

STUDY OF STRENGTH DEVELOPMENT FOR 12 TO 13 YEARS OLD PUPILS THROUGH TABATA METHOD

Petrariu Ileana¹

¹*“Miron Costin” Gymnasium School Suceava*

Keywords: development, strength, TABATA, physical fitness, tests

Abstract:

The continuous increase of sports performances represents the primarily result of improving the training process [1][2]. This study aims to improve strength development through TABATA method [5]. The study subjects are pupils aged between 12 to 13 years old of Suceava Miron Costin Elementary School. The results showed that TABATA exercises are very efficient for pupils aged between 12 to 13 years old strength development.

Introduction. The purpose of the research is to evaluate the level of strength development of 12-13-year-old pupils from the Miron Costin Gymnasium School in Suceava. In this study, 155 students were tested, out of which 78 were girls. Strength evaluation consisted in applying the following tests: push-ups, crunches, standing long jump [4]. These tests were aimed to determine the students strength development level. After applying the strength tests, the results were compared and we analyzed the progress.

In order to achieve the proposed goal [3], the following **objectives** were formulated:

1. Studying the theoretical conceptions and the practical experience of the physical education and sports specialists who are active at the level of the secondary education, regarding the methodology for strength development.
2. Assess the level of strength development of secondary school pupils.
3. Interpreting the results by analyzing the progress obtained on the final testing.

TABATA is a high-intensity interval training that consists of eight sets of fast-paced exercises each performed for 20 seconds interspersed with a brief rest of 10 seconds.

In our country this method is still new, but the pupils received it very well and the results followed immediately after only 10 trainings.

Running the experiment

In this study, 77 boys and 78 girls (155 students) were tested. In the table no. 1 and 2 presents the results obtained for strength testing of the 155 pupils.

12-13 years boys initial strength testing results			
Statistical indices	Push-ups (30 sec)	Crunches (30 sec)	Standing Long Jump (cm)
Average	7.36	18.12	153.64
Standard deviation	2.18	1.48	13.43
Variability coefficient	29.58	8.17	8.74
12-13 years boys final strength testing results			
Statistical indices	Push-ups (30 sec)	Crunches (30 sec)	Standing Long Jump (cm)
Average	12.92	22.08	168.16
Standard deviation	2.93	1.96	12.88
Variability coefficient	22.67	8.86	7.66

Table 1. Initial and final testing results of 12-13 years old boys

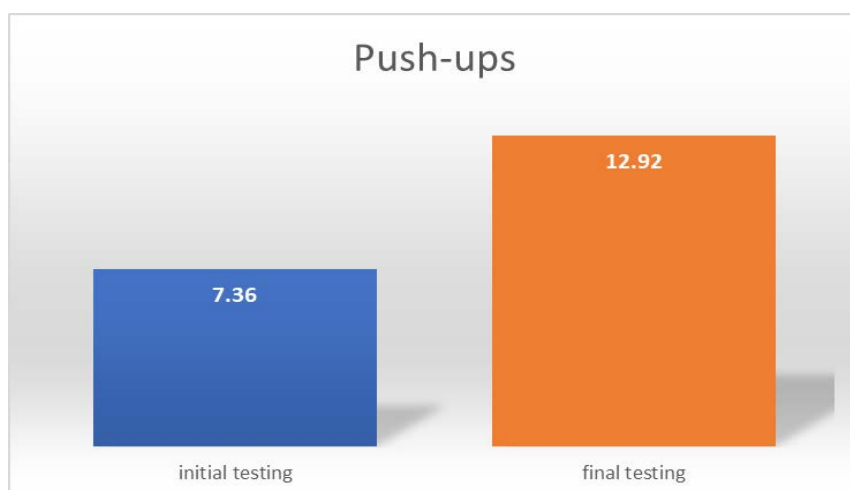


Chart no. 1. Representation of boy's average values for Push-up test

In chart no. 1 shows the average values for "Push-ups" test. Boys obtained an average of 7.36 reps in 30 seconds on the initial testing, and 12.92 reps at the final testing, having a progress of 5.56 reps.

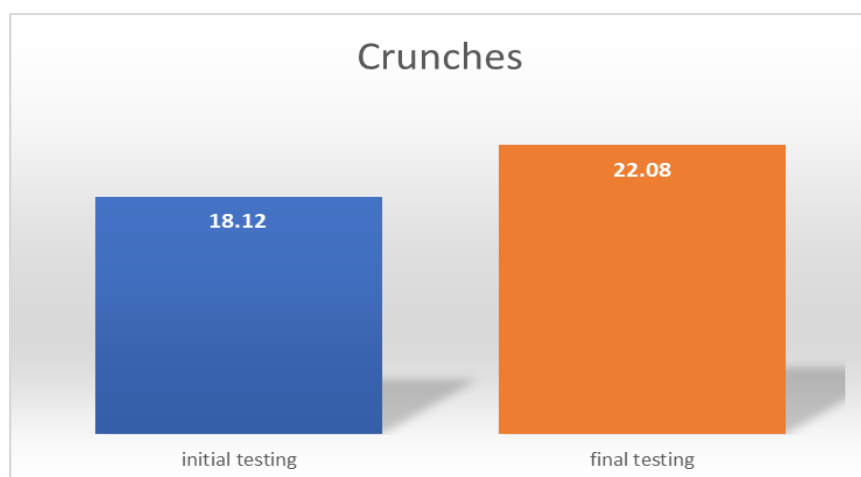


Chart no. 2. Representation of boy's average values for crunches test

In chart no. 2 shows the average values for the "Crunches" test sample. Boys obtained an average of 18.12 reps on the initial testing and 22.08 reps on the final testing, having a progress of aprox 4 reps.

