

Artículo Original: *The comparison of 7 different classes (4<sup>th</sup> grade), from 7 different countries (fitness tests in a comenius project - ted's project)*

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## **The comparison of 7 different classes (4<sup>th</sup> grade), from 7 different countries (fitness tests in a comenius project - ted's project)**

### **La comparación de diferentes clases 7 (4to grado), de 7 países (diferentes pruebas de aptitud en un proyecto comenius - ted's proyecto)**

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#### **Resumen**

7 escuelas que participan en este estudio, incluso en el siglo XXI, que tenía un montón de problemas para la realización de este análisis micro. Algunas cuestiones culturales, financieras y de interpretación, dieron muchos problemas hasta ser completa. Se realizaron 6 pruebas para comprobar si existen diferencias estadísticamente significativas entre los siete países estudiados. Los países con mejores resultados son aquellos en los que los niños son más autónomos, con un estilo de vida más activo. En términos de la antropometría, que no conseguimos resultados con grandes diferencias. Pero hemos aprendido, los países que tienen más horas de educación física durante el año, tienen mejores resultados.

#### **Palabras clave**

Pruebas de aptitud; 1er Grado; Europa; Proyecto Comenius; Estilo De Vida Saludable.

#### **Abstract**

7 Schools involved in this study, even in the XXI century, we had lots of problems to the realization of this micro- analysis. Some cultural, financial and interpretation issues, gave lots of problems until be complete. 6 tests were performed to check whether there are statistically significant differences among the seven countries studied. The countries with the best results are those where children are more autonomous, with a more active lifestyle. In terms of anthropometry, we did not get results with great differences. But we have learned, the countries who have more hour of PE during the year, have best results.

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## Keywords

Fitness Tests; 1<sup>st</sup> Grade; Europe; Comenius Project; Healthy Lifestyle.

## Introduction

At a time when there is a significant technological advance, children show higher inactivity rates. In Brazil, 49.2% of people are inactive, in Argentina 68.3% are sedentary, (Bacelo, 2012). Since there is no way to refuse the technological advancement, it is necessary to give in to this reality and reuse it to the detriment of improving the quality of life through exercise. Alarming data are related to obesity. Campos LF et al. (2008) studied 226 pupils of the 1st cycle\* between the ages of 6 and 9 and results showed overweight or obesity in most cases. The most worrying figures are girls between the ages of 8 and 9, which reveal cases of obesity and overweight. Katzmarzyk, P. T. et al. (2013), (ISCOLE) are part of a study (worldwide) about obesity and lifestyle to be performed in 12 countries, covering 6,000 children.

At the European level, the picture is not better, despite health remaining the most valuable attribute for humankind, yet most people only bother to improve their health when they feel really sick, when disease symptoms are clearly evident (Nahas, 2003). The lack of physical activity, besides other various factors, is linked to the onset of countless diseases or medical problems, including smoking, unhealthy diet, excessive alcohol consumption and emotional stress, factors that constitute modern lifestyle health complications (Who, 2010). In this axiological context, we had the possibility of making a pilot study at the European level among 1st cycle schools of basic education\*, with children between the ages of 9 to 10.

The preparation/idea of this study appears in Enniscorthy, Ireland, during the first preparatory meeting through the "Lifelong Learning Programme – Comenius". We recognized that it would be pertinent to all partner countries and respective coordinators (Denmark - Gitte Bjorn, Finland - Eeva Leena Takala, Hungary - Zsuzsana Sajbán,

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Ireland - Evelyn Owen, Italy - Egle Room, Portugal - José Amoroso and Romania - Diana Sarbu), to analyze data regarding the students physical fitness, given that the project entitled "Travelling Ted's European Discoveries. The T.E.D. Project - <http://tedproject.eu/wordpress/> targets a multidisciplinary exchange.

In the absence of data on the implementation of this study, with few studies in this area, and in the inability to carry out a study on a larger scale, we thought it would be interesting to carry out a pilot study to identify some differences thus seeking to know the importance that each country gives to the motor physical fitness. The motor fitness is an important factor to characterize differences between children, it may provide interesting data so that professionals can identify some children as children at risk and implement strategies to improve their sporting habits.

\* Basic education in Portugal is intended for children aged between six and fifteen.

