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Effects of the EuroFit program

Abstract

The "EuroFit" program, which lasted one school year, was applied to a sample of eleven- and twelve-year-old boys. Motor tests were measured at the beginning and end of the school year. The motor tests that were monitored at the beginning and end of the school year related to; 'Flamingo' balance-FTR (test of general balance), Hand tapping-PLT (test of rapid hand movements), Reach while sitting-SAR (test of general flexibility), Long jump-SBJ (test of explosive strength of the lower extremities), Sit ups-SUP (abdominal muscle strength test), Arm pull-BAH (arm and shoulder girdle strength and endurance test) and body height-VIS were measured. The aim of the research was to determine the differences after the application of planned and programmed physical education classes using EuroFit program contents. After the implemented program and the measurements at the beginning and end of the school year, statistical data processing was performed. The results of descriptive and advanced statistics show exactly that there has been a positive transformation in the area of psycho-motor abilities of students. It is important to point out that the results at the end of the school year were better in all tests. At the general (overall) level, the transformation is positive and statistically significant $p < .001$. According to the obtained results, the hypothesis that reads "Positive transformations of motor skills are expected under the influence of the EuroFit program in the period of one school year" was confirmed.

$H_{(p \leq .05)} : MS1 < MS2$

Keywords: EuroFit, tests, motor skills

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Introduction

Motor skills are an extremely important prerequisite for everyday simple and complex work and sports activities of every person. Motor abilities are the best indicator of a person's general health condition that is why they are monitored, measured, controlled and improved with special attention from birth to the end of life. Motor (psycho-motor) abilities are in high causality with morphological (anthropometric) dimensions. Morphological dimensions refer to the constitution of the body. Body constitution is defined by a large number of anthropometric dimensions; height, weight, body circumference, muscle mass, fat tissue, diameters of shoulders, hips, joints, etc. The concepts of motorics or psychomotorics are old, as are somatics, morphology, anthropometry (body dimensions). The terms ability and characteristic are not synonymous, on the contrary, they differ significantly. So, the ability is for someone to perform some motor action in accordance with some rules, and the characteristics are height, weight and other anthropometric dimensions of the body. Motor abilities are determined by motor tests, and morphological status by measures such as; height, weight, shoulder and hip diameter, chest circumference, waist, etc. Motor abilities and anthropometric dimensions are more or less correlated with each other. Both can be transformed through certain treatments. The transformation is especially more effective in the period of growing up (adolescence). Long-term experience confirms that motor skills are more susceptible to transformation, which is why they are a frequent subject and problem of study in anthropology, medicine, and biomedicine. The transformation of motor skills is the direct responsibility of professional experts, sports educators, teachers, trainers, pedagogues, psychologists and health workers of various specialties. For the above reasons, the EuroFit program is primarily intended for the transformation of motor, i.e. psychomotor abilities.

The number of morphological and motor variables is virtual. Depending on the importance, possibility and goal of the research, the number of variables is reduced. The International Biological Program recognizes a battery of 39 anthropometric dimensions.[1] The situation is similar with motor skills. Motor abilities are usually defined as indicators of the level of development of the basic motor activities of a person. The level of motor skills determines and conditions the successful realization of simple and complex actions, regardless of whether these skills are acquired through training or not. Fleishman[2] systematized the motor space and reduced it to seven essential physical properties; (strength, speed, endurance, coordination, balance, precision and flexibility). Zaciorski[3] also made a significant contribution to the systematization of the motor area, as well as to the selection of valid tests by which it is evaluated; strength, speed, endurance, coordination and flexibility. Kurelić[4] et al., conducted extensive research on morphological characteristics and motor skills on a representative sample of younger and older adolescents. Based on the obtained results, tables were made, i.e. norms for each test. Norms are made according to gender and age. The applied tests were previously validated. All tests had satisfactory validity, reliability, objectivity and discrimination. Motor abilities presuppose a set of mechanisms on which the success of movement depends. In the functional sense, they represent the shaped structures of the motor system for managing various movement manifestations. Psycho-motor abilities represent the complex possibilities of man for the manifestation of complex moving structures that unite biochemical, functional and mental processes. These processes are limited by the characteristics of the neuromuscular system. Anthropomotor properties and abilities change under the influence of systematic physical exercise. The selected exercises have a clearly set goal. The development and improvement of anthropomotor, motor and functional abilities can be achieved through the teaching process of physical exercise. For many students, physical and health education is the only form of organized physical activity. This type of teaching has positive effects in the fight against hypokinesia, which is more and more pronounced in children and youth. Movement, play and other motor activities have been replaced by sitting next to phones, computers and small screens. Going to school and back in

