

Using physical education lessons to develop the autonomy of primary school children

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Abstract.

The shift in emphasis from the motor sphere to the mental, psycho-emotional sphere leads to a decrease in the natural motor activity of the younger schoolchild, which actualizes the development of the functional and body adaptive capabilities by means of motor activity. In this regard, the formation of independence for physical education is one of the most important problems in Kazakhstani primary school. Therefore, this research has been undertaken to study: a) the state of work of the country's general education schools in the formation of independence skills in junior schoolchildren; b) the essence and features for the formation of the independence skill in younger schoolchildren through general developing exercises in physical education lessons; c) to propose measures that ensure the effectiveness of the physical education process in primary school to improve the physical fitness of schoolchildren, the formation of their motivation for independent physical education. The revealed results showed that the real experience for organizing physical education of schoolchildren in primary school is not effective enough. The present study points to the beneficial effect of general developing exercises on the physical development of children, especially on the development effectiveness of the independence of schoolchildren and their need for systematic physical exercise.

Keywords: general developing exercises, formation, pedagogical conditions, primary education; primary schoolchildren.

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1. Introduction

Currently, researchers from many countries are directing their efforts to solving the problem of physical, mental and spiritual-moral improvement of schoolchildren (Burns et al., 2018; Pozuelo-Carrascosa et al., 2018; Beni et al., 2019; García-Hermoso et al., 2020; Gómez-Álvarez et al., 2021). The results of previous 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); unwillingness of the majority of schoolchildren to engage in physical culture and sports on a systematic basis (Rodríguez-Ayllon et al., 2019; Goh et al., 2019; Andermo et al., 2020). For example, Guthold et al., 2020 used data from 298 school-based surveys from 146 countries, territories, and areas including 1.6 million schoolchildren aged 11-17 years. Globally, in 2016, 81.0% (95% uncertainty interval 77.8-87.7) of pupils aged 11-17 years were insufficiently physically active (77.6% [76.1-80.4] of boys and 84.7% [83.0-88.2] of girls).

Great attention in the context of our research was paid to works where the role of general developing exercises in primary school is investigated (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-educative activities (Chanal et al., 2019; Ledezma, 2019; Quennerstedt, 2019; Masini et al., 2020; Gómez-Álvarez et al., 2021; Thorjussen, 2021; Wassenaar et al., 2021).

The introduction of an individual's personality to systematic physical education actively occurs at primary school age on the basis of developing age-related interests in motor activity (Wyszyńska et al., 2020; Jaitner et al., 2020). It is the active inclusion of schoolchildren in independent physical education and sports, the formation of their interest in strengthening their own health, involvement in various forms of a healthy lifestyle that appears today as a modern target setting for the development of school education in physical culture (Sallis et al., 2012; Sacheck et al., 2021; Uddin et al., 2020).

Based on the analysis of the scientific literature, proceeding from the tasks of the research, we came to the following conclusions:

Autonomy is the most valuable quality of the personality and it assumes, firstly, independence, the ability to make and carry out in life important decisions himself (Chirkov, 2014), without a clue from the outside, secondly, responsibility, willingness to be responsible for own actions and, thirdly, the belief that such behavior is real, socially possible and morally correct. This conclusion allows us to say that the autonomy of the personality stimulates creativity, improves the mental processes of the individual, increases satisfaction with activity (study, sports, leisure, etc.)

When performing general developing exercises, independence is characterized by the following indicators: knowledge of the structure for general developing exercises, understanding of the sequence of movements' performance; the ability to talk about the performed movements using terminology; to reflex; to apply the acquired skills in the activity during the educational and extracurricular time.

Further, the researches show that younger age is the most favorable for the formation of basic motor skills, the development of motor functions, to foster interest in physical culture. The most significant changes of the child's motor system occur of the 8-12 years. They are more adapted to short-term high-speed power exercises of the dynamic nature.

Thus, it is required from the educational institution that during the years of training in it, primary schoolchildren can gain experience in independent actions, can develop their creative potentials, and can master the skills of independent organization of their activity.

However, in Kazakhstan there is limited data on this issue. This fact is confirmed by the government document "The concept of development of physical culture and sport of the Republic of Kazakhstan till 2025", which indicates that the number of Kazakhstani studies on physical education of schoolchildren is very limited, and there is no coordinated strategy for conducting scientific research in the field of sports and physical education in the country.

1.1. Research Problem Statement

Statistical data confirm this fact that the role of subjective factors in the motivation formation for physical education is constantly decreasing among Kazakhstani schoolchildren. This problem is actualized in the context of the transition of domestic education to a competence model, when the subject area "Physical culture" faces the task of ensuring the monolithic nature of the educational process by determining specific learning outcomes, as well as methods, forms and means leading to the formation of subject competencies in physical culture. However, the fully undeveloped organizational and methodological support of this educational process makes it difficult to apply the competence-based approach in practice. At the same time, the educational process is complicated by the heterogeneity of schoolchildren in the classroom, who have differences in psychophysical development, health, physical fitness. Naturally, the question arises before teachers: what methods, forms and means to use so that the applied physical load corresponds to the functional state of each child.

