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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

THE INTEGRATED DEVELOPMENT OF ADOLESCENTS' PHYSICAL AND COGNITIVE ABILITIES AS A MEANS OF IMPROVING LEARNING OUTCOMES (IN PHYSICAL EDUCATION CLASSES)

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GENERAL CHARACTERISTICS OF THE RESEARCH

Relevance and degree of development of the topic. The upbringing of adolescents and students in a patriotic spirit, together with the development of national identity and a strong attachment to their language and homeland, is directly dependent on their physical, scientific, and intellectual development. Therefore, the integrated development of adolescents' physical and cognitive abilities during physical education classes should be considered one of the key directions of the teaching and educational process.

The content of physical education classes in general secondary schools should not be limited solely to the development of specific motor skills and abilities; it should also be directed toward fostering adolescents' attention, memory, thinking, rapid decision-making, self-regulation, and other cognitive competencies. Such an approach carries significant pedagogical importance.

Adolescence represents a critical developmental stage characterized by intensive physical, psychological, and social growth. During this period, alongside the development of physical qualities and motor skills, substantial changes also occur in cognitive processes. Therefore, organizing adolescents' physical and intellectual development not as separate processes but rather in an integrated and interrelated manner is of particular importance for enhancing the effectiveness of the educational process.

Physical education classes offer extensive pedagogical opportunities for ensuring such integration. Purposefully selected physical exercises, games, relay races, coordination tasks, problem-solving situations, and activities requiring prompt decision-making can not only increase students' physical activity levels but also stimulate their attention, memory, logical and flexible thinking, as well as their ability to assess situations and make appropriate decisions. Thus, the comprehensive utilization of the opportunities provided by physical education lessons serves as an important pedagogical tool that contributes to both physical and intellectual development.

In current practice, the primary focus of physical education classes is generally placed on the development of physical qualities, motor skills, and movement competencies, while the purposeful integration of physical and cognitive activities has not yet been implemented in a sufficiently systematic manner. This increases the relevance of the problem under investigation. Identifying the scientific and pedagogical foundations for the integrated development of physical and cognitive abilities within the same educational process, as well as designing effective methods, instructional tools, and organizational forms to support this integration, may be regarded as one of the important directions of contemporary physical education theory and methodology.

Another significant aspect contributing to the relevance of the problem is the necessity of evaluating the outcomes of physical education classes not only in terms of students' physical fitness levels but also from the perspective of their impact on overall learning performance. The integrated development of physical and cognitive abilities may contribute to increasing students' classroom engagement, sustaining attention, improving task completion speed, and enhancing their capacity for independent and flexible decision-making. Consequently, this approach may serve as one of the important factors contributing to improved educational outcomes.

Thus, the relevance of the present research is determined by the need to identify the relationship between adolescents' physical and cognitive abilities, to investigate the pedagogical opportunities for their integrated development within physical education classes, to develop an appropriate methodology, and to experimentally verify its impact on educational outcomes.

The influence of physical education on individuals' physical development, health promotion, and the formation of motor skills and habits has been the subject of numerous studies in the fields of pedagogy, psychology, physiology, and physical education theory. Various scientific approaches have examined the effects of physical activity on children's and adolescents' development, age-related characteristics of physical fitness enhancement, the organization of physical education classes, the educational potential of motor

activities, and issues related to improving students' physical preparedness.

Another important dimension of the problem concerns the investigation of the relationship between physical activity and cognitive development. International studies have extensively examined the association between physical activity and attention, memory, executive functions, behavior, and academic performance. The findings of systematic reviews and meta-analyses indicate that physical education and school-based physical activity programs, under certain conditions, can positively influence the cognitive and academic outcomes of children and adolescents. At the same time, it has been established that research findings are not entirely consistent across all studies, and that the magnitude of the effect varies depending on the intensity, duration, content of physical activity, and the pedagogical strategies employed.

An analysis of the existing scientific literature reveals that, although considerable research has been conducted on the impact of physical activity on cognitive and academic outcomes, the issue of developing adolescents' physical and cognitive abilities within a unified pedagogical framework in physical education classes has not yet been fully resolved. In particular, further research is needed to determine the methodological foundations for integrating physical and cognitive tasks, to systematize the instructional tools used for this purpose, to adapt them to adolescents' age-related and individual characteristics, and to evaluate the outcomes based on clearly defined criteria.

At the same time, identifying the mechanisms through which the integrated development of physical and cognitive abilities influences overall educational outcomes is of particular importance. Although existing studies have examined the relationships among physical activity, cognitive functions, and academic performance separately, insufficient systematic attention has been given to the purposeful integration of these components within the structure of physical education lessons, the development of a pedagogical model for such integration, and its experimental validation. Therefore, although the analysis of scientific and pedagogical literature and

current educational practice demonstrates that various aspects of the problem have been investigated, there remains a need for a comprehensive examination of the impact of the integrated development of adolescents' physical and cognitive abilities during physical education classes on the improvement of learning outcomes. This necessity has determined the direction of the present research and has necessitated the investigation of the problem at both theoretical and experimental levels.

The research was conducted on the basis of the physical education curriculum and instructional materials of general secondary schools.