large numbers involves sitting in a means of transport. Movement, play, sport, recreation has been replaced by sitting next to tablets, computers and small screens. The problem of monitoring, evaluating and improving anthropomotor level and status is an integral part of the programmed teaching of physical and health education.

What is the EuroFit program[5]

The modern way of life has led to the fact that hypokenesis and obesity are not only a problem for adults, but also for an increasing number of children. In the prevention and elimination of this problem, moderate physical activity, which is carried out as part of physical education classes, plays an important role. In order to be able to monitor the development of children's physical abilities and health status, there was a need to test them and establish reference parameters. For this purpose, on European soil, the Eurofit battery of tests was set apart. EuroFit tests are simple, inexpensive and relatively easy to apply. The EuroFit program can be implemented as part of regular physical and health education classes or as part of supplementary exercise, as well as in specialized medical institutions. In addition to its role in the effective implementation of the physical education curriculum, the modified version of EuroFit can be used in working with children with special needs. A specially validated battery of EuroFit tests is used in the fields of analytics and diagnostics during selection in the training process, as well as in the control and monitoring of the effects of the training process. The standard EuroFit program and tests are intended for younger and older adolescents of both sexes, from 6 to 18 years old. With a small modification and adaptation, the EuroFit tests can be successfully applied to older age groups. Physical abilities are the essence of all psychomotor activities, on the basis of which similarities and differences in motor efficiency among individuals can be observed. Physical abilities are a complex latent structure that is indirectly determined by motor tests. Moric tests or psychomotor tests are in different causality with physiological, biochemical, somatic, physical and psychological endogenous and exogenous factors. Due to the obvious complexity of the motor system, numerous sciences and empirics, each from their own angle and point of view, have been trying for decades to find valid and reliable tests that measure; strength, speed, endurance, dexterity and agility, flexibility and elasticity of man.[6]

The evaluation and assessment of the mentioned qualities has been solved for decades by applying various tests. Often these tests are numerous, demanding and expensive, and in the end insufficiently valid and reliable with insufficient probability that good results on the test will correspond to a good result for which the test is intended. Tests are indispensable in everyday life, they are especially practiced during various selections, at school, at the workplace, professional orientation, sports, the army, etc. Tests are performed on people and animals, living and non-living beings and objects. This paper is about man and tests that are intended to assess and evaluate general motor abilities. The general problem of EuroFit motor tests is that they are insufficiently reliable and valid. Another problem is that the tests are demanding, expensive ie. unavailable to a large number of researchers and test subjects. EuroFit tests are a compromise solution due to their pragmatism, simplicity and realistic possibility to perform them repeatedly. EuroFit tests are of a general universal type, they are realistically applicable for all ages and genders, people with special needs, recreationists and athletes. For the above reasons, the EuroFit battery is universal, but not ideal. The problem with all tests, including these, is determining objective and realistic standards and norms. Scales and norms for each test are necessary. Based on scales and norms, it is possible to see the place and position of each individual in relation to the group. Scales and norms must be appropriate for age, gender, environment and space.[7] Norms are determined based on test results in real circumstances. It should be emphasized that the norm is a variable category. Under the influence of known and unknown factors, test values change over time. Changes can be positive or negative. According to these changes, the norms are revised. By revising the norms, the scales are revised, and thus new standards are defined. For example, norms and standards for children of the same gender and age do not have to be the same for children from urban and rural areas. For the above example and reasons, the EuroFit test battery is universal in structure, but the norms and standards are of a local and regional nature. A predetermined norm is a goal, real norms are values in the current time and space. Testing and measuring, scaling and normalizing is not a fashion but a necessity. A need without which there is no objective comparison and monitoring of the effects of any transformation process. The paper "Effects of the EuroFit Program" tries to give an answer to the aforementioned polemics and problems.

