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STUDY REGARDING THE DEVELOPMENT OF STRENGTH DURING ONLINE PHYSICAL EDUCATION CLASSES WITH 8TH GRADE STUDENTS

Cosmin PRODEA[1*], Maria-Renata KARACSONY[2*]

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ABSTRACT. Strength is the ability of the human body to overcome internal or external resistance (Dragnea, A., 2006). Strength motor quality plays an important role in streamlining the instructional-educational process (Ardelean, T., 1981). Strength is one of the most important qualities that the human body has and the one that has a special role in ensuring the basis for the development of other motor qualities (Dragnea, A., 2006). **Materials and methods:** This study is a research about the development of strength in the online environment in the 8th grade school children. The students that have taken part in the study were between the age of 13 and 15, studying at the Vaida Voievod middle school in Cluj-Napoca. The students were selected from two different study groups, which ranged between 27 to 30 pupils. I've been analyzing their physical development, throughout our trainings which took place twice a week, and two hours of physical education, which contained specific exercises. The testing took place at two stages. The initial testing (T.1) took place in November 2020, while the second (T2) was done in May 2021, both consisting of muscle development, pull ups (30 sec), push-ups (30 sec), squats (30 sec), hip thrusts (30sec). **Results:** for each test, I've calculated the arithmetic mean. For each test or control test we calculated the arithmetic mean and the standard deviation. I will further present the value of the arithmetic mean for the pull ups test (30 ''): T1-11.33, T2-15.2. Next I will present the result of the arithmetic mean for the push-ups test (30 ''): t1-15.46, t2-20.33. Arithmetic mean for hip thrusts test (30 ''): t1-20,73 t2-23,13. Arithmetic mean for the squats test (30"): t1-26.46 t2-29.06. **Conclusions:** Following this study we can say that we came

1 *Faculty of Psychology and Sports Sciences, Babeș-Bolyai University, Cluj-Napoca, Romania*
2 *"Alexandru Vaida- Voevod" Gymnasium School, Cluj-Napoca, Romania*
* *Correponding authors: prodeacosmin@gmail.com, karacsonyrenata15@gmail.com*

to the conclusion that there are more students who approached the scales given in the specialized books. These students were very receptive to the exercises we proposed through the online classes.

Keywords: *increasing strength, exercises, middle school children.*

REZUMAT. ***Studiu privind dezvoltarea forţei în timpul lecţiilor de educaţie fizică online cu elevi de clasa a VIII-a.*** Forţa este capacitatea corpului uman de a învinge rezistenţa internă sau externă (Dragnea, A., 2006). Calitatea motrică a forţei joacă un rol important în eficientizarea procesului instructiv-educativ (Ardelean, T., 1981). Forţa este una dintre cele mai importante calităţi pe care le are corpul uman şi cea care are un rol deosebit în asigurarea bazei pentru dezvoltarea celorlalte calităţi motrice (Dragnea, A., 2006). **Materiale şi metode:** Studiul de faţă este o cercetare privind dezvoltarea forţei în mediul online la şcolarii din clasa a VIII-a. Elevii care au luat parte la studiu au avut vârsta cuprinsă între 13 şi 15 ani, studiind la şcoala gimnazială Vaida Voievod din Cluj-Napoca. Elevii au fost selectaţi din două grupuri de studiu diferite, care variau între 27 şi 30 de elevi. Am analizat dezvoltarea lor fizică, de-a lungul antrenamentelor noastre, care au avut loc de două ori pe săptămână, şi a două ore de educaţie fizică, care conţineau exerciţii specifice. Testarea a avut loc în două etape. Testarea iniţială (T.1) a avut loc în noiembrie 2020, în timp ce cea de-a doua (T2) a avut loc în mai 2021, ambele constând în dezvoltare musculară, tracţiuni (30 sec), flotări (30 sec), genuflexiuni (30 sec), ghemuiri (30 sec), împingeri de şold (30 sec). **Rezultate:** pentru fiecare test, am calculat media aritmetică. Pentru fiecare test sau test de control am calculat media aritmetică şi deviaţia standard. Voi prezenta în continuare valoarea mediei aritmetice pentru testul de tracţiuni (30 ‘‘): T1-11,33, T2-15,2. În continuare voi prezenta rezultatul mediei aritmetice pentru testul de flotări (30 ‘‘): t1-15,46, t2-20,33. Media aritmetică pentru testul de împingere a şoldurilor (30 ‘‘): t1-20,73, t2-23,13. Media aritmetică pentru testul de genuflexiuni (30 ‘‘): t1-26,46 t2-29,06. **Concluzii:** În urma acestui studiu putem spune că am ajuns la concluzia că sunt mai mulţi elevi care s-au apropiat de scalele date în cărţile de specialitate. Aceşti elevi au fost foarte receptivi la exerciţiile pe care le-am propus prin intermediul cursurilor online.

