

# Dynamics of physical properties of children and adolescents associated with the school period

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## Introduction

Work on this issue began in 2016. Between 500 and 600 teenagers of different ages were monitored. Observations were made for all training cycles and periods. The analysis of the obtained data showed that high results among athletes (this will be cyclical or situational exercises) cause the formation of a close interaction between physical properties. special importance is attached to the existing relationship between strength, speed and endurance, so it is not a little important and responsible connection with the sport and the preparation of the correct training process. To achieve high sports results, the above physical properties must be developed equally, since it is the unity of each of them that gives the best result. As a result of observation of highly qualified athletes, we came to the conclusion that in particular cases, disharmony of physical properties, when displaying high sports performance, is often a hindering factor and such an imbalance is not so rare in the competition of an athlete.

Our interest in this issue was manifested in the observation of this issue. in this regard, we decided to study the trends in the properties of physical development in young children and adolescents, when the load is determined not only by one specialization, but by all types of loads, in most cases it is carried out in the form of games. To resolve this issue, we started monitoring 10 different General education schools in Tbilisi. The age of the children ranged from 6 to 8 years. Standards were specially drawn up for them, after which they were enrolled in groups.

Observation began in September 2016-2017. Every year, 500-600 children were monitored, and the best of them were enrolled in different sports groups.

We observed: the strength of the right-left arm and lower back, statistical endurance, speed, and ability to jump. All processes were performed 3 times during the school year, both before the start of the training session and at rest and after the end of the training session.

We observed: running for 30 meters with an interval of 3-5 minutes, using a Bicycle Ergometer, we recorded both the same obstacles, speed work, race and statistical endurance. Force of arms was checked by the dynamometer for hand, power lumbar reversionism the dynamometer, the speed of a stopwatch, and static endurance dynamometer Rosen of Balanitis.

## Discussion of the received data

The first figure shows the average performance of running at a maximum pace of 30 meters at intervals of 3-5 minutes. The indicators of children selected in the first week at school were taken and compared with those obtained after 5 months; as can be seen in the figure when compared with the background indicator(week 1), the indicators of speed properties as a result of 5-month exercises significantly increased. At the same time, it should be noted that when running at intervals, despite three races, the speed indicator improved with each new race.

The second figure shows the average results obtained as a result of long jumps. In this case, the positive impact of physical activity on children is clearly visible. As the data from the figure shows, as a result of physical exercises, the jump function increased by 12% in comparison with the background indicators. In the research methodology, it was noted that to determine the strength of the arm muscle, a manual dynamometer is used, both before the start of exercises and after their completion. For static endurance, a Riberblant dynamometer with silver water is used.

At rest, on average, the strength of the left hand is 13 kg. As expected, the difference between the strength of the right and left hands at rest is well expressed. As for the data obtained, the strength of the arm muscles after physical activity, both the right and left hands, increased in comparison with the background indicators, and this increase is especially pronounced in the data of the left hand. If the strength of the right hand has increased by 1 kg, this is an indicator that the strength in it has increased twice compared to the left.

Observations of static endurance showed that among girls and boys of the above age, static endurance lasts a very short time, especially when exercising with 70% load. We obtained comparatively better results of arm strength, taking into account the ratio of body weight and taking into account the use of lower back muscle strength. It should be noted that there is a significant difference between the hands in determining the average of both weakness and strength. In this regard, to establish a pattern, it is necessary to use a standard load in the laboratory.

The result is a five-month exercise in children is the development of coordination. Confirmation of this gives "Makaseb", the results obtained when running. This is confirmed by the indicators shown in figure 4.

## Conclusion

The analysis of the obtained data showed that the results obtained by us among teenagers (from 5 to 8 years) should be considered only for the growth of children for the following reasons: the identification of the maximum possibilities of physical properties among older children is based on many subjective and objective reasons. These are: the genetic basis, what is the role of the

family in the process of activity of the child, etc. Under the influence of five-month exercises, various properties are improved, which gives us the opportunity to finally determine which types of physical exercises will be given an advantage in the training process (exercises) and at the end of each year, the teacher (coach) will be given recommendations for making loads in the process.

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#### **Dynamics of physical properties of children and adolescents associated with the school period**

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#### **Summary**

Work on this issue began in 2016. Between 200 and 300 teenagers of different ages were monitored. The observation was carried out for all training cycles and periods. The analysis of the obtained data showed that among athletes with high athletic performance (this will be cyclic or acyclic exercises), a strong connection is formed between physical properties and special significance is intended for: the existing relationship between strength, speed, agility and endurance. Based on all this an important responsibility falls on the preparation of the correct training process associated with different types of sports.

**Key words:** sports results, physical properties of children and adolescents, physical activity, muscle strength, manifestation of maximum abilities.

ბავშვთა და მოზარდთა ფიზიკური თვისებების დინამიკა  
დაკავშირებული სასკოლო პერიოდთან

ტრისტან გულბიანი, მერაბ მაისურაძე, თეიმურაზ ლორთქიფანიძე  
რეზიუმე

აღნიშნულ საკითხზე მუშაობა დაიწყო 2016 წლიდან. დაკვირვების ქვეშ გვყავდა სხვადასხვა ასაკის 200-დან 300-მდე მოზარდი, დაკვირვებების ტარდებოდა ყველა სასწავლო - საწვრთნო ციკლისა და პერიოდულობის მიხედვით. მიღებული მონაცემების ანალიზმა გვიჩვენა, რომ სპორტსმენებში მაღალი სპორტული შედეგების ჩვენებისას (ეს იქნება ციკლური თუ აციკლური ვარჯიშები) ფიზიკურ თვისებებს შორის მჭიდრო ურთიერთობა ყალიბდება და განსაკუთრებული მნიშვნელობა ენიჭება: ძალის, სისწრაფის, მოქნილობისა და გამძლეობის შორის არსებულ კავშირს, ამიტომაც არანაკლებ საპასუხისმგებლოა სპორტის სახეობასთან დაკავშირებული სწორი საწვრთნო პროცესის შედგენა.

**საკვანძო სიტყვები:** სპორტული შედეგები, ბავშვთა და მოზარდთა ფიზიკური თვისებები, ფიზიკური დატვირთვა, კუნთების ძალა, მაქსიმალური შესაძლებლობის გამოვლენა.

Динамика физических свойств детей и подростков  
связанный с школьным периодом

Тристан Гулбиани, Мераб Майсурадзе, Теймураз Лорткипанидзе

Резюме

Работу над данным вопросом начали в 2016 г. Под наблюдением находились от 200 до 300 подростков разного возраста, наблюдения проводились в соответствии с тренировочным циклом и периодичностью. Полученные данные показали, что спортсмены показавшие высокие спортивные результаты (это буд циклические или ациклические упражнения) между физическими свойствами формируются тесные связи, особенное значение придаётся связям между: силой, скорости, гибкости и выносливости. Так что не менее требовательно разработка правильного тренировочного процесса в избранном виде спорта.

**Key words:** спортивные результаты, физические качества детей и подростков, физическая нагрузка, мышечная сила, выявление максимальных возможностей.