Aim subject and research problem

The aim of this research is to determine and argue and prove whether there is a statistically significant difference in motor tests known as EuroFit nitirulju tests at the end of the school year compared to the results at the beginning of the school year. Based on decades of experience, differences are expected for two reasons, the first is younger adolescents where the biological acceleration is very intense at that age, the second reason is the fact that the respondents (students) are subjected to regular scheduled physical and health education classes. The overall teaching process in the subject of physical and health education was conducted under the guidance of an expert, in the example of a teacher. The contents of the classes were related to the application of the EuroFit program.

a) The subject of the research is primary motor skills defined and recognized with the help of psychomotor (motor) EuroFit tests.

b) The research problem is the effects, i.e. transformation of primary motor skills under the influence of organized physical and health education.

c) Based on long experience, professional and scientific knowledge, a positive transformation of motor skills is expected in the period of one school year.[8]

The results of primary EuroFit motor skills at the end of the school year are individually and generally better than the results that were at the beginning of the school year. The hypothesis about the expected differences was tested at the level of statistical error $p \leq .05$., $H_{(p \leq .05)}$: $MS1 < MS2$

Research methods[9]

The sample of respondents consists of male students aged 10 and 11 years. The number of students included in the testing was 90. A sample of 6 motor tests under the name "EuroFit" was selected for the assessment of students' motor abilities. "EuroFit-93" is a set of validated motor tests prescribed by the Committee for Sports Development of the Council of Europe.[10] These are tests that assess primary motor skills: endurance, strength and flexibility. The mentioned tests are generally accepted in many schools in Europe and beyond. EuroFit-93 tests do not require expensive and complex equipment, and can be completed in two to three school hours. Testing (measurement) was carried out in the following order; body height (VIS), flamingo (balance test) (FLB), hand tapping (PLT), gray reach (SAR), standing long jump (SBJ), trunk lift from lying to sitting position (SUP) and finally hold in a squat (BAH).[11]

a) Flamingo-FLB, flamingo is (test of general balance). The test is repeated three times. The best result in seconds is entered in the survey form. A higher numerical value in this test represents a better result. The detailed methodology of measurement and testing of all tests in this one was carried out in accordance with the methodology of Eurofit.[12]

b) Taping by hand-PLT, this test is intended to measure movement speed. The task is for the test taker to complete 25 correct cycles at the meter's mark. The time for which the respondent completed the task is registered, i.e. made 25 correct cycles. This test is repeated twice. A better result is entered in the survey form. Note, a lower numerical value in this test represents a better result.

c) Access in gray-SAR, reach in gray is a test that evaluates general suppleness, i.e. general flexibility of the body. The unit of measurement in this test is centimeters. The test is repeated twice, the better result is entered in the survey form. A higher numerical value in this test represents a better result.

d) Standing Long Jump-SBJ, Standing Long Jump is a well-known and recognized test for evaluating the explosive power of the lower extremities. There is no sport where explosive power, which is more or less correlated with all motor skills, is not desired. For the above reason as well as for the simple measurement methodology, long jump from standing is popular because the obtained results can be validly and reliably compared. The unit of measurement in this test is centimeters. The test is repeated three times. The highest numerical value is entered in the survey form.

e) Sits up-SUP, the trunk raise from a lying to a sitting position is a test that assesses the endurance of abdominal muscle strength. The number of correctly executed cycles, i.e. raising the trunk from a lying to a sitting position in thirty seconds is recorded in the survey form. This test is performed once. A higher numerical value in this test is a better score.

f) Arm pull-BAH, this test evaluates the static endurance of the arm and shoulder girdle muscles. Time is measured in the pull-up. This test is performed only once. The time it lasts in tenths of a second is entered in the survey form. A higher numerical value in this test represents a better result.

