ARGUMENT FOR OBTAINING AN OPTIMUM PHYSICAL CONDITION

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Abstract
Purpose: Determining the current level of physical condition manifestation of students enrolled in professional study groups and informing community members about specific responsibilities and divided in order to maintain an acceptable level of physical condition of youth. The life of modern man is increasingly technologically and automation dependent, resulting in almost completely replacing the physical effort. Today, almost no one moves on foot, even when the distances to travel are very small, and climbing the stairs without using the lift is almost inconceivable. Walks, practicing football in the school yard, riding a bicycle through the park, everything that means movement in general are gradually replaced by computer gaming, internet surfing and watching TV. Such activities stimulate the mind, but ignore the body, and long-term implications are not beneficial.
Methods: Research methods used in this research are part of the private and processing methods category, analysis and interpretation of data collected by the study. Initial testing and final test was done using the Harvard test of general physical condition.
Results: Optimizing the physical condition of young, independent driving activities, based on physical education and sport specific means, is conditional on the level of expression of the motor capacities, functional capacities of each individual but also of the objectives arising from future profession requirements. The lesson of physical education and independent activities ensure training continuity, from one educational cycle to another, establishing an optimal balance between individual physical condition and learning specific motor skills for physical education and sport, but also a gradual gradation of effort.
Conclusions: Implementation of this program of aerobic gymnastic combined with long term running over the 60 days allowed us to conclude that the difference between the calculated arithmetic averages are significantly different at the threshold of significance $p < 0.01$, so the research hypothesis is validating.
Adapting the body to moderate effort, which is what originally defined the term of physical condition can be achieved and maintained only through constant and gradual increase in the level of physical demand placed on the body. The recipe for a healthy lifestyle is exercise used constantly, correct eating habits, active rest. Maintaining the permanent normal health status is a difficult test that each of us must go daily. The claim that it is a very close connection between a normal lifestyle and longevity is not new to anyone.
Key words: optimum physical condition, specific means, lesson, physical education

Introduction and research objectives

Knowledge and practice of systematic and rational exercise, combined with proper nutrition, is defined by foreign experts as being fitness (in Romanian, physical condition), the term has recently entered our vocabulary and is a set of methods and physical exercises, specific to different sport branches, in order to obtain optimal physical condition.

Fitness is being translated as matching, health, shape, feeling good; other sources explain the term as "a complex of activities, in order to get into shape, including musculature, stretching and cardio-respiratory training [Le Petit Larousse, 2004].

• creation of physical exercise programs and differentiation requirements of each individual by detecting the useful indicator for the development/maintenance of optimal physical condition;

• achieving an appropriate framework for the individual to express freely, creatively, to discover, demonstrate initiative;

• understanding the application capacity, and interpret the programming aspects of the development/maintenance of physical condition;

• collection of updated information with regard to addressing program development/maintenance of physical condition;

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Through an optimal physical condition it is established an efficient ratio between specific individual characteristics (personality, age, sex, general physical structure) and physical effort made in solving the motor duties of physical education lesson and not only [M., Finichiu, 2009].

The main objectives of individual physical condition research are:

• acquisition of new acts and motor actions aimed at enhancing the motor baggage and their application in appropriate situations thereby improving the expression level of fitness.

• continuing the practice of physical exercise and after years of academic study to enhance the manifestation level of the motor capacities;

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• social-professional integration.

Increasing the efficiency of individual fitness [I.L., Hidi, 2007] is achieved by:

• motor support development: strength, endurance, strength, muscle elasticity and joint mobility, coordination abilities;

• increase support operational efficiency: the respiratory system, cardio-vascular system, metabolic processes, nervous system, immune system;

• increase efficiency by lowering the overall physical structure of body fat and body shape to adapt to individual requirements;

• Training the general feeling well of the "I" (body, mind, spirit).

Aerobic Gymnastics is a sport of physical activity, with multiple positive meanings with the main benchmark for motor and mental ability of the individual, with beneficial effects on physical fitness and health.

Aerobic Gymnastics is a maintenance gymnastics that is integral part of aerobic exercise (jogging, cycling, walking long distances, swimming aerobic dance, etc.) and that runs with musical accompaniment.

Systematic practice aerobic gymnastics and running lengthy cover the main muscle groups – superior and inferior members, abdomen, back, - with complex and long-term effects:

• significant reduction in the risk of monotony and repetition;

• facilitate the establishment of the well;

• increasing the manifestation level of resilience capacity and motor coordination;

• improving coordination and motor balance through choreography;

• improving the cardio-vascular system activity (strengthening heart muscle, improving blood circulation, normalize blood pressure).

