

# Use motion games in exercise with children with bronchial asthma

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**Purpose:** to analyze the possibility of using moving games in the rehabilitation of children with bronchial asthma.

**Material & Methods:** the modern scientific literature on integrated prevention and treatment of children with asthma.

**Results:** A high frequency of morphological and functional deviations at children with asthma. Classification and examples of mobile games, which can be used for this group of children.

**Conclusions:** the results of modern research that show the effectiveness the use of physical rehabilitation, including moving games.

**Keywords:** bronchial asthma, physical rehabilitation, motion games.

## Introduction

The significant increase in prevalence of bronchial asthma (BA) at children, difficulties of diagnostics and possibility of development of heavy, invalidizational forms of a disease, pre-determine a special relevance of a problem in modern conditions. BA – is the most widespread disease of a children's age. Boys are ill more often, than girls (6% in comparison with 3,7%), however the frequency of a disease becomes identical in both sexes with the approach of the pubertal period. BA observe at city dwellers more often, than at rural (7,1% and 5,7% respectively). A disease proceeds heavier at children from families with the low social status [6].

In 2011 at the meeting of the UNO on non-communicable diseases – Ncds) the attention was concentrated on the increase in threat of BA and other noninfectious diseases of global health, social wellbeing and economic development. BA usually develops in the early childhood. Signs of BA can disappear in more than in 3/4 of children in whom symptoms of asthma appeared till 7 years old, at an adequate complex treatment till 16 years old [2].

In this situation the search of safe is very actual, but enough effective methods and ways of therapy of BA, especially at a rehabilitation stage. For today methods of non-drug and traditional therapy began to be used rather widely in clinical practice. These methods of influence pathogenetic are proved, they are combined with medicamentous therapy, harmless, allow avoiding polypragmasy, are psychologically well transferred by patients, help renewal of the broken functions of an organism [9].

For today the solution of questions of prevention of bronchial asthma is important. Now there are no prenatal actions which could be recommended for primary prevention of BA [6].

Post-natal prevention provides carrying out the following actions: to recommend the chest bringing up which has a protective effect concerning emergence of whistling rattles at children of early age; the warning of parents-smokers of negative influence of a tobacco smoke on the course of diseases

which are followed by bronchial obstruction.

Actions for the secondary prevention are focused on children in whom the existence of a sensitization is proved, but there are no symptoms of BA yet.

The tertiary prevention is directed to reduction of influence of provocative factors for control improvement of BA and reduction of need for medicamentous therapy.

Especially perspective prevention of BA at children who visit the children's organized collectives, which are located in the polluted industrial regions or in territories with adverse ecological conditions and enter into the risk group concerning the development of allergic diseases.

Introduction of the multicomponent system of medico-pedagogical improving actions with inclusion of the alternative methods of influence in child care educational institutions, which are directed to the improvement of a state of health of children including risk groups on the development of bronchial asthma, will allow to solve not only medical, but also socially important problems of use of health care technologies in education of children [9].

The opinion of authors and their colleagues on clinical prospects of physical activity of children with different types of diseases, different degree of their weight is displayed in the book "Health of children and physical activity" of O. Bar-Or and T. Rouland (2009). Authors consider that "... low-mobility practically without options displays an aberration at children which is expressed in physical, mental or emotional violations and social disadaptation" [1].

The disease often leads to reduction of physical activity which provides detraining influence, decrease in functionality of a child and the subsequent prevalence of hypoactivity: "hypoactivity – detraining – hypoactivity – close vicious circle" [1].

Considering physical activity as therapeutic means in physical therapy, work therapy, that is means of physical rehabilitation, it is necessary to consider their positive necessary factor for

growth and development of children, teenagers, causing their full-fledged health, and also reducing development of risk factors of chronic diseases at an mature age [12].

Group of authors (O. N. Kuzina and co-authors, 2015) [5] conducted the research of morfo-functional indicators of an organism of children with atopic BA in the period of clinical remission for the development of criteria of efficiency of basic treatment and rehabilitation of this category of patients. 166 children aged from 3,5 till 15 years sick on atopic BA in a remission stage (113 boys and 53 girls) were examined. All patients were divided into 3 groups in 1 of which 44 preschool children entered; in the 2nd 70 children younger, were included in the third – 52 children of middle school age. The main anthropometrical indicators, force of different groups of muscles, counted indexes were measured: Ruffie, Harvard step-test, Robinson. It was revealed as a result of the researches:

1. Physical development was disharmonious in 53 (31,9%) cases that was generally shown by surplus of body weight; with age the part of these patients grew up from 6 (13,6%) cases in the 1st group to 22 (42,3%) in the third.

2. Indicators of a condition of the muscular system in most of patients, especially at preschool children, were lowered: hand dynamometry in 78 (47%) cases, force of muscles of a back – in 117 (70,5%), a stomach – in 107 (64,5%).

3. High frequency of decrease in separate parameters is registered, which display an initial condition and an adaptive reserve of the cardiorespiratory system.