Cuvinte cheie: *creşterea forţei, exerciţii, elevi de gimnaziu.*

Introduction

Physical education and sport have become in Romania social phenomena of national interest that have a special contribution and a high efficiency in increasing the general motor capacity, the bio-motor and spiritual potential of the population (Ardelean, T., 1981).

Under the current reform of Romanian education and given the restrictions imposed by the SARSCOV-2 pandemic, any research aimed at increasing the efficiency of sports activity is welcome.

Motor quality - "strength plays an important role in making the instructional process more effective. This is possible given that strength is one of the most important qualities of the human body and the one that has a special role in providing the basis for the development of other motor qualities" (Dragnea, A., 2006, p. 79).

Starting from the premise that there is no lower limit in the development of the motor quality of strength and that there are only methods and means suitable for their development, this paper aims to demonstrate that strength is a motor perfectible quality and that it should be developed from an early age.

I would also like to point out that it is possible to work with weights when physical education classes are held online, provided that the weights used are appropriately adapted to the pupils' possibilities.

Aim, objectives and research hypothesis

The present work deals with the efficiency of the strength motor capacity of 8th grade students in physical education classes in an online environment by using mainly their own weights, but also weights taken from other sports activities that put the subjects in a position to participate actively and consciously, obtaining a positive result.

The general aim of this work is to identify the development of strength motor capacity in 8th grade students following the application in the training process of non-specific means taken from different sports activities such as: sports games, gymnastics, athletics, fitness, etc.

Through the present research we aim to contribute to the development of new ways of conducting the physical education class in the online environment that take into account a minimum physical effort consumption and a high emotional output, so that strength development can be achieved quickly and at the same time efficiently.

On the basis of the proposed goal, several objectives were set based on the study of literature and interdisciplinary sources.

The framework objective of the research is to develop strength motor skills in 8th grade students in online physical education classes.

The optimization of strength motor capacity based on general physical training programs using non-specific means will be combined with the measurement of its spatial, temporal and instructional parameters, measurements and evaluations that take into account both qualitative and quantitative aspects that will lead to objective results of monitoring the development of strength in 8th grade students.

The operational objectives of our work were aimed at the specific adaptation of physical education classes and the fulfilment of the tasks of the observational approach to achieve the proposed goal:

1. Consultation of the literature and interdisciplinary
2. Establishing measurable parameters of general physical fitness
3. Determine the causes contributing to the decrease in strength motor capacity in 8th grade students
4. Eliminating general physical trainings errors
5. Improving general fitness indicators by developing general upper and lower limb pushing strength

Methods and materials

Methods used: bibliographic documentation method; observation method; experimental method; method of analysis and interpretation of result.

According to the hypothesis of strengthening and improving the motor quality of strength, in the online physical education classes we proposed and introduced a series of exercises and operational models used in other branches of sport to improve the tested parameters.

Materials used in the research: a chair, a bed or a sofa, 2 bottles of water (1.5 l girls, 2.5 l boys), a plush toy, 2 pillows, a balloon, a roll of toilet paper, a broom handle.

Research subjects

The research involved 15 subjects from the 8th grade aged between 13 and 15 years, included in the educational system of Vaida Voievod middle school in Cluj-Napoca.

The students were chosen from the 8th grade with a total of 27 students. Subjects were chosen from the 8th grade, based on attendance and training. As a limit of the study there were 2 medically exempted students for the whole year, and 3 more partially exempted students. We tracked general physical development by doing 2 individual workouts per week and 2 hours of physical education. Testing took place in two stages. The initial testing (T.1) was performed in November 2020 and the second testing (T.2) performed in May 2021, both in terms of tests for motor quality strength and recording some anthropometric parameters.

All students had the necessary conditions for the development of the experimental research.

Tests used

The fact-finding investigations were carried out between 20 November 2020 and 20 May 2021: first test: - initial 1 - 15 November 2020; second test: final 5 - 15 May 2021.

In order to obtain representative results, we used 4 tests and control samples that allowed us to objectively assess the level of strength training in a representative sample of subjects for our research.

1. Supine pelvic raises 30" (maximum number in 30")
2. Arm pulls 15" (maximum number in 15")
3. Push-ups 30" (maximum number in 30")
4. Squats 30" (maximum number in 30").