The authors' practical experience shows that a long and significant limitation of the motor activity of a younger schoolchild leads to negative changes in his higher nervous activity: mental performance worsens (the number of errors increases); the time of simple and complex reactions increases, indicators of the function of attention, thinking, memory decrease, and emotional stability is weakened. Long-term restriction for movements of schoolchildren leads to a decrease in the accuracy of motor actions, to a deterioration in the temporal and spatial coordination of not only complex, but also simple motor skills. Lack of muscle activity is one of the main causes of severe chronic diseases of the internal organs of children. The above-given facts indicate that the traditional system of physical education in elementary school in our country is not characterized by efficiency, which was a consequence of the low level of physical development and health of schoolchildren. The state of the material and technical base of schools in Kazakhstan does not inspire optimism: in the 1970 schools of the Republic of Kazakhstan there are no gyms, more than 60% of schools are engaged in two shifts, there are also three-shift schools (Zakir'Yanov et al., 2013). Consequently, the weak material and technical base of Kazakhstani schools are also one of the factors that the school and society cannot cope with the tasks of physical training of primary schoolchildren (Sadykova et al., 2016). It is worth noting that the main unfavorable factors affecting the deterioration of the health of schoolchildren during schooling are the intensification of the educational process, psycho-emotional stress, and low physical activity.

The reason for the decrease in motivation to the subject is the contradictions that arise as a result of the discrepancy between the personal interests of schoolchildren and the curriculum, where the types of motor activities, means of sports in most cases do not meet the modern needs of young people. The lack of an individual program for the development of physical qualities of each schoolboy in the educational process, in physical culture without taking into account sensitive periods, as well as methods, forms, and means of physical education, significantly reduces the interest of schoolchildren during lessons and independent studies, does not allow to productively influence the growth of indicators of schoolchildren physical development (Zakir'Yanov et al., 2013).

The perception of traditional physical education lessons, the monotony, and unattractiveness of the program material content, the lack of modern sports gear and equipment are assessed as a "social duty", and not as a natural need (Madej, 2021). In addition, the traditional organization of physical education is not focused on the ability of schoolchildren to choose the type of physical activity, especially for schoolchildren with disabilities. The lack of choice does not stimulate either interest in educational activities, or the desire for regular physical education outside of school hours. All these organizational reasons sharply reduce the effectiveness of the educational process.

The content of the subject "Physical culture" does not fully ensure the skills' formation for independent organization of schoolchildren's physical exercises. Many primary school graduates do not know how to independently organize and conduct health-improving forms of physical culture, methods of control and regulation of physical activity, hygiene procedures, technologies of modern

health-improving systems, exercises of adaptive physical culture, sports that have applied significance, the basics of a safe lifestyle (Zakir'Yanov et al., 2013). Theoretical knowledge in many cases turns out to be isolated from practical activity.

As a result of the initial literature review, it was found that in modern conditions the content of the subject "Physical culture" does not fully provide:

- the formation of stable motives and needs of pupils in respect of their health and physical fitness, the holistic development of their physical and mental qualities, the creative use of physical culture tools in organizing a healthy lifestyle;
- the formation of abilities and skills in the use of physical exercises for personal and public well-being, contributing to the formation of schoolchildren personalities and their general culture through the process of physical education;
- the formation of a culture of movements, enrichment of motor experience with physical exercises with a general developing and corrective orientation;
- a content component in terms of the formation of schoolchildren skills and abilities to observe their physical development and health, the amount of physical activity, indicators of basic physical qualities during independent exercise.

1.2. Related research

Existing studies have shown a beneficial effect of general developmental exercise in physical education classes on the formation of the independence skill of younger schoolchildren (Zueck Enríquez et al, 2019; Opstoel et al, 2020). Greier et al, 2020 found from their research that children in the intervention schools displayed significantly higher improvements in the 6-minute run, 20 m sprint, sit-ups, and backward balance ($p < 0.01$) compared to their peers in the control schools. No significant differences were observed in the development of standing long jump, sideways jumping, push-ups and stand and reach and indicate beneficial effects of daily PE on physical fitness, particularly regarding endurance, core strength, speed, and balance in Tyrolean elementary school children. Accordingly, daily PE appears to be a viable option for the promotion of physical fitness in children”.

A recent study in Austria found that organized sports may be an important component in ensuring adequate fitness, which is an important aspect of general health and well-being (Drenowatz et al, 2019). However, differences in research design and methodology, including age range, school types, and follow-up period, limit the comparability of studies. Hohmann et al, (2021)20 studied the relationship between physical activity and motor ability in 577 children aged 8-9 years (the same age as our study participants) in Germany and China. Children with more physical activity can demonstrate higher physical fitness and motor ability compared to peers with less physical activity.

The formation of independence for physical education is one of the most important problems of primary school in Kazakhstan. However, it has not been comprehensively studied. We see overcoming the current situation in the development and application of qualitatively new approaches to the organization of physical education of schoolchildren, ensuring the formation of aspiration and readiness for the effective use of physical culture means for maintaining and strengthening health, physical improvement.

Consequently, the present research has been undertaken to study: a) the state of work of the country's general education schools in the formation of independence skills in junior schoolchildren; b) the essence and features of the skill formation of independence in younger schoolchildren through general developing exercises in physical education lessons; c) to propose measures that ensure the effectiveness of the process of physical education in primary school to improve the physical fitness of schoolchildren, the formation of their motivation for independent physical education. All these testify to the importance of researching this problem.

1.3. Purpose of study

The main goal of this research was to study the influence of general developing exercises on the skill formation for the independent organization of physical exercises in younger schoolchildren. It was suggested that the level of independence of schoolchildren will improve as a result of the availability for performing general developmental exercises for younger schoolchildren; timely control and assessment of the results of schoolchildren independent work for the teacher's operational management of the schoolchildren activities in the classroom, making the necessary adjustments, individual assistance in the development of physical exercises; group and individual consultations of parents on the value of the health of their children, on the advisability of systematic implementation of general developmental exercises, a creative approach to their implementation, as a means of their improvement and health improvement, involving all family members in participating in the physical education of the child; reflection on the part of schoolchildren and the teacher as subjects of the educational process.

2. Method

2.1. Data collection instrument

An experiment was conducted for the study and the data for the study was recorded and analyzed accordingly. The researchers designed the experiment based on the analysis of previous literature.

