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### THE IMPORTANCE FOR YOUNG ADULTS TO DO PHYSICAL ACTIVITIES FOR A HEALTHY LIFESTYLE

*Взаємозв'язок між фізичною активністю і станом здоров'я є дуже складним, оскільки фізична активність приносить користь здоров'ю, рух необхідний для правильного функціонування людського організму. На фізичну активність, фізичний стан і стан здоров'я впливають генетичні фактори, умови навколишнього середовища і спосіб життя кожного індивіда. Метою дослідження було виявлення функціонального стану кардіо-респіраторної системи студентів. Була протестована кардіо-респіраторна система на 30 студентах 1-го курсу кафедри здоров'я та розвитку людини віком 18–40 років, які дали свою згоду на участь в експерименті. У дослідженні був використаний тест Руф'є для оцінки функціонального стану дихальної та серцево-судинної систем. Результати дослідження показали, що студенти мають хороший фізичний стан, оскільки вони виконують щоденну серію фізичних вправ*

відповідно до навчальної програми. Ці результати схожі з результатами в спеціальній науковій літературі.

**Ключові слова:** фізична активність, стан здоров'я, здоровий спосіб життя.

*The relationship between the physical activity and the health condition is very complex since the physical activity brings benefits to health whereas the movement is essential for the human body to work properly. The physical activity, the physical condition and the health condition are influenced by the genetic factors, environmental conditions and lifestyle of each individual. Objectives. The trial aimed at pointing out the cardio-respiratory functional status of students correlated to their lifestyle and physical activity level. Material and method. The cardio-respiratory capacity was tested on the students in the 1st year at the Department of Health and Human Development, precisely 30 students. The inclusion criteria were: their age of 18–40, their consent to take part in the trial, their compliance during the trial, their lack of acute conditions or chronic ones. The Ruffier test was used, a test that assesses the functional capacity of the respiratory and cardiovascular apparatus. Results. The interpretation of the Ruffier test and Ruffier-Dickson test enables an overall view about the ability to adapt the body to effort for the students taken into consideration for the trial. Conclusions. The results of the trial show us that the participants have a good physical condition as they do a series of physical exercises on a daily basis according to the study curriculum. These results are similar to the ones in the specialty literature where the pyramid of physical activities plays an important role.*

**Key words:** physical activity, health condition, healthy lifestyle.

Introduction. The research done in the past years showed that the lack of physical activity correlated to the sedentary lifestyle threatens the health condition. The relationship between the physical activity and the health condition is very complex since the physical activity brings benefits to health whereas the movement is essential for the human body to work properly. The data of several studies show that there are benefits for any level of physical activity; however, a high level would bring additional benefits [1].

The physical activity may influence the physical condition, which may influence the physical activity level. That is why the physical activity and the physical condition may influence the health state which, in its turn, may shape the physical effort level. The physical activity, the physical condition and the health condition are influenced by the genetic factors, environmental conditions and lifestyle of each individual. The physical exercises are beneficial and have good consequences upon health. It was found that the sedentary persons have a higher morbidity rate as well as a higher premature mortality in comparison to active persons [1]. Less physical activities lead to the occurrence of the cardiovascular diseases, of the stroke, of the 2nd type diabetes mellitus or of the cancer. Moreover, the unhealthy food increases the risk factors (high blood pressure, obesity), practically diseases associated to the reduced level of the physical activity, being called hyperkinetic diseases.

A trial published in 2010 by Williams [2] emphasized the connection between the risk to develop the cardiovascular diseases by doing physical exercise and the increase of the physical activity level. The data of several epidemiological trials [3] demonstrated the inverse relationship between the physical activity level and the mortality rate. Thus, it was found that a group of healthy men aged 35–74 who consumed more than 2,000 kcal/ week by physical activities lived with 2.15 years more than the ones who consumed less than 500 kcal/ week by physical activities [1]. Furthermore, the trial conducted by the Institute of Aerobic Research in Dallas [4] pointed out clearly that the reduced number of physical activities is associated to the increased risk of sickness in comparison to the increase of the physical activities that reduce substantially the risk of sickness, increase the working ability and provide the physical and psychical wellness.

The main proofs of the benefits upon the health condition after doing physical exercises regularly are the reduction of the premature mortality risk, of the cardiovascular diseases, of the stroke, of the 2<sup>nd</sup> type diabetes, of the high blood pressure and of the depression at the same time as the increase of the agility/ coordination and the improved quality of the sleep.

