

ПРИНЦИПЫ РЕАБИЛИТАЦИИ И РОЛЬ ДОЗИРОВАННОЙ ФИЗИЧЕСКОЙ АКТИВНОСТИ У ДЕТЕЙ, БОЛЬНЫХ БРОНХИАЛЬНОЙ АСТМОЙ

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ПРИНЦИПЫ РЕАБИЛИТАЦИИ И РОЛЬ ДОЗИРОВАННОЙ ФИЗИЧЕСКОЙ АКТИВНОСТИ У ДЕТЕЙ, БОЛЬНЫХ БРОНХИАЛЬНОЙ АСТМОЙ
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Аннотация: В данной статье освещены принципы реабилитации и роль дозированной физической активности у детей, больных бронхиальной астмой. Результаты исследования показали, что физические упражнения способствуют улучшению клинических показателей астмы и повышению качества жизни детей. Исследование проводилось в 2018–2022 годах в пульмонологическом отделении Ферганского областного многопрофильного медицинского центра, было обследовано 70 пациентов.

Ключевые слова: бронхиальная астма, реабилитация, дети, физическая активность, дыхательная гимнастика, велоэргометрия.

BRONXIAL ASTMA BILAN KASALLANGAN BOLALARDA REABILITATSIYA TAMOYILLARI VA DOZALANGAN JISMONIY FAOLLIKNING O'RNI

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Farg'ona viloyat Bolalar ko'p tarmoqli tibbiyot markazi. Farg'ona sh., O'zbekiston.

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Аннотация: Ushbu maqolada bronxial astma bilan kasallangan bolalarda reabilitatsiya tamoyillari va dozalangan jismoniy faollikning o'rni yoritilgan. Tadqiqot natijalari jismoniy mashqlar astmaning klinik ko'rsatkichlarini yaxshilashga va bolalarning hayot sifatini oshirishga yordam berishini ko'rsatdi. Tadqiqot 2018-2022 yillarda Farg'ona viloyat bolalar ko'p tarmoqli tibbiyot markazining pulmonologiya bo'limida olib borilgan bo'lib, 70 bemor tekshirildi.

Калит so'zlar: бронхиальная астма, реабилитация, дети, физическая активность, дыхательная гимнастика, велоэргометрия.

PRINCIPLES OF REHABILITATION AND THE ROLE OF DOSED PHYSICAL ACTIVITY IN CHILDREN WITH BRONCHIAL ASTHMA

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Abstract: This article highlights the principles of rehabilitation and the role of dose-dependent physical activity in children with bronchial asthma. The study results showed that physical exercises help improve the clinical indicators of asthma and enhances the quality of life of children. The study was conducted from 2018 to 2022 in the pulmonology department of the Fergana Regional Children's Multidisciplinary Medical Center, with 70 patients examined.

Keywords: bronchial asthma, rehabilitation, children, physical activity, breathing exercises, cycle ergometry.

Introduction: Bronchial asthma is a complex allergic disease associated with chronic inflammation of the airways and is widely prevalent among children worldwide. In recent years, its incidence has been increasing, leading to significant medical and social challenges [1,2]. The development of asthma can be influenced by genetic predisposition, environmental factors, hypersensitivity to allergens, and infections [3,4]. Studies have shown that bronchial asthma reduces patients' quality of life and is characterized by reversible airway obstruction and bronchial hyperreactivity [5]. In children with this condition, it often leads to decreased physical activity, rapid fatigue, and reduced overall endurance. Therefore, in addition to pharmacological treatment, the implementation of physical therapy and rehabilitation principles is crucial in the treatment process [6,7]. An individualized approach is essential for the effective treatment of children with bronchial asthma. The course of the disease, allergic background, and degree of bronchial obstruction should be taken into account. Recent scientific studies have demonstrated the effectiveness of comprehensive treatment programs for children with bronchial asthma. These programs include pharmacotherapy, physiotherapy, breathing exercises, and rehabilitation measures aimed at increasing physical activity [8-10]. Controlled physical activity plays a vital role in reducing bronchial obstruction, strengthening respiratory muscles, and improving overall endurance. The exercises should be gentle and tailored to the patient's physical condition. Research findings indicate that applying physical therapy methods reduces airway inflammation and helps decrease the frequency of asthma attacks in children with bronchial asthma [10-13].

Materials and methods: This study was conducted in the pulmonology department of the Fergana Regional Children's Multidisciplinary Medical Center between 2018 and 2022. The research involved 50 children diagnosed with bronchial asthma, 20 children diagnosed with chronic pneumonia, and 30 healthy children (aged 7-15 years). The study participants were gradually included in the diagnostic, treatment, and rehabilitation processes. The study consisted of the following stages:

- Clinical and Anamnestic Examination:* Patients' medical history, complaints, and specific features of bronchial asthma progression were assessed.
- Laboratory and Instrumental Examinations:* General blood tests, spirometry, pulse oximetry, and cardiovas-

cular system parameters were evaluated.

3. Development of a Rehabilitation Program: Patients were integrated into an individualized rehabilitation program, which included breathing exercises, physical exercises, physiotherapy procedures, massage, and reflexotherapy.

4. Physical Load Assessment: A stepwise physical exercise plan was developed using the veloergometry method. The intensity of the exercises was adjusted based on the patient's condition.

5. Evaluation of Treatment Effectiveness: During the study, respiratory parameters and overall physical endurance of the patients were monitored. The results of veloergometry and respiratory tests were analyzed.

