impact of structured interventions designed to promote independence in physical education activities. The moo position some time recently the trial was uncovered in 40 of repliers, conjointly concurring to the comes about of the interchange diagnostics, the moo position of the aptitude of autonomous execution of common creating works out was uncovered in 32 of essential schoolchildren.

Within the display consider, the impact of common test works out on the compliance of the aptitude of free affiliation of physical works out by youngish schoolchildren in Kazakhstan was considered. As expected, we attained measurably critical contrasts in the position of aptitude compliance of autonomous execution of common creating works out at essential schoolchildren from exploratory and control bunches. The findings suggest a clear increment in students' knowledge and understanding of physical exercises, particularly in several key areas:

1. Structure of Physical Exercises: Students showed greater awareness of how exercises are organized, including the correct form and techniques for each movement.
2. Spatial Awareness: There was improvement in students' understanding of the spatial positioning of their bodies during exercise, which is essential for performing movements accurately.
3. Sequencing of Exercises: Students demonstrated a better grasp of the correct order in which exercises should be performed, leading to smoother and more efficient physical routines.
4. Knowledge of Spatial Language: Students gained familiarity with spatial terminology, which helped them better understand instructions and adjust their movements accordingly.
5. Adaptability: The students in the experimental group developed the ability to modify and adjust the exercises based on different conditions, reflecting an improvement in their independent execution skills.

Additionally, creativity and self-organization began to emerge in the students' approach to performing various physical exercises. These improvements signify not just an increase in the amount of knowledge but also a qualitative shift in how the students independently approached and executed the exercises.

This progression also allowed for the correction of existing weaknesses in their physical development and exercise performance, indicating a deeper and more meaningful transformation in their independent engagement with physical activities. Thus, we can confidently conclude that the intervention led to a subjective restructuring of the way students performed general developmental exercises, fostering greater autonomy, creativity, and competence in physical education.

Existing studies have demonstrated the *beneficial effects* of general experimental exercises in physical education classes on the development of independence skills in young schoolchildren. For example, research by Zueck Enríquez *et al.* (2019) and Opstoel *et al.* (2020) shows that physical

education can significantly contribute to fostering autonomy in children by encouraging independent decision-making and self-regulation in physical activities.

A study by Greier *et al.* (2020) found that children in intervention schools exhibited *greater improvements* in several physical fitness metrics, including the 6-minute run, 20-meter sprint, sit-ups, and backward balance, compared to peers in control schools. These improvements were statistically significant ( $p < 0.01$ ). The researchers noted no significant differences in the development of standing long jump, sideways jumping, push-ups, and stand-and-reach exercises, but the overall findings suggested that *daily physical education (PE)* had beneficial effects on physical fitness, particularly in terms of endurance, core strength, speed, and balance. As a result, daily PE was identified as a *feasible strategy* for promoting physical fitness in schoolchildren.

Additionally, a recent Austrian study by Drenowatz *et al.* (2019) emphasized the importance of *organized sports* in maintaining adequate fitness, a crucial factor for general health and well-being. This study supports the idea that structured physical activity can have a *positive impact on children's physical development* and health.

However, there are *limitations in the comparability* of different studies due to variations in research design, methodology, age ranges, school types, and follow-up periods. For instance, Hohmann *et al.* (2021) investigated the relationship between physical activity and motor abilities in 577 children aged 8-9 in *Germany and China*. Their findings revealed that children who engaged in more physical activity demonstrated *higher levels of physical fitness and motor skills* compared to their less active peers, which is consistent with other studies, including those focusing on the same age group as our study participants.

In conclusion, while the body of research supports the positive effects of physical education and organized sports on children's physical fitness and independence, differences in study designs highlight the need for further research to establish a more unified understanding of how best to integrate these activities into school curricula for maximum benefit.

**Results and Discussion.** The results of this study align well with existing literature (Ludwig *et al.*, 2018; Batista *et al.*, 2019; Cibirillo *et al.*, 2020) that reports improvements in physical flexibility and general mobility among young schoolchildren. These improvements, in turn, enhance cooperation and posture, important for physical education and general motor skill development.