Practicing physical exercise as aerobic gymnastics and running of duration has some advantages:

• reduces/maintains body weight;

• improving the cardio-vascular and respiratory functions;

• reduction of blood cholesterol;

• balancing and harmonizing body shapes;

• provides attractive effort development by linking movement with music.

Research hypotheses

The research was based on the following working hypotheses:

• Design and practice an exercise program for the development/maintenance of students' physical condition is the prerequisite for future progress of individual optimal physical condition,

valued by independent physical activity and maintaining wellness.

• Specific means of physical education and sports, and various working conditions, lead to improvements in the manifestation of motor skills as a factor favoring the improvement of physical condition.

Research methods and procedures

The experiment consisted of a program of aerobics in the extra-physical activity over 60 days (April and May, academic year 2009-2010), and long running, moderate tempo during physical education classes, 15-20 minutes; making the initial test and final test using the Harvard Test of general physical condition. Extra-physical training sessions are included in the plan of complementary activities of the Department of E.F.S., 2 sessions per week lasting 30-45 minutes.

Program of aerobics gymnastics and long running was held on the sport base of U.P.G. Ploiesti, comprising a total of 35 students (20 boys and 15 girls) I and II years of professional study, clinically healthy.

For the good development of the experiment were used proper methods of investigation among which - the experimental method, observation, measurement and recording method and methods of processing and interpretation of collected data - statistical and mathematical method and graphical method.

The used research methods and techniques have been complied with the rigors of a high-level scientific research, respecting the choice of subjects under investigation, gathering and storage of data, measuring instruments etc.

The Harvard Test [H.,Barrow and R., McGee, 1973] aims to measure the overall ability of the body and especially the heart and circulatory system. The test consists of stepping on and off a bank into a preset time period, followed by recording their pulse rates and lasts for 5 minutes, the going up/downhill cadence is of 30 cycles/minute (a cycle consists of 4 times, from lowering the two-stroke with both feet, the length of the cycle time is two seconds).

Pulse is recorded from the carotid or radial artery at intervals of one minute, two or three minutes after the finishing of the task, for 30 seconds, forming the sum of the pulse.

Fitness index is calculated by applying the formula: *ICF = duration of exercise (seconds) x 100/2 x sum of the pulse*. The assessment of the recorded results is made with reference to the norms and established qualifications devised by the authors of the imagined tests as follows: *Excellent* <90; *Good* between 80 - 90, *Medium* between 65-80, *Sub-medium* between 1955-1965, *Weak* > 55.

Long running has as purpose the physical fitness component development, cardio-respiratory resistance. To obtain high effect on this component

of fitness, physical exercise is performed with high or moderate intensity of effort, the effort is taking is aerobic and is developed in the conditions of relative balance between demand and supply of O_2 - steady state [T., Ardelean, 1982] for larger working time (30 - 40 minutes), which have the effect of increasing heart rate gradually and slowly, reaching values of the target area, 155 p/minute [A., Bota, 2006].

### Research results and their interpretation

Processing and interpretation of collected data (Table 1 and Table 2) was achieved by calculating the arithmetic mean (X), standard deviation (S), coefficient of variability (Cv%), the amplitude of the string of data (W), average error estimation (EEm) and significance by calculating the difference between the means of "t" [A., Dragnea, 1984].

In the absence of a database for these tests, reports were made based on the results obtained after the initial and final measurements, presenting the following case, by sex:

Male students (table 1)

❖ Calculated *arithmetic mean*, X = 57,14, for the sample of boys (Figure 2) is held after the assessment scale used by the authors of the test, at the qualifier "sub-medium". Of the 20 students enrolled in the experiment, after initial testing, six students, representing 30%, have a rating "poor", the results calculated had the value under 55, and 14 students, representing 70%, had recorded values of fitness index between 55 - 65 rating "sub-medium". After the final testing of the arithmetic mean fitness index was X = 65,46 which is a grade "average" for the pattern of male students; two students, representing 10% had a physical condition index at the qualifier "weak", 11 students, representing 55% had a physical condition index at the qualifier "sub-medium" and seven students, representing 35% had a physical condition index rating stood at "medium" (Figure 1).

