

Physical fitness levels in students with and without training capacities – A comparative study in physical education classes

Niveles de condición física en estudiantes con y sin capacidades de entrenamiento – Un estudio comparativo en clases de educación física

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Abstract. Introduction: The practice of Physical Activities is a cultural habit and as such it must be acquired in childhood so that there is a greater probability of being continued throughout life. Physical Activities on a regular and duly regulated basis, even if they are at ages where this component is absolutely fundamental, not only for their motor development but for their socialization and creation of healthy lifestyles. Objective: The study aims to evaluate the levels of Physical Fitness of middle-school students, between students who practice Physical Education and those who, in addition to this, performed a training programme. Methods: Participated 32 students of both genders aged between 10 and 11 years old divided into two groups with the same number of students (16): the Training Group which, in addition to attending Physical Education classes, benefited from a training programme and the other group that only attended the physical education classes. The Fitnessgram battery tests was applied for flexibility, strength and aerobic capacity. Results: Through this study, it was presented that the use of a physical training programme, eight weeks before the final moment, allowed the training group to obtain significant differences, in the tests results, from the initial moment to the final moment in terms of physical fitness when compared with the group that only attended physical education classes. Conclusions: This study allows us to understand that the fact that the Training Group benefited from a Physical Skills Training, improved the performance levels of the students in this group at the final moment.

Key words: Physical Fitness, Fitnessgram, Physical Education, Training capacities.

Resumen. Introducción: La práctica de Actividades Físicas es un hábito cultural y como tal debe adquirirse en la infancia para que exista una mayor probabilidad de que se mantenga a lo largo de la vida. Realizar Actividad Física de forma regular y debidamente regulada, aunque se encuentren en edades donde este componente es absolutamente fundamental, no sólo para su desarrollo motriz sino para su socialización y creación de estilos de vida saludables. Objetivo: El estudio tiene como objetivo evaluar los niveles de Condición Física de los estudiantes de educación media, entre los estudiantes que practican Educación Física y los que, además de esta, realizan un programa de entrenamiento. Métodos: Participaron 32 alumnos de ambos sexos con edades entre 10 y 11 años divididos en dos grupos con igual número de alumnos (16): el Grupo de Entrenamiento que además de asistir a clases de Educación Física se benefició de un programa de entrenamiento y el otro grupo que solo asistía a las clases de educación física. Se aplicó la batería de pruebas Fitnessgram para flexibilidad, fuerza y capacidad aeróbica. Resultados: A través de este estudio, se presentó que el uso de un programa de entrenamiento físico, ocho semanas antes del momento final, permitió que el grupo de entrenamiento obtuviera diferencias significativas, en los resultados de las pruebas, desde el momento inicial hasta el momento final en términos de condición física en comparación con el grupo que solo asistía a clases de educación física. Conclusiones: Este estudio permite comprender que el hecho de que el Grupo Formador se beneficiara de un Entrenamiento en Habilidades Físicas, mejoró los niveles de rendimiento de los alumnos de este grupo en el momento final.

Palabras clave: Aptitud Física, Fitnessgram, Educación Física, Capacidades de entrenamiento.

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Introduction

The world around us is involved in numerous technological and scientific processes that are seen as a real factor of change, triggering phenomena that interact in the creation of new social, economic and cultural contexts, a fact that leads to the formation of new mentalities and patterns of behavior (OMS, 1999; Mota & Sallis, 2002; Matos & Graça, 1991).

Since the practice of Physical Activities is a cultural habit and as such must be acquired in childhood so that there is a greater probability of being continued throughout life, it is undoubtedly with personal and professional concern that we observe in the middle of the century XXI the existence of children, who, for several reasons, do not perform physical activities on a regular and properly regulated basis, even if they are at ages where this component is absolutely fundamental, not only for their motor devel-

opment, movement literacy and for their socialization, but also and, of course, for the creation of healthy lifestyles (Sacristan & Gómez, 2002; Proença, 1999).

The teaching of Physical Education methodology contributes significantly to the acquisition of knowledge and the development of skills and attitudes that allow teachers to perform their work better. It is important that, in their teaching practice, the teacher frequently consults the discipline contents so he can exercise it with the best effectiveness. It is important to mention that the contents of this discipline can be articulated with other areas of knowledge.