The first cycle lasts for four years and is taught by one teacher (who may be assisted by others in specialized areas), Emphasis is placed on the integrated development of studies and activities and the teaching of a foreign language may begin.

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## Methods

### Aim of the study

The aim of this study is to compare and relate the motor fitness in children (9 and 10) in groups of 20 pupils of both genders, in the following countries (Denmark, Finland, Hungary, Ireland, Italy, Portugal; Romania), where the use of technology is fundamental. It was a representative number of students, from one class. For this purpose, some anthropometric data (weight, height...) were checked and a battery of 6 tests were/was performed. The Balance Test (Flamingo Balance); Shuttle Test (Twenty-m multistage shuttle run); Abdominal (Curl-ups); Push-ups (push-ups); Trunk raising test (Trunk lift) and Horizontal Impulse test (Standing long jump). In addition to these data, anthropometric data, weight and height were collected.

### The subjects

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This study sample consisted of 130 pupils between the ages of 9 and 10, from 6 schools within the project. From *Jardim Escola João de Deus* (Leiria, Portugal), 20 pupils performed the tests, 10 boys and 10 girls, from the Monageer National School (Enniscorthy, Ireland – Without results) 12 students participated in the tests, 8 males and 4 females. From Vallilan School Ala-asteen Koulu (Helsinki, Finland) 17 students participated, 9 males and 8 females, from the School No. 13 (Sibiu, Romania) 12 students participated, 6 males and 6 females. At the Maglegaardsskolen school (Copenhagen, Denmark) 21 students participated, 12 males and 9 females. From Circolo Didattico "Amatuzio" (Bojano, Italy), 25 students participated, 14 males and 11 females. And from the Szent Imre Katolikus Általános Iskola jó Pásztor Óvoda school (Éger, Hungary) 32 students participated, 15 males and 17 females.

### Procedures - Performing Protocol

To facilitate the understanding and communication between the Physical Education Teachers of each country was prepared a PowerPoint describing the protocol to perform in each financial year. It was also carried out a video explanation to minimize the maximum possible failures of understanding; this PPT and Video were carried out in English, mother tongue Project. To finish, was sent a file in excel for teachers put the data collected, to facilitate and help in obtaining the best data collection possible. This study was carried out between January and March 2014, when were made the tests locally. It was necessary to verify the data, due to a discrepancy in values, a factor that has led to a new collection of data on the part of some countries. All data were treated in SPSS version 17. Through these results was measured the average and the standard deviation.

### Description of tests

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## **Anthropometric**

The anthropometric data were performed according to the same protocol and all partners used scales and tape measures validated. For the weight we used to measure (kg); for the time we use the (m).

## **Flamingo Balance**

The student puts one foot on the brake, and bends the leg, grabs the instep with the hand on the same side, imitating the position of a flamingo. Tries to maintain the balance in this position for 1 minute, and can previously support the forearm of the observer to be put in the correct position. The test begins as soon as the students take the hand support. During the test, if there is an interruption, a penalty is assigned (for example, if the free foot loosens from the hand or if any part of the body comes into contact with the ground). After each interruption, it is given a new departure until the minute runs out. After performing with one foot, the subject performs the test with the other foot.

## **Twenty-m multistage shuttle run**

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Sportis. S Jens Bangsbo (1996) developed a flashing test for the evaluation of resistance, the YO-notricity YO Intermittent Endurance Test.

The participant who performs the test puts himself behind the starting line and at the first sign, runs through the stipulated area (distance of 20 m in a straight line), stepping on or surpassing the line before the next beep. When he hears a signal reverses the direction and runs.

The test ends when the student withdraws or fails two beeps (not necessarily consecutive).

## **Curl-ups**

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The student must be in the supine position on the mat. The knees are flexed at 90 degrees, feet slightly apart and resting on the ground. The arms and hands kept in extension to side with the palms in contact with the mat touching on the track that is placed next to the performer. The performer raises the trunk until it makes contact with the fingers at the other end of the track, and then lows the trunk (the heels should stay in contact with the ground). The repetitions are performed at a rate of 1 every 3 seconds. (The rhythm may be provided by clapping, drum or an audio tape). The student performs the repetitions until exhaustion or up to a maximum of 75. It is registered the number of elevations performed correctly.

