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MODEL EDUCATION AND DEVELOPMENT MOTOR ABILITY TO CHILDREN AGE 4–6 YEARS

Abstract: The children have their needs to move and to do exercises. They should exercise everyday to coordinate limbs and body muscles to move in the best way their body. Children needs more than ever to move and play, because his mental development is directly connected with "his motor development". When his "motor development" is not normal, there can be not an intellectual development, affective and social. In this point of view, we think to explore in actual motor abilities and social level of the children in the age 4–6 years old. For the realization of study, have selected 60 children from four Tirana's preschools city. Gymnastic program build is in a specific way to adjust from age 4 to 6. Motor abilities will be evaluated by a tests battery such as: ruler drop test, coordination test (eye-hand), ball throwing, kick for target, trunk flexion, jumping (left-right), static balance test, beam balance walk backward test, push-up test, long jump standing test. Collected data, in begin, middle and in the end of tests and questionnaires were under a statistical processing by IBM SPSS package, version number 22. T-test. Results evidenced statistical changes in both genders (girls and boys) in all performed tests in first and second phase. Gymnastic program has an impact in motor-skills education and development, but this impact in not the same in all skills because it is limited by maturity effect, especially by fine motor skills.

Keywords: Exercises, children, motor development, balance, flexibility, ability, muscular endurance.

Introduction

Development is very complex and universal process, when the development fields must pass from a stage simple to the most complicated one and to integrate with each other. It is a product of social-emotional, cognitive and biological fields. The growth refers to quantitative changes which are comparable with a rate [1, 127].

Growth and development is general process of organism maturity that advance in a progressive way from conception moment to adult age. All the educators or fields specialists which works with preschool children must know and understand their typically changes since birth to eight years old, atypical changes, also to understand the benefits that come from educators interventions [2, 73–74].

Growth and development are represented by many physic, psychic, social, emotive and cultural factors that in general are genetic factors. Some of this growth and development indicators from one side are very with connected each other and with genetic factors, and from the other side they are connected with external factors too. Children development theories help us to understand them better and to know what are the best ways in which they can learn and the relations with development factories [3, 56].

The childhood years represent one of the most important stages in the human development. The thesis in which human development is compared with a 10 floors building is already accepted by many scholars, in which eighth first floors represent the age till 6 years old. To have a normal child development needs for sure the stimulation of external environment factors. Children with disabilities or those with social problems, as the normal child, have physical and psychological needs to live and develop their best potential [4, 60–61].

The children have their needs to move and to do exercises. They should exercise everyday to coordinate limbs and body muscles to move in the best way their body. This is one of the reasons why physical activity represent an essential part of the children education

program. Through this activity, children have all the possibilities to discover and recognize themselves, to develop constantly moving skills which are inseparably connected with their child world and which creating their personality are valid for the present and future. The children learn from their life experience and curious nature, so they appear in school with a very considerable training and experience formed in theirs families or friends [5, 91].

Children learn through the moving field interaction with the other fields which are: knowledge, social and emotional. In this way, physical education through moving experience focused in moving skills contributes in children full development [6, 244].

Pedagogical sciences that handle the movement, consider it as a very important education tool. In this point of view, education and in particular the movement at preschool ages draws attention of many specialists and scholars, based on the pedagogical masterpiece to build and develop learning process in a creative way [7, 126].

Preschool age, without doubt, is one of the most important periods that needs a special attention. The curiosity of the child in this age is a really treasure, which allows to discover in few years all the world around him. The child pay attention in details, in which adults do not recognize them. He join looking, hearing and touching things. In this period children needs more than ever to move and play, because his mental development is directly connected with “his motor development”. When his “motor development” is not normal, there can be not an intellectual development, affective and social. In this point of view, we think to explore in actual motor abilities and social level of the children in the age 4–6 years old. Based on our confirmations, we think also that this study will serve to improve the movement field in the preschool children, considering that the education and “motor skills” as a very important factor in movement development to create opportunities to practice social skills connected with childhood world, talent and their entertainment potential,

which are valid to build their personalities in the present and future. Combination of theoretical with practical character and study conclusions will serve the teachers of physical education which works with preschool ages [8, 86–88].

Purpose of study

The purpose of the study is to test the efficiency of this motor model-education through a gymnastic program for preschool children.

Methodology

For the realization of our study, have selected 60 children from four Tirana's preschools city, that seems to be the bigger city, center of economic, social, administrative, culture, academic, industrial, medial of Albania, with purpose to have a big representation of all social-economics layers. The children are separated in two equal groups.