Students in general like Physical Education classes and feel motivated to practice it. This motivation results, in large part, from the fact that it has a strong playful component, and, in addition, it can provide students with opportunities to face challenges, deal with others according to the rules, to make an effort, to exercise in a group

and alone, to commit themselves and achieve goals, to face difficulties always with optimism and good disposition. It is important to recognize the value of this discipline within the school, especially in the early years of students' lives, as their personality, character, morals, knowledge of their own bodies are being built (Mota, 1999; Cádiz-Chacón, Barrio Mateu, Valladares, Álvaro, Milla Palma & Sotomayor, 2021; Riviera, Villouta, Urra, Méndez, Sabando & Esparza, 2021).

Physical Education, in addition to being a discipline that is concerned with the body, also works on the civic education of students. Therefore, this subject should be given the same value as other subjects.

Classes should provide students with the opportunity to go beyond practical intelligence. In order for the objectives of the classes to be achieved, children need to be challenged to solve problems or face situations that require different ways of thinking from those used until then. A meaningful learning requires, in addition to dialogue and experimentation with the movement of the body in a certain space, the use of mental structures to relate the received stimuli forming clear concepts (Paim & Bonorino, 2009; Ruiz-Ariza, Torre-Cruz, Lopez-Serrano, Martinez-Lopez & Cárcamo-Oyarzún, 2021; Martin & Jimenez, 2021). Sports practice in students has the great role of promoting basic motor development, making them integrate, understand their body and its limits, improve their self-esteem, their self-confidence, their expressiveness and in physiological terms reduce the conditions for the development of diseases.

It is essential to see students as beings at the level of maturation and discovery. It is essential to create opportunities for growth and individual discovery using sport and physical activity as tools.

It's understandable, then, that Physical Education has a fundamental role in the education of students, for the possibility of providing them with a diversity of experiences through situations in which they can create, invent, discover new movements, re-elaborate concepts and ideas about movement and your actions. In addition, the class is a space where, through experiences - with the body, with materials and social interaction - students discover their own limits, face challenges, get to know and value their own body, relate to other people, realize the origin of the movement, express feelings, using body language, locate themselves in space, among other situations aimed at developing their intellectual and affective capacities, in a conscious and critical action (Ruiz-Ariza et al. 2021).

School Physical Education is one of the most efficient ways to promote teaching-learning in a complete, complex and playful way, in addition to being able to, through the movement itself, highlight the cultural, bodily and social differences of the population involved (Felgueras Custodio & Delgado Pintor, 2021).

This study aims to help understand the reality of the importance in improving Physical Fitness in Physical Education classes, using assessment tools, in this case, the

Fitnessgram Program, designed to promote physical activity among young students and to help the teacher in the assessment of the Physical Fitness.

Importance of Physical Education at school

The Physical Education discipline plays a privileged and irreplaceable role in the promotion and creation of healthy lifestyle habits associated with an active lifestyle, imposing this promotion as a goal of any educational system, since many children, may not have, throughout their lives, another opportunity to practice organized and regular physical activity other than the experiences provided in Physical Education classes (Cenico-Benjumea, Vásquez-Ramos, Ferreras-Mencia & Galvez-Gonzalez, 2022). The main objective of this course is to educate students to become adults with regular physical activity habits. Students in general like the Physical Education discipline and feel motivated to practice it.

It is important to recognize the value of this discipline within the school, especially in the early years of students' lives, as their personality, character, morals, knowledge of their own bodies are being built (Cenico-Benjumea et al., 2022).