### **Push-ups**

The student extends MS, keeping the knees and the back in extension, then flexes up to an angle of 90 degrees (the forearm should be parallel to the ground). The partner, kneeling in front of the performer, verifies that the angle of the elbow is 90° each time a bending is performed. Performs many flexing as possible, keeping the cadence of 20 per minute. The test ends when the student cannot perform the flexing properly (it is allowed three corrections), if you feel pain or if you are unable to run more. The result is the number of repetitions performed correctly.

### **Trunk lift**

The student should be lying ventrally, with the hands under the thighs and lower limbs in extension. Elevates the head and the upper part of the trunk while maintaining the position long enough to be evaluated. The evaluator measures the distance from the ground to the chin with the ruler. Then the subject bends the trunk. The result of the test is about the height to which the subject can raise the upper part of the trunk, measured from the ground to the chin (in cm). It is allowed two attempts, being registered the best.

### **Standing long jump**

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This test was based on the battery of the Eurofit Test Battery (1993). Students stay with their feet apart and parallel, distant some centimeters (10 - 20 cm), positioned behind a line of output demarcated on the ground with a piece of chalk. To perform the jump the student balances the arms behind his back and bends his knees. The jump should be performed with the athlete extending the lower limbs during the movement. It is allowed 3 attempts.

### **Sit and reach**

To test the flexibility of the low back and hamstring muscles. How to: 1. Have the client/patient sit, with shoes off and feet flat against the sit and reach box. Make sure the knees are flat on the ground and the palms are facing down. 2. With the hands on top of each other or side by side, the client/patient reaches forward slowly as far as possible. 3. Hold the position for 2 seconds for accurate scoring. 4. Note with scoring that the "0" point is where the toes are flat against the board.

### **Shuttle Run**

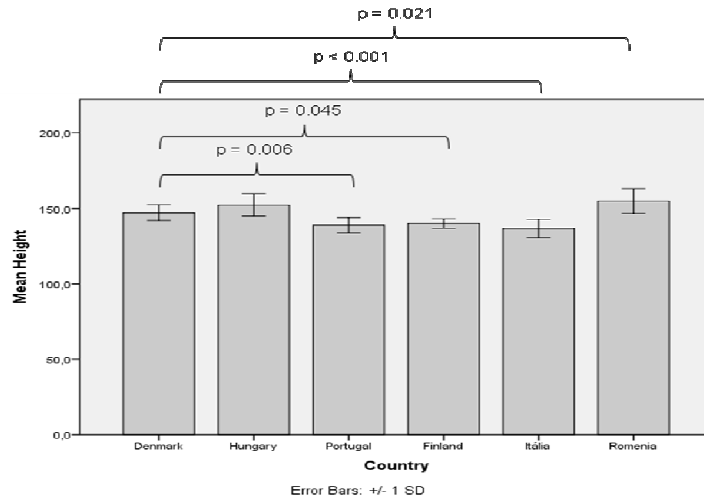
A maximal multistage 20 m shuttle run test was designed to determine the maximal aerobic power of schoolchildren, healthy adults attending fitness class and athletes performing in sports with frequent stops and starts (e.g. basketball, fencing and so on). Subjects run back and forth on a 20 m course and must touch the 20 m line; at the same time a sound signal is emitted from a pre-recorded tape.

### **Result and Discussion**

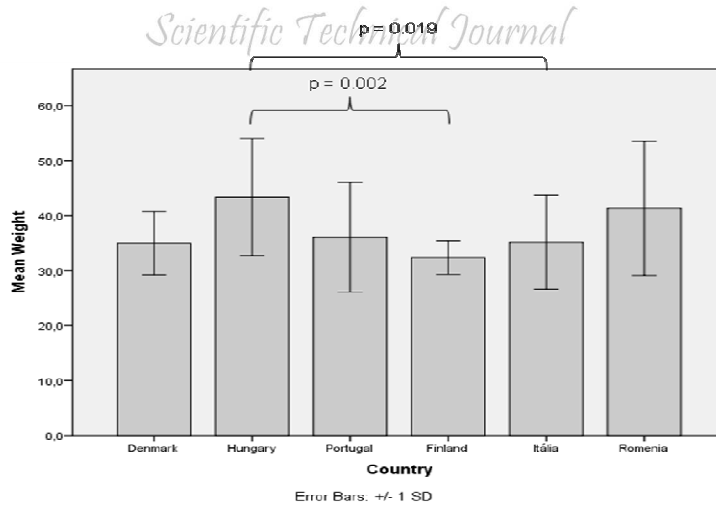
Before the presentation of the results, and to perform a more precise framework, here are some differences between countries. In Hungary the 4<sup>TH</sup> year students have 5 lessons per week of 45 'each; Finland 2 lessons of 45 ' ; Romania 2 lessons of 60 ' ; Italy 1 class of 60 ' ; Denmark 2 class per week of 60´each; Portugal 1 class of 60 ' ; Ireland 1 lesson 60 'but with flexibility for which there is more. It also used the Baecke TEST, but due to some protocol difficulties we ended up not being able to use the data.