Results

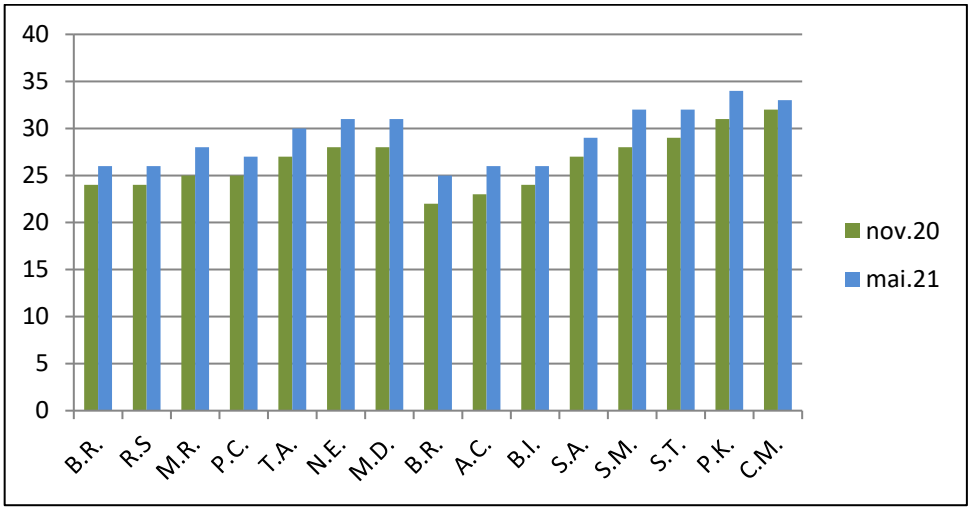

Figure 1. Results of the arm pull-ups test (15'')

We can see that this index registers higher values at the end of the test, meaning in May, compared to November. The lowest result in November was recorded by S.M, of only 9 pulls, which in May reached 13 pulls. The best results in November were recorded by T.A., B.R., A.C. who each recorded 13 pulls, they maintained the trend and were the best in May when they recorded 16 and 17 pulls respectively.

We will present the result of the push-ups (30'').

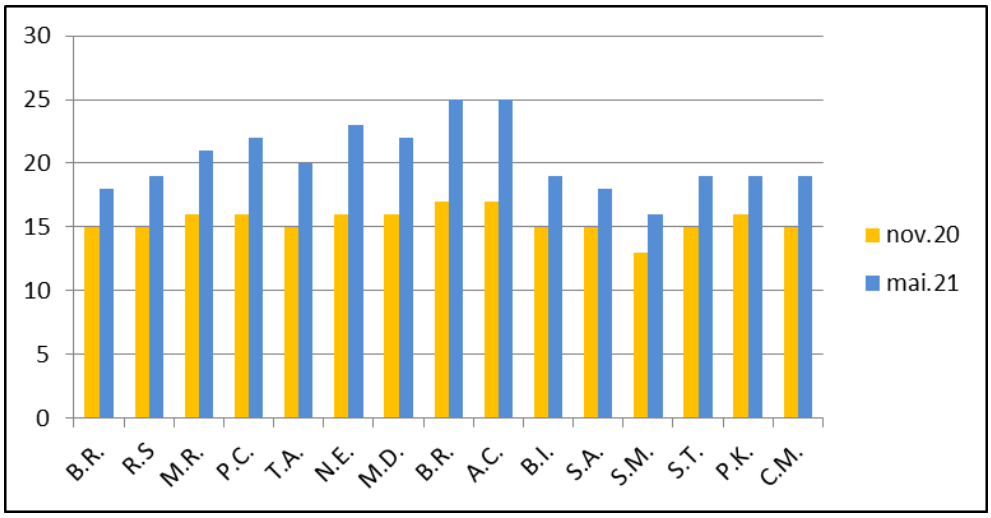

Figure 2. Results of the push-ups test (30'')

It can be seen that this index also has higher values at the end of the test than at the beginning of the test. The lowest result in November was recorded by S.M. of 13 push-ups, which in May reached 16 push-ups in 30 seconds. The best result in November was recorded by B.R. and A.C. and was 17 push-ups, they maintained their average and were the best in May when they recorded 25 push-ups. The girls did push-ups with support on the backboard.