Benefits of Physical Education

The benefits of this discipline can be felt in three aspects: physiological, psychological and social. Briefly, the physiological benefits are related to the improvement of blood circulation, heart and lung functions, increased resistance and muscle tone, improved joint mobility and stimulation of metabolism. The psychological benefits are related to the promotion of self-esteem, self-confidence and the improvement of mood states and consequently reduces the levels of anxiety and depression. In terms of social benefits, it allows excellent opportunities for interpersonal relationships (EUFIC, 2007). Physical activity in children and young people promotes healthy growth, increases school performance levels and strengthens the body. In social integration, it is very important to ensure that the child has the opportunity to participate in decisions that involve the organization of sports activities in the school community and in extra-school environments. Since one of the objectives of Physical Education is to increase the probability of young people adopting an active lifestyle and maintaining it as adults, it must assume an increasing importance in the health of individuals and can be considered as a biological need of the human being. Physical Education also allows students to develop through stimuli from exercise and physical activity, allows for the improvement of basic motor behaviour procedures (running, jumping, throwing, grasping, etc.) and the development of sports skills associated with the practice sport a healthy life.

Physical Fitness Vs. Health

Physical Fitness translates into a set of attributes that can be related to health (cardiorespiratory capabilities,

muscular endurance and strength, flexibility and body composition) or simply to the mastery of motor performance techniques (balance, agility, speed and coordination), (Lopes, 2006); Freedson, 2000). Although the concept of Physical Fitness related to health has a recent history but is rich in information and importance in the lives of populations, its relevance in the study of the lowest age groups, children and young people, is a fact that runs through some literature (Maia, 1996). Health-related physical fitness can be defined as a state characterized by the ability to perform daily tasks with vigor and skills that are associated with a low risk of developing hypokinetic diseases. According to Lopes (2006) physical Fitness tests can be used as tools for teaching Physical Fitness related to health, the benefits of physical activity on health, inserted in the Physical Education curricula at school. The concept of health has been constructed from several factors, encompassing physical, mental and social well-being. The promotion of physical exercise is a priority and irreplaceable as a protective factor for health. A sedentary lifestyle is a risk factor. Behaviours and lifestyles have a proven influence on individual and collective health. From an early age, children should acquire habits of physical activity even before school age. The analysis of the available data points to the need for parents and teachers to pay attention to the importance of reducing the time spent by children in front of monitors (television, computer, electronic games, among others) and to promote recreational activities that promote physical activity. According to the Health Behavior in School-aged Children (HBSC), it is reported that more than 50% of adolescents practice physical activity three or more times a week and, outside school hours, two or more times a week. Most teenagers have good average values in terms of their physical condition. It is the young males and the youngest (8th grade) who present better results in physical condition. On the other hand, in a study carried out in Portugal (Maia, 1996) the numbers and other national indicators related to the prevalence of fitness and physical activity were analysed. It was found that 77% of men and 64% of women are sufficiently active, that is, they perform at least 30 minutes of moderate physical activity daily [15]. For the individual to have positive health, he must be able to identify and fulfil his aspirations, to satisfy his needs and to change or adapt to the surrounding environment (DGES, 2015; NES, 2002).

FITNESSGRAM Program

Fitnessgram is a Physical Fitness Education program for health and is aimed at children and young people in primary and secondary education. This program was developed to help the Physical Education Teacher in the assessment and education of fitness and physical activity of children and adolescents aged between 6 and 18 years (NES, 2002).

Fitnessgram contains the Physical Fitness tests most adapted to these ages and evaluates performance in three distinct zones, in which: the first one the student “Needs

to Improve”, the second identifies the “Healthy Zone” and the last one “Above the Healthy Zone”.

Fitnessgram, based on the results obtained, allows the generation of individualized reports according to each evaluation and the respective classification in one of the three zones. Each performance is associated with personalized advice.

Methods

Study purpose

The present study aims to verify if there are improvements in the levels of Physical Fitness between these students in two different moments of evaluation, in the Physical Fitness tests implemented in school. The student's evaluations were performed in October and the other one in the end of May. It should be noted that eight weeks before the second evaluation, a supplementary reinforcement of strength, resistance and flexibility exercises were applied to one of the classes under study for twenty minutes of each ninety-minute class.

Participants

The study was carried out in a Portuguese public school where eight 6th grade classes participated. This study had 32 students: 16 (from the same class) were the group subject to the training programme and 16 (from other seven classes, chosen randomly) were the group that only practice physical education classes. The group subject to the training programme (TG) had 6 girls (two with 10 years old and four with 11 years old) and 10 boys, all 11 years old. The physical education group (PEG) is matched with the trained group in terms of gender and age distribution.