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## Antropometric



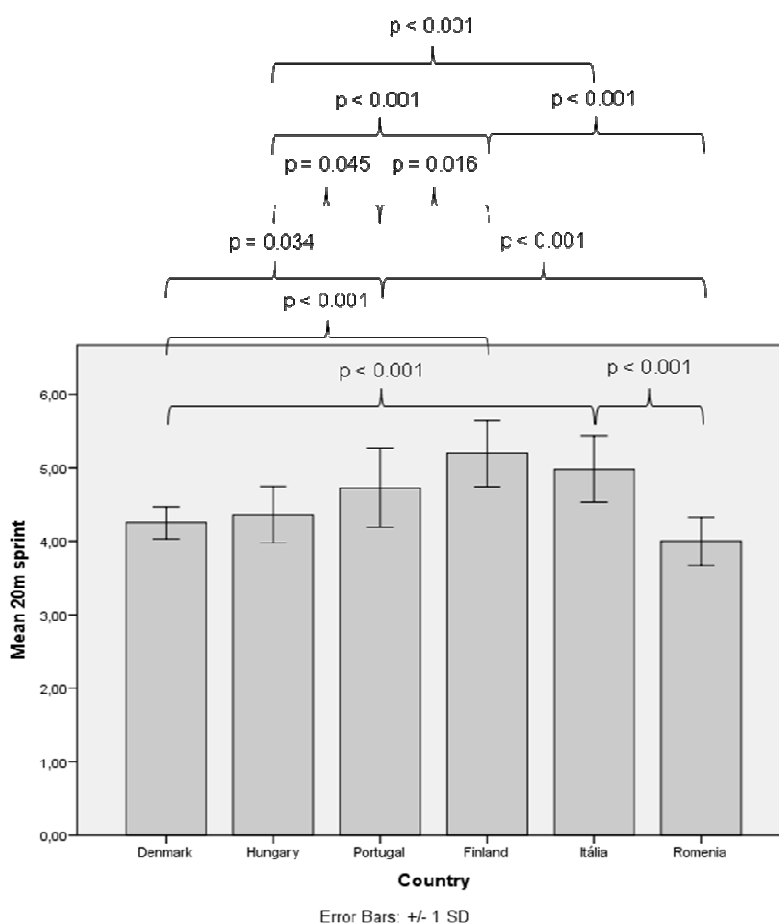
**Fig.1. Height.** Shows the values for anthropometric data - height. Superior results were obtained by Romania and Hungary. Although there are no significant differences found that the Romanian children have the highest indicators.



**Figure nº 2 Weight.** Shows the values for anthropometric data - Weight. Superior results were obtained by Romania and Hungary, which are in accordance with Figure 1, which represents the height. Although they are not children with lower height, for the remaining, the Finnish children are those with the least weight of all countries.



Although there are no significant differences found that the Hungarian children have the highest indicators. All data presented are within normal values Who (2007).