Statistical methods[13]

In accordance with the aim of the work and the set hypothesis, standard (descriptive) and advanced (multivariate) statistics were applied. Table 1 & Table 2 shows the values of standard (descriptive) statistics; (Mean, Std. Error of Mean, Std. Deviation, Skewness, Std. Error of Skewness, Kurtosis, Std. Error of Kurtosis, Minimum, Maximum). Descriptive statistics are especially important because advanced statistics are built on top of these statistics. Quantitative values; variances, standard deviations, standard errors, kurtosis, skewness, etc. they deserve special attention and serious analysis. Together, these statistical values indicate whether the variables are normally distributed. If the empirical values significantly deviate from the theoretical model, i.e. Gaussian distribution, it is not scientifically correct to apply advanced statistical methods, which a priori imply a normal or approximately normal distribution. In these and such cases, the problem is solved by applying statistical methods that are not conditioned by a normal (Gaussian) distribution. It happens that some variables have an extreme range from the minimum to the maximum value, such extreme cases spoil the representativeness of the arithmetic mean. In such and similar cases, it is necessary to remove extreme values from the further statistical procedure. This level of statistics is intended to recognize those extremes as well as to exclude them from the database in further advanced statistics.

Table 1 Statistics results of the first measurement

	'Flamingo' balance FTR	Hand tappin PLT	Reach while sitting SAR	Lng jump SBJ	Sits up SUP	Arm pull BAH	Body hight VIS
Valid	90	90	90	90	90	90	90
Missing	0	0	0	0	0	0	0
Mean	16.28	17.22	29.31	143.88	20.40	22.63	146.42
Std. Error of Mean	2.28	.49	1.31	3.45	.77	2.72	.94
Std. Deviation	15.33	3.34	8.84	23.18	5.21	18.27	6.32
Skewness	1.91	3.23	-1.62	-.70	-.46	1.16	.27
Std. Error of Skew	.35	.35	.354	.35	.35	.35	.35
Kurtosis	4.07	15.90	3.65	.28	1.49	1.52	-.39
Std. Error of Kurt	.69	.69	.69	.69	.69	.69	.69
Minimum	1.48	13.53	.00	85.00	5.00	.00	135.00
Maximum	71.75	34.55	43.00	180.0	33.00	79.04	161.00

Tables 3–8 shows the results obtained by applying advanced statistical methods; (Analysis of variance, Canonical discriminant analysis, Correlation analysis and Factor analysis). The mentioned methods are undoubtedly advanced, but also extremely complex and demanding. From the operational aspect, they are very simple thanks to great software like SPSS. The problem lies in not knowing basic statistics and the criteria that variables must meet in order to be included in a complex statistical-mathematical procedure. So all these methods are sensitive to normal distribution, sample size, number of variables in relation to sample size, selection of dependent and independent variables, size of dependent and independent sample, etc. The choice of statistical methods depends on the stated criteria that must be respected. A good paradigm is good pharmacies and a large selection of medicines, that is, good statistical packages with a large selection of statistical methods. In both cases, someone competent must recommend an effective remedy or an effective statistical method. Efficient and effective for some cases does not mean that it will be efficient and effective for another. In both cases, the problem is good, optimal selection. Statistical-mathematical packages offer enormous algorithms. The discussion and conclusions must be based on selected relevant matrices in order to draw unbiased scientifically sound conclusions. For the stated reasons, in this paper, only the essential matrices are presented and commented on in the form of tables. Statistical data processing was performed using the SPSS[14] statistical and mathematical program.

Table 2 Statistics results of the second measurement

	'Flamingo' balance FTR	Hand tappin PLT	Reach while sitting SAR	Lng jump SBJ	Sit ups SUP	Arm pull BAH	Body hight VIS
Valid	90	90	90	90	90	90	90
Missing	0	0	0	0	0	0	0
Mean	19.81	14.73	32.75	155.77	24.62	26.95	148.64
Std. Error of Mean	2.41	.39	.8337	3.17	.6173	4.02	.982
Std. Deviation	16.19	2.64	5.592	21.26	4.14	26.99	6.59
Skewness	1.10	1.63	-.67	-.660	.40	2.81	.29
Std. Error of Skew	.35	.35	.35	.35	.35	.35	.35
Kurtosis	.32	3.79	1.01	.52	-.43	11.32	-.38
Std. Error of Kurt	.69	.69	.69	.69	.69	.69	.69
Minimum	2.03	11.70	15.00	100.00	17.00	.00	137.00
Maximum	65.46	25.03	42.00	195.00	34.00	156.60	165.00