Being guided by the obtained data by authors which confirm the decrease in force of muscles, disharmonious physical development and a low adaptive reserve of respiratory and cardiovascular systems of children with BA, is expedient to include in the complex treatment of means of physical rehabilitation, in particular, medical physical culture.

Leading experts on physical rehabilitation and pulmonology (S. V. Khrushchov, V. N. Moshkov, M. I. Fonaryev, K. P. Buteyko, V. M. Mukhin, N. A. Geppe, O. V. Peshkova and another) recommend focusing against the all-developing exercises attention on various technicians of breath. But, considering needs of children, V. A. Siluyanova and N. L. Ivanova suggest to enter into the inter-attack period in classes by remedial gymnastics of game of a special orientation, and also elements of sports [4].

According to L. A. Strashk (2011), MPC for patients with bronchial asthma has to become a part of everyday life [10].

## The purpose of the research

To learn possibilities of use of outdoor games in rehabilitation of children with bronchial asthma.

## Material & Methods

Research methods: the analysis of modern literature and researches, which devoted to use of different means of rehabilitation of children with bronchial asthma.

## Results and discussion

Use in pediatrics of medical physical culture as an element of physical rehabilitation allows developing individually the muscular force and physical abilities of children [3].

In the course of physical rehabilitation the approach of remission happens thanks to renewal of own compensatory opportunities of an organism of a patient. Means of physical rehabilitation are ecologically purest and at their correct appendix don't cause complications [9].

It is proved by the researches of certain authors that bad shipping of loadings at children with bronchopulmonary diseases connected with a condition of detraining which develops as a result of an inactive way of life [11].

Means of physical rehabilitation contribute to renewal of function of external breath, normalization of blood circulation, improvement of adaptation opportunities of respiratory and cardiovascular systems, physical activities; strengthening of muscles of a thorax and bronchoalveolar device; increase in mobility of a backbone, ribs, diaphragms; increase of resilience of an organism; improvement of exchange processes; normalization of function of the central nervous system [12].

One of the most effective methods in the motive therapy of patients and the weakened children – outdoor games. They influence favorably the cardiovascular, respiratory systems and the musculoskeletal device [11].

The main form of MPC is classes by the remedial gymnastics (RG) which are recommended to be carried out at the beginning of a rehabilitation course individual, and then low-group and group by methods. From means of MPC are applied: the breathing exercises, all-developing exercises (ADE), special physical exercises, outdoor games of the special and all-developing orientation [7].

Classes by RG consist of 3 parts: preparatory, main and final. 15–20% of the general time are taken away on the preparatory part of classes of RG, on the main part – 65–75%, on final – 10–15%.

Elementary gymnastic exercises are given in the preparatory part of classes of RG which don't need a big physical tension that train a patient for the growing physical activity. It is also possible to include outdoor games on attention which are held on the place, lasting up to 2 minutes.

The main part of classes of RG solves the leading medical tasks and includes the special and all-developing exercises which positively influence respiratory and cardiovascular systems and all organism of children. Exercises are applied to big muscular groups on strengthening of muscles of an abdominal tension, breathing exercises (breathing exercises with a pronunciation of sounds, dynamic breathing exercises with the prolonged exhalation, diafragmalny breath, drainage exercises but other), outdoor games of special and all-developing orientations, Hatha yoga elements. It is also possible to use 1–2 ball games in the main part in which it is necessary to use in transfers which are previously studied in exercises, throwings, dribbling. Duration has to be 5–10 minutes.

Final part: elementary gymnastic and breathing exercises, relaxation exercises, and also elements of autogenic training. It is possible to include to it an outdoor game with low intensity which will promote a slow decrease in loading and will calm after the emotional excitement [8].

Unlike adults for whom motivation to classes by physical activity is renewal of health, it isn't motivation for children and teenagers. Therefore the program of physical exercises for children needs to be built by the principle of game activity, even with elements of symbolical remunerations after the implementation of the necessary motive program [1].

Game serves satisfaction of different requirements – in self-knowledge and communication, in spiritual and physical development, in rest and entertainment, etc. Different parties of the identity of children appear and develop, many emotional and intellectual requirements are satisfied, character, self-confidence, forces are built up in a game.

Outdoor games – the most available and effective method of influence on a child with her active help. Game exercises take the special place both in physical training of a child, and in treatment, providing complex influence on her organism and high emotionality [4].

Game exercises are divided on outdoor games (on the place, inactive, mobile) and sports.

Requirements to games which are used in rehabilitation of children:

- obligatory regulation of physical activity, according to motive regime of a child;
- possibility of management of the physiologic shifts connected with an emotional coloring;
- fixing of the developed movement skills;
- compliance and realization of the put medical tasks;
- compliance of a game of age of a child.

In view of an insufficiently high level of physical efficiency of children with BA, it is necessary to pay special attention to dispensing. The following receptions are used for regulation of physical and emotional activity on classes: to change the duration and the number of repetitions of a game; to increase or reduce the platform sizes; to apply stock of bigger or smaller weight and sizes; to enter short breaks; to reduce or increase number of teams depending on the number of participants [8].