Degree of Research on the Problem. Certain studies have been conducted and a number of scholarly works have been published on the problem addressed in this dissertation. In particular, Russian scholars Y.N. Gagunov, V.B. Rubanovich, G.A. Kuzmenko, D.S. Matorin, Y.M. Revenko, and others have devoted their research to the development of adolescents' physical and intellectual abilities, as well as to related issues. However, the development of adolescents' physical and intellectual abilities as a means of improving learning outcomes, particularly through physical education lessons, has not been sufficiently explored.

Taking into account the relevance of the research, the dissertation topic has been formulated as follows: "The integrated development of adolescents' physical and cognitive abilities as a means of improving learning outcomes (in Physical Education classes)."

Object and Subject of the Research.

Research Object. The object of the research comprises physical education lessons and physical education activities conducted in general secondary schools.

Research Subject. The subject of the research is the impact of the integrated development of students' physical and cognitive abilities on educational outcomes.

Aim and Objectives of the Research. *The aim* of the research is to identify the pedagogical opportunities for the integrated development of students' physical and cognitive abilities in general

secondary schools, to substantiate effective methods and instructional tools in this area, and to examine, through a survey-based approach, the impact of their implementation on the improvement of educational outcomes.

The objectives of the research are as follows:

- to analyze the scientific-pedagogical, psychological, and methodological literature related to the problem of developing students' physical and cognitive abilities in physical education classes;

- to determine, from a theoretical perspective, the nature, structure, and interrelationship of students' physical and cognitive abilities;

- to examine the current state of physical education lessons in general secondary schools and identify the main factors influencing the achievement of educational outcomes;

- to determine the existing state of the development of physical and cognitive abilities in physical education classes, as well as physical education teachers' attitudes toward this issue, through the administration of a survey among physical education teachers;

- to identify opportunities for developing cognitive skills such as attention, memory, logical and strategic thinking, decision-making, problem-solving, reflection, and planning in conjunction with physical activity during physical education lessons;

- to develop a methodology aimed at the integrated development of adolescents' physical and cognitive abilities and to implement it within the framework of a pedagogical experiment;

- to evaluate the effectiveness of the proposed methodology through a comparative analysis of the results obtained from the experimental and control groups;

- to generalize the findings of the research and develop scientific and methodological recommendations for improving educational outcomes through the integrated development of physical and cognitive abilities.

The research methods employed in the dissertation include observation, interviews, questionnaires, theoretical analysis, analysis and synthesis, discussions, the examination of school documentation,

mathematical and statistical methods, and pedagogical experimentation.

Propositions submitted for defense. Physical education classes provide significant pedagogical opportunities not only for students' physical development but also for the formation and enhancement of their cognitive abilities.

Adolescents' physical and cognitive abilities develop in an interconnected and integrated manner; the process of physical activity facilitates the development of such cognitive skills as attention, memory, logical and strategic thinking, decision-making, problem-solving, reflection, and planning.

The integrated development of physical and cognitive abilities in physical education classes requires the purposeful, systematic, and student-centered organization of the teaching process, as well as the appropriate selection of teaching methods and instructional tools.

The use of game-based, competitive, problem-based, cooperative, and reflection-oriented methods in physical education classes not only increases adolescents' physical activity but also creates favorable conditions for the development of their independent thinking, decision-making, and problem-solving skills.

The implementation of a methodology aimed at the integrated development of physical and cognitive abilities contributes to increasing adolescents' interest in lessons, participation, motivation, and educational outcomes.

The effectiveness of developing physical and cognitive abilities in physical education classes depends on teachers' professional competence, the appropriate selection of lesson content, the purposeful application of teaching methods, and consideration of students' individual characteristics.

The integrated development of physical and cognitive abilities contributes to improving the quality of physical education in general secondary schools, promoting the holistic development of adolescents, and fostering their formation as active, independent, and creative individuals

Scientific novelty of the research. The issue of the integrated and interrelated development of adolescents' physical and cognitive

abilities in physical education classes has been comprehensively investigated from a pedagogical perspective. Based on a survey conducted among physical education teachers, the current state of achieving educational outcomes and developing students' cognitive abilities in physical education classes was examined, and areas requiring further improvement were identified. On the basis of the findings obtained, scientific and methodological recommendations were developed for the integrated development of physical and cognitive abilities and for enhancing educational outcomes in physical education classes.

Theoretical and practical significance of the research. The theoretical significance of the research is that it will enrich pedagogical science with new scientific propositions.

The practical significance of the research is determined by the possibilities of applying the findings and recommendations obtained for the integrated development of physical and cognitive abilities of students in Grades V-IX and, on this basis, for improving educational outcomes in pedagogical practice. The pedagogical conditions identified in the course of the research, the proposed methods and tools, as well as the tasks and activities aimed at coordinating physical and cognitive activities, may be used to organize physical education classes more effectively in general secondary schools.

Approbation and implementation. A total of six scholarly articles reflecting the content of the research, its principal scientific ideas, and the findings obtained have been published, including two articles in international journals indexed in abstracting and indexing databases. In addition, four conference papers have been published, two of which were published abroad.

Name of the organization where the dissertation was completed. The dissertation was carried out at the Department of Physical Training of the Azerbaijan Sports Academy.