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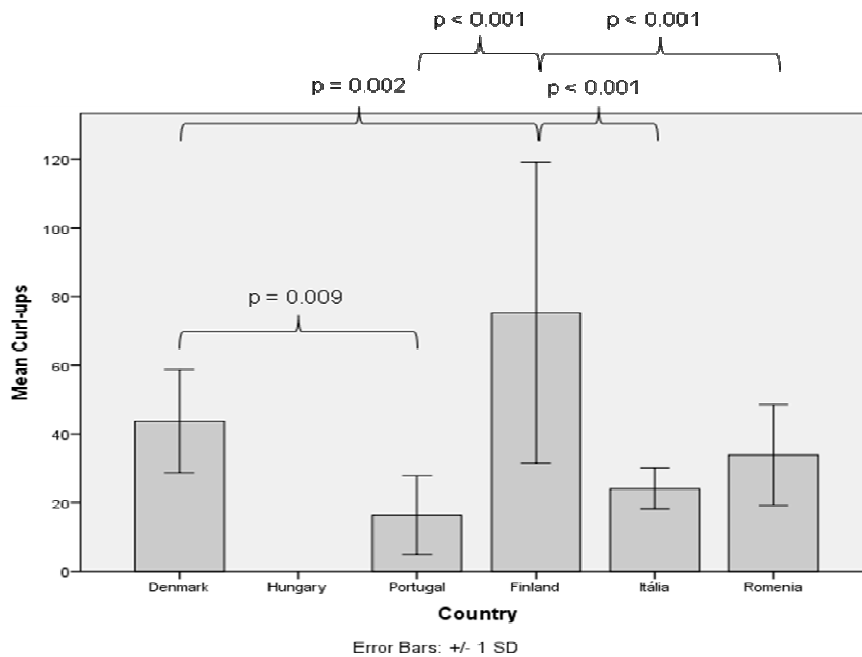
**Figure nº 3 Mean 20m sprint.** Presents the figures for the sprint test of 20 meters. Superior results were obtained by Romania, Denmark and Hungary, compare with the others countries. In addition, Finland was the country that showed the worst results for the remaining. This test analyzes the child's acceleration capability. Since this is a test that requires the child to overcome the inertia and quickly reach a high speed, it is very dependent on motor coordination. Thus, this can be an extremely interesting test to be carried out in different stages of maturation of the child (eg prepubertal vs postpubertal) to identify situations in which motor coordination can inhibit the development of certain

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physical skills . The results obtained by participants ranged between ~ 4 and ~ 5 seconds which represents an average speed of +/- 4.4m / sec.



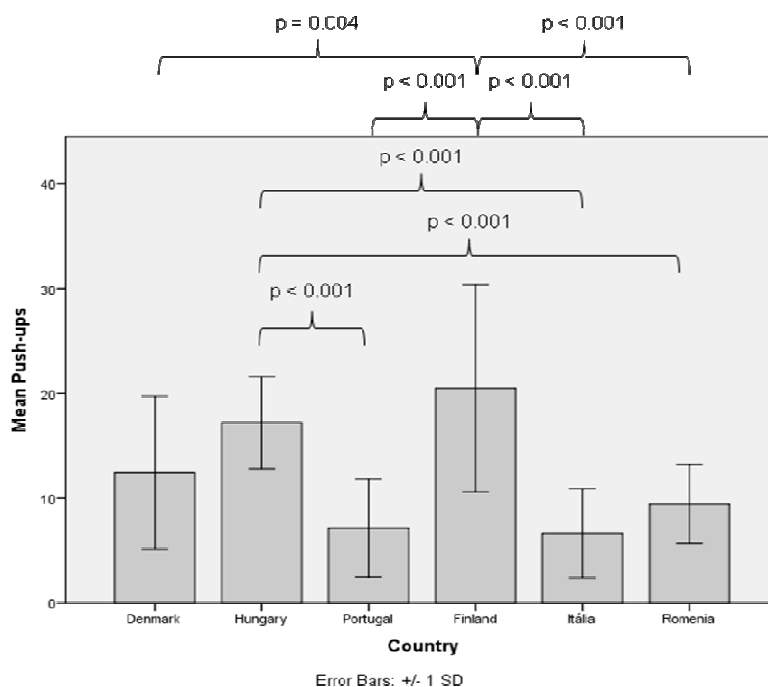
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**Figure nº 4 Curl - ups** . Presents the figures for Curls-Ups test. Superior results were obtained by Finland in the other countries. Hungary also performed the test but the results were invalid so excluded). Portugal was the country that showed the worst results for the remaining. This test analyzes the abdominal strength of the child. Since this is a test that requires the child to perform all curls a constant and rhythmic acceleration and is dependent on your balance / strength.