The physical activities should be done daily in order to bring benefits to health. In addition, by intensifying their level, there may emerge biomechanical, cardiovascular, respiratory risks or a combination of them [1, 5]. Practically it is considered that an individual has the optimal level of the physical condition when he/she is able to accomplish the daily tasks efficiently and safely but also when he/she still has energy for the free recreational activities [4, 6]. The characteristics that determine the level of the functional ability are morphological, motor, muscular, metabolic and cardio-respiratory [1, 7]. The calculation of the body weight index was very important in order to determine a possible weight excess by referring the body weight to the body surface  $IMC = G \text{ (kg)}/I \text{ (m}^2\text{)}$ . There is one way of expressing the contribution of the physical activities to the health condition, and namely the pyramid of the physical activities [4, 8]. In this pyramid, each level brings certain benefits that continue the health condition or improve the physical condition. Thus, at the base of the pyramid, 1<sup>st</sup> level, there are physical activities of low or moderate intensity, of approximately 60 min/day. On each level there emerge additional benefits for health and a better physical condition [9]. At the 2<sup>nd</sup> level, there are physical exercises for the cardio-respiratory condition, with the performance time of 20–60 minutes/3–5 days /week. On the 3<sup>rd</sup> level there are physical exercises for the muscular condition 2–4 days/ week. The 4<sup>th</sup> level corresponds to the physical inactivity that should have a limited length as it is useful for relaxation, recovery after a day's work or after intense effort, working on the computer or watching TV. In order to influence the physical condition, it is essential to elaborate a training program. There should be exercises for the development of the movements, general mobility, [10] muscular condition, aerobic ability, all of them by dosing the effort.

**Purpose.** The trial aimed at pointing out the cardio-respiratory functional status of students correlated to their lifestyle and physical activity level.

**Material and method.** The cardio-respiratory capacity was tested on the students in the 1<sup>st</sup> year at the Department of Health and Human Development, precisely 30 students. The inclusion criteria were: their age of 18–40, their consent to take part in the trial, their compliance during the trial, their lack of acute conditions (fever, infection) or chronic ones (high blood pressure, cardiopathy, asthma and neurologic conditions). The exclusion criteria were: their age of over 40, their refusal to participate in the trial, students with acute or chronic conditions.

The Ruffier test was used, a test that assesses the functional capacity of the respiratory and cardiovascular apparatus. This test means measuring the heart rate during a submaximal effort (genuflexions). The Ruffier Index was calculated according to the formula  $[(P_1 + P_2 + P_3) - 200]/10$ , and the values were interpreted according to the index: values  $< 0$  = very good, 0–5 = good, 5–10 = average, 10–15 = insufficient,  $> 15$  = poor.

The Ruffier-Dickson Index was calculated according to the formula  $[(P_2 - 70) + 2(P_3 - P_1)]/10$  and the values were interpreted according to the index:  $< 0$  = excellent, 0–2 = very good, 2–4 = good, 4–6 = average, 6–8 = poor, 8–10 = very poor, 10 = bad. Another variable in the trial was the blood pressure, respectively systolic and diastolic in the beginning and in the end of the two previously mentioned tests.

**Demographic data.** There were 30 students: 16 male students (53.34%) and 14 female students (46.64%). The average age of the group was 20 ( $20 \pm 3.94$ ).

**Results.** After applying the test to assess the adaptation of the body to efforts, we obtained the values for the 3 moments of the heart rate, noted  $P_1$ ,  $P_2$ ,  $P_3$ , which subsequently enabled the calculation of Ruffier Index and of Ruffier-Dickson Index. The obtained data were inserted in Table 1.

Table 1

The values of the variables for the trial group	
Variable	Median and standard deviation
P <sub>1</sub>	70.00±1.18
P <sub>2</sub>	94.00±2.75
P <sub>3</sub>	78.00±2.76
Ruffier index	4.30±0.53
Ruffier-Dickson index	1.75±0.42

The graphic representation of the data obtained after the assessment can be found in Figures 1 and 2.