2.2. Participants

The experiment was attended by third-grade schoolchildren: one experimental and one control group. Both groups were formed based on typological selection and were the same in age, the number of primary school children ($n = 25$) and they were approximately homogeneous on the level of physical fitness, health, formation of skills of independence in physical education lessons. Physical education lessons in the control and experimental groups were conducted following the model program - three lessons per week. The effectiveness of the experimental method was evaluated in the conditions of the real educational process.

The specific eligibility criteria for this study were children who (1) were enrolled in a public primary school; (2) at the age of 8-11; (3) without a diagnosed physical or mental disability according to school records; and (4) can provide parental and child consent. Eligibility was obtained from school records and the Demographic Information Survey. Written consent was obtained from children and consent was obtained from parents before data collection of educational organizations №182 and №149 of the Alatau district in Almaty city, the Republic of Kazakhstan.

2.3. Procedure

This stage of the experiment took 7 months and consisted in creating conditions for the formation of the skill of independent organization of physical exercises by younger schoolchildren through general developmental exercises with the involvement of representatives of the scientific community, experts in the field of physical culture, and sports, practicing teachers who have achieved high results in teaching the subject; using the best successful teaching methods and technologies of the subject.

Following the State Educational Standard, the curriculum includes a compulsory part and a part formed by participants in the educational process. In the part of the curriculum, formed by the participants of the experiment, the time allotted for research was determined, ensuring the realization of the interests and needs of researchers, schoolchildren, their parents (legal representatives), and the teaching staff of the educational organization.

In the interests of children, with the participation of the participants in the experiment and their families, individual curricula were developed, within the framework of which the individual trajectory of the schoolboy development was formed. The implementation of the program was accompanied by tutor support. Taking into account the specificity of the impact of general developmental exercises, it was classified according to the anatomical basis, grouping exercises for different parts of the body:

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

The classification of exercises based on anatomical features was supplemented by exercises for the nature of their physiological effects. This refers to the predominant influence of exercises on the development of motor qualities: strength, speed, flexibility, endurance, dexterity. Therefore, all exercises, in turn, were divided into three groups: 1) Power and speed-power; 2) Stretching; 3) Relaxation.

The section of the curriculum "Methods of motor (physical) activity" included tasks focused on the active involvement of pupils in independent forms of physical culture; ideas about the structural organization of objective activity, reflected in the appropriate methods of organization, execution, and control. This section is closely related to the theoretical section. The main content of this section is a list of necessary and sufficient topics for independent physical culture, health, and sports activities of skills and abilities. Thus, this structure was changed, and the educational blocks of the curriculum were focused on the physical improvement of schoolchildren and consisted of the means of general physical and technical training.

In the lessons, a variety of ways to achieve the goal were used, including the play method, the improvisational nature of the actions in the game, which contribute to the formation of independence, initiative, creativity, dedication, and other valuable personal qualities among the research participants. The section "Physical improvement" included training focused on harmonious physical development, comprehensive physical training, preservation, and strengthening of pupils' health. This section consists of topics closely interrelated and complementing each other several topics: "Physical culture and health-improving activities", "Sports and health-improving activities with a general developmental orientation", "Application-oriented exercises" and "General developing exercises".

Most of all, the instructors paid attention to increasing the resistance to fatigue in various types of motor activity, i.e. development of general endurance. At the same time, it was important for the instructors to touch not only physical but also sensory, intellectual, emotional, volitional manifestations. Thus, in each session (Monday, Wednesday, and Friday), schoolchildren participated in 20-minute general developmental exercises under the supervision of a teacher. Each training session included various types of general developmental exercises, which were aimed at developing individual motor qualities and abilities - strength, flexibility, agility, speed, coordination, balance, rhythm, plasticity, grace, etc. ; on the development of the properties of the psyche - attention, intelligence, orientation in space, in time, etc.; - to increase the functional level of the body's systems - exercises for training the respiratory, cardiovascular systems, activating metabolic processes.

All general developmental exercises were carried out using various objects and apparatus (exercises with sticks, balls, hoops, flags, skipping ropes, on a gymnastic bench, at a gymnastic wall, chairs, etc.). They were performed in different directions, planes, with different amplitude, speeds, degrees of muscle tension, and relaxation. Some of the general developmental exercises were technically simple; others required good coordination of movements, the concentration of attention, and the physical fitness of the trainees. Schoolchildren performed 1-2 sets per exercise.

Independence was assessed at baseline, 1-2 weeks before the start of the experiment at the beginning of the first quarter (in the fall); and at the control examination after 6 months - 1-2 weeks before the end of the third quarter (spring) of the school year. For each physical fitness test, the researcher demonstrated the protocol to the participants before collecting the data, and then assessed the element following the expected learning outcomes, which are set out in the main provisions of the State Compulsory Standard for Primary Education of the Republic of Kazakhstan. All grades were coded live during each participant's physical education lessons.

The organization of this experiment was developed taking into account the sanitary norms and rules for organizing the learning process, ensuring high performance of schoolchildren throughout the school day, establishing the physiological balance of the child's body with the environment in which education and upbringing are carried out, creating favorable conditions for physical and mental development, protecting the nervous the system of research participants against overstrain and fatigue, which increases the general resistance of the body and contributes to the preservation of the health of schoolchildren.

All members of the research group were trained before the start of data collection. The important place was given to working with members of the research group to increase their pedagogical competence and practical readiness to the formation of the skill of independence through general developing exercises at primary schoolchildren, clarifying the content and methodology. For this purpose, seminars, workshops, consultations, talks, open lessons were held, at which the method of formation of skill of independence through general developing was mastered; the ability to analyze and evaluate the content and methodology of physical.