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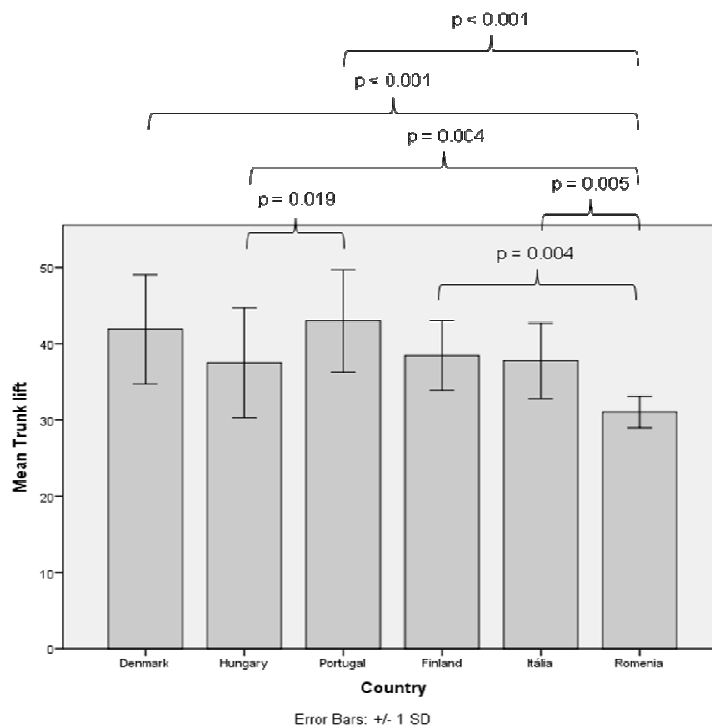


**Figure nº 5 Mean Push -ups.** Shows us the results for the Push-Ups test. The best results were obtained by Finland compared in the others countries. Italy and Portugal were the countries that fared worse compared to others. This test analyzes the abdominal strength of the child. Since this is a test that requires the child to perform all curls / movements a constant acceleration and rhythmic, being dependent on their balance / strength.

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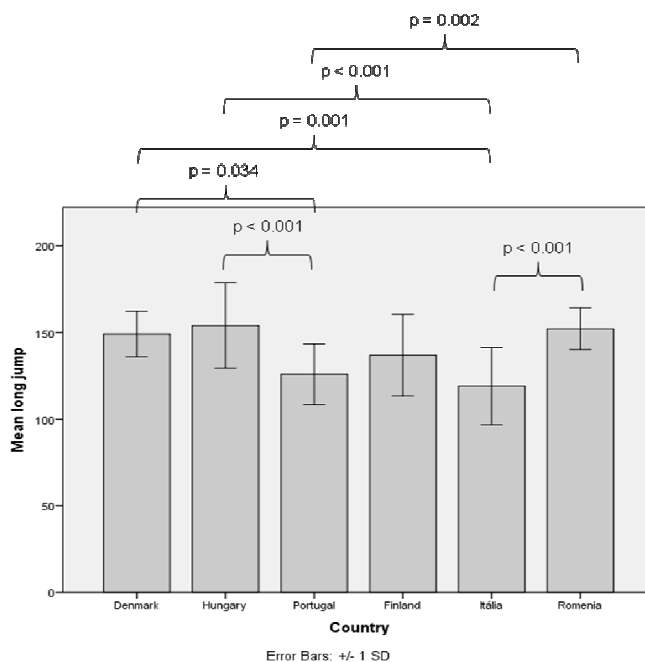


**Figure nº 6 Mean Trunk lift.** Shows the results for the Mean trunk lift test. The best results were obtained by Portugal compared with the others countries. Romania was the country that showed the worst results for the remaining. This test analyzes in centimeters, the flexibility of the child at the trunk level.

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**Figure nº 7.** Shows the values for the test Mean long jump. Romania and Hungary