The classification of outdoor games with allocation of 4 groups is accepted in therapy of patients and the weakened children taking into account psychophysical loading in them: I group – games with insignificant psychophysical loading, II group – with moderate loading, III group – with a toning loading, IV group – with a training load [4].

Games on the place and games of small mobility are entered in the post-attack period when physical rehabilitation is carried out in the form of individual and low-group classes. At improvement of a condition of a patient (reduction of frequency

of attacks, their duration, decrease in tendency of bronchial tubes to a spasm) elements of sports are connected (volleyball, basketball throwing in a ring and so forth). At the same time the whole loading part of any exercise: trunk inclinations, a ball throw, and so forth is carried out on an exhalation. It is necessary to relax after several repetitions. It promotes increase of adaptation of an organism to growing physical activities, working capacity preservation.

Outdoor games which impose already more considerable requirements to nervous, cardiovascular and respiratory systems [6], are included in remedial gymnastics in the inter-attack period that are carried out already, as a rule, by a group method.

Outdoor games of a special orientation of N. L. Ivanov offers to divide into 5 groups: I group – with breath correction elements, II group – with elements of drainage of bronchial tubes, III group – with sport elements, IV group – with posture correction elements, V group – with elements of relaxation [4].

Outdoor games with elements of correction of breath solve a task: to promote relaxation of smooth muscles of bronchial tubes, developments of the mechanism of full breath with overwhelming training of an exhalation. «*Summer at the dacha*»: an image of different animals: cows (moo), sheeps (be), goats (me), pigs (oink- oink), bugs (zhzhzh), cats (meow), cocks (cock-a-doodle-doo), toy pistols (uphph). To say each sound 6–8 times. The game for training of an exhalation “*Flight with flowers*”: s.p. – straight arms are raised up, palms are connected. The flower extremely reveals – hands in the parties (on an exhalation), the flower smells – a delay of breath, closing of a flower, – return to s.p. (on a breath). “*Festive cake*” – imitation of a a blowout of candles on a festive cake.

Outdoor games with elements of drainage of bronchial tubes help to improve a bronchial permeability and to normalize evacuator function of a bronchial tree. “*Cars*”: s.p. – children carry out an emphasis hands in forgery, parents hold them by legs. A child carries out the movement on hands. For children of a middle school age possible performance of this game without the aid of parents, it is necessary to divide them into several teams for this purpose.

Children with BA rather often have violations of a bearing in (most often kyphotic). The correcting outdoor games promote prevention and elimination of postural defects. “*Hit in a skittle by a ball*”: to put in one rank lay down on a stomach, each player has a ball in hands. At small distance opposite to each participant belongs a skittle. A ball push from a breast the skittle needs to bring down a ball. After that a child puts hands on a belt, having raised a breast from a floor, connects shovels – to hold 5 seconds. Then each participant gets up, follows a ball and repeats a task. To execute 5–7 attempts in total. The one who brought down the bigger number of times to a skittle wins. “*Stand up straight*”: accept to put in front of the mirror a correct posture and go on the hall a simple step with speed change (slowly, quickly), then turn into run. By a signal of an instructor to put run take the places about a mirror, correctness of a bearing is checked and advice from correction is given if the wrong bearing.

Outdoor games with elements of sport are preparatory to certain sports (basketball, volleyball, track and field athletics,

and so forth). They promote improvement of work of all bodies and systems of an organism, and also breath training. «*Relay with basketball elements*»: the players who are divided into 2 teams and built in columns. By an order of the instructor players of both teams carry out dribbling by one hand, for 2 m to a ring stop, carry out a throw in a ring two hands from a breast on an exhalation. Then catch a ball, and with it in hands run come back to team and pass on baton. The team which all players have quicker executed exercises wins. «*A foot ball*»: players settle down in a circle, in one of them a ball. The pupil who drives comes into a circle. Players roll a ball on a floor each other, seeking to get into the pupil's legs in a circle. If someone manages it, then he changes the player in a circle.

Outdoor games with elements of relaxation help to teach any relaxation of muscles, and also relaxations of muscles of a humeral belt and the top extremities promote. «*Sea waves*»: s.p. – standing in a circle and having joined hands. To carry out hands the wavy movements, weakens at the same time a humeral belt and the top extremities. «*Weeping willow*»: s.p. – hands in the parties, legs at shoulder length – a breath. On an exhalation to make an inclination forward, to weaken a hu-

meral belt and hands, then to shake hands diversely, having presented that hands – tree branches, shake on wind.

## Conclusions

1. Modern researches of morpho-functional indicators demonstrate a decrease in force of muscles, disharmonious physical development and a low adaptive reserve of respiratory and cardiovascular systems of children with bronchial asthma, therefore are expedient to include in complex treatment of means of physical rehabilitation, in particular, of medical physical culture.

2. From means of MPC are applied: the breathing exercises all-developing exercises (ADE), special physical exercises, outdoor games of a special orientation.

## Prospects of the subsequent searches

Are connected with the improvement of programs of physical rehabilitation of children with bronchial asthma for the purpose of the increase of their motivation to physical activity.

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