3. Results

The selection consisted of schoolchildren 8-10 years old, schoolchildren of secondary schools №182 and №149 of the Alatau district of Almaty, Kazakhstan. Respondents (50 schoolchildren 8-10 years old) were divided into two groups following the data of the experiment.

To assess the effectiveness of the carried-out work, the control experiment was conducted, in which the same tasks were used as at the ascertaining stage. The influence of the experimental teaching 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 school children 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	3 (12%)	8 (32%)	4 (16%)	4 (16%)
Average	12 (48%)	15 (60%)	11 (44%)	12 (48%)
Low	10 (40%)	2 (8%)	10 (40%)	9 (36%)

Analysis of the results of ascertaining and formative experiments showed that the number of primary school children of experimental groups, having high and average levels of formation of the skill of independent performing general developing exercises, increased significantly compared to the ascertaining stage. So, if at the stage of the ascertaining experiment as a whole, from all the subjects in the experimental group, 12% of primary school children had the high level of formation of the skill of independent performance of general developing exercises, then according to the results of the

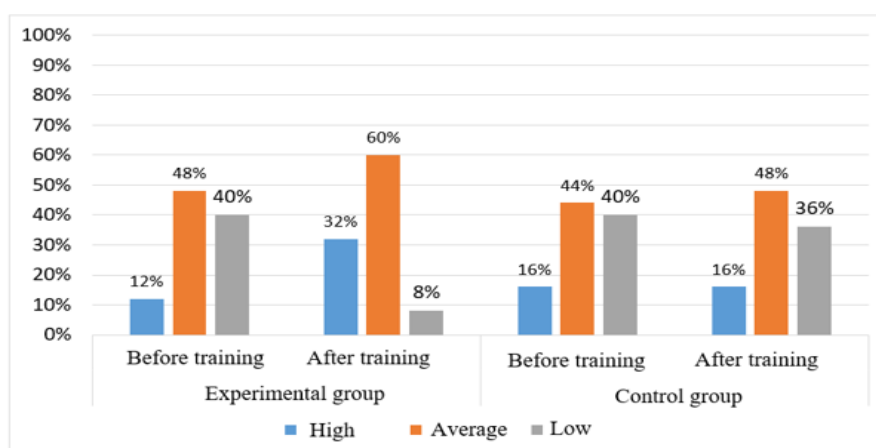
second intermediate diagnostics of such primary school children, there were already about 32%, and with the average level of 60%.

The minor changes in the levels of development of the skill of independent performance of general developing exercises were revealed in the control group of primary school children. For example, if at the primary diagnostics among them primary schoolchildren with the high level of development of the skill of independent performance of general developing exercises were 16%, then according to the results of the final diagnostics, this level was revealed only in 20%. The low level before the experiment was revealed in 40% of respondents, and then according to the results of the second diagnostics, the low level of the skill of independent performance of general developing exercises was revealed in 32% of primary school children.

This data is presented in the following diagram for clarity (Figure 2).

Figure 1

Level of development of the independent performance of general developing exercises at children of primary school age in experimental and control groups before and after the formative experiment



At the next stage, we used the ϕ -Fisher's angular transformation criterion to identify the reliability, i.e., the statistical significance of differences in the experimental and control groups of primary schoolchildren on the formation of their skill of independent performance of general developing exercises.

Table 2

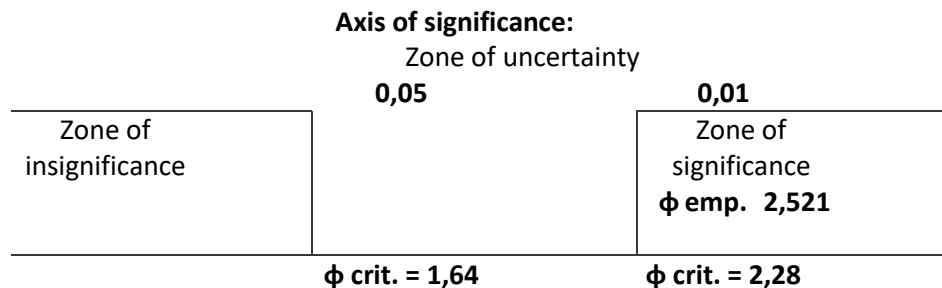
Calculation of ϕ -Fisher's angular transformation criterion for experimental and control groups on the formation of the skill of independent performance of general developing exercises

Groups	"There is an effect" (the skill of independent performance of general developing exercises was formed)		"There is no effect" (the skill of independent performance of general developing exercises was not formed)		Sums
	Number of subjects	% share	Number of subjects	% share	
1 group EG	23	(92%)	2	(8%)	25 (100%)
2 group CG	16	(64%)	9	(36)	25 (100%)
Sums	40		10		50

Footnote: it was taken by us for "There is an effect" the results on the high and average level of formation of the skill of independent performance of general developing exercises.

Table 3

Axis of significance



Answer: $\phi^*_{emp.} = 2.521$

$\phi_{emp.} = 2.521$ at $p < 0.01$. This empirical value of the ϕ -Fisher's criterion is in the zone of significance. This means that the percentage share of persons with a high level of development of the skill of independent performance of general developing exercises in the experimental group is higher than in the control group.

4. Discussion

In the present study, the influence of general developmental exercises on the formation of the skill of independent organization of physical exercises by younger schoolchildren in Kazakhstan was studied. As expected, we obtained statistically significant differences in the level of skill formation of independent performance of general developing exercises at primary schoolchildren from experimental and control groups. There is an increase in knowledge about the structure of physical exercises, the spatial position of parts of the body; understanding the sequence of performance of exercises; knowledge of spatial terminology; ability to vary the performed exercises at the subjects from the experimental group. There were elements of creativity and self-organization in the performance of various physical exercises. All this mentioned above allows us to talk about the qualitative restructuring of the existing ways of independent performance of general developing exercises and correcting shortcomings in their development.