Table 3 Tests of equality of group means

	Wilks' Lambda	F	df1	df2	Sig.
'Flamingo' balance-FTR	.987	1.127	1	88	.291
Hand tappin-PLT	.852	15.23	1	88	.000**
Reach while sitting-SAR	.948	4.872	1	88	.030**
Lng jump-SBJ	.932	6.427	1	88	.013**
Sit ups-SUP	.829	18.10	1	88	.000**
Arm pull-BAH	.991	.789	1	88	.377
Body height-VIS	.971	2.66	1	88	.106

Table 4 First 1 canonical discriminant functions were used in the analysis

Eigenvalues				
Function	**Eigenvalue**	**% of Variance**	**Cumulative %**	**Canonical correlation**
1	.544[a]	100.0	100.0	.593

Table 5 Test of function(s) wilks' lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.648	36.680	7	.000

Table 6 Standardized canonical discriminant function and correlation matrix structure

Standardized Discriminant function	CDF1	Correlation matrix structure	CMF1
'Flamingo' balance-FTR	.162	Sit ups-SUP	.615
Hand tapping-PLT	.464	Hand taping-PLT	.564
Reach while sitting-SAR	.662	Long jump-SBJ	.367
Long jump-SBJ	.198	Reach while sitting-SAR	.319
Sit ups-SUP	.761	Body height-VIS	.236
Arm pull-BAH	.071	'Flamingo' balance-FTR	.154
Body height-VIS	.491	Arm pull-BAH	.128

Note: Variables that show differences at the individual level do not imply that they will retain the same differences at the general level. Variables that contribute the most to general discrimination do not mean that they will have the highest correlation with the discriminant function. The stated statement is confirmed by the obtained values in Table 6 (see coefficients in columns CDF1 and CMF1).

Table 7 Extraction method: principal component analysis total variance explained

Compone	Initial eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumul. %	Total	% of Variance	Cumul. %	Total	% of Variance	Cumul. %
1	2.395	39.919	39.919	2.395	39.919	39.919	2.327	38.790	38.790
2	1.108	18.463	58.382	1.108	18.463	58.382	1.176	19.592	58.382
3	.912	15.196	73.578						
4	.675	11.253	84.831						
5	.566	9.438	94.268						
6	.344	5.732	100.000						

Extraction Method: Principal component analysis.

Extraction Method: Principal component analysis

Table 8 Principal component analysis and rotation varimax with kaiser normalization

Principal Communa.	Initial	Extraction	Rotated Varimax component	F1	F2
'Flamingo' balance-FTR	1.000	.316	Arm pull-BAH	.776	.000
Hand tapping-PLT	1.000	.495	Long jump-SBJ	.773	.397
Reach while sitting-SAR	1.000	.794	Sit ups-SUP	.733	.033
Long jump-SBJ	1.000	.756	Hand tapping-PLT	.704	.008
Sit ups-SUP	1.000	.539	Reach while sitting-SAR	.185	.872
Arm pull-BAH	1.000	.603	'Flamingo' balance-FTR	.242	.507

Results and discussion

Table 1 & Table 2 shows descriptive statistics of all tests. The first thing to notice is the sizes of the arithmetic means of the first and second measurements and the differences between the arithmetic means at the beginning and end of the school year. Measures of variation are particularly important because their sizes speak about the normality of the distribution and the representativeness of arithmetic means. The standard deviation and its size are especially important. It should be noted that the 'Flamingo' balance FTR and 'Arm pull' BAH tests show a high variation. The test "Standing jump length" SBJ and "Body height" VIS show the smallest variation around the arithmetic mean, and they confirm that the arithmetic means of the standing jump length and body height tests are very stable and representative. Other values in the Table 1 & Table 2 show the expected arithmetic means and standard deviations. The range of variation of the minimum and maximum results further confirm the expected results. The "Flamengo" and "Arm pull" tests are specific in that a number of subjects have problems with balance, while the other part of the subjects showed fantastic results, the same problem occurs with the results in the "Arm pull" test. The physiological mechanisms responsible for and regulating these two psychomotor abilities are also specific. The balance problem is associated with special centers of the nervous-muscular system, while the result in the "Arm pull" test is highly correlated with the static strength of the arms and shoulder girdle. Body height VIS showed the least variation, and thus the greatest stability.