Variables under analysis

The physical fitness variables under study are the following: Aerobic capacity; trunk strength and lower limb flexibility.

Instruments and Procedures

Data collection on Physical Fitness was assessed by recording the performance of students (boys and girls) in the Fitnessgram Physical Fitness tests at the beginning and end of the school year. It should be noted that half of the students (10 boys and 6 girls) benefited from a training programme (TG) for eight weeks (1x per week) before the final registration of the Fitnessgram tests.

Statistical procedures

The statistical analysis involved measures of descriptive statistics (means and standard deviations) and inferential statistics. The significance level was set at $(\alpha) \leq .05$. Student's t test was used for independent samples when comparing the two groups in dependent variables of quantitative type and Student's t test for paired samples when comparing the evolution of performance. The tests for

normality of distribution and homogeneity of variances, were analysed using the Shapiro-Wilk Levene tests. In cases where these situations were not satisfied, they were replaced by alternative non-parametric tests, namely the Mann-Whitney or Wilcoxon test. In this situation, for ease of interpretation, the mean values were presented in the descriptive statistics. To match the subjects of the PEG with the TG, a random selection was carried out (performed with the Excel random number generator) having selected an equal number of subjects and with the restriction of gender and age. Statistical analysis was performed using SPSS version 22.0.

Physical Fitness Assessment

Nowadays, Fitnessgram is an important assessment tool used by thousands of teachers, helping them to collect information on the state of Physical Fitness and the level of Physical Activity, functioning as a motivating element for physical activity, on a regular basis, or yet as a cognitive instrument to inform children and young people about the implications that Physical Fitness and physical activity have for health (Sardinha, 2002).

According to the Fitnessgram program (NES, 2002) is a recent instrument that aims to be used with a preventive and modelling function of behaviours related to the absence of Physical Activity, at a time when new trends associated with the concept of Aptitude are emerging. Physics. The author states that these new trends have been abandoning the more classic concepts that relate Physical Fitness to motor performance and are increasingly adopting the concept of Physical Fitness associated with health. And in the field of health, professionals involved in community intervention have noted, with some concern, that the recognized healthy role of physical activity does not seem to be having the desired effect on the habits of young Portuguese people.

Physical Capacity Training Programme applied in the study

The training programme had the maximum duration of 25 minutes. It began with the exercise to prepare for the shuttle's aerobic test. Then, the class was divided into 3 groups, where each group was distributed by an exercise station consisted in 5 minutes each. The groups were running through the stations. This Training Programme lasted eight weeks. The exercises of the stations were being diversified to motivate the students. To train the aerobic shuttle's run test, at the beginning of each class, after warming up, the students performed an endurance race around the handball field, where the number of laps that each student performed in a continuous race were counted, with a limit of 10 minutes. When a student stopped running, the number of laps was recorded. In the following class, students were informed of the number of laps performed in the previous class and were encouraged to exceed that number, and so on, for eight weeks.

To train abdominal strength, one of the stations con-

tained exercises to strengthen this body area (abs), such as: lying in supine with bent legs, feet on the floor, hands on the chest, raise the trunk about 20 cm from the floor, contracting the abdominal muscle. For 5 minutes, perform a maximum of 20 sets of crunches each, resting between each set for 30 seconds to 1 minute; lying supine with bent legs, feet on the floor, hands extended upwards, raises the trunk about 20 cm from the floor, contracting the abdominal muscle keeping the arms extended forward and upwards. For 5 minutes, perform a maximum of 20 sets of abs each, resting between each set for 30 seconds to 1 minute.

To train trunk strength for the test of Modified Hanging Arm Push-ups, another station contained exercises to reinforce this area, such as: lying on your back with legs bent and feet on the floor, place your arms outstretched behind your head, lift a medicine ball to face level and back to the starting position. For 5 minutes perform sets of 5 repetitions and rest between 30 seconds to 1 minute; standing, pull a rubber band with one hand and then alternate. Initially, the arm stretched out in front grabs the elastic band attached to a post at waist level, with one of the hands pulls it to your waist. Place the opposite leg to the hand holding the elastic in front of the other. Then switch hands and change the position of the legs. For 5 minutes, perform sets of 10 repetitions for each arm and rest between 30 to 45 seconds.