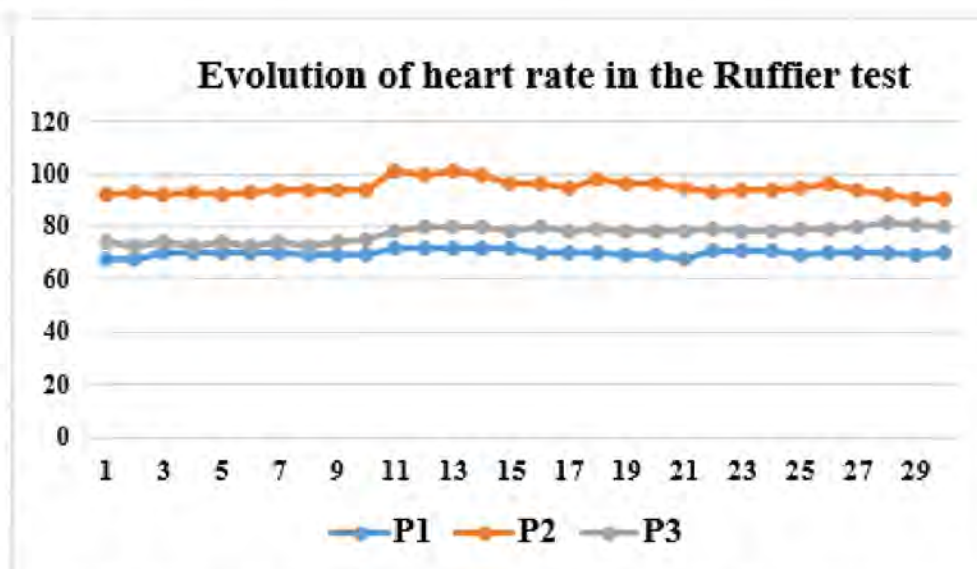


Fig. 1. The graphic representation of the heart rate during the assessed moments

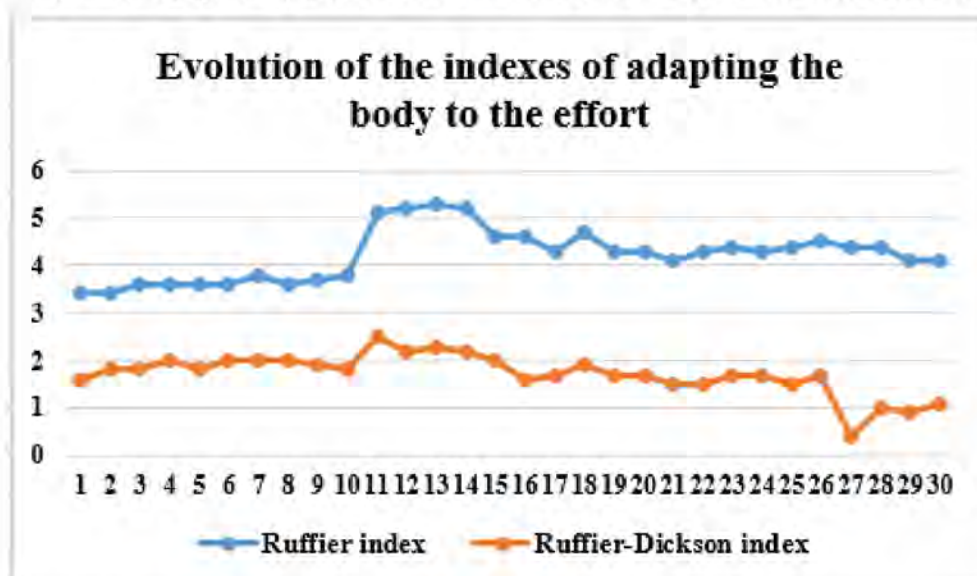


Fig. 2. The evolution of the indexes to adapt the body to the submaximal effort

Moreover, the students' blood pressure was recorded after applying the submaximal effort, at the initial moment of the test and at the final one, for the systolic sequence and for

the diastolic one, whereas the results are included in Table 2 and represented graphically in Figure 3.