In the experiment group will be implemented the education program with basic gymnastics elements, which will last twelve weeks, twice a week for an hour.

Gymnastic program build is in a specific way to adjust from age 4 to 6. Children which will be part of this program will have the possibilities to practice with different gymnastics elements, games and social skills. They will have always the same leader and the same persons which will keep their data bases. For

any change, in the end of twelve weeks program, data will recollect.

In this study dependent variables are motor abilities while the independent variables are the participation in the gymnastic program and gender. Control group, will follow a free program by using preschool infrastructure under educators supervision. Motor abilities will be evaluated by a tests battery such as: ruler drop test, coordination test (eye-hand), ball throwing, kick for target, trunk flexion, jumping (left-right), static balance test, beam balance walk backward test, push-up test, long jump standing test.

Collected data, in begin, middle and in the end of tests and questionnaires were under a statistical processing by IBM SPSS package, version number 22. T-test is used to see if there are significant changes between control and experiment group skills along the tests phases. This test is used also to see the differences between dependent and independent variables. F criteria is used to tell the importance of dependent and independent variables relation. Pearson's Product-Moment coefficients is used to evaluate all the relations between dependent variables.

Results

Table 1. Differences in motor ability in experiment group. N = 30

Motor Ability	First phase		Second phase			
	Mean	Std	Mean	Std	T-test	p
Reaction time	37.74	1.25	38.09	1.62	-1.74	0.003
Hand action cube positioning (sec)	43.13	2.52	45.63	3.10	-6.92	0.000
Hand action, postcards distribution (sec)	39.80	1.75	41.63	1.96	-7.60	0.000
Kicking ball (m)	6.30	0.25	5.80	0.26	10.10	0.000
Hand-eye action, push the needle thread	4.00	0.74	3.67	0.80	3.01	0.005
Static balance	14.40	2.06	17.90	1.67	-10.17	0.000
Dynamic balance 6 cm	2.50	0.22	1.56	0.24	30.52	0.000
Dynamic balance 4.5 cm	1.87	0.18	1.14	0.21	22.00	0.000
Jumping right-left 15 s	8.73	2.21	6.83	1.80	10.85	0.000
Flexibility	1.61	0.91	-1.17	1.31	19.54	0.000
Long standing jump	68.93	9.78	59.33	9.63	16.77	0.000
Muscular endurance	8.30	1.70	3.90	0.89	16.33	0.000

Table 2. Differences in motor ability in control group. N = 30

Motor Ability	First phase			Second phase		
	Mean	Std	Mean	Std	T-test	p
Reaction time	37.86	1.36	37.96	1.44	-0.67	0.005
Hand action cube positioning(sec)	43.75	3.31	44.63	3.18	-4.45	0.000
Hand action, postcards distribution (sec)	41.21	1.85	42.02	2.31	-3.59	0.001
Kicking ball (m)	5.94	0.19	5.88	0.21	3.70	0.001
Hand-eye action, push the needle thread	3.77	0.73	3.71	0.65	0.57	0.005
Static balance	17.15	1.52	17.46	1.55	-2.32	0.003
Dynamic balance 6 cm	1.68	0.26	1.59	0.23	4.47	0.000
Dynamic balance 4.5 cm	1.25	0.13	1.19	0.10	3.66	0.001
Jumping right-left 15 s	7.33	2.06	6.97	1.75	3.00	0.005
Flexibility	-0.58	0.94	-1.08	1.14	4.67	0.000
Long standing jump	62.1	8.74	60.93	8.97	1.85	0.005
Muscular endurance	4.5	1.09	4.1	0.76	4.39	0.000

Discussions

Achieved results from informative statistical processing (IBM SPSS, 22 version) for measured data in each subject, we confirm again the hypothesis at the beginning of this study that movement activity modeling in this age in function of education and movement develop skills is in the right way. In case of the achieved results from subjects in which gymnastic program with simple elements was applied for 12 weeks, the changes are significant. Based on statistical processing results in the table 1 and 2 it seems a difference of results between first and second phase of all the tests. Before the program implementation, for reaction time results was any significant change as per control and experiment children group. In the end program, there is a small increase in the experiment group children performance, but in the control group children performance have a decrease, a sign that shows a general improvement of the indicators. The concentration absence is another factor that can be helpful in the test results. Distraction affect in the reaction ability by lowering it. Distraction and a tasks answer failure slows down the reaction.