To improve flexibility for the Sit and Reach Test, the third station consisted of the exercises: sitting with legs apart and extended, try to reach the tip of the foot with your hands. Stretch as far as you can towards one foot with both hands together. When you reach your feet, hold it for 10 to 15 seconds and then do it to the other side. If they cannot reach their feet, they stretch as far as their flexibility allows and a colleague puts some pressure on the back; standing, puts an extended leg in a high point and tries to reach the tip of the foot with the hands. Stretch towards the foot of the raised leg with both hands together. When you reach your feet, hold it for 10 to 15 seconds and then do it to the other side. If they can't reach their feet, they stretch as far as their flexibility allows.

Results

In this section, the results of the variables under study will be presented and discussed. In a first phase, the results of the initial moment of the Training Group (TG) and the Physical Education Group (PEG) were considered. Then, an analysis of the final moment of the two groups was carried out. In the last phase, the results obtained in the initial and final moments of each group were compared separately. All results are presented by gender. The results obtained will be presented through tables and graphics.

Comparative Analysis of the (1st) Initial Moment Initial moment

The results of the initial moment between the Training

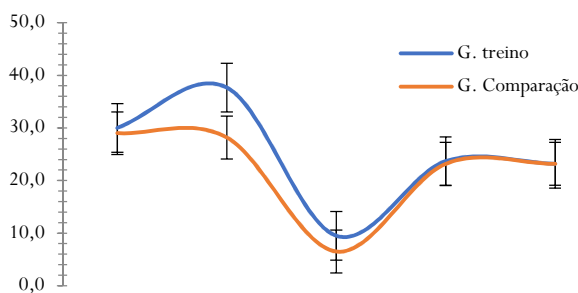
Group (TG) and the Physical Education Group (PEG) were considered. Results are presented by gender:

Before the training program the differences between the girls in the Training Group and those in the Physical Education Group were not statistically significant ($p > .05$). Table and Graph 1 allow us to clearly visualize small differences registered in girls.

Table 1

Means, standard deviations and significance values of differences between the two groups at the initial moment in girls.

Variables	TG		PEG		Sig. T		
	M	DP	M	DP			
Shuttle	30.00	13.90	29.00	7.85	0.153		
Abdominals			37.67	29.13	28.17	0.322	
Modified arms suspension			9.50	6.89	6.50	3.83	0.932
Sit and reach (D)			23.67	11.08	23.17	9.33	0.000
Sit and reach (E)			23.17	10.72	23.17	8.30	0.000



Graphic 1. Significance of differences between the two groups at the initial moment: girls

Before the training program the differences between the boys in the Training Group and those in the Physical Education Group were not statistically significant ($p > .05$). Table and graphic 2 demonstrate small differences recorded in boys

Comparative Analysis of the Final Moment Final moment

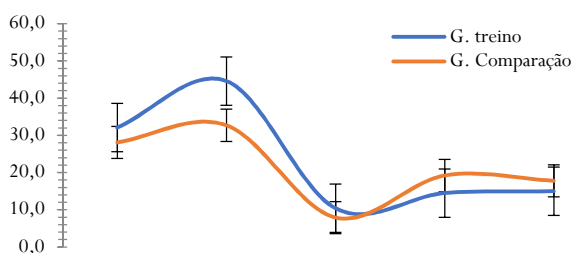
An analysis of the final moment between the Training Group and the Physical Education Group was carried out.

Table 2

Means, standard deviations and significance values of differences between the two groups at the initial moment in boys.