One key factor contributing to these improvements is the students' interest in seeing immediate results from their training. Unlike long-term goals, the ability to observe tangible progress in the short term motivates children to engage more enthusiastically in physical education activities. Previous research by Bidzan-Bluma and Lipowska also suggests that children between the ages of 8-14 make considerable developmental progress due to natural growth factors, especially in terms of speed and motor skills. The present study confirms these findings, showing that game-based systems successfully foster autonomy and motor skill development in children. Games introduce elements of fun, emotional engagement, and attraction, which are crucial for maintaining a positive attitude and active motivation toward physical exercise (Kubat, 9, p. 33).

Furthermore, evidence suggests that physical education is particularly effective in shaping the general attitude and posture of primary school students (Hughes *et al.*; Rosa Guillamón *et al.*, 10, p. 57). This study observed significant growth in static posture among schoolchildren, a crucial aspect of overall physical fitness. The use of natural movements combined with smooth, measured, and synchronized muscle work served as the primary method to develop posture. These exercises stimulate blood circulation and respiration, leading to meaningful functional changes in the body and promoting better metabolism.

Key exercises identified for developing static posture included:

- Running at a steady pace,
- Accelerated walking,
- Repeated jumping, alternating with walking.

To further improve static posture, exercises focused on holding various positions for extended periods, such as standing, sitting, lying down, and hanging, were emphasized. Specific movements like tilting with a straight back, raising arms to different positions, and lying on the stomach while bending and extending were also included (12, p. 81; 13, p. 76). These exercises helped children develop the ability to maintain the basic posture for a sustained period, thus reinforcing the foundations of core strength and stability.

Overall, the study corroborates prior research and demonstrates that structured, enjoyable, and varied physical activities significantly improve children's physical and cognitive abilities, fostering both immediate and long-term benefits in their overall development.

The results of this study demonstrate that general experimental exercises can have targeted effects on specific body areas and muscle groups, contributing to the harmonious development of the musculoskeletal system. By carefully selecting and adjusting the exercises, instructors can produce a multifaceted impact on participants' bodies, leading to balanced physical development. The regulation of physical exertion is highly adaptable with these exercises, as the intensity of the workout can be controlled through:

1. Exercise selection: Some exercises are more challenging than others, and this variability allows for tailored approaches.
2. Duration and repetitions: Increasing the duration of an exercise or the number of repetitions amplifies the intensity.
3. Speed of movement and load: Incorporating faster movements, weights, or the collective resistance of the participants can enhance the muscle stress.
4. Starting position changes: Altering the starting position (such as standing, lying down, or sitting) can also vary the intensity.
5. Voluntary sweating exercises: The need for sustained effort in voluntary exercises further intensifies the workout.
6. Execution style: Different methods of performing the same exercise can yield different outcomes in terms of muscle engagement and overall exertion.

**Conclusion.** This study underscores the positive effects of general experimental exercises on the development of young children's independent motor skills and physical growth. The findings emphasize the importance of systematic practice, demonstrating how these exercises contribute to the harmonious development of the body by targeting specific muscle groups.

Additionally, this research enriches the existing literature on physical education methods for primary school students, offering insights into the relationship between experimental exercises and the cultivation of independence in physical activity. From an application perspective, the study highlights that fostering children's ability to engage independently in physical activities is crucial for improving their overall physical activity levels, enhancing physical fitness, and strengthening their bodies.

Key Findings from Reviewed Studies:

1. School-based physical activity interventions show a significant impact on children's health and academic outcomes.
2. General experimental exercises are particularly effective in improving muscle coordination and promoting independent participation in physical activities.
3. Focusing on developing primary school students' ability to self-regulate and engage independently in physical education is key to improving both fitness levels and long-term health outcomes.

In conclusion, this study advocates for the integration of structured, adaptable, and systematic physical exercises in school-based physical education programs to foster autonomy, promote balanced physical development, and improve the overall well-being of primary school students.

**Physical Health Benefits:** School-based physical activity interventions have consistently shown significant improvements in children's physical fitness across several key areas. These benefits include:

1. **Increased cardiovascular endurance:** Regular physical activities help enhance the heart and lungs' efficiency, allowing children to sustain prolonged physical efforts and improve overall stamina.