Structure of the dissertation. The dissertation comprises an introduction, three chapters, a conclusion, and a list of references. The Introduction comprises 8 pages and 14,845 characters; Chapter I consists of 43 pages and 78,785 characters; Chapter II comprises 40 pages and 77,387 characters; Chapter III consists of 21 pages and

42,467 characters; and the Conclusion comprises 2 pages and 2,160 characters. The total length of the dissertation, excluding the list of references, is 122 pages and 210,644 characters.

THE MAIN CONTENT OF THE RESEARCH

The Introduction substantiates the relevance of the research problem and outlines the object, subject, aim and objectives of the study, research methods, scientific novelty, theoretical and practical significance, as well as the main propositions submitted for defence.

Chapter I of the dissertation is entitled **"Scientific and Theoretical Foundations of the Problem."** This chapter consists of two sections. The first section, entitled ***"The Presentation of the Problem in Pedagogical Literature,"*** indicates that the issue of the integrated development of physical and cognitive abilities has been reflected in Azerbaijani pedagogical literature and has been emphasized in the education of young people. Taking these considerations into account, the presentation of the problem in the literature was examined from the following perspectives: the Importance of Physical Education, the Importance of Cognitive Education, the Importance of the Integration of Physical and Cognitive education.

Nizami Ganjavi vividly and admiringly portrayed the physical abilities of his characters in his works, describing their skills in horse riding, swordsmanship, archery, and lasso throwing. Shah Ismayil Khatai considered hunting, sword fighting, and archery to be exemplary activities for young people. In his work "Mehr and Mushtari," he attributed the heroes' victories to their agility, patience, and mastery of military science.

A. Bakikhanov and M.F. Akhundov regarded the cultivation of a well-rounded individual as the primary goal of education and considered physical education an important component of the educational process. H. Zardabi, in his work "Hygiene," viewed physical education as a significant factor in both personal development and the preservation of health.

Games constitute one of the most important means of physical education. They exert a significant influence on children's intellectual and physical development, as well as on their moral and labor education.

Games teach children how to behave appropriately within a group and society, fostering the ability to subordinate personal interests to the interests of the collective. They also cultivate willpower, courage, independence, and the ability to act correctly and autonomously.

Games contribute to the development of children's cognitive abilities and perceptual skills, enabling them to gain a better understanding of the living beings and environments with which they interact in their daily lives.

Games also serve as an educational tool, promoting the development of speech and intellect, encouraging initiative, and exerting a strong influence on the formation of vigor, alertness, and agility.

One of the important characteristics of national games is that they incorporate various types of physical activities. Participation in games enhances physical development and exerts a positive influence on human psychology. In constantly changing game situations, the processes of regulating and controlling movements play a special role in personality development. Games increase the strength and mobility of the central nervous system, stimulate the functioning of the cerebral cortex and all bodily systems, and improve their regulatory functions. According to A. Nabiyev, a researcher of folk songs and traditional games, the word "game" (oyun) originates from the Turkic root "oynamaq" (to play). Among Turkic-speaking peoples, the word "oy" also carries the meanings of intelligence and wisdom. The expression of intellect and ingenuity through movement played an important role in the emergence of games. For example, an examination of the games represented in rock art demonstrates that they were conceived and depicted to convey particular ideas and wisdom to individuals, and perhaps to tribal or clan leaders and their members. In games that evolved from dances, movement remains the

principal element. In general, it is impossible to understand games separately from movement.

In order to enhance adolescents' ideological and civic maturity and achieve harmony between their physical and intellectual development, particular emphasis should be placed on fostering national self-awareness and promoting the heroic traditions of their ancestors. In this regard, classical Azerbaijani literature, as well as historical and cultural heritage monuments, constitute valuable sources.

The second section of Chapter I is entitled ***"Objectives and Tasks of Physical Education Instruction in Normative and Legal Documents."*** On 30 June 2009, the President of the Republic of Azerbaijan, Ilham Aliyev, signed the new Law of the Republic of Azerbaijan on Physical Education and Sport. This law determined the organizational, legal, and socioeconomic foundations of activities in the field of physical education and sport, established the fundamental principles of state policy in this sphere, regulated the corresponding social relations, and guaranteed the right of every individual to participate in physical education and sport.

Among the major educational institutions contributing to the development of physical education and sport in Azerbaijan, particular mention should be made of the Azerbaijan Sports Academy (formerly ASAPES) is the only higher education institution in the country specializing in the preparation of professionals in the field of physical education and sport and has a history of more than seventy years. Founded in 1930, the institution initially operated under a three-year and later a four-year system of education. From 1936 onward, it continued its activities as the State Institute of Physical Education. In the years following the Second World War, the Institute further expanded its activities. Over a period of seventy years, more than 15,000 highly qualified specialists graduated from the Academy. In 1998, the National Olympic Academy was established on the basis of the Azerbaijan State Institute of Physical Education, and pursuant to Resolution No. 42 of the Cabinet of Ministers of the Republic of Azerbaijan, dated 23

March 1999, it was reorganized as the Azerbaijan State Academy of Physical Education and Sport.

The consistent sports policy implemented by the Azerbaijani state serves as a strong guarantee for the development of sport in the country.

Physical education is formed through three main stages:

I. The Cultural Activity Dimension. This dimension encompasses comprehensive activities carried out within the educational process with the aim of promoting the overall development of the individual and enhancing motor skills and abilities.