Generally in the second measurement i.e. at the end of the school year, on all tests, the respondents showed better results, i.e. larger arithmetic means, at the same time less variation, which is an indicator of better representativeness of arithmetic means. (See the sizes of arithmetic means and standard deviations in the first and second measurements, Table 1 & Table 2).

The primary goal of the research is to determine the differences between the first and second measurements, that is, to determine the effectiveness of physical education and health education under the influence of the EuroFit program. In this direction, a hypothesis was put forward, which assumes that the results at the end of the school year at the individual and overall level will be better, as well as that this improvement will be statistically significant.

$$H_{(p\leq.05)}: MS1 < MS2$$

The verification of the set hypothesis was done using Analysis of Variance and Canonical Discriminative Analysis. Table 3 & Table 4 show the results of one and the other method. As can be seen in Table 3 (Tests of Equality of Group Means) in the last column Sig., values less than Sig.<.05 are marked with an asterisk indicating that the differences are statistically significant, the error is less than p<.05. There were better results in other tests as well, but these increases are not statistically significant. It has already been pointed out that the variation around the arithmetic mean was the largest in the Balance-FTR and Arm pull-BAH tests, so the efficiency of the EuroFit program was the lowest precisely in those motor tests. In addition to the difference in arithmetic averages, the magnitudes of variation are very important, i.e. sizes of standard deviations and standard errors of arithmetic means. A larger variation affects a larger statistical error. For the above reasons, it happens that smaller differences between arithmetic means are statistically significant compared to larger ones.

It seems absurd, but it is quite possible, it happens when the difference between standard deviations and standard errors of arithmetic means is small. The difference of arithmetic means and statistical difference is shown in Table 3. Tests of Equality of Group Means, (see Table 3 column Sig.).

Body height does not belong to motor skills, but this dimension is extremely important. Body height is correlated with numerous motor abilities, with some the correlation is high, and with others it is average, while with others the correlation is negative. For sports such as volleyball, basketball, high jump, etc. above average body height is preferred, in contrast to gymnastics, acrobatics, diving, figure skating, where above average height represents a handicap. In some sports, body height is not a limiting factor. In the period of adolescence, the increase in height and weight of the body is monitored with special attention. Due to its special importance, body height and weight are also indirectly measured in fetal development. The first two dimensions measured at birth are height and body weight. This fact in the best way confirms the special importance of these dimensions. Height and body weight are in a positive correlation with each other, which changes during life. The correlation between height and weight are relevant indicators of the general state of health of the organism. Given that these dimensions are important, as well as easy and simple to measure, they are regularly monitored throughout life.

According to this research, the average height of students at the first measurement was 146.42 cm, and at the second 148.64 cm. The increase of 2.22 cm was not statistically significant at the p<.05 error level. As you can see, the increase of 2.22 cm is evident and is statistically significant at the level of error p<.106. Statistical indicators of motor tests and body height were compared with norms and standards of the same sex and age in Bosnia and Herzegovina.[15] By looking at the tables of norms and standards, it can be concluded that the obtained results of this research fit into the standards and norms that apply to the same population in Bosnia and Herzegovina. Some average values are slightly higher and some are lower. The variations move with the rules and within the limits of the normal Gaussian distribution.

In the title of the paper, the goal of the research is highlighted, it is explicitly about determining the differences in the level of motor skills under the treatment of the EuroFit program in the time period of one school year. Differences were obtained at the overall (general) level. The statistics of differences are shown in the Tables 4–6. Characteristic value (Eigen value=.544) corresponds with (Canonical Correlation=.593). The statistical relevance of the coefficients was tested using (Wilks' Lambda and Chi-square test). As can be seen, statistically significant differences were obtained at the overall level, Sig.=.00., (Table 4 & Table 5). Table 6 shows how much each test participates in the total discrimination of CDF1 and the correlation of each test with the discrimination function of CMF1. Based on the size of the coefficients (Table 6, column CDF1), it can be concluded that tests contribute the most to overall discrimination; (SUP=.761 and SAR=.662) When it comes to the correlation between the discriminative function and motor tests, the tests have the highest correlation with the discriminative function; (SUP=.615) and PLT=.564).