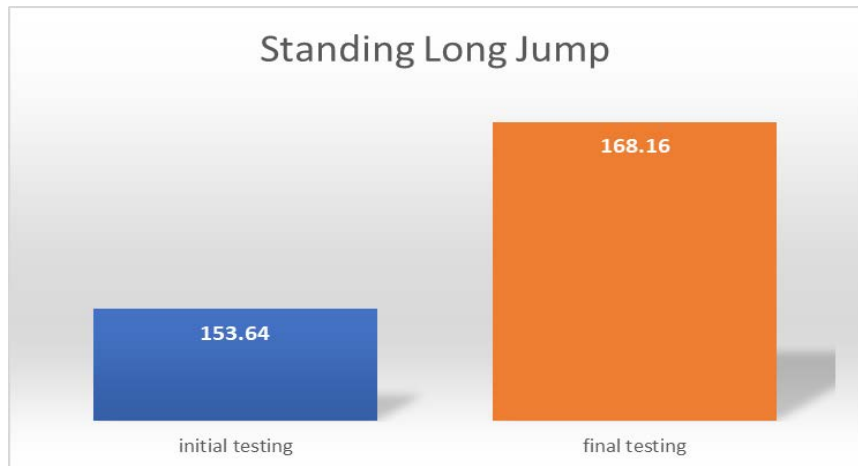


Chart no. 3. Representation of boy’s average values for Standing Long Jump Test

In chart no. 3 shows the average values for the "Standing long jump" test. On the initial testing, boys obtained an average of 153.64 cm, comparing the result obtained at the final testing (168.16cm), they have a progress of aprox 15cm.

12-13 years girls initial strenght testing results			
Statistical indices	Push-ups (30 sec)	Crunches (30 sec)	Standing Long Jump (cm)
Average	6.26	17.48	151.41
Standard deviation	2.26	1.67	12.52
Variability coefficient	36.16	9.57	8.27
12-13 years girls final strenght testing results			
Statistical indices	Push-ups (30 sec)	Crunches (30 sec)	Standing Long Jump (cm)
Average	9.70	21.52	167.48
Standard deviation	2.89	2.03	13.00
Variability coefficient	29.81	9.42	7.76

Table 2. Initial and final strenght testing results of 12-13 years old girls

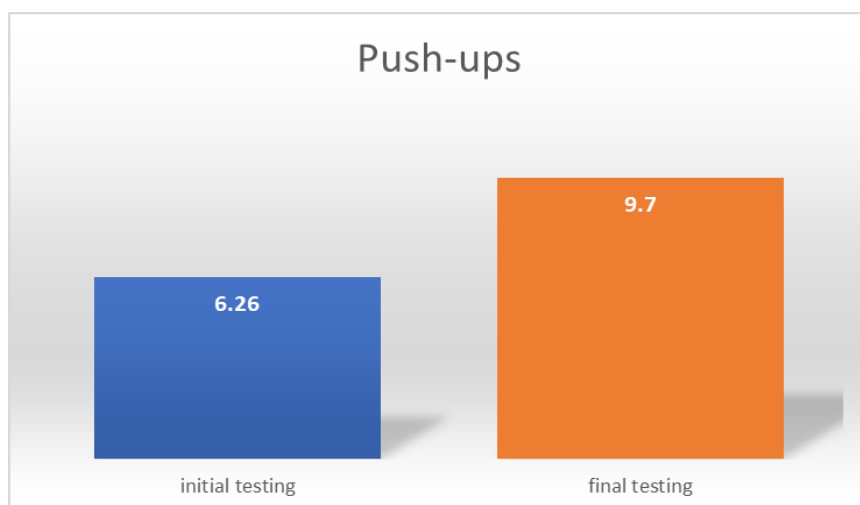


Chart no. 4. Representation of girl's average values for Push-up test

In chart no. 4 shows the average values for "Push-ups" test. Girls obtained an average of 6.26 reps in 30 seconds on the initial testing, and 9.7 reps at the final testing, having a progress of 3.44 reps.