Variables	TG		PEG		Sig. T
	M	DP	M	DP	
Shuttle	32.10	14.88	28.10	9.73	0.711
Abdominals	44.60	24.14	32.70	17.35	1.177
Modified arms suspension	10.40	5.97	7.90	7.25	0.989
Sit and reach (D)	14.50	8.00	19.20	7.98	-1,315
Sit and reach (E)	15.00	5.29	17.80	7.08	-1,001

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$



Graphic 2. Significance of the differences between the two groups at the initial moment: boys

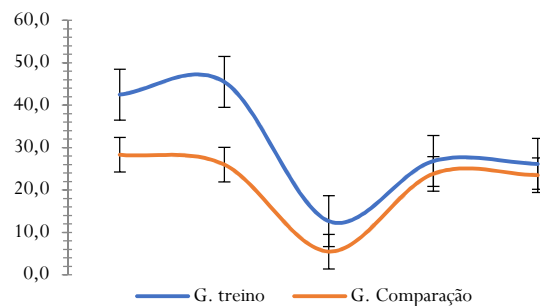
After applying the training programme, we found some significant differences. When analysing table and graphic 3, we realize that in modified arms suspension, $t(10)=2.606$, $p= 0.026$, the girls in the Training Group have a significantly higher performance (12.67 vs 5.50).

Table 3

Means, standard deviations and significance values of differences between the two groups at the final moment in girls.

Variables	TG		PEG		Sig. T
	M	DP	M	DP	
Shuttle	42.50	11.84	28.33	10.73	2,172
Abdominals	45.50	23.71	26.00	14.11	-1,288
Modified arms suspension	12.67	6.12	5.50	2.81	2.606*
Sit and reach (D)	26.83	10.80	23.83	5.04	0,617
Sit and reach (E)	26.17	10.94	23.50	7.56	0,323

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$



Graphic 3. Significance of differences between the two groups at the final moment with girls.

After applying the training programme we also found significant differences. Looking at Table 4, we can conclude that abdominals, $t(18) = 2.141$, $p = .046$, the boys in the Training Group have a significantly higher performance (50.90 vs 33.50). Graphic 4 helps to better understand the differences recorded.

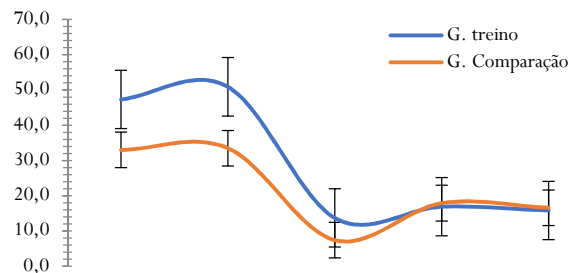
Evolution of analysed groups Training group

Table 4

Means, standard deviations and significance values of differences between the two groups at the final moment in boys.

Variables	TG		PEG		Sig. T
	M	DP	M	DP	
shuttle	47.30	19.45	33.00	12.21	1,969
Abdominals	50.90	21.92	33.50	13.43	2,141*
Modified arms suspension	13.70	6.91	7.40	8.42	1,828
Sit and reach (D)	16.90	6.35	17.90	4.84	-,396
Sit and reach (E)	15.80	6.99	16.60	5.10	-,292

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$



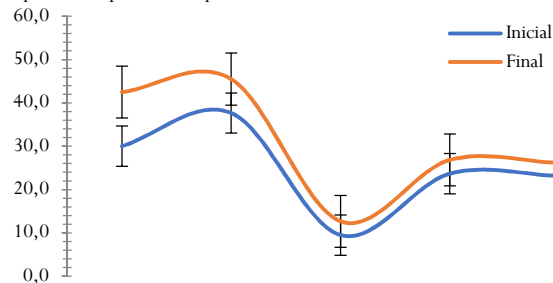
Graphic 4 – Significance of differences between the two groups at the final moment with boys.

Table 5

Means, standard deviations and significance values according to the Training Group between the initial and final moments with girls.

Variables	Initial		Final		Sig. T
	M	DP	M	DP	
Shuttle	30.00	13.90	42.50	11.84	-5,715**
Abdominals	37.67	29.13	45.50	23.71	-2,207*
Modified arms suspension	9.50	6.89	12.67	6.12	-5,270**
Sit and reach (D)	23.67	11.08	26.83	10.80	-2,224
Sit and reach (E)	23.17	10.72	26.17	10.94	-2,054

* p ≤ .05 ** p ≤ .01 *** p ≤ .001



Graphic 5 – Significance of the differences in the Training Group between the initial and final moments with girls.

