

Physical Education in Primary Schools: Cognitive Stimulation, National Active Games and Cultural Background

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Abstract

This study describes the features of active game-based learning in primary schools. The survey involved 38 national sports coaches and 29 school teachers. Based on previous empirical findings, this study probes whether there is an established opinion about national games in the school curriculum among teachers and experts. Primary school students are offered many techniques to form necessary skills during the execution of physical exercises. The findings demonstrate that different games and competitions are able to expand the social circle of children. In the long run, the relationships between individual tribes and tribal unions became consistent and global. Games and competitions favoured this tendency, contributing to a gradual formation of behavioural norms in people of different generations.

Keywords: Primary School; Cognitive Activity; Physical Education; National Active Games; Healthy Lifestyle

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Introduction

The future of any country is directly related to the amount of attention that a particular country draws to its younger generation, adolescents and children. Despite a complete regulatory framework, however, educational care may be fraught with problems such as limited institutional services, a lack of trained teachers, and weak academic support (Ahmed & Kashem, 2015). In developing countries, seasonal labour migration as a means of poverty alleviation makes migrant children have trouble with school attendance (Roy, Singh, & Roy, 2015). In this context, alternative sources that permit cognitive development (that is, interaction with other people, with the world, and game simulation) become highly relevant.

Today, the CIS (Commonwealth of Independent States) region faces a phenomenon called demographic redistribution (changes in the pattern of where people live) (Choudinovskikh & Denissenko, 2013), which necessitates a new series of priorities in social development, those that are associated with ethnic identity, confessional diversity, and a significant number of inhabitants (Djoldosheva, 2019).

In a development plan of the Republic of Kazakhstan, the main priorities embrace the social-economic development, which is to be accomplished through the formation of a healthy lifestyle and the education reforms (Kazakhstan-2050 Strategy ..., 2012). These priorities are related to the distinguishing features of a Kazakhstani ethnic identity, their confessional diversity, and a small number of inhabitants.

A rapid increase in the portion of interactive games has a considerable impact on school programmes for physical activity (Brocas & Carrillo, 2018). To make children carried off by games, a comfortable and safe environment is needed. The means to raise the interest of school children in sports regardless of gender are appropriate clothing, footwear, the use of training gadgets, surfaces of the preschool yard, balance equipment, gym mats and sticks in the

gym and skipping ropes, sand and mostly hilly terrain on the outdoor playground (Määttä et al., 2019).

The need for a healthy lifestyle comes from a genuine attitude to health which people of different age groups have (Bolotin & Bakayev, 2015). Statistic and research papers provide many other relevant factors. Of course, one's attitude to one's own health is reflected in the way one behaves. Different sources indicate a recent increase in the incidence of a range of diseases in Kazakhstan. Such changes are often explained by an unfavourable ecological situation, stress, and bad habits (smoking, alcohol and drug abuse).

Medical examination reports claim that in 2002-2017, 933 912 school students, or 53.8%, suffered from various pathologies (Gazibara, Pekmezović, Popović, Paunić, & Kisić-Tepavčević, 2018). Evidently, every seventh child had gastrointestinal and nervous system diseases; every ninth child had a nervous system disease, whereas every tenth child had problems with respiratory and endocrine systems.

Bad habits in schoolchildren, such as smoking, alcohol consumption and drug abuse are an urgent problem: 10% of school students under 14 smoke cigarettes, whereas 20% drink alcohol.

According to the experts, the leading causes of a disease to emerge are related to sanitation and hygiene – overnumbered classes, academic overload, subjective feelings of dissatisfaction among students, and inadequate medical service. The main factor influencing health remains the family, especially in the rural areas and cities with insufficient infrastructure.

Though the current strategy focuses on the health of the local population, it is also crucial to promote the formation of healthy lifestyle habits within the framework of pre-school and school education. The results of literature analysis suggest the absence of favourable conditions for the sports programme development, those that take into account a connection between the sports programme and the cognitive function of schoolchildren (Egger, Conzelmann, & Schmidt,

2018). Besides, there are no settings and teaching methods oriented towards the formation of healthy lifestyle habits through national and active sports.

This study aims to examine the features of active game-based learning in primary school, considering both the principles of cognitive stimulation and cultural background. To reach the research goal, based on previous empirical findings, the researchers probe whether there is an established opinion about national games in the school curriculum among teachers and experts. Based on the findings, the study proposes a scientifically grounded methodology for organising and conducting active games in a primary school. The relevant literature underpinning the study is reviewed in the following section.