Figure 1. Number of boys according to the classification level of fitness index
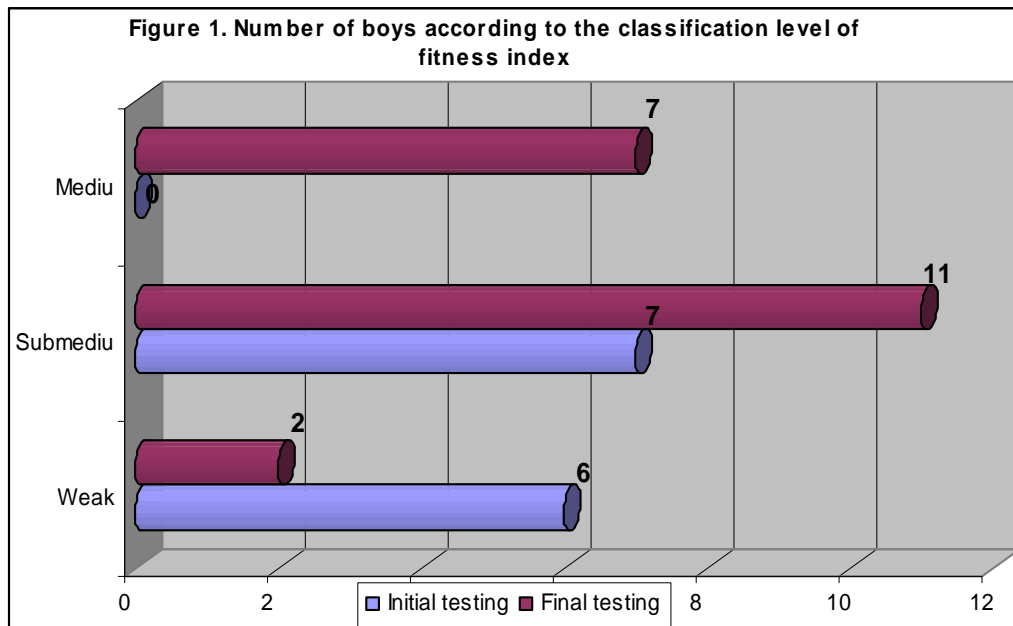
❖ *The coefficient of variation* Cv% calculated, presents us an approximate percentage ratio of standard deviation and arithmetic mean, as follows: after initial testing, the boys team has a poor uniformity Cv = 22,99%, after final testing results achieved by the boys team presents an average homogeneity Cv% = 19,42%.

❖ *The magnitude results from range data* covers a range of 47,11 points after the initial testing and after the final testing of 46,61 points, which indicates that the results obtained by this team at the final testing are more grouped than those of the initial testing.

Table 1. Calculated statistic indicators – Harvard Test

	Statistic indicators	Initial testing	Final testing
Male students	**X**	**57,14**	**65,46**
	S	13,13	16,32
	Cv%	22,99	19,42
	W	47,11	46,61
	EEm	Trust limit situated between 57,14 ± 3,38 (53,76 ÷ 60,52) at p<0,01, trust degree of 99%	Trust limit situated between 65,46 ± 3,17 (62,29 ÷ 68,63) at p<0,01, trust degree of 99%
	t	t = 3,96 difference significantly different at p<0,01, trust degree of 99%	t = 6,48 difference significantly different at p<0,01, trust degree of 99%

❖ *Estimating the average error calculation* presents a fit within the values 53,76 ÷ 60,52 (57,14 ± 3,38) for the arithmetic mean, after initial testing, representing the trust interval of the mean at the significance threshold p<0,01. Confidence limits of arithmetic mean calculated after the initial testing are 53,76 and 60,52 and the real average is in this value range. After final testing, calculation of average estimation error is within the range value EEm 62,29 ÷ 68,63 (65,46 ± 3,17), representing the confidence interval of the average significance threshold p <0.01. Confidence limits of arithmetic mean calculated after

the initial testing are 62,29 and 68,63 and the average real value is in this range.

❖ *Calculation of significance between the two means* - test "t" = 3,96, one can find that is greater than the value of "t" in Fischer's table, so the difference between the two averages is significant at the threshold of significance p <0,01, the research hypothesis is validated, after initial testing; after the final test, t = 6,48, one can find that is greater than the value of "t" in Fischer's table, so the difference between the two averages is significant at the threshold of significance p<0,01, the research hypothesis is validated.