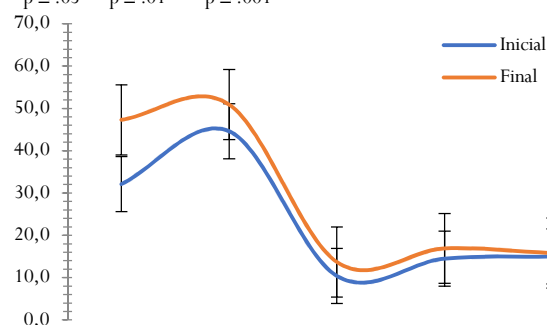
After analysing table and graphic 5, we found significant differences: In Shuttle run test $t(18) = -5.715$, $p = .002$, the girls in the Training Group have a significantly higher performance after the training program (42.50 vs 30.00). In sit-ups, $Z = 2.207$, $p = .027$, the girls in the Training Group perform significantly higher after the training program (45.50 vs 37.67). In the modified arm suspension, $t(5) = -5.270$, $p = .003$, the girls in the Training Group performed significantly higher after the training program (12.67 vs. 9.50).

Table 6

Means, standard deviations and significance values according to the Training Group between the initial and final moments with boys.

Variables	Initial		Final		Sig. t
	M	DP	M	DP	
Shuttle	32.10	14.88	47.30	19.45	-5,531***
Abdominals	44.60	24.14	50.90	21.92	-3,310**
Modified arms suspension	10.40	5.97	13.70	6.91	-3,794**
Sit and reach (D)	14.50	8.00	16.90	6.35	-1,895
Sit and reach (E)	15.00	5.29	15.80	6.99	-1,000

* p ≤ .05 ** p ≤ .01 *** p ≤ .001



Graphic 6 - Significance of the differences in the Training Group between the initial and final moments with boys.

Looking at table and graphic 6, we found the following significant differences:

In Shuttle run test, $t(9) = -5.531$, $p = .001$, the boys in the training group have a significantly higher perfor-

mance after the training program (47.30 vs 32.10). In sit-ups, $t(9) = -3.310$, $p = .009$, the boys in the training group perform significantly higher after the training program (50.90 vs 44.60). In the modified arm suspension, $t(9) = -3.794$, $p = .004$, the boys in the training group performed significantly higher after the training program (13.70 vs 10.40).

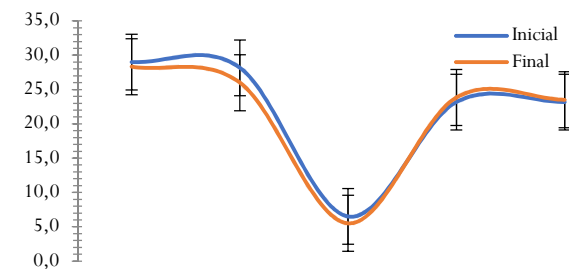
Physical Education Group

Analysing table and graphic 7, it is observable that the performance differences between the initial and final moments in these group are not statistically significant ($p > .05$).

Table 7

Means, standard deviation and significance values between the initial and final moments with girls.

Variables	Initial		Final		Sig. T
	M	DP	M	DP	
Shuttle	29.00	7.85	28.33	10.73	,415
Abdominals	28.17	02.26	26.00	14.11	,283
Modified arms suspension	6.50	3.83	5.50	2.81	,889
Sit and reach (D)	23.17	9.33	23.83	5.04	-1,792
Sit and reach (E)	23.17	8.30	23.50	7.56	-1.625

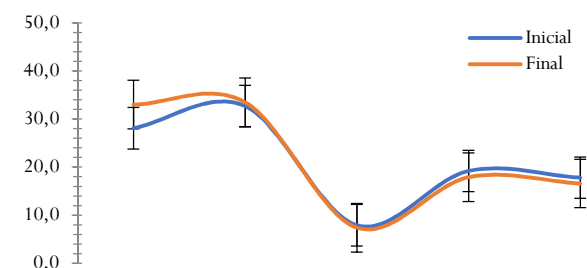


Graphic 7. Significance of the differences in the Physical Education Group between the initial and final moments with girls.