Literature Review

Nowadays, maintaining and promoting children's health, both physical and mental, is a priority of education (Milteer, Ginsburg, & Mulligan, 2012; Tagiltseva, Matveyeva, & Byzova, 2019). On the one hand, the amount of knowledge accumulated by humanity and, consequently, the volume of learning material increase annually. On the other hand, there is a dramatic drop in health rates among schoolchildren, with the central damage caused to the eyesight and the musculoskeletal system. According to different studies, the number of healthy children decreases four-fold during the school year (Akanov, 2004). The 2000 reports show an increase in the number of short-sighted children, from 3.9% among KS1 (key stage 1) children to 12.3% among the KS5 (key stage 5) children. According to the same sources, the number of children with neuropsychic diseases grew from 5.6% to 16.4%, and the portion of postural disorders increased from 1.9% to 16.8% (Mikhaylova & Alifirov, 2017).

As noted, the daily motor activity of children decreases two-fold after entering school (Ericsson, 2008). Consequently, their organisms do not receive enough oxygen, and their productivity falls. The lack of movements cannot be fully compensated in the physical education classroom alone. That is why, it is necessary to

plan a lesson in a way that will ensure the students' natural need for movement (Bailey et al., 2009).

One of the means of creating a health-promoting environment during a lesson is a system of game-based tasks with the underlying integration of cognitive and motor activity in a primary school (Stewart, Sun, Patterson, Lemerle, & Hardie, 2004).

A game-based approach towards learning allows an in-class activity, which is close to the leading activity of school-aged children and contributes to the development and improvement of the musculoskeletal system (Ucus, 2015). Games teach children discipline, concentration and systematic actions (Bartolomé, Zorrilla, & Zapirain, 2011). The game-based learning is the most specific and emotionally effective way to work with schoolchildren, as it incorporates the elements of visual thinking. In a game-based setting, children simultaneously improve their motor skills, become independent and creatively initiative (Verstraete, Cardon, De Clercq, & De Bourdeaudhuij, 2006).

As one of the primary means of physical education, active games allow fulfilling the health-promoting and teaching objectives effectively (Sevy-Biloon, 2016). It exerts an extensive influence on a child's physical development and health promotion. While playing, a child activates the entire organism, enhances the metabolic processes, and increases vitality. The game-based learning favours the development of children's moral and volitional qualities, their cognitive potential (Bernstein, Gibbone, & Rukavina, 2015). Besides, through a sport/game, children acquire team skills (Pangrazi & Beighle, 2009).

An active game with rules is a conscious level of play that implies an accurate and timely complement of specific tasks. A mobile game is an exercise that helps a child to prepare for life. Engaging content and emotional richness of a game stimulate to mental and physical efforts.

An active game is a game in which a child moves in a rapid response to verbal signals, like "Catch!", "Run!", and "Stop!" Active game/sport

is a motor skills activity performed, in most cases, with the aim of accomplishing a motor task. The play is governed by the rules, which are clearly formulated at the start and all players must obey them. The game rules define the duration of motor actions and accuracy requirements. How well a child follows the rules defines how well he/she controls one's own behaviour (Schmidt, Lee, Winstein, Wulf, & Zelaznik, 2018). Active game exerts a favourable influence upon a child's nervous system. To win in a game, a child needs fast reaction time (Zeman, Cassano, Perry-Parrish, & Stegall, 2006) or the ability to take reasonable action in response to a sudden change in the situation within the shortest timeframe possible. Otherwise, all efforts will become late and ineffective. The majority of active games/sports involve many large muscles, positively influencing the whole body. During a game, some movements are alternated with other movements. Hence, the rapid onset of fatigue is not to be a matter of soon concern. Children are free to change the pace of play and thereby, regulate the load. In light of these backdrops, this study probes physical education in primary schools. The next section discusses the methods and methodological issues deployed to achieve the objectives of the study.

Methods

Research Design

Methods used in the study to reach the research purpose include:

- national coaches and teacher surveys;
- the analysis of competition protocols and training plans for young athletes engaged in national sports;
- investigation tests among schoolchildren and athletes involved in the national sports;
- in-class competitions;

In articles and methodological developments that favour the students' health promotion, the issues surrounding the motivation to motor activity and healthy lifestyle, as well as methods implying the use of national sports, are not sufficiently formulated. Hence, this study

explores the consistency of opinions regarding the teaching and learning technologies that were put forward in previous empirical studies conducted in Kazakhstan.

The experience of national sports coaches and school teachers was accumulated by a survey, which has been offered during the lesson observation (Imanbetov, Kuleimenov, Muskunov, & Salikov, 2010).

