MOTOR DEVELOPMENT: EXPLORING MAIN MOTOR SKILLS OF 6 YEAR OLD KOSOVAR CHILDREN

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Abstract
With the aim to highlight the movement skill levels of 6 years old children of Kosovo, a set of motor tests was conducted with 178 children, 105 boys and 73 girls. The set contained five tests that measure agility, static balance, dynamic balance, strength and coordination. Tests, which are consistent with their level of development, were fun and easily implemented from children. The results obtained have provided an overview of the stage of development of some motor skills of 6 years old children. Along with the descriptive analysis of data, was presented the latent structure of motor space, in which case it was possible to extract two factors: the factor of dynamic balance and coordination, and the factor of strength, agility and static balance.

Keywords: motor skills, preschool children, motor tests, motor factor

Introduction
Children love the movement. The move is a part of their lives from the beginning. Through it they not only get satisfaction, but the movement helps to increase their optimal development. It has already been proved that first learning and growth are enabled through movement (Andress, 1991). Physical and motor development is quite rapid in the first three years of the child’s life, during which the child’s bones and muscles develop more. Also, coordination skills, strength or balance are developed so rapidly, causing them to do their daily activities with energy. While at ages from 3-6, due to the consolidation and maturation of the skeletal system, the body of preschool children receives a more regular shape, with an athletic appearance, characteristic for these children. Their locomotors abilities become more refined, the movements are more coordinated and balance skills develop significantly. All children enter preschool with a variety of luggage and motor skills they have acquired and perfected during their early childhood, and which include the right attitude of sitting, straight posture and walking. During the first years of life, children refine their movement skills (the displacement) and their manipulative skills thus becoming able to find in their environment. With time starts to develop what is called the general structure of the movement, which includes dancing, jumping, seizures, running (which are already learned). Numerous studies have already confirmed the close relationship that exists between the fields of development in the preschool age and the huge impact that these areas have at each other, but also the many benefits that movement activities provide. So Barnett, (2002) in his study estimated that preschool education has a positive impact on children development, but also in enhancing their skills to learn. Also the results of a research conducted by Shonkoff and Phillips (2000), showed that effective and qualitative preschool programs affect positively in the development of children and also in the growth of learning skills.

Methods
Defining the sample
Research sample were children aged 6 years ± 3 months. These children have attended the program offered by the Ministry of Education, Science and Technology, in public preschool institutions, in several cities of Kosovo like Prishtina, Gjilan, Gjakova, Prizren, Mitrovica and Ferizaj. Even so the sample is random, during the preparation for research it was taken into account that children were able to follow the preschool curriculum that institution offers, which do not suffer from various chronic diseases and to respect the criteria of age settled for selection.
For all children it was taken preliminarily the written consent for participation in research. The total number of children is 178, and 73 of these children are girls and 105 boys.

Measuring instruments and their description
As a result of a research conducted by Shala (2007), it was set a battery of tests that movement achievability of preschool children in Kosovo, thus the same tests are applied in this research. Agility test (Jumping of hurdles); static balance test (One foot standing); dynamic balance test (walking in straight line); strength test (throwing of medicine ball); coordination test (jumping in squares).

Procedure
Before the tests were applied at each institution involved in research, there has been developed a preliminary discussion with management staff and teachers of this age group. Conversation has been aimed at recognizing the reason for the development of tests and also to respect the ethical aspects of research, and the agreement from parents and educators of children participating in research was reached successfully. The tests were developed in environments of each institution during morning hours foreseen for physical activities. The implementation of tests is administered by the authors of the research assisted by the students.

Statistical analysis
In accordance with the aims of the research project, sample characteristics and the nature of measuring instruments for quantitative data processing, these methods were applied: • for each variable were calculated basic statistical indicators and the absolute difference between actual and theoretical cumulative frequency. • To prove the latent structure of motor space it was used the factor analysis. For elaboration of these results statistical program SPSS for Windows was used.

Results
Table 1 shows the results of children for each variable motor. Basic statistical indicators of motor values are given with these signs: Number (N), Mean (MA), the minimum score (Min), maximum score (Max), standard deviation (DS), Asymmetric curve (Skew), insights the curve (Kurt) and the absolute difference between actual and theoretical cumulative frequency (Max D). Values presented are indicative of a normal distribution of variables in general, except for ‘static balance’ and ‘dynamic equilibrium’ variables, in which Max D value is greater than the value of the test, while all other variables values are smaller than the value of the test. Mass distribution of the results is within the normal and is known as such based in the values of asymmetry (skewness) and acuity of the curve (Kurtosis). Only dynamic balance variable, has a tendency to skew toward abnormality, however it is still smaller (-2.02) than the criteria value which is 3. This can be explained by the dynamic balance measurement unit (we have only 1 value in the unit, and a number of entities).