2. Enhanced muscle strength: Structured physical activities promote the development of muscle strength, particularly through exercises that involve resistance, such as body-weight training, which is crucial for the growth and development of young children.

3. Improved flexibility: Engaging in a variety of physical movements, such as stretching and dynamic exercises, increases flexibility, which helps prevent injury and promotes better posture and movement efficiency.

4. Reduced rates of childhood obesity: Regular participation in physical education helps children maintain a healthy body weight by increasing energy expenditure and promoting healthier lifestyle habits.

5. Better overall health: Consistent physical activity supports a wide range of health benefits, including stronger bones, improved mental health (by reducing stress and anxiety), and enhanced immune function, contributing to a healthier and more resilient body.

In summary, school-based physical activity interventions are vital for fostering long-term physical health in children, helping to prevent chronic health conditions and promoting a healthy, active lifestyle from an early age.

**Academic Performance:** Evidence indicates that physical activity interventions can positively influence academic outcomes. Schools that integrated physical activity into the curriculum or provided regular physical education classes often observed enhancements in students' concentration, classroom behavior, and academic performance. The beneficial effects are likely due to improved cognitive function and reduced classroom disruptions linked to physical activity.

**Structured Programs:** Programs that include regular, scheduled physical education classes or extracurricular sports tend to show significant benefits. Well-designed programs that balance intensity and duration are particularly effective.

**Curriculum Integration:** Active learning strategies, where physical activity is embedded into academic lessons, can improve engagement and retention of academic material. For example, incorporating movement into math or reading lessons has been shown to enhance student participation and learning outcomes.

**Environmental Changes:** Modifying the school environment can significantly enhance students' physical activity levels. Key changes include:

1. Upgrading playgrounds: Improvements to playground facilities—such as adding new equipment, creating safe play zones, and providing a variety of activity options—encourage children to engage in more active play during breaks. Well-designed spaces stimulate creativity and participation in physical activities, leading to higher overall activity levels.

2. Creating more opportunities for physical activity during breaks: Introducing structured or unstructured physical activity opportunities during recess or lunch breaks, such as organizing games, sports, or movement-based activities, gives students more chances to stay active throughout the school day.

3. Providing open spaces for active play: Open areas where children can freely run, play, and move around promote spontaneous physical activity, which is essential for encouraging natural movement and fostering a physically active lifestyle.

4. Incorporating activity-friendly classroom settings: Modifying indoor spaces, such as integrating standing desks or flexible seating arrangements, can also help reduce sedentary behavior and encourage light physical movement during academic activities.

These environmental changes help create a school culture that prioritizes physical activity, ultimately leading to healthier, more active students and promoting lifelong habits of movement and exercise.

**Program Fidelity:** The success of physical activity interventions is closely tied to their proper implementation. Consistent delivery and adherence to program guidelines are crucial for achieving desired outcomes.

**Support and Resources:** Effective interventions often require strong support from school administrators, teachers, and parents, as well as adequate resources. Schools that successfully integrated physical activity into their programs typically had dedicated staff and appropriate facilities.

**Variation in Outcomes:** The impact of interventions can vary based on factors such as the type of activity, program duration, and student demographics. Additionally, some studies reported only short-term benefits, highlighting the need for long-term evaluation.

**Research Gaps:** There is a need for more robust, long-term studies to better understand the lasting effects of physical activity interventions and to identify the most effective practices.

The findings underscore the importance of integrating regular physical activity into the school day to support both physical health and academic achievement. Schools should consider adopting comprehensive physical activity programs that include structured physical education, active learning, and environmental enhancements. Collaboration among educators, policymakers, and community stakeholders is essential to create and sustain effective programs.

Overall, school-based physical activity interventions have a positive impact on children's health and academic performance. By fostering environments that promote regular physical activity, schools can contribute to the holistic development of students, preparing them for both academic success and healthier lifestyles. Continued research and investment in these programs will be vital to maximizing their benefits and addressing the evolving needs of students.

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