Table 8

Means, standard deviation and significance values between the initial and final moments with girls.

Variables	Initial		Final		Sig. T
	M	DP	M	DP	
Shuttle	28.10	9.73	33.00	12.21	-1,579
Abdominals	32.70	17.35	33.50	13.43	-,228
Modified arms suspension	7.90	7.25	7.40	8.42	,591
Sit and reach (D)	19.20	7.98	17.90	4.84	,463
Sit and reach (E)	17.80	7.08	16.60	5.10	-,494



Graphic 8 - Significance of the differences in the Physical Education Group between the initial and final moments: boys

After analysing table and graphic 8, its verified that the performance differences between the initial and final moments in the Physical Education Group are not statistically significant ($p > .05$).

Discussion

At the initial moment the groups, training group (TG) and physical education group (PEG), both in boys and girls, do not present significant differences in their results, with no group with better Physical Fitness than the other. Comparing the values of the two groups at the final moment, it was found significant differences in only two tests: in boys, in the abdominal test and in girls in the modified arm suspension test. It would be expected that, after applying the training programme in (TG), the physical capacities tests would undergo significant improvements compared to the (PEG), which did not happen in most tests in both genders. In some studies such as Wang (2004), Calha (2012) and Guedes, Guedes, Barbosa & Oliveira (2002) to determine the effects of the application of aerobic exercises in the physical education classes, it was found that the intervention did not significantly improve the physical condition, but it allowed improvements in some tests of physical condition. The same happened in the evolution of the groups under study from the initial moment to the final moment, since there were significant differences in three of the tests used, in both genders. The training programme allowed the students of the (TG) to obtain better results in the tests: aerobic capacity, abdominal strength and upper limb strength. The same did not happen with the (PGE), which only attended Physical Education classes, since there were no significant improvements in any of the tests evaluated. These results are in line with other results obtained (ONAFD, 2011; Byrd, 2007; Ferreira, 1999; Henriques, 2000). It is also important to mention studies from Malina (1993), Galahue (2001), Martins (2005) and Trigo (2006) that compares the levels of Physical Fitness of students aged 11 to 14 with and without extracurricular physical activities throughout the school year. Comparing the group of practitioners with non-Practitioners (boys and girls) with the Fitnessgram reference values, it was found that in relation to Physical Fitness, the practitioners had higher percentages within the Healthy Zone of Physical Fitness for all tests performed in both assessments.

Conclusions

At the beginning of the school year, after applying the Fitnessgram test battery (initial moment) we found that there are no significant differences between genders in the Training Group (TG) and the Physical Education Group (PEG), in all the analysed exercises.

The results obtained in the evaluation carried out at the final moment, allowed us to verify significant differences in some of the tests applied, between genders of the TG and the PEG. The girls in the TG performed significantly higher (12.67 vs. 5.50) than the girls in the PEG on the modified arm suspension test. The boys from the TG perform significantly higher (50.90 vs. 33.50) than the boys from the PEG on the abs test.

In terms of the evolution of the groups under study, there were significant differences in three of the four tests applied in both genders. Girls in the TG, in the back-and-forth test, perform significantly higher after the training program (42.50 vs. 30.00). The same is true for the sit-up test (45.50 vs. 37.67) and the modified arm suspension test (12.67 vs. 9.50). The same happens in the boys in the TG as they performed significantly higher in the back-and-forth test after the training program (47.30 vs. 32.10), as well as in the abdominal test (50.90 vs. 44.60) and in the modified arm suspension test. (13.70 vs. 10.40).

Thus, we realized that in the initial moment the levels of Physical Fitness of the students are similar because there are no significant differences in their performance. The same does not happen when we compare the two groups at the final moment, since in both girls and boys there is a test in which the Training Group performs better.

As for the evolution of the groups under study, we verified that there are no significant improvements in the levels of Physical Fitness of the students from the first to the second moment of evaluation, without training of strength, resistance and flexibility capacities. This study allows us to understand that the fact that the Training Group benefited from a Physical Skills Training, improved the performance levels of the students in this group at the final moment.

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