II. The Cultural and Technical Dimension. This dimension includes the material and spiritual values created by humanity for the development of physical education, such as films related to physical education and sport, various technical sports facilities and equipment, and the creation and development of different sports disciplines.

III. The Dimension of Achievements Obtained Through Physical Education and Sport. This dimension includes competitions of various levels, including the Olympic Games, World Championships, and European Championships, as well as the medals and records achieved through participation in these events, the number of participants involved, and the utilization of the achievements attained.

Physical education is a pedagogical process aimed at developing an individual's physical qualities, improving the structure and functions of the organism, preparing individuals for professional work and the defense of the homeland, equipping them with motor skills, habits, and specialized knowledge, and educating healthy, energetic, and morally strong individuals.

The "Ready for the Defense of the Motherland" program constitutes one of the foundations of the country's physical education system and contributes to addressing key issues of physical education. These include the promotion of health, comprehensive physical development, and preparation for the defense of the homeland. The purpose of the national physical education system is to educate physically well-developed, healthy, energetic, and socially

active individuals who possess high work capacity, are prepared to defend their homeland, and are not intimidated by difficulties. Within the process of physical education, the following tasks are fulfilled.

- contributes to the proper development of adolescents' bodies and to the strengthening of their physical constitution;

- creates opportunities for the formation and improvement of students' natural motor skills and abilities and provides them with knowledge related to new forms of motor activity;

- educates a young generation characterized by high moral qualities, endurance, willpower, discipline, courage, bravery, and initiative;

- ensures the development of essential motor qualities such as strength, flexibility, and agility.

The objectives of physical education are implemented in accordance with the age, physical fitness level, profession, health condition, and other characteristics of participants.

A significant proportion of the objectives of physical education are accomplished during lessons. Each lesson constitutes a separate link within a unified educational process and contributes to the attainment of general objectives. At the same time, every lesson is designed to address specific educational tasks.

The following tasks are assigned to the lesson:

1) teaching new material;

2) Improvement and refinement of previously acquired knowledge and skills;

3) Development of physical qualities and the cultivation of moral and volitional characteristics.

The first or the second task may not always be included in a particular lesson. However, the third task must necessarily be integrated with either the first or the second.

The purpose of involving young people in physical education on a mass scale in our country is to educate physically well-developed, healthy, energetic, socially active individuals who are prepared to defend their homeland and are not afraid of difficulties.

Young citizens of the Independent Republic of Azerbaijan achieve these objectives primarily through physical education.

Undoubtedly, in order to attain these goals, specific tasks must be defined in accordance with the prevailing conditions. These tasks are as follows:

a) ensuring the harmonious development of the body's structure and functions, aimed at the comprehensive improvement of physical abilities, the strengthening of health, and the extension of life expectancy;

b) ensuring the normal physical development of adolescents and fostering strength, endurance, flexibility, and agility;

c) providing young people with the necessary knowledge and teaching them both general natural movements (walking, running, throwing objects, etc.) and specialised physical education exercises (various sports disciplines, active games, and specific gymnastic exercises);

d) developing essential motor skills, abilities, habits, and specialised knowledge necessary for everyday life;

e) Fostering moral and volitional qualities in athletes, such as national patriotism, courage, willpower, initiative, bravery, and determination.

These tasks are closely interrelated. When physical education is properly organised, all of them can be addressed simultaneously.

The physical education curriculum is outcome-oriented in nature. In this document, the content is expressed in terms of skills and values. The curriculum takes into account students' cognitive, moral-volitional, motor, and psychomotor activities in the process of physical education instruction.

Physical education and sport serve as fundamental means of ensuring adolescents' physical and moral well-being and harmonious development. At the same time, they are sources of beauty, aesthetic appreciation, and joy. The primary responsibility for ensuring that young people have the opportunity to benefit from all these aspects rests with the leading professionals in this field, namely coaches and physical education teachers.

Chapter II. “The Integrated Development of Physical and Cognitive Abilities as an Objective of Physical Education Classes”

Chapter II consists of three sections. The first section is entitled ***"Physical Abilities and the Ways of Their Development."*** The terms "physical abilities" and "physical qualities" are commonly used to characterize individuals' motor capabilities. Although these concepts are closely related, they should not be regarded as identical. An analysis of the literature indicates that there are both differing and interconnected interpretations regarding their content. Physical abilities are explained as a manifestation of the working capacity of the body's functional systems and their participation in motor activity (Q.Q. Natalov, 1976). According to another approach, they are understood as the capacities inherent in an individual for use in everyday life, particularly those motor activities that are based on physical qualities (L.P. Matveev, 1991). A third approach defines abilities as innate characteristics grounded in the organism's psycho-physiological and morphological features (E.P. Ilyin, B.V. Yevstafyev, 1987).

Physical ability is the capacity of an individual to utilize morphological and psycho-physiological potential in a comprehensive manner, respond to the demands of muscular activity, and ensure the effective performance of physical movements.

Physical qualities are associated with an individual's physical abilities and reflect the manifestation of these abilities in various forms of movement. The development of physical abilities is influenced, on the one hand, by environmental factors (social and living conditions, climatic and geographical factors, the material resources of training facilities, teaching methodology, etc.) and, on the other hand, by hereditary factors (motor talent and predisposition). The hereditary characteristics of physical abilities are reflected in the anatomical, physiological, and psychological features of the human organism.