Results: During the study, various rehabilitation methods were tested in children with bronchial asthma. The results demonstrated that physical exercise and respiratory therapy play a crucial role in reducing bronchial obstruction, decreasing episodes of bronchospasm, and improving airway patency.

The patients were divided into two groups: the first group received controlled physical exercise and physiotherapeutic methods, while the second group was treated solely with pharmacotherapy. The findings confirmed that incorporating physical exercises into the rehabilitation program was effective in reducing asthma symptoms, maintaining airway openness, and enhancing cardiovascular endurance.

Key findings of the study:

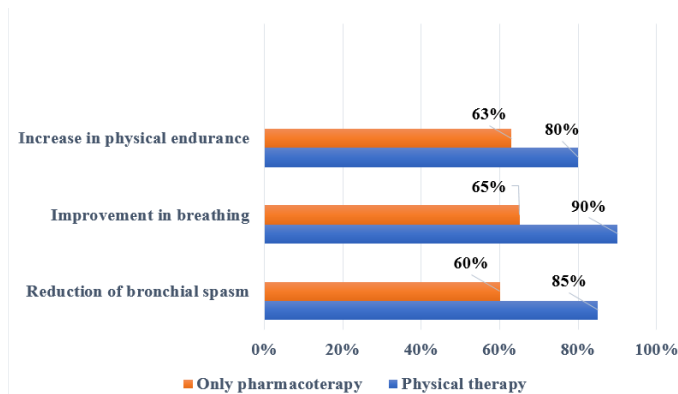
- 85% of children in the first group showed a reduction in bronchospasm and improvement in respiratory function.
- Patients included in the rehabilitation program, which involved veloergometry and respiratory exercises, demonstrated stabilization of heart rate and respiratory rate.
- Clinical indicators and laboratory test results confirmed an increase in overall physical endurance among patients.
- Subjective assessment criteria were also analyzed during the study, revealing that 90% of the patients reported a reduction in breathing difficulties and an overall improvement in well-being.
- It was determined that proper planning of physical activity contributes to prolonging the remission period of the disease and reducing the frequency of exacerbations.

Additionally, quality of life indices were assessed in the patients. The study results indicated that children included in the rehabilitation program experienced

a significant improvement in overall physical activity, and issues related to respiratory disorders were noticeably reduced, (Table 1).

Table 1.

The impact of physical therapy on patients' conditions.



The results of the study indicate that dosage-controlled physical exercise is an integral part of the rehabilitation process for children with bronchial asthma. The trials conducted within the study demonstrated that incorporating physical exercises into the rehabilitation program contributes to the dilation of airways, reduction of bronchial spasm, and improvement in cardiovascular endurance. Furthermore, patients engaged in physical training showed a decrease in asthma attacks, improvement in respiratory function, and an increase in physical endurance. During the study, 90% of the children included in the rehabilitation program exhibited a significant enhancement in overall physical activity. Additionally, a reduction in complaints related to respiratory disorders and an improvement in the quality of daily life were observed among the patients.

Discussion: The findings of our study reaffirm the significant role of dosed physical activity as part of the rehabilitation program for children with bronchial asthma. Consistent with previous research [1,3,5], our results demonstrated that structured physical training, including breathing exercises and controlled veloergometry sessions, contributed to improved respiratory function, reduced frequency of bronchospasm episodes, and increased overall physical endurance among the pediatric patients. The observed improvement in clinical parameters in the intervention group suggests that physical activity, when tailored to the patient's condition, can effectively support bronchial patency and enhance the functional capacity of the respiratory muscles. This

aligns with the studies by Silva et al. [5] and Weinstein [8], which emphasize the importance of moderate-intensity exercises in reducing airway inflammation and promoting better asthma control in children. One of the most notable findings was the significant enhancement in quality of life indicators among children who participated in the rehabilitation program. Subjective reports from patients indicated decreased dyspnea and increased exercise tolerance, which are critical for psychosocial well-being and daily functioning. This supports the recommendations made by the Global Initiative for Asthma (GINA) [2] and the American Thoracic Society (ATS) [7], advocating for the inclusion of physical training in asthma management protocols. Moreover, the stabilization of heart rate and respiratory rate observed during physical load assessments indicates a positive impact on the autonomic regulation of cardiovascular and respiratory systems. These results parallel the findings of Kupiainen et al. [3] and Mendez et al. [9], who reported long-term benefits of exercise in enhancing cardiopulmonary fitness in asthmatic children. It is also important to highlight that the individualized approach to exercise intensity, adapted to the children's physical capabilities, played a crucial role in the success of the rehabilitation program. Overexertion was carefully avoided, ensuring that physical activity remained therapeutic rather than provocative of asthma symptoms. However, the study has certain limitations. The relatively small sample size and single-center design may limit the generalizability of the results. Additionally, long-term follow-up data were not collected, which could have provided more comprehensive information regarding the sustainability of the observed benefits. Future studies with larger, multicenter cohorts and extended monitoring periods are recommended to validate and expand upon these findings.

Conclusion: the integration of dosed physical activity into the rehabilitation programs for children with bronchial asthma not only improves clinical outcomes but also enhances the patients' quality of life. These results underline the necessity of multidisciplinary rehabilitation approaches that incorporate controlled physical training alongside pharmacotherapy for optimal management of pediatric asthma.

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