The results of the current study resonate with the literature (Ludwig et al, 2018). Batistão et al, 2019; Cibinello et al, 2020) and found an improvement in body flexibility, joint mobility in younger schoolchildren, which means improved coordination and posture. One of the probable reasons for the improvement may be related to the fact that the student was interested in the results of his training and, most importantly, he saw these results, not in the distant future, but now, today. Previous studies, for example, Bidzan-Bluma, & Lipowska, 2018, have shown, that children at school age, especially from 8-9 to 13-14 years old, progress intensively under the influence of natural factors of development, all manifestations of speed abilities. The study concluded that the play method, as a research approach to improve childrens' autonomy skills, was successful in this experiment. The factor of pleasure, emotionality, and attractiveness inherent in the play method contributed to the formation of a stable positive interest and active motive in schoolchildren to engage in physical exercises. This significant result is consistent with the literature (Kubat, 2018).

There is evidence of high efficiency in the development of general endurance in primary school children (Hughes et al, 2018; Rosa Guillamón et al, 2018). Our study also found high growth rates of

static endurance in schoolchildren. Natural movements associated with relatively easily regulated, preferably rhythmic, simultaneous work of most of the muscles were used as the main means of training general endurance. These studies showed that such exercises activated blood circulation and respiration, caused more significant functional changes in the body, and increased metabolic processes. It was, first of all, running at a steady pace, accelerated walking, repeated jumps alternating with walking. To develop static endurance, preference was given to holding the body and its parts in various positions, dosed in direction and duration, for example, holding bent and straight legs while standing, sitting, lying down, hanging; tilts with a straight back, raising your hands to your belt, to the sides, up; lying on the stomach, bending over, etc. It was also valuable to teach children to maintain the basic stance for a certain period.

The results of this study have shown that general developmental exercises can be used to have a relatively selective effect on specific body parts and muscle groups. This feature makes it possible to exert a versatile effect on the body of those involved, especially on the locomotor apparatus, and to achieve the harmonious development of the muscles of the whole body. When using general developmental exercises, it is relatively easy to regulate physical activity. The load depends on the selection of exercises and their number in one lesson. Some exercises are easier, others more difficult, depending on the intensity of muscle tension with which the exercises are performed. The intensity of muscle tension could be increased: a) by increasing the duration (number of repetitions) of the same exercise, the speed of the exercise, load (with the help of weights or mutual resistance of the trainees); b) a change in the starting positions; c) the need to apply volitional efforts; d) the way it is carried out.

5. Conclusion

The present study points to the beneficial effect of general developmental exercises on the formation of the skill of independent organization of physical exercises in younger schoolchildren, on the physical development of children, and their needs for systematic physical exercises. In addition, this study supplements the literature on the theory and methodology of physical education of primary school children, reveals the features of the relationship between general developmental exercises and the skills of independence of primary schoolchildren. From an applied point of view, the results emphasize that teaching the ability to independently engage in physical exercises is one of the most important conditions for increasing the volume of physical activity of schoolchildren, improving their physical fitness, and strengthening their health.

With teaching the ability to independently engage in physical exercises, the problem of raising habits and the need to systematically engage in physical exercises can be solved in many ways, thereby orienting the pupils towards targeted health promotion, in-depth development of physical qualities and abilities, optimization of working capacity, prevention of morbidity, the formation of basic knowledge about personal hygiene, the system of hardening procedures and the daily regime. However, it should be noted that it is necessary timely monitoring and evaluation of the results of independent work of schoolchildren for the operational management by the activity of schoolchildren at lessons, making necessary corrections, individual assistance in mastering physical exercises; group and individual consultations of parents on the issues of the value of health of their children, on the advisability of systematic performance of general developmental exercises.

6. Recommendations

Based on the results of the study, we recommend that there should be;

- updating the content of educational programs in physical culture at the levels of primary general, basic general, and secondary general education (with ensuring their continuity), relevant educational publications, as well as technologies for teaching physical culture;

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- development of information resources necessary for the implementation of educational programs, tools for the activities of schoolchildren and teaching staff;
- updating the scientific and methodological support and material and technical equipment of the educational subject "Physical culture";
- increasing the personnel potential of physical education teachers.