The development of physical abilities is characterized by a number of specific regularities:

1) movement is the leading factor in the development of physical abilities.

2) the development of physical abilities depends on the mode of motor activity.

3) the development of physical abilities occurs in stages.

4) the development of physical abilities is non-uniform and heterochronic (occurring at different rates and times).

5) indicators of physical ability development may regress to their initial level.

6) physical abilities can be transferred from one activity to another.

7) motor skills and physical abilities exist in unity and are closely interconnected.

Physical abilities are greatly influenced by both hereditary and environmental factors in their development. Under the same conditions, motor activity plays a decisive role in the development of physical abilities aimed at improving an individual's psycho-physiological nature. For this reason, the morphological and functional indicators of the organs and systems of individuals engaged in physical exercise are generally higher than those of others.

The development of physical abilities is manifested not only in the process of motor activity but also requires that such activities be performed according to a specific regime. This regime is based on adherence to a particular sequence of work and rest intervals during the performance of physical exercises, as well as within a training session or a system of training sessions.

Heterochrony can be observed in the dynamics of physical ability development. Specialized research and practical experience demonstrate that certain age periods create particularly favorable conditions for influencing the development of abilities. These periods are referred to as sensitive or critical periods and play a significant role in human development. Research indicates that the highest effectiveness in the development of specific abilities is achieved during periods of their intensive natural growth. At other age stages, the effectiveness of pedagogical influence on the same abilities may be neutral or even negative. Therefore, it should be noted that, in the process of developing specific physical abilities, the most important factor is the correct identification of the favorable age period.

Each age stage has its own sensitive period. The age ranges of these periods differ for boys and girls, with girls generally reaching them one to two years earlier than boys.

During activity, physical abilities are interconnected with motor skills and habits and function as a unified system. The level at which individuals perform motor skills and habits depends directly on the development of their physical abilities.

Physical abilities constitute an important source of enjoyment, providing individuals with moral strength, optimism, and a positive attitude toward life. In this regard, participation in sports from an early age accelerates the formation of a healthy lifestyle. In particular, the proper moral and aesthetic development of children and adolescents positively influences their character, behavior, and position within both the collective and society. Sport directs their life path toward a healthy lifestyle, culture, and the arts rather than undesirable influences, while also contributing to the enhancement of their intellectual development.

The second section is entitled ***"The Development of Cognitive Abilities as an Objective of Modern Physical Education Classes."*** Cognitive education refers to the acquisition of a system of knowledge, intellectual skills, and habits, the development of thinking and intellectual qualities, and the formation of cognitive motives.

Intellectual qualities are not equally developed in all students. Therefore, the study of students' intellectual qualities under different instructional conditions and through various forms of experimentation is of great importance. Intellectual qualities are sometimes referred to as individual differences in thinking or cognitive activity. In other words, individual differences in intelligence, thinking, and cognitive activity are reflected in intellectual qualities.

Intellectual abilities are numerous. Taking into consideration the studies conducted by N.A.Menchinskaya, intellectual abilities may be grouped as follows:

1) general intellectual abilities (planning, working with books, self-control);

2) intellectual abilities necessary for organizing mental activity (identifying the main idea of a text, dividing a text into meaningful parts, comparing events, etc.);

3) specific intellectual abilities (those reflecting the characteristics of a particular subject area, such as graphic abilities).

I. Unt classified intellectual abilities as follows:

1.Abilities related to the perception of instructional material (reading, observation, listening skills);

2.Abilities associated with performing logical operations on instructional material (identifying essential information, drawing conclusions, etc.);

3.Creative abilities (the ability to construct compositions and similar tasks).

The brain is one of the principal organs responsible for governing human activity. Intelligence is a product of the human brain.

Individuals possessing cognitive abilities have a powerful advantage over their opponents. They are capable of identifying challenges in a timely manner and preparing appropriate responses to them.

Cognitive education is not limited to equipping students with specific knowledge, skills, and habits. It also plays an important role in developing intellectual qualities, attention, and memory, as well as in enhancing cognitive activity.

Another important benefit of cognitive abilities is the development of communication skills.

By participating in various sports activities, individuals can strengthen their willpower and develop perseverance, determination, the ability to overcome difficulties, and other positive qualities.

The third section is entitled ***"The Integrated Development of Physical and Cognitive Abilities in Physical Education Classes."***

During his meeting with the youth of the country on 22 September 1993, the great statesman Heydar Aliyev stated: "World experience and history over centuries have shown that moral, intellectual, and physical health constitute the overall well-being of a people and determine the present and future of a nation." Taking this

idea of the National Leader as a guiding principle, one of the major tasks is to provide children with proper education from an early age, to develop their intellectual and physical capacities and abilities at a high level, and to prepare them as worthy citizens devoted to their homeland and people. At present, there is a considerable need for the integrated and interrelated development of the physical and cognitive abilities of children, adolescents, and young people.

Nizami Ganjavi emphasized that the proper functioning of the hand in holding a pen depends on the strength of the body. He stated that physically strong and healthy individuals are emotionally stable, enthusiastic, and cheerful. The great poet viewed physical strength in close connection with intellectual purity and affirmed the unity of physical and mental strength in overcoming evil forces. Nizami attributed profound philosophical and medical significance to physical education, advocating the principle that a healthy body houses a healthy mind.