Figure 2. Arithmetic means values
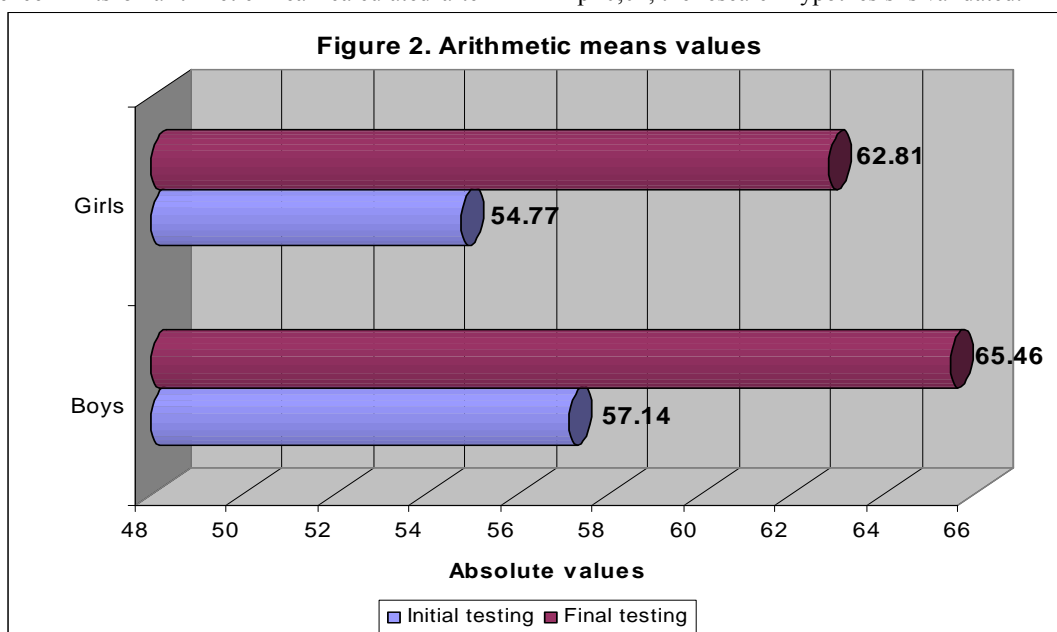
Female students (table 2)

Calculated *arithmetic mean*, X = 54,77, for the sample of girls (Figure 2) is situated, after the assessment scale used by the authors of the test, at the qualifier "weak". Of the 15 female students included in the survey, after the initial testing, seven students, representing 46,6%, recorded a fitness index value of the qualifier "weak", the results were calculated as the value of 55, and 8 students, representing 63.43 %

experienced physical condition index values ranging from 1955 to 1965 qualifier "sub-medium". After the final testing, the arithmetic mean fitness index was X = 62,81, the qualifier "sub-medium" for the sample of female students; five students, representing 33,3% had recorded a physical condition index situated at the qualifier "medium", 10 female students, representing 66,6% had a physical condition index at the qualifier "sub-medium" (Figure 3).

Figure 3. Number of girls according to the classification level of fitness index
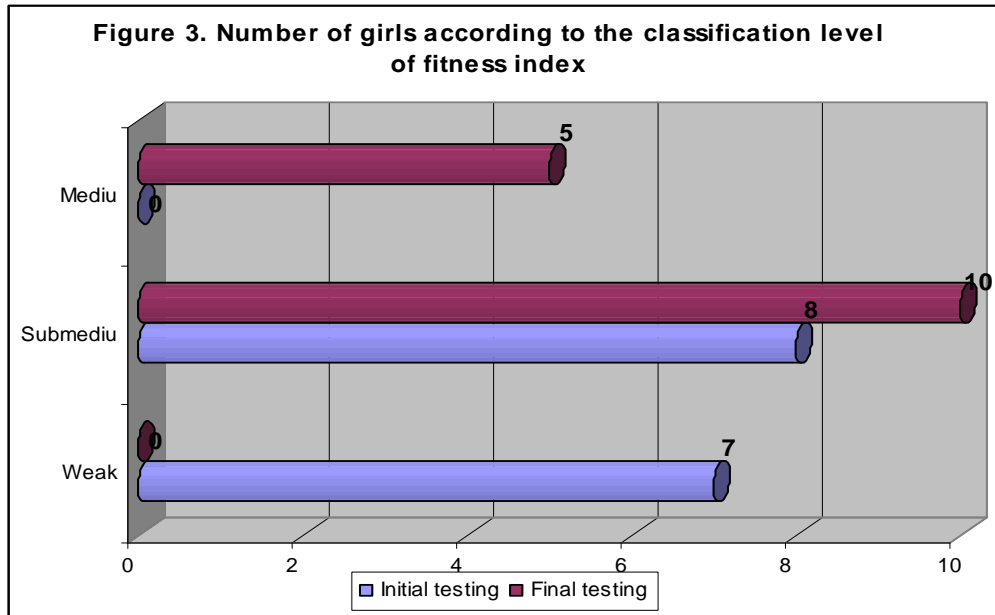
❖ *The coefficient of variation* Cv% calculated, representing the approximate percentage ratio of standard deviation and arithmetic mean, after initial testing (Cv% = 17,45%) and final (Cv% = 19,67%), a team of girls with a medium uniformity.