References

- Abramov, S., & Shyshatska, V. (2022). Increasing motor activity of students by means of physical education in higher education institutions. [https://ela.kpi.ua/bitstream/123456789/45990/1/Abramov ShishatskaV Increasing%20motor%20activity%20of%20students.pdf](https://ela.kpi.ua/bitstream/123456789/45990/1/Abramov%20ShishatskaV%20Increasing%20motor%20activity%20of%20students.pdf)
- Andermo, S., Hallgren, M., Nguyen, T. T., Jonsson, S., Petersen, S., Friberg, M., Romqvist, A., Stubbs, B., & Elinder, L. S. (2020). School-related physical activity interventions and mental health among children: a systematic review and meta-analysis. *Sports medicine - open*, 6(1), 25. <https://doi.org/10.1186/s40798-020-00254-x>
- Batistão M.V., Carnaz L., Moreira, R. de F. C., & Sato, T. de O. (2019). Effects of muscular stretching and strengthening school-based exercise program on posture, trunk mobility, and musculoskeletal pain among elementary schoolchildren - a randomized controlled trial. *Fisioterapia em Movimento*, 32, 1-13. e003208. <http://dx.doi.org/10.1590/1980-5918.032>
- Beni, S., Fletcher, T., & Chróinín, D. N. (2019). Using features of meaningful experiences to guide primary physical education practice. *European Physical Education Review*, 25(3), 599–615. <https://doi.org/10.1177/1356336X18755050>
- Bidzan-Bluma, I., & Lipowska, M. (2018). Physical Activity and Cognitive Functioning of Children: A Systematic Review. *International journal of environmental research and public health*, 15(4), 800. <https://doi.org/10.3390/ijerph15040800>
- Burns, R. D., Brusseau, T. A., & Fu, Y. (2018). Moderators of School-Based Physical Activity Interventions on Cardiorespiratory Endurance in Primary School-Aged Children: A Meta-Regression. *International journal of environmental research and public health*, 15(8), 1764. <https://doi.org/10.3390/ijerph15081764>
- Cañas Encinas, M., Pinedo González, R., & García Martín, N. (2021). La promoción y la enseñanza de las habilidades del pensamiento profundo y visible en las sesiones de Educación Física en Educación Primaria (The promotion and teaching of deep and visible thinking skills in Physical Education sessions in Primary Educat. *Retos. Nuevas tendencias en Educación Física, Deporte y Recreación* 41, 387-398. <https://doi.org/10.47197/retos.v0i41.84139>
- Chanal, J., Cheval, B., Courvoisier, D. S., & Paumier, D. (2019). Developmental relations between motivation types and physical activity in elementary school children. *Psychology of Sport and Exercise*, 43, 233-242. <https://doi.org/10.1016/j.psychsport.2019.03.006>
- Chirkov V. (2014) The Universality of Psychological Autonomy Across Cultures: Arguments from Developmental and Social Psychology. In: Weinstein N. (eds) *Human Motivation and Interpersonal Relationships*. Springer, Dordrecht. https://doi.org/10.1007/978-94-017-8542-6_2
- Cibinello, F. U., de Jesus Neves, J. C., Carvalho, M. Y. L., Valenciano, P. J., & Fujisawa, D. S. (2020). Effect of Pilates Matwork exercises on posterior chain flexibility and trunk mobility in school children: A randomized clinical trial. *Journal of Bodywork and Movement Therapies*, 24(4), 176–181. DOI: 10.1016/j.jbmt.2020.06.016
- Drenowatz, C., Greier, K., Ruedl, G., & Kopp, M. (2019). Association between Club Sports Participation and Physical Fitness across 6- to 14-Year-Old Austrian Youth. *International journal of environmental research and public health*, 16(18), 3392. <https://doi.org/10.3390/ijerph16183392>
- Fu, Y., Burns, R.D., Constantino, N., Fitzsimmons, J. & Zhang, P. (2019). Effect of the Resistance Exercise on Elementary School Students' Physical Fitness. *J. of SCI. In sport and exercise* 1, 184–191 <https://doi.org/10.1007/s42978-019-0022-7>
- Fühner, T., Kliegl, R., Arntz, F., Kriemler, S. & Granacher, U. (2021). An Update on Secular Trends in Physical Fitness of Children and Adolescents from 1972 to 2015: A Systematic Review. *Sports Med*, 51, 303–320 <https://doi.org/10.1007/s40279-020-01373-x>