As is clearly evident from the wise sayings of the great Nizami, physical health constitutes one of the principal prerequisites for success in life. Physical exercises and various forms of traditional folk games play a particularly important role in achieving and maintaining good health.

Researchers highly value the role of traditional folk games, which have a long historical background, in the development of children's physical and cognitive abilities. Such games foster respect for the nation's ethnographic heritage, customs and traditions, as well as national and moral values. Educators also emphasize the importance of intellectual games requiring thought and reasoning alongside active games in achieving the integrated development of children.

Through active games, children are systematically taught various physical movements such as walking, marching, jumping, climbing, and leaping. Active games have a positive influence on children's holistic development, contributing not only to their physical growth but also to their cognitive development, while creating a positive emotional atmosphere. During active games, children are required to demonstrate such physical qualities as

initiative, resourcefulness, agility, and flexibility. These games also cultivate courage, determination, cooperation, teamwork, the ability to think correctly, and the capacity to make prompt and accurate decisions. Through participation in such games, children take their first steps in sport and experience the joy of their first achievements. Active games broaden and strengthen children's understanding of their environment and contribute to the development of memory, observation, purposefulness, persistence, agility, willpower, discipline, collectivism, comradeship, and a sense of responsibility. They also teach self-control and composure. During such games, children develop nervous system mobility, the ability to regulate their own actions independently, and emotional stability.

Adolescents must be healthy in order to achieve success in other academic subjects, and for this reason they should actively engage in games and play activities. Games also help cultivate such qualities as determination, perseverance, courage, patriotism, collectivism, and other positive personal characteristics.

Many games are associated with technology, nature, geography, astronomy, and even mathematics. Such games provide children with relevant knowledge and contribute to their scientific awareness. An educated person evaluates every issue through the filter of reason before acting. Throughout different historical periods, Azerbaijani youth have distinguished themselves through their knowledge, intellect, and talent. Even in ancient times, intellectual competitions and knowledge-based contests founded on logic were organized. Intelligent young people relied on their knowledge and intuition to answer the most difficult questions. In general, younger generations learned a great deal from the wisdom of their predecessors. Azerbaijani fairy tales and epics vividly depict the images of knowledgeable and intelligent children and young people. Numerous legends describe the talents and abilities of gifted children who distinguished themselves among their peers through their intellect. Such young people were able to amaze even rulers with their knowledge. As science and technology developed, new opportunities also emerged for enhancing the knowledge and abilities of young people. For many years, the mass media have organized

knowledge competitions and intellectual games aimed at raising the intellectual level of young people. Encouraging youth participation in intellectual games represents a highly successful initiative.

Chapter III is entitled **"Ways of Improving Educational Outcomes in Physical Education Classes."**

The first section is entitled ***"Educational Outcomes as an Indicator of Lesson Quality."*** The analysis of learning outcomes in physical education, the selection of criteria that ensure the effectiveness of both students' and teachers' activities, and the accurate allocation of time for their implementation are among the methods that stimulate the teaching process. Such analysis includes identifying final outcomes within the educational process (the achievement of general educational objectives, upbringing, and development), regulating the activities of teachers and students, examining and identifying the time allocated to instruction in accordance with curriculum requirements, and determining the practical opportunities that regulate activity and enhance participation. These are regarded as important means of organizing instruction effectively. The bilateral nature of the educational process, that is, learning and teaching, is associated with methods that regulate activity, increase participation, accelerate the learning process, and improve its quality. However, it is difficult to assume that these methods can be effective without students' ability to organize and regulate their own learning activities.

Research conducted in this field has confirmed the existence of a positive correlation between general intellectual ability and academic achievement. In some cases, the relatively low level of correlation did not allow researchers to conclude unequivocally that general intelligence alone determines academic success. Factors cited as causes of a low correlation coefficient include: (a) the inadequacy of assessment procedures as indicators of academic achievement, and (b) the inconsistency between test materials and the content of educational programs. Analysis of research findings indicates that the relationship between general intelligence and academic achievement is not linear but rather more complex in nature. For example, although there is a positive correlation between intelligence levels

and academic achievement among students with high intellectual ability, this relationship is not sufficiently dynamic.

One of the teacher's primary responsibilities is to create conditions that enable students to consciously understand the material, demonstrate independence, and remain actively engaged in the learning process. The teacher should also be active during instruction, encouraging students to make comparisons, conduct analyses, and identify cause-and-effect relationships. In this way, students become more actively involved and achieve a conscious understanding of knowledge.

The effectiveness of a lesson depends not on how much the teacher teaches during the class, but on the teacher's ability to motivate and engage students in the learning process.

A comprehensive pedagogical approach to the solution of this problem leads to the conclusion that when the learning process is organized under conditions of students' cognitive activity, their learning performance genuinely improves and their cognitive interests develop. In other words, students become more active participants in the educational process, moving beyond the mere description of events and striving to understand cause-and-effect relationships. Students with well-developed cognitive interests generally work more independently and demonstrate a stronger inclination toward independent activity in dealing with theoretical issues.