Table 2

The representation of the blood pressure values

Variable	Median and standard deviation
Initial systolic blood pressure	110.00±7.06
Final systolic blood pressure	130.00±3.98
Initial diastolic blood pressure	75.00±4.10
Final diastolic blood pressure	87.50±3.08

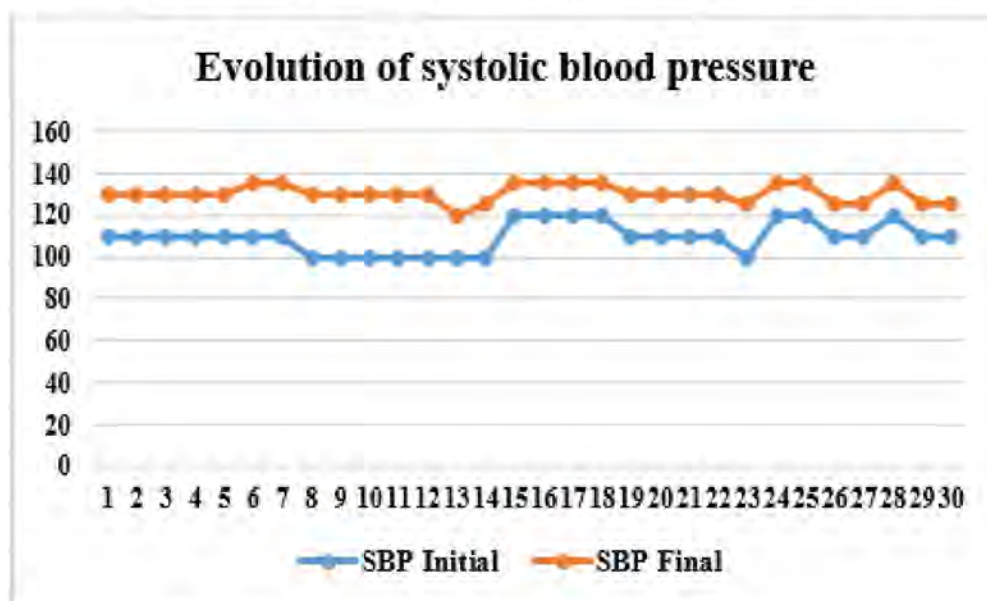


Fig. 3. Evolution of the blood pressure in the trial group

**Discussions.** The interpretation of the Ruffier test enables an overall view about the ability to adapt the body to effort for the students taken into consideration for the trial, namely:

- 26 students had good values between 0–5;
- 4 students had average values between 5–10.

The interpretation of the Ruffier-Dickson test also showed the ability of the body to adapt to effort for the students taken into consideration for the trial, namely:

- 21 students had very good values between 0 and 2;
- 5 students were at the limit between very good and good, with the value 2;
- 4 students had good values between 2 and 4.

**Conclusions**

By taking these values into account during the tests to assess the ability to adapt the body to submaximal effort but also the recorded values of the blood pressure, systolic and diastolic, we can reach the following conclusion:

- the students of the trial group had a good functional condition during the test;
- they had an adequate adaptation to the submaximal effort;
- they can reduce their values by doing physical exercises and a regular physical activity;
- they can improve their adaptation performances by doing slightly intense exercises;
- they can improve the quality of their life and their ability to focus;
- they can have a healthy lifestyle from the physical point of view by correlating the obtained results with an adequate food diet.

The results of the trial show us that the participants have a good physical condition as they do a series of physical exercises on a daily basis according to the study curriculum. These results are similar to the ones in the specialty literature where the pyramid of physical activities plays an important role. The young adults, respectively the students, are very active from a physical point of view and therefore can be found on the first 3 levels of the pyramid, according to a healthy lifestyle that they should continue as much as possible.

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### СИСТЕМАТИЗАЦІЯ РУХЛИВИХ ІГОР ТА РОЗВАГ ДЛЯ СТУДЕНТІВ 15–17 РОКІВ ЗГІДНО ЇХ ПУЛЬСОВОЇ ВАРТОСТІ

*В статті поданий детальний аналіз досвіду застосування рухливих ігор як засобу педагогічного впливу та засобу психофізичного розвитку особистості. Проаналізована можливість застосування ігор серед контингенту студентів коледжів як з педагогічно-виховною метою і як фактору впливу на організм людини. Підібрані та складені в окремі блоки комплекси рухливих ігор різного педагогічно-розвиваючого характеру. Здійснений збір показників частоти серцевих скорочень студентів I–II курсів, 15–17 річного віку під час застосування ігор та розваг в рамках експериментальної програми. Детально описана та наведена класифікація ігор за рівнем впливу їх на серцеву судинну систему студентів. Проаналізована можливість застосування та дозування ігор з метою розвитку певних фізичних якостей опираючись на отримані дані.*