- Ospankulov, Y. E., Nurgaliyeva, S., Kunai, S., Baigaliev, A. M. & Kaldyhanovna, K. R. (2022). Using physical education lessons to develop the autonomy of primary school children. *Cypriot Journal of Educational Science*. 17(2), 601-614. <https://doi.org/10.18844/cjes.v17i2.6856>
- García-Hermoso, A., Alonso-Martínez, A. M., Ramírez-Vélez, R., Pérez-Sousa, M. Á., Ramírez-Campillo, R., & Izquierdo, M. (2020). Association of Physical Education With Improvement of Health-Related Physical Fitness Outcomes and Fundamental Motor Skills Among Youths: A Systematic Review and Meta-analysis. *JAMA pediatrics*, 174(6), e200223. <https://doi.org/10.1001/jamapediatrics.2020.02>
- Goh, T. L., Leong, C. H., Brusseau, T. A., & Hannon, J. (2019). Children's Physical Activity Levels Following Participation in a Classroom-Based Physical Activity Curriculum. *Children (Basel, Switzerland)*, 6(6), 76. <https://doi.org/10.3390/children6060076>
- Gómez-Álvarez, N., Schweppe-Villa, A., Parra-Gatica, A., Cid-Rojas, F., Pavez-Adasme, G., & Hermosilla-Palma, F. (2021). Efectos agudos de distintas estrategias de calentamiento sobre el rendimiento físico y las habilidades motrices en escolares (Acute effects of different warm-up strategies on physical performance and motor skills in schoolchildren). *Retos. Nuevas tendencias en Educación Física, Deporte y Recreación*, 42, 18-26. <https://doi.org/10.47197/retos.v42i0.86525>
- Greier, K., Drenowatz, C., Ruedl, G., Kopp, M., Burtscher, M. & Greier, C. (2020) Effect of Daily Physical Education on Physical Fitness in Elementary School Children. *Advances in Physical Education*, 10 (2), 97-105. DOI: 10.4236/ape.2020.102009.
- Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2020). Global trends in insufficient physical activity among adolescents: a pooled analysis of 298 population-based surveys with 1.6 million participants. *The Lancet. Child & adolescent health*, 4(1), 23–35. [https://doi.org/10.1016/S2352-4642\(19\)30323-2](https://doi.org/10.1016/S2352-4642(19)30323-2)
- Hohmann, A., Yuan, X., Schmitt, M., Zhang, H., Pietzonka, M., & Siener, M. (2021). Physical Fitness and Motor Competence in Chinese and German Elementary School Children in Relation to Different Physical Activity Settings. *Children*, 8(5), 391. <http://dx.doi.org/10.3390/children8050391>
- Hughes, D. C., Ellefsen, S., & Baar, K. (2018). Adaptations to Endurance and Strength Training. *Cold Spring Harbor perspectives in medicine*, 8(6), a029769. <https://doi.org/10.1101/cshperspect.a029769>
- Jaitner, D., Bergmann, M., Kuritz, A., Mall, C., & Mess, F. (2020). Determinants of Physical Activity and Sedentary Behavior in German Elementary School Physical Education Lessons. *Frontiers in sports and active living*, 2, 113. <https://doi.org/10.3389/fspor.2020.00113>
- Jiang, R., Xie, C., Shi, J., Mao, X., Huang, Q., Meng, F., Ji, Z., Li, A., & Zhang, C. (2021). Comparison of physical fitness and mental health status among school-age children with different sport-specific training frequencies. *PeerJ*, 9, e10842. <https://doi.org/10.7717/peerj.10842>
- Kubat, U. (2018). Identifying the Individual Differences Among Students During Learning and Teaching Process by Science Teachers. *International Journal of Research in Educational and Science (IJRES)*, 4(1), 30-38. <https://doi.org/10.21890/ijres.369746>
- Ornelas Contreras, M., Conchas Ramírez, M., Díaz-Leal, A., Blanco Ornelas, L., & Rangel Ledezma, Y. (2020). Propiedades psicométricas de una versión informatizada del Physical Self Description Questionnaire en adolescentes mexicanos (Psychometric properties of a computerized version of the Physical Self-Description Questionnaire in Mexican adolescents). *Challenges*, 37, 22-26. <https://doi.org/10.47197/retos.v37i37.68900>
- Ludwig, O., Kelm, J., Hammes, A., Schmitt, E., & Fröhlich, M. (2018). Targeted Athletic Training Improves the Neuromuscular Performance in Terms of Body Posture From Adolescence to Adulthood - Long-Term Study Over 6 Years. *Frontiers in physiology*, 9, 1620. <https://doi.org/10.3389/fphys.2018.01620>
- Madej, K. (2021). Motivational Bodybuilding Videos As a Component of Discourse Influencing Perceptions Of Masculinities. *Society Register*, 5(1), 117-134. https://yadda.icm.edu.pl/yadda/element/bwmeta1.element.ojs-doi-10_14746_sr_2021_5_1_06
- Masanovic, B., Gardasevic, J., Marques, A., Peralta, M., Demetriou, Y., Sturm, D. J., & Popovic, S. (2020). Trends in Physical Fitness Among School-Aged Children and Adolescents: A Systematic Review. *Frontiers in pediatrics*, 8, 627529. <https://doi.org/10.3389/fped.2020.627529>
- Masini, A., Marini, S., Leoni, E., Lorusso, G., Toselli, S., Tessari, A., Cecilian, A., & Dallolio, L. (2020). Active Breaks: A Pilot and Feasibility Study to Evaluate the Effectiveness of Physical Activity Levels in a School-Based Intervention in an Italian Primary School. *International journal of environmental research and public health*, 17(12), 4351. <https://doi.org/10.3390/ijerph17124351>
- Munko, Y. (2017). Academic burnout among high-school students in Kazakhstan: The protective role of personality and academic motivation. <https://nur.nu.edu.kz/handle/123456789/2581>
- Núñez-Quiroga, J. I., Zurita-Ortega, F., Ramírez-Granizo, I., Lozano-Sánchez, A. M., Puertas-Molero, P., & Ubago-Jiménez, J. L. (2018). Análisis de la relación entre los hábitos físico-saludables y la dieta con la obesidad en escolares de tercer ciclo de Primaria de la Provincia de Granada (Analysis of the relationship between physical-healthy habits and diet with obesity in primary scho. *Retos. Nuevas tendencias en Educación Física, Deporte y Recreación*, 35, 31-35. <https://doi.org/10.47197/retos.v0i35.60727>