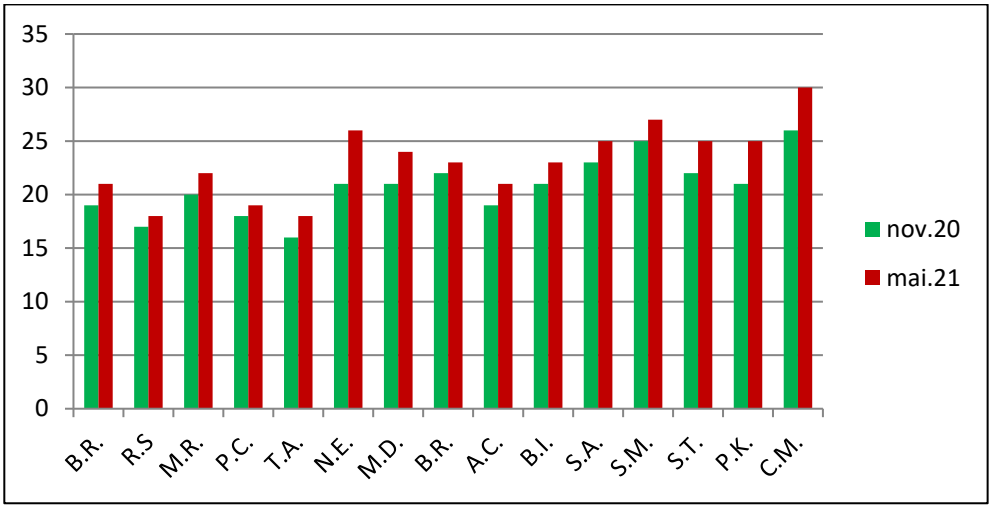

Figure 3. Evolution of the hip thrusts from supine position indicator (30'')

For supine pelvic raises (30''), improvements were recorded from 16 lifts in 30 seconds to 18 lifts. The best result was recorded by C.M who went from 26 lifts to 30 lifts in 30 seconds, which can be considered a performance for this age.

We present below the value of the results obtained as well as the graphical representation of the 30" squat test (maximum number in 30").

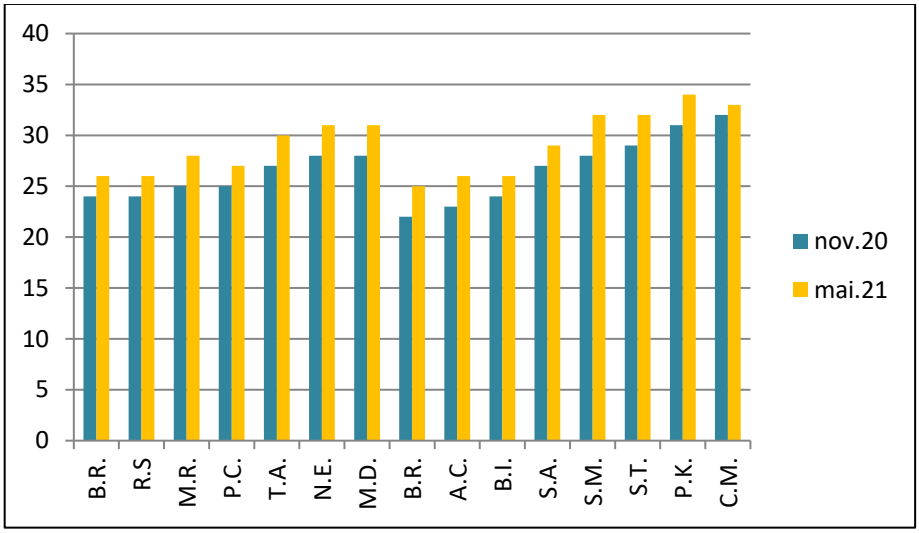

Figure 4. Results of the squats test (30'')

It can be seen that this index also has higher values at the end of the test than at the beginning of the test. The lowest result in November was recorded by B.R. of 22 squats which in May reached 25 squats in 30 seconds. The best result in November was recorded by P.K. and it was 31 squats, he maintained his average and was also the best in May when he recorded 34 squats.

At the moment we have not found any other studies on this topic, in conclusion we had no comparison with other authors.

Study conclusions

Following this study, we can say that we concluded that there are more students who have come close to the scales given in the studies. These students were very receptive to the exercises we proposed through the online classes.

Following the application of the experimental program, it was found that the results of the assessment for motor quality strength showed progress in the final test, with progress considered statistically significant.

Consequently, it can be appreciated that the hypothesis of our experimental approach is confirmed, in terms of the improvement of the quality of life of 8th grade students who followed the proposed exercise program. At the same time, they also developed their motor quality and strength.

General physical education lessons should be designed in such a way as to create new situations of solving, contributing to the education of memory, balance, orientation in space, coordination of movements through the appropriate use of physical education.

General conclusions

We conclude that the hypothesis of this work has been confirmed, as it could be proved by the research results.

We started from the hypothesis that if during the instructional-educational process, in the physical education lesson in the online environment means taken from other branches of sport are used, physical training programs appropriate to the level of training are carried out and modern methods of instruction are used, then an improvement in the performance of students in specific control tests can be achieved, with positive influences also on the motor quality of strength.

Overall strength reaches its maximum potential around the age of 13-15. Therefore, the development of strength, which does not stop at this age, is closely linked to the development of vertical and horizontal dexterity, the development of speed, as well as dynamic strength in the lower limbs. To this end, we have a rich methodology, which includes numerous specific methods and a variety of general and specific means: weights ensuring maximum or submaximal demand, principles of continuity and progressivity, force accumulation included in the combined motor qualities.

It is of major importance to make the subjects aware of the positive influence these means have on their physical appearance, ensuring that fitnes and capacity for effort are maintained for as long as possible.

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