Table 1. Main statistical results

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>MA</th>
<th>Min</th>
<th>Max</th>
<th>DS</th>
<th>Skew</th>
<th>Kurt</th>
<th>Max D</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSHKATH</td>
<td>178</td>
<td>7.26</td>
<td>5.56</td>
<td>8.96</td>
<td>0.85</td>
<td>0.06</td>
<td>-0.87</td>
<td>0.07</td>
</tr>
<tr>
<td>MEKSTA</td>
<td>178</td>
<td>54.3</td>
<td>22.6</td>
<td>100.6</td>
<td>20.68</td>
<td>0.45</td>
<td>-0.72</td>
<td>0.13</td>
</tr>
<tr>
<td>MERDIN</td>
<td>178</td>
<td>0.49</td>
<td>0</td>
<td>1</td>
<td>0.50</td>
<td>0.02</td>
<td>-2.02</td>
<td>0.34</td>
</tr>
<tr>
<td>MHEMED</td>
<td>178</td>
<td>340</td>
<td>170</td>
<td>520</td>
<td>78.17</td>
<td>-0.26</td>
<td>-0.40</td>
<td>0.10</td>
</tr>
<tr>
<td>MNRKA</td>
<td>178</td>
<td>7.31</td>
<td>4.91</td>
<td>11.87</td>
<td>1.48</td>
<td>0.51</td>
<td>0.25</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Table 2. Here are shown the eigenvalues (LAMBDA), also partial contribution (%) and their cumulative overall explanation of variability. According to the method of Hotelling and G/K criteria (Gutman-Kaiser), there were extracted two principal components, which explain 49.01% of the total variance. The first eigenvalue explains 25.44% of the total variance of the system, while the second explains 23.57% of it.

Table 2. Eigenvalues

<table>
<thead>
<tr>
<th>Component</th>
<th>Total</th>
<th>% of Cumulative Total</th>
<th>% of Cumulative Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.272</td>
<td>25.443</td>
<td>1.272</td>
</tr>
<tr>
<td>2</td>
<td>1.179</td>
<td>23.576</td>
<td>1.179</td>
</tr>
<tr>
<td>3</td>
<td>0.92</td>
<td>19.840</td>
<td>0.92</td>
</tr>
<tr>
<td>4</td>
<td>0.898</td>
<td>17.968</td>
<td>0.898</td>
</tr>
<tr>
<td>5</td>
<td>0.659</td>
<td>13.164</td>
<td>0.659</td>
</tr>
</tbody>
</table>

In the first principal component (Table 3) important projections have conducted the variables: dynamic balance and the coordination (.708 -.735). Both these variables have high projections on this component. The second component , which includes the 23.57% of total variance is defined with variables such as agility, static balance and strength with coefficients of -.406-.706. To make information clearer and more complete latent structure of morphological space key components are transformed into solutions "OBLIMIN". As a result of these transformations two matrix were created. The Pattern matrix which contains parallel projections of vectors of variables on factors, structure matrix which contains orthogonal projections of variables on factors and the component cumulative matrix between the extracted factors. Main importance in explaining the latent space has pattern matrix. The first OBLIMIN factor is defined by variables: dynamic balance and the coordination with coefficients .773 -.796. According to such projections, the first factor could be interpreted as a factor of dynamic balance and coordination.
In the second factor, the higher projections were conducted by throwing the medicine ball and agility (.657-778), while static balance has a lower projection which may have been due to saturation of this variable with error variance, which can be seen from communality value (Table 3) which is very low. According to projections of variables, the second factor can be defined as: factor of strength, agility and static balance. There is no significant correlation between them meaning that factors are independent of each other (r=0.034).

### Discussion and conclusion

Since the preschool age is considered as one of the periods in which the most rapid development of individual and movement development occurs, it is very important to know what are the parameters of the development of movement skills of preschool children to us. This with the main purpose of the program to provide different activities to further develop these skills.

For this reason, our research was focused on evaluating and presenting the results of movement achievement of children 6 years old (boys and girls). From the results presented it is obvious that our 6 years old children have developed motor skills level that allows them to complete daily activities and create very good predisposition for completion of additional activities.

### References


Sazetak
S ciljem da naglasí razinu vještine pokreta djece od 6 godina na Kosovu, skup motornih testova proveden je sa 178 djece (105 dječaka i 73 djevojčice). Skup sadrži pet testova koji mjere agilnost, statičku ravnotežu, dinamičku ravnotežu, snagu i koordinaciju. Izvođenje testova, koji su u skladu sa stupnjem razvoja djece, bilo je zabavno i jednostavno. Dobiveni rezultati su dali pregled stupnja razvoja nekih motoričkih sposobnosti djece od 6 godina. Osim deskriptivne analize podataka, predstavljena je latentna struktura motoričkog prostora, u kojem slučaju je moguće izdvojiti dva faktora: faktor dinamičke ravnoteže i koordinacije, i faktor snage, agilnosti i statičke ravnoteže.

Ključne riječi: motoričke sposobnosti, predškolska djeca, motorički testovi, motorički faktori

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