- Ospankulov, Y. E., Nurgaliyeva, S., Kunai, S., Baigaliev, A. M. & Kaldyhanovna, K. R. (2022). Using physical education lessons to develop the autonomy of primary school children. *Cypriot Journal of Educational Science*, 17(2), 601-614. <https://doi.org/10.18844/cjes.v17i2.6856>
- Oñate Navarrete, C., Aranela Castro, S. C., Navarrete Cerda, C. J., & Sepúlveda Urrea, C. A. (2021). Asociación del enfoque en competencia motora y habilidades motrices, con la mantención de la adherencia a la actividad física en adolescentes. Una revisión de alcance (Association of the focus on motor competence and motor skills, with the maintenance o. Retos. Nuevas tendencias en Educación Física, Deporte y Recreación, 42, 735-743. <https://doi.org/10.47197/retos.v42i0.86663>
- Opstoel, K., Chapelle, L., Prins, F. J., De Meester, A., Haerens, L., van Tartwijk, J., & De Martelaer, K. (2020). Personal and social development in physical education and sports: A review study. *European Physical Education Review*, 26(4), 797–813. <https://doi.org/10.1177/1356336X19882054>
- Pozuelo-Carrascosa, D. P., García-Hermoso, A., Álvarez-Bueno, C., Sánchez-López, M., & Martínez-Vizcaino, V. (2018). Effectiveness of school-based physical activity programmes on cardiorespiratory fitness in children: a meta-analysis of randomised controlled trials. *British journal of sports medicine*, 52(19), 1234–1240. <https://doi.org/10.1136/bjsports-2017-097600>
- Quennerstedt, M. (2019) Physical education and the art of teaching: transformative learning and teaching in physical education and sports pedagogy. *Sport, Education, and Society*, 24:6, 611-623, <https://doi.org/10.1080/13573322.2019.1574731>
- Rodriguez-Ayllon, M., Cadenas-Sánchez, C., Estévez-López, F., Muñoz, N. E., Mora-Gonzalez, J., Migueles, J. H., Molina-García, P., Henriksson, H., Mena-Molina, A., Martínez-Vizcaino, V., Catena, A., Löf, M., Erickson, K. I., Lubans, D. R., Ortega, F. B., & Esteban-Cornejo, I. (2019). Role of Physical Activity and Sedentary Behavior in the Mental Health of Preschoolers, Children and Adolescents: A Systematic Review and Meta-Analysis. *Sports medicine (Auckland, N.Z.)*, 49(9), 1383–1410. <https://doi.org/10.1007/s40279-019-01099-5>
- Rosa Guillamón, A., Garcia Canto, E., & Carrillo López, P. (2018). Relación entre capacidad aeróbica y el nivel de atención en escolares de primaria (Relationship between aerobic capacity and level of attention in primary school children). *Retos. Nuevas tendencias en Educación Física, Deporte y Recreación*, 35, 36-41. <https://doi.org/10.47197/retos.v0i35.60729>
- Sacheck, J. M., Wright, C. M., Amin, S. A., Anzman-Frasca, S., Chomitz, V. M., Chui, K. K., Duquesnay, P. J., Nelson, M. E., & Economos, C. D. (2021). The Fueling Learning Through Exercise Study Cluster RCT: Impact on Children's Moderate-to-Vigorous Physical Activity. *American journal of preventive medicine*, 60(6), e239–e249. <https://doi.org/10.1016/j.amepre.2021.01.002>
- Sadykova, S. A., Yergazina, A. A., Yeshpanov, V. S., Korvyakov, V. A., & Aitzhanova, A. B. (2016). Possibilities of extracurricular activities in the student's spiritual and moral formation. *International Journal of Environmental and Science Education*, 11(17), 9857-9871. <https://eric.ed.gov/?id=EJ1119054>
- Sallis, J. F., McKenzie, T. L., Beets, M. W., Beighle, A., Erwin, H., & Lee, S. (2012). Physical education's role in public health: steps forward and backward over 20 years and HOPE for the future. *Research quarterly for exercise and sport*, 83(2), 125–135. <https://doi.org/10.1080/02701367.2012.105998>
- Taylor, S. L., Noonan, R. J., Knowles, Z. R., McGrane, B., Curry, W. B., & Fairclough, S. J. (2018). Acceptability and Feasibility of Single-Component Primary School Physical Activity Interventions to Inform the AS:Sk Project. *Children (Basel, Switzerland)*, 5(12), 171. <https://doi.org/10.3390/children5120171>
- Thorjussen, I. M. (2021). Social inclusion in multi-ethnic physical education classes: Contextualized understandings of how social relations influence female students' experiences of inclusion and exclusion. *European Physical Education Review*, 27(2), 384–400. <https://doi.org/10.1177/1356336X20946347>
- Uddin, R., Salmon, J., Islam, S., & Khan, A. (2020). Physical education class participation is associated with physical activity among adolescents in 65 countries. *Scientific reports*, 10(1), 22128. <https://doi.org/10.1038/s41598-020-79100-9>
- Wassenaar, T. M., Wheatley, C. M., Beale, N., Nichols, T., Salvan, P., Meaney, A., Atherton, K., Diaz-Ordaz, K., Dawes, H., & Johansen-Berg, H. (2021). The effect of a one-year vigorous physical activity intervention on fitness, cognitive performance and mental health in young adolescents: the Fit to Study cluster randomized controlled trial. *The international journal of behavioral nutrition and physical activity*, 18(1), 47. <https://doi.org/10.1186/s12966-021-01113-y>
- Watson, A., Timperio, A., Brown, H., & Hesketh, K. D. (2019). Process evaluation of a classroom active break (ACTI-BREAK) program for improving academic-related and physical activity outcomes for students in years 3 and 4. *BMC public health*, 19(1), 633. <https://doi.org/10.1186/s12889-019-6982-z>
- Wyszyńska, J., Ring-Dimitriou, S., Thivel, D., Weghuber, D., Hadjipanayis, A., Grossman, Z., Ross-Russell, R., Dereń, K., & Mazur, A. (2020). Physical Activity in the Prevention of Childhood Obesity: The Position of the European Childhood Obesity Group and the European Academy of Pediatrics. *Frontiers in pediatrics*, 8, 535705. <https://doi.org/10.3389/fped.2020.535705>

- Ospankulov, Y. E., Nurgaliyeva, S., Kunai, S., Baigaliev, A. M. & Kaldyhanovna, K. R. (2022).** Using physical education lessons to develop the autonomy of primary school children. *Cypriot Journal of Educational Science*. 17(2), 601-614. <https://doi.org/10.18844/cjes.v17i2.6856>
- Zakir'Yanov, K. K., Andruschishin, I. F., & Makogonov, A. N. (2013). The status and perspective of development of sport in the Republic of Kazakhstan. *Theory and Practice of Physical Culture*, (9), 25. <https://cyberleninka.ru/article/n/the-status-and-perspective-of-development-of-sport-in-the-republic-of-kazakhstan>
- Zueck Enríquez, M., Ramírez García, A., Rodríguez Villalobos, J., & Irigoyen Gutiérrez, H. (2019). Satisfacción en las clases de Educación Física y la intencionalidad de ser activo en niños del nivel de primaria (Satisfaction in the Physical Education classroom and intention to be physically active in Primary school children). *Retos. Nuevas tendencias en Educación Física, Deporte y Recreación*, 37, 33-40. <https://doi.org/10.47197/retos.v37i37.69027>