Research Sample and Survey

In the survey, coaches and school teachers were asked questions to subsequently develop a method for healthy lifestyle formation through the national sports, for shaping a negative attitude towards bad habits among students, and for raising their interest in sports participation.

The survey involved 38 national sports coaches and 29 school teachers. For the specialist survey, respondents were selected beforehand.

An expert is expected to possess comprehensive knowledge in the research question and to be sufficiently qualified in related fields (Rolloft, 1985).

To evaluate the competency level of candidates, a questionnaire was developed. The questionnaire form is dedicated to the issues of health promotion and healthy lifestyle formation. The candidates were given 5 minutes to answer the questions. Based on the answers, the group estimates were calculated for each question. The sum was then divided by the number of candidates. The specialists, who developed this survey method, suggest selecting the most competent respondents.

The number of qualified respondents can be defined by a dependence on the group average error rate (Guilberg & Pocc, 1985). Hence, it varies between 10 and 29. This is why the final sample involved 14 specialists, who took part in the specialist survey.

Specialists were asked to assess factors influencing the healthy lifestyle and health of children. Data processing was carried out using the rank order method, the progress tracking method, and the double comparison method.

Data Analysis

The Kendall concordance coefficient was calculated. The said coefficient measures the

consistency of opinions, according to the formula:

$$W = 12 \times S / m^2(m^3 - n), \quad (1)$$

Where:

W - the concordance coefficient,

12 - a constant,

S - the sum of mean square deviations,

m - the number of respondents,

n - the number of relative factors.

The results range from 0.01 to 1.00, where 1.00 resembles complete agreement, while 0.01 means no agreement. Statistics will allow determining if the teachers and specialists are ready to incorporate national games into the primary school curriculum.

In the study of Guilberg & Pocc (1985) the opinion consistency was 0.76 and 0.89, respectively. The findings of Imanbetov et al. (2010) demonstrate a 0.94 consistency. Hence, there is an established opinion about technologies in education and about the potential of national education programmes to transform, through the inclusion of national games into the framework of physical education. The following section critically analyses the findings.

Towards Effective Physical Education in Primary Schools

The conclusions regarding physical education in Kazakhstan are to be drawn correctly if the matter in question is considered in the close relation to all fields of social development.

Modern Kazakhstan is a centre of ancient culture, as evidenced by archaeological excavations, oral and written sources, monuments engraved in stone, and historical research.

The Kazakhstani national games and sports have their roots in the earliest historical time periods. Scythians, the old Turks, are considered as the great grandfathers of the Kazakhs, who lived between the 17th Century B.C. and the Second

Century A.C. and who emphasised the importance of physical education.

Scythians established trade and cultural relations with the neighbouring nations. Some information about the competitions that took place back then is provided by Herodotus, who wrote about Scythians winning the horse race. This allows us to conclude that even little children could be taught horse riding, archery and justice between 5 and 25 years of age.

Herodotus commented on the Scythian dressing style: "The Sacae, who are Scythians, have high caps tapering to a point and stiffly upright, which they wear on their heads. They wear trousers and carry bows and daggers; besides which they carried the battle-axe, or sagaris" (Chiasson, 2001:39).

Some families in Kazakhstan preserved their family coat of arms. Based on these data, one may conclude that the Sacae paid due attention to physical education and participation in competitions, and conducted special lessons.

Before starting any activity, Kazakh people used to ask a respected man for his blessing and permission. This tradition was observed by wrestlers, horse trainers or 'atbegi' and eagle hunters or 'kusbegi'. Before competitions and during preparation, different manifestations of ignorance and superstitions could appear. Today, superstitions are viewed as a means of psychological support.

The evidence that the Eastern people, including the Turks, organised and conducted their own competitions, which happened to be similar to

the Olympic Games in Ancient Greece, include the words of Olzhas Suleymenov, who noted that Turks were given a leaf wreath for winning a competition (Humphrey, 2002). The prize tradition shows the respect that people have for a winner, and it remains part of the Kazakhstani culture. For example, the book *Tauarih Hamsa or The Genealogy of the Turks*, or the *Essays on the History of the Five Eastern Peoples* (Russian translation), written by Kurbanghali Khalid in the 21st Century, speaks of 'baiga', the short-distance horse races (Khalid, 1992). As history shows, the national games developed at a rather slow pace due to specific unfavourable events – The Great Disaster of 1723–1727, famine and mass repressions during the Soviet time, The Great Patriotic War, etc.