The development of adolescents' cognitive interests is determined by their level of activity and independence in learning. Thus, a teacher who encourages students to be active and work independently during lessons is likely to achieve greater success than a teacher who speaks and works extensively while providing limited opportunities for student engagement.

To stimulate adolescents' interest, it is necessary to make full use of the educational potential of instructional materials through:

- the creation of problem situations;
- the development of independent thinking;
- the organization of student collaboration during and outside the learning process;

- the establishment of positive relationships within the classroom;

- showing interest and sincerity toward students' achievements;

- the clear formulation of instructional objectives.

Thus, within the framework of the contemporary educational concept, the effectiveness and quality of a lesson are measured not by the volume of material presented to students but by the learning outcomes achieved during the instructional process. Learning outcomes in physical education involve the development of students' motor skills, the improvement of physical qualities, and the formation of active lifestyle habits.

To determine the role of learning outcomes as indicators of lesson quality, as well as teachers' approaches to planning and assessment, a survey was conducted. The comparison of the results obtained from Grades V, VI, VII, VIII, and IX made it possible to identify differences in learning outcomes according to age-related and developmental characteristics. Alongside students' physical abilities such as physical fitness, motor activity, coordination, and agility, cognitive abilities including attention, memory, logical thinking, rapid decision-making, and the ability to correctly understand the essence of a given task also influence the formation of learning outcomes achieved during the lesson.

Thus, based on the results of the survey conducted among 46 teachers, it can be concluded that learning outcomes in Grades V-IX constitute an important criterion for evaluating lesson quality. The improvement of learning outcomes may be regarded as an indicator of the appropriate selection of lesson objectives, content, methods, and instructional tools, as well as of the integrated development of students' physical and cognitive abilities. Therefore, in determining the quality of physical education lessons, it is advisable to consider learning outcomes not only as a final indicator but also as one of the principal pedagogical criteria reflecting the effectiveness of the teaching process.

The second section is entitled **"*Determining the Dependence of Learning Outcomes on Physical and Cognitive Abilities in Physical Education Classes.*"**

Beginning from Grade V, games should be selected separately for boys and girls. Particular care should be taken when selecting games for girls. The tempo and duration of games should be reduced, the weight of filled balls should be relatively lighter, and rhythmic movements and dance elements should be incorporated into the games.

Taking into account the anatomical and physiological characteristics of development among boys and girls aged 11-15 years, games that include strength-endurance exercises as well as movements promoting the development of the chest should be selected. For this purpose, games involving running and jumping over various distances may be effectively utilized.

Among girls aged 15-18 years, growth in height slows down. The ossification of the skeleton and the increase in muscular strength are, to a large extent, completed. Conditions are created for the development of endurance in order to improve the functioning of the respiratory system, and the activity of the central nervous system is enhanced. As observed among boys, girls also develop stronger feelings of companionship and strive for flexibility and physical attractiveness through participation in various games.

Among boys aged 15-16 years, a slowing of height growth, an increase in body width, and greater muscular development can be observed. These changes are reflected in increased strength and agility, as well as improved coordination of movements.

Adolescents aged 15-18 years should approach physical education activities involving the gradual increase of speed and distance with caution. In physical education classes conducted with this age group, active games should be used less frequently than in the lower grades. Active games mainly serve an auxiliary function, including preparatory games, warm-up activities, and games designed to provide active rest between exercises. Such activities include games involving running, jumping, throwing, various relay races, ball games, and competitive games.

Students' activity in the educational process is largely determined by their interest in the subject, the teacher, and the learning process as a whole. Interest is, in fact, associated with deep

internal processes, particularly with individual inclinations and motivations. For this reason, L.S. Vygotsky described the emergence of cognitive interests as a manifestation of instincts. As he emphasized, cognitive interests play a universal role in children's lives. According to Thorndike, we engage even in our most interesting activities because they correspond to our interests. Thus, interests may be regarded as the natural driving force of children's behavior. He stated that it is a reliable expression of intensive striving and demonstrates that a child's activity corresponds to his or her organic needs.

As is well known, cognitive activity is a creative process. "A common theme in the biographies of many distinguished individuals is that, even in early childhood, they developed their own ideas, acquired knowledge, and experimented with directing their thoughts toward specific purposes". Students' efforts to learn and their cognitive interests are stimulated by the following factors:

- systematic development throughout the teaching process;
- the relationship between subject-logical materials and theoretical and practical thinking;
- the creation of harmony between personal-social and personal-psychological components.

Within the framework of the research, a survey was conducted among 46 teachers to determine the extent to which learning outcomes in Grades V-IX depend on students' cognitive and physical abilities. The main purpose of the survey was to identify, on the basis of teachers' pedagogical observations and professional experience, the relationship between the level of development of students' physical and cognitive abilities and their learning outcomes. The analysis of the survey results revealed that the majority of teachers acknowledged the existence of a relationship between students' physical activity and physical abilities, on the one hand, and their cognitive performance and learning outcomes, on the other. According to the teachers, physically active students demonstrate higher levels of sustained attention, flexible thinking, active participation in completing tasks, rapid decision-making, and engagement in classroom activities.