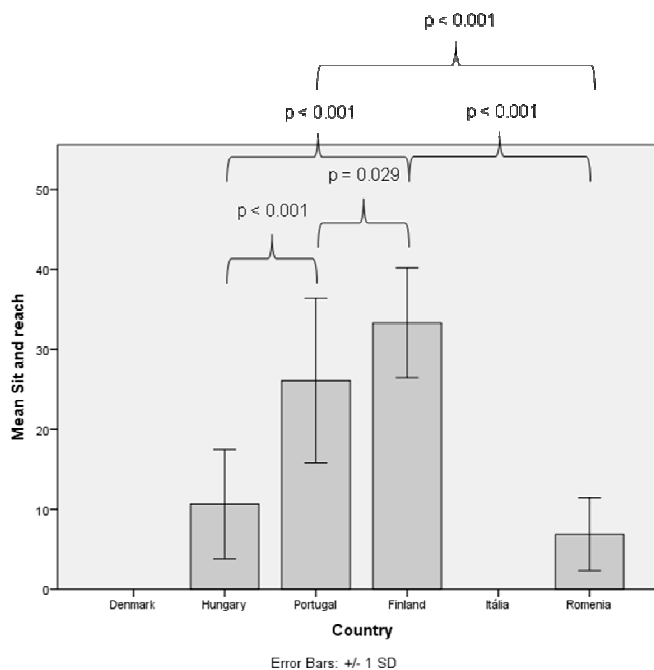
obtained better results compared with the other countries. Italy was the country that showed the worst results for the remaining. The results presented also show that

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Gontarev, S., Zivkovic, V., Velickovska, and L. Naumovski, M. (2014).

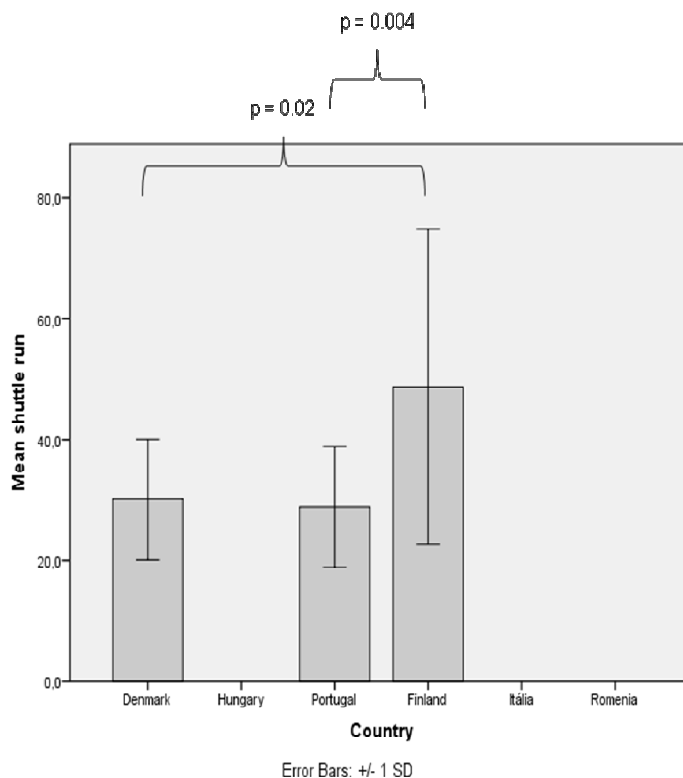
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**Figure nº 8.** Shows the values for the test Mean Sit and reach. Finland achieved higher results compared with the other countries. Italy and Denmark presented controversial results and staying out of the results of this test. Romania was the country that showed the worst results for the remaining. Portugal and Finland are quite satisfactory results according to Wells, KF & Dillon, E. K. (1952).

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*Scientific Technical Journal*  
**Figure nº 9.** Shows the results for the Mean shuttle run test. Portugal had the best result compared with the other countries. Italy, Romania and Hungary presented controversial results and staying out of the results of this test. Finland was the country that showed the worst results for the remaining. Portugal and Denmark have satisfactory results in accordance with Handbook (1983).

## Conclusion

The data collected do not show big differences between countries in terms of results. Finland is the country that presents the best results. Before we realize results countries with a bigger number of physical education classes per week, obtained more satisfactory results, it may be an indicator that more practice time could lead to better results.

The distance and the communication was one of the difficulties of this work This study helps to realize that despite differences, are the daily habits that lead to question

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whether it will be the deciding factor in the obtained differences, such as autonomy and simply moving to school. Studies show a decrease of autonomy levels of children and youth in city areas and worsening of child inactivity, risking the experience of own experiences of age, that is, play and physical activity (Neto, 1999; Piéron, 1999; Van Gills, 1996; Frost, 1992; Moore, Goltsman & Iacofano, 1992; Moore, 1986)

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