It should be noted that Kazakh people use national games as the primary tool of physical education, as a means of identity protection. As the child grows, he/she adheres to different kinds of physical exercises and this necessitates the change in a training strategy. Undoubtedly, physical education is one of the main domains in pedagogy and rational use of the national ethnical teaching methods is an effective educational approach. National games and sports that are similar to those of Kazakhs can be found among other nations. This suggests a mutual exchange of traditions between nations.

Nowadays, modern Kazakhstan actively revives and develops its national values, transforming them in teaching tools (Sarmantayev & Ishanov, 2018). The necessity of using national games and sports in education is a proven fact. The research results show that national sports and games serve a teaching tool that forms a child's worldview and the perception of one's own language, culture, and traditions. In this context, physical education is of great social significance. In physical education, the combined use of accepted exercises and national games contributes to the formation of national consciousness and physical self-awareness in children. Nevertheless, the Kazakh national games are challenging to incorporate in the education system and to use when nurturing.

In the Kazakh national sports and games, the achievements are fraught with many shortcomings: the lack of regulations, weak methodological framework, inadequate normative legal procedures, information shortage, the lack of facilities and qualified staff.

From the above, it can be concluded that the information about games has been used for educational purposes since the Stone Age. National games rooted back to the ancient Sacae and different games can be found in countries that existed during the time of Scythians, Huns, and the Turks. Kazakh national games have their names formed when the Kazakh people became a unique ethnos. The comprehensive research on the Kazakh national games began in the first half of the 20th Century and constituted the works written by the Russian researchers Eshchen and Pustovalov. The Soviet period, however, saw only a few scholars interested in national sports and games.

Given the popularisation of national sports and games, it is necessary to consider them in the context of healthy lifestyle promotion. Teaching methodology offers specific recommendations for the development of cognitive activity in primary school students in a physical education classroom. Making children active in a class means to bring their intellectual, moral, volitional and physical strengths into play so that they achieve a particular goal. The cognitive activity is possible when a child is able to compare the current situation with his/her past experience. The orienting response (OR), an immediate response to changes in the external environment, here is of special significance.

The levels of cognitive activity are distinguished as follows:

- *Reproduction*, characterised by the desire of a student to understand, remember, reproduce knowledge, master the ways of using the pattern.
- *Interpretation*, characterised by the desire of the learner to comprehend the meaning of the studied, to establish connections, to master the ways of applying knowledge in changed conditions.

- *Creative activity*, characterised by the student's desire for a theoretical understanding of knowledge, independent search for solutions to problems, an intensive manifestation of cognitive interests.

The cognitive activity in physical education is based on the following principles:

- *Horizontal connectedness* (learners relate their learning to real-life contexts), which forms the core of active learning and is achievable only through active learning;
- *Correspondence*, according to which, the content and activity that schoolchildren learn to correspond to the current scientific knowledge.
- *Consciousness*, which refers to learning with understanding.
- *Visualisation*, which refers to the unity of abstract ideas and verbal instructions with specific actions.
- *Individual engagement*, which ensures that all students are engaged in collective learning and that the process corresponds to their physical abilities.

The learning content, teaching modes and methods serve tools to activate the students in the class.

The teacher's role here is to ensure the achievement of mastery rather than class attendance. Hence, independent activity is of particular importance when it comes to learning. To make an individual student assign for any form physical education, the teacher must:

- Clarify the purpose of the independent work;
- Give a specific task;
- Clearly state what a student must achieve to end the task; and
- Outline the progress assessment form.

Requirements to the content of the independent work are outlined below:

- An assignment must be in line with the teaching and learning goals;
- All levels of cognitive activity must be involved;

- Flexibility realised through a broad range of diverse tasks.

Conclusion

This article offers a scientifically grounded methodology for organising and conducting active games in a primary school. Physical education opens up broad opportunities for a teacher to ensure the assimilation of knowledge and to optimise the learning process. Movement in the classroom stimulates the cognitive interest and contributes to the development of physical and mental abilities in children.

Results show that a child remembers only 44% of the transmitted material. Thus, integrating cognitive and motor tasks, it is definitely expected to ensure better assimilation. Each physical education class includes low-intensity games, which allow children to reduce their emotional load. Such games have a cognitive element that increases motivation and thus, improves the ability to remember.

The effectiveness of teaching largely depends on the children's attitude, and a game that combines movement and cognition allows keeping the lesson at a high pace; catching the attention of students; avoiding excessive fatigue and overload. It is scientifically proved that students do not perceive physical education as forcible when the process integrates the cognitive and motor tasks (in our case, national and active games).

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