Thus, within the framework of the study, the quantitative and percentage-based results of a survey conducted among 46 physical education teachers teaching Grades V-IX at General Secondary Schools No. 200, 78, 337, 137, and 92 were analyzed as follows:

Main factors influencing the improvement of learning outcomes:

- Teachers' motivational strategies: 43.5% (20 teachers)
- Curriculum content: 34.8% (16 teachers)
- Students' interest (cognitive factor): 21.7% (10 teachers)

A total of 84.8% of teachers indicated that when intellectual cognition is integrated with practical physical activity at the end of a lesson, a high level of learning outcomes, which serve as a key indicator of lesson quality, can be achieved.

A number of significant **findings** have been obtained regarding the integrated development of physical and intellectual abilities in physical education lessons. Some of these findings are presented below:

1. The integrated development of physical and cognitive abilities plays an exceptional role in the holistic development of children and adolescents. The interaction between these two factors contributes to the optimization of the education process, enhances students' cognitive activity, and promotes the formation of such cognitive qualities as comprehension, perception, analysis, and decision-making.

2. The process of achieving the integrated development of children's physical and cognitive abilities should begin from an early age. In this regard, the role of the family, parents, and elderly family members is of particular importance, as the foundations of children's physical development and healthy thinking are established within the family environment.

3. In order to achieve success in professional practice, a physical education teacher should possess a thorough understanding of the nature, content, and objectives of the integrated development of physical and cognitive abilities, be familiar with the pedagogical and psychological foundations of the problem, and be aware of effective organizational forms and methods for its implementation.

Furthermore, the teacher should regard the student as an equal participant in the pedagogical process. In other words, the student should be viewed not only as an object but also as a subject of the educational process.

4. The integrated development of physical and cognitive abilities is primarily fostered through the organization of active games in physical education classes. Subsequently, extracurricular and out-of-school sports and recreational activities are widely utilized for this purpose.

5. In the process of fostering the integrated development of physical and cognitive abilities, particular importance is attached to topics such as “Morning Exercises,” “Healthy Lifestyle,” and “Formation Drills” in Grade V; “Active Games,” “Endurance Capacity,” and “Improvement of Speed Ability” in Grade VI; “Characteristics of Adolescent Personality Development,” “Morning Exercise Complexes,” and “Agility Ability” in Grade VII; “Characteristics of Adolescent Physical Development” and “Personal Hygiene During Physical Activities” in Grade VIII; and “Regulation and Monitoring of Physical Load During Exercises,” “Health Protection and Promotion,” and “education” in Grade IX. These topics play a significant role in the integrated formation and development of students’ physical and cognitive abilities.

The research findings make it possible to put forward the following **recommendations**:

1. Teachers should employ modern teaching methods in the instructional process in order to support the development of students’ physical and cognitive abilities.

2. It would be beneficial to prepare and distribute books, booklets, or brochures within the “School Library” series on such topics as *“Active Games and Intellectual Development” and “The Educational Significance of Our National Games”* for students.

3. It is both desirable and important to regularly organize integrated sports and intellectual competitions, as well as active game tournaments that combine physical and cognitive components, among children and school students in the cities and districts of the Republic, and to recognize and reward the winners.

The content of the research, its main scientific ideas, and the results obtained have been reflected in the following **scientific articles and conference** proceedings published by the author:

1. Means of fostering an interest in sports among adolescents // Contemporary Developments in Sport Sciences, dedicated to the 100th anniversary of National Leader Heydar Aliyev, Azerbaijan Sports Academy, – Baku: – 30 November – 1 December, – 2023, – pp. 156-159.
2. The Impact of Physical Activity on the Daily Life of Schoolchildren // 9th International Academic Sport Research Congress, – Baku: – 6-9 October, – 2025, – p. 75.
3. Research in Pedagogical Literature on the Combined Development of Physical and Mental Skills // The 3rd International Congress of Exercise and Sport Sciences, – Konya, Türkiye: – 20-22 November, – 2025, – p. 594.
4. The influence of the family's financial situation on adolescents' participation in sports // Modern Sports Education: In Search of New Paradigms, III International Scientific-Practical Conference, Azerbaijan Sports Academy, – Baku: – 27-28 November, – 2025, – p. 60.
5. Development of Coordination and Motor Skills in Children // – Baku: Scientific News of the Azerbaijan Sports Academy, – 2026. Vol. 8, No. 1, – pp. 92-100.
6. The impact of students' physical fitness level on their academic achievement // – Baku: Scientific News of Ganja State University, Series of Fundamental, Humanities and Natural Sciences, – 2026. No. 3, – pp. 127-130.
7. Examining the Relationship Between Students' Physical Activity and Academic Achievement: A Narrative Review // – Türkiye: Academic Journal of History and Thought, DergiPark Akademik, – 2026, Vol. 13, No. 3, – pp. 1-7.
8. Normative Documents of the Republic of Azerbaijan on Physical Education Policy // – Baku: Scientific Research: International Scientific Journal, Azerbaijan Science Center, – 2026, Vol. 6, No. 7, – pp. 90-95.

9. The Role of Game Technologies in the Development of Cognitive Skills // – Baku: Scientific Research: International Scientific Journal, Azerbaijan Science Center, – 2026, Vol. 6, No. 8, – pp. 51-56.
10. The Relationship Between Sleep Quality and Shooting Accuracy in Female Archers // A Cross-Sectional, Study Life, – 2026, Vol. 16, Article 1719, – p. 12 (Scopus and Web of Science, Q1).



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