In the first phases test (before the gymnastic program intervention) the subjects of control and experiment groups needed more time in the postcards distribution. Postcards distribution average time is

the same in the both groups. After the intervention program it seems an improvement in the distribution postcards time in both groups, but the most significant improvement seems in the experiment group. Seems clearly a significant difference between groups ($t = -3.05$, $p = 0.000$).

In the hand action test, cube positioning, as in the first and in the second phase seems that there is no change between groups. Even though in the second phase the majority of subjects are improving, there is not improve in the decrease average time in the both groups. The results of our study confirm the conclusions of study [9, 181–184] in which hand-eye coordination and small muscles control improves rapidly in the 4–6 age. Based on the table number 1, it seems that in the first phase of legs action test, kicking the ball, has no significant statistical changes between two groups (experiment-control). This changes presented in the second phases results ($t = 6.201$, $p = 0.000$), where the subjects of experiment group had an increase in the average distance of balls jump, while in the control group had not significant changes.

In the first phase, between the subjects of experiment and control groups, there are no significant statistical changes in the performance of the proof to push the needle thread. In the second phase, it

seems a small improvement in the both groups performance, which is not reflected in the final result. Is proved that the ability of coordination eye-hand improves as it grows, which is based in some other study. The results of static equilibrium test in the first phase shows that there is no significant change between control and experiment group. After the intervention program with basic gymnastic elements, the changes between groups become more significant ($t = -5.901$, $p = 0.0001$). Significant statistical changes between control and experiment groups we will recognize in both dynamic balance tests ($t = 13.26$, $p = 0.000$); ($t = 15.61$, $p = 0.000$); Study results are in the same direction with study. Physical activity improves children dynamic balance at the fourth age.

Significant statistical changes between groups will recognize in flexibility ($t = 9.17$, $p = 0.0001$); in agility and left-right jumps during 15 seconds ($t = 2.54$, $p = 0.01$); in long jump ($t = 2.85$, $p = 0.01$); muscular endurance ($t = 1.01$, $p = 0.000$). The motor abilities were improved considerably in the end of gymnastic program. The result can be the same in both genders and the children will be developed considerably, if it will be selected the right activity for this age. Based on the first tests phases of statistical processing results, it seems significant changes between the experiment groups gender. Those are noticed in cubes positions ($t = -3.46$, $p = 0.000$); dynamic balance ($t = -6.48$, $p = 0.00$), agility ($t = -3.37$, $p = 0.02$); long jump ($t = -4.58$, $p = 0.000$). Significant changes are also noticed in all motor abilities in both genders between first and second phase (girls and boys). There is a considerable improve in the second phases results, which are reflected in significant statistical changes between both genders. Those changes are reflected in static balance ($t = -2.03$, $p = 0.005$); dynamic balance ($t = -3.05$, $p = 0.00$); in power ($t = -3.92$, $p = 0.00$); in flexibility ($t = -2.38$, $p = 0.003$). This is attributed to activity role in increasing or decreasing gender differences. Both genders can perform in the same way,

if in preschool age they get all the same education form. The differences between genders are very small in this age. Differences between genders in power at 4–6 age are small, they begin to appear in teenage. The changes in the second phase between genders, can be as result of selected activity type influence because our study results shows differences along of testing performance. Our study results reinforce the study conclusion 'Muscular strength abilities measurements shows that boys are better than girls in every group age.

Conclusions

Our study and our experience results, confirm what was expected; in this age education and motor skills, are not just depended from maturity (body developments, neuromuscular systems, cardio respirator system development and endocrine glands function) but also by activity type that children decided to be part of because it can be determinant in their improvement.

Through this study we think to offer some rational solutions with movement and social character, using a variety tools that gymnastic contains accompanied by some educational and entertainment methods.

Study's results shows that gymnastic program has an impact in motor skills education and development, but this impact is not the same in all skills because it is limited by maturity effect, especially by fine motor skills. Fine motor skills development depends by growth, and especially by bone development. In a child the hand, wrist, ankles and leg has less bones than an adult. In girls, this bones are visible in the age 4 years and 3 months while in boys 4 years and 5 months. This difference explain why girls has better elegant motor coordination performance than boys. This conclusion is important and must be known by all individuals that works childrens raising and education in this age [10, 77–78].

In the results were evidenced statistical improvements in dynamic and static equilibration skills of experiment group, in dexterity, in suppleness, power and muscular stability.

Results evidenced statistical changes in both genders (girls and boys) in all performed tests in first and second phase. It seems girls tendency to perform

better than boys in eye-hand coordination and static equilibration tests.

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