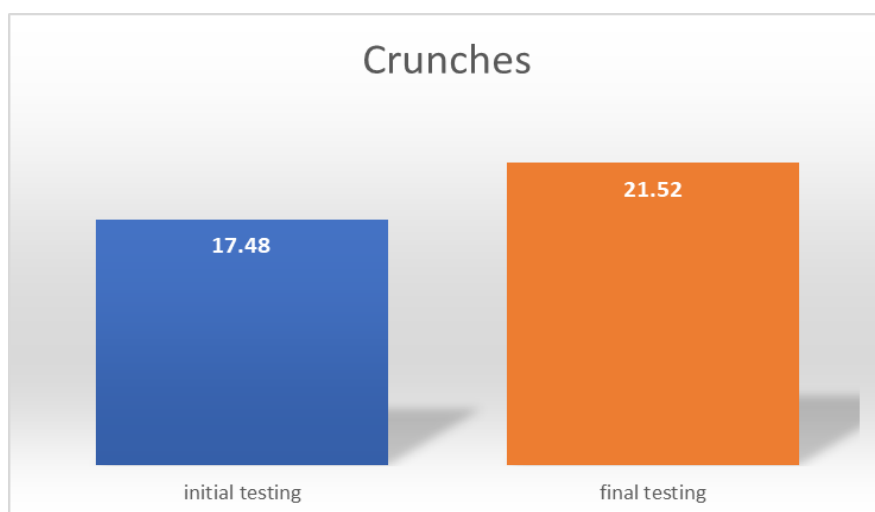


Chart no. 5. Representation of girl's average values for crunches test

In chart no. 5 shows the average values for the "Crunches" test sample. Girls obtained an average of 17.48 reps on the initial testing and 21.52 reps on the final testing, having a progress of aprox 4 reps.

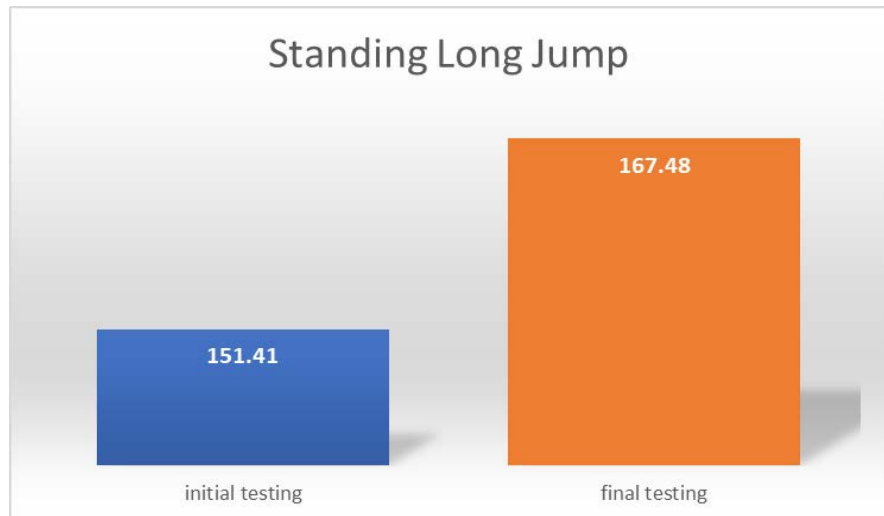


Chart no. 6. Representation of girl's average values for Standing Long Jump Test

In chart no. 6 shows the average values for the "Standing long jump" test. On the initial testing, girls obtained an average of 151.41cm, comparing the result obtained at the final testing (167.48cm), they have a progress of aprox 16cm.

Conclusion and recommendation

In terms of strength testing, at the "push-ups" test, the girls achieved a progress of 3.44 reps, comparing to boys who achieved a progress of 5.56 reps. It can be said that boys had a higher progress on this test.

For the "crunches" test, both girls and boys obtained a progress of aprox 4 reps. We can conclude that at this particular test, both boys and girls had aproximalty the same progress.

For the last strength test "standing long jump", girls exceeded boys resoult, having a progress of 16 cm long jump, comparing with boys 15 cm long jump. We can conclude that girls did better than boys on this specific test.

From the results we can see that TABATA type of workout had a positive result on both boys' and girls' strength development progress, considering that the students had only 10 trainings available for this study.

It is advisable to adopt a healthy lifestyle and healthy diet for 12-13-year-old children, given that the specificity of age brings about changes in the growth and development of their body. We also recommend practicing regular physical exercise at both physical and leisure time and, last but not least, training and improving all basic motor skills, as well as application-utilitarian use of pupils during the education classes physical and sports activities.

TABATA training (also called Tabata protocol) is a type of HIIT (high-intensity interval training) that is fun, carried out on motivational specific music and new for our pupils which had a major impact on them [5].

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STUDIUL PRIVIND DEZVOLTAREA FORTEI ELEVILOR DE 12-13 ANI PRIN INTERMEDIUL METODEI TABATA

Petrariu Ileana

Cuvinte cheie: dezvoltare, forța, Tabata, condiție fizică, probe de control

Rezumat: Îmbunătățirea continuă a performanțelor sportive reprezintă rezultatul principal în creșterea performanțelor sportive [1][2]. Acest studiu are ca scop creșterea nivelului forței prin intermediul exercițiilor de tip TABATA [5]. În cadrul acestui studiu au fost testați elevii cu vârsta de 12-13 ani din cadrul școlii gimnaziale Miron Costin din Suceava. Rezultatele obținute de către elevii de 12 - 13 ani au demonstrat faptul că exercițiile de tip TABATA sunt foarte eficiente în ceea ce privește dezvoltarea forței segmentare.