According to the obtained results, it can be reliably concluded that organized physical education classes with the application of the EuroFit program significantly contributed to the increase in the level of psycho-motor abilities. Quantitative and qualitative progress is shown in tables 1 to 6. The hypothesis about the expected positive effects was confirmed.

$$H_{(p\leq.05)}: MS < MS2$$

The secondary goal of this work was related to the determination of correlations between motor tests, as well as the determination of the common factor structure.[16] Table 7 & Table 8 show statistical values based on which it is possible to give a relevant answer about the existence of two factors. The basic purpose of factorization is maximum parsimony, i.e. the unification of several related variables into a smaller number that we call factors. As a rule, the variables that make up the factor are mutually correlated. It follows that several variables make up one factor. In the example, based on six motor tests, two relevant characteristic values were obtained, i.e. two factors. For the purpose of an easier and more objective interpretation of the factor structure, an orthogonal rotation of the factors (Varimax solution) was performed. As a rule, the first characteristic value and the first factor are the most dominant. In the example, the first factor explains 39.92% of the total variance, and the second 18.46%. The total explained variance is 58.38%.

Table 8 (Rotated Varimax Component) shows the motor tests and the size of the correlation coefficients that make up the factors (F1 and F2). The matrix of correlations with the first factor F1 and the second factor F2 is shown in Table 8.

According to the obtained correlation coefficients, the first factor F1 consists of 4 motor skills tests with approximately the same coefficients ranging from (.776 to .704). The second factor is explained by the two tests "Reach while sitting-SAR" and "Flamengo" balance-FTR". The "Reach while sitting" test measures general flexibility, and the "Flamengo balance" test measures general balance. The mentioned two tests are mutually correlated. Psychomotor abilities are more or less causally related to a large number of endogenous and egogenic factors.[17] A special role is played by endogenous factors that are under the control of the Central Nervous System.[18] For the above reasons, the transformation of exogenous factors is more certain. In addition to the aforementioned factors, the positive transformation of the psycho-motor space was also influenced by other unknown causes, which is confirmed by the size of the unexplained variance, which is 41.62%. Drawing conclusions based on scientific knowledge implies considering the influence of other factors that are endogenous and exogenous in nature.[19] We should not forget the influence of biological acceleration, which is evident but latent in this research. It is important to point out that the EuroFit program was implemented under the expert guidance of physical and health education teachers.

Conclusion

Respecting all the rules of the teaching process, the EuroFit program was implemented on a sample of students of the chronological age of 10 and 11 years. Motor skills were measured at the beginning and end of the school year. According to the title, subject, problem, goal, tasks and hypothesis, the following conclusion can be drawn;

The respondents (students) at the end of the school year achieved better results in all motor tests. The results of the Analysis of Variance show that statistical significance was obtained in the following motor tests; (Sit ups-SUP F=18.10, p<.000**), (Hand tappin-PLT F=15.23, p<.000**). (Lng jump-SBJ F=6.427, p<.013**). (Reach while sitting-SAR F=4.872, p<.030**). The size of the F coefficient corresponds to the size of the differences and corresponds to the error probability p<.05. Marks in the exponent** indicate that the given F values are statistically significant. Respondents in the tests; (Arm pull-BAH F=.789, .377) and ('Flamingo' balance-FTR F= 1.127, p<.291) also achieved better results at the end of the school year, but these

differences are not statistically significant. The same applies to body height (Body height-VIS F= 2.66, shown in Table 1 & Table 2.

The answer to the question of whether there is a statistically significant difference at the overall (general) level was obtained by applying Canonical discriminant analysis. The statistical significance of the discriminative function is shown in table 5. Test .106). Differences in absolute units of measure are of Function(s): Wilks' Lambda=.648, Chi-square=36.68, Sig.=.000). High values of Wilks' Lambda and Chi-square tests show that a statistically significant difference was obtained at the overall (general) level. The biggest differences between the first and second measurements were in the test (Sit ups-SUP), and the smallest in the test (Arm pull-BAH). The biomechanical structure of the test (Arm pull-BAH) is static, monotonous and uninteresting for this age. The overall EuroFit program is dynamic, so the teacher, for understandable reasons, did not insist on static exercises. The hypothesis that the EuroFit program will give positive effects that are statistically significant has been confirmed. The results of motor skills at the end of the school year MS2 are significantly better than the results at the beginning of the school year MS1. Chi-square=36.68, Sig.=.000.

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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