❖ *The magnitude results from range data* covers a range of 37,98 points after the initial testing and 40,11 points, after the final testing, which indicates that the results from the initial testing of this sample are more clustered than those of final testing .

❖ *Estimating the average error calculation* presents a fit within the value 49,60 ÷ 58,94 (54,77 ±

4,17) for the arithmetic mean, after the initial testing, representing the confidence interval at the average significance threshold p <0,01. Confidence limits of arithmetic mean calculated after the initial testing are 49,60 and 58,94 and the average real value is in this range. After final testing, calculation of average estimation error is within the range value EEm 58,04 ÷ 66,58 (62,81±3,77), representing the confidence interval of the average significance threshold p <0,01. Confidence limits of arithmetic mean calculated after the initial testing are 58,04 and 66,58 and the average real value is in this range.

Table 2. Calculated statistic indicators - Harvard test

	Statistic indicators	**Initial testing**	**Final testing**
Female students	**X**	**54,77**	**62,81**
	S	14,56	13,78
	Cv	17,45	19,67
	W	37,98	40,11

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	EEm	Trust limit situated between 54,77 ± 4,17 (49,60 ÷ 58,94) at p<0,01, trust degree of 99%	Trust limit situated between 62,81 ± 3,77 (58,04 ÷ 66,58) at p<0,01, trust degree of 99%
	t	t = 2,78, difference significantly different at p<0,01, trust degree of 99%	t = 4,28, difference significantly different at p<0,01, trust degree of 99%

❖ *Calculation of significance between two means* – "t" test = 2,78, one can find that is greater than the value of "t" in Fischer's table, so the difference between the two averages is significant at the threshold of significance p <0,01, the research hypothesis is

Conclusions

1. Implementation of this program combined with aerobic exercise during the period running from 60 days allowed us to conclude that the difference between the calculated arithmetic averages are significantly different at the threshold of significance p <0.01, thus the research hypothesis is validated.

2. Arithmetic averages calculated by the two tests indicate that this program used had an efficient effect on the expression level of fitness index of the two samples of students.

3. Calculation of variability within the results of the two groups after the two tests in the category of teams with low and medium consistency, estimate the average error after the two tests, we show that these confidence intervals are calculated at the threshold of significance p <0, 01.

4. The significance of the two areas indicates that they are significantly different with a confidence level of 99%, at the significance threshold p <0.01.

5. Need for physical activity at least one hour per day, especially by the young, the overall benefit of physical activity is improving the health and ability to perform certain activities, with an acceptable productivity for a longer period of time .

6. Improving the optimal level of physical condition manifestation, should be done in a total equilibrium state in relation to future graduate of a technical college; health is the issue that underlies the evolution of man and on this basis, it can build a high level of individual physical condition expression.

7. In addition to its compensatory psycho-biological function, physical education and sport contribute to stimulating the intellectual capacity, to increase the level of theoretical knowledge of students.

8. Adapt the body to moderate effort, which originally defined the term fitness can be achieved and maintained only through constant and gradual increase in the level of physical demand being placed on the body. Recipe for a healthy lifestyle is exercise used constantly, eating habits, active recreation.

9. Maintaining permanent normal health status is a difficult test that each of us must go daily. The claim that it is a very close between a normal lifestyle and longevity is not new to anyone.

validated, after initial testing. After the final test, t = 4,28, one can see that is greater than the value of "t" in Fischer's table, so the difference between the two averages is significant at the threshold of significance p <0,01, the research hypothesis is validated.

Through the lesson of physical education and self employment to ensure continuity from one educational cycle to another, establishing an optimal balance between individual fitness and learning specific motor skills for physical education and sport, but a gradual gradation of effort.

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