ASESSMENT OF LEVEL OF DEVELOPMENT OF BASIC MOTOR QUALITIES OF STUDENTS FROM THE SPECIALTY MEDICAL REHABILITATION THERAPIST, ERGOTHERAPIST

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(Research note)

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Abstracts
The aim and tasks of the research is to form a positive readiness within students for improvement and maintenance of the basic motor qualities, based on the assessment of its development level. Ninety three students have been investigated from the specialty study for Medical rehabilitation therapist, Ergotherapist, on average age of 21,3 years for females and 21,9 years for the males. The students were subjected to the 7 motor indices tests, distributed into groups of tests for measuring speed levels, flexibility, force/strength capabilities and endurance. The result’s analysis shows that the female and male students, in the beginning of their study in the Medical University of Sofia, have manifested poor average results of the basic motor qualities. Marked as per the normative table, they have got the “good” grade, while “very good” and “excellent” grades have not been gained in none of the tests. This conclusion imposes strict control and more extensive and specialized work with their study on sports at the University.

Keywords: male students, female students, motor tests, speed test, strength test, endurance test, normative table, coefficient of variability

INTRODUCTION
Regarding the new specialty of Medical rehabilitation therapist - Ergotherapist, within the Medical University of Sofia (MU), which determines a high criterion not only for the professional-personal qualities of the future specialists, but for their motor capabilities as well, as a precondition for qualitative fulfillment of their professional activity.

The profession of Medical rehabilitation therapist - Ergotherapist discussed by us, and the students educated on it, as object of number of researches is added in the national profession list with new positions, included in the national classification of professions and positions in the year 2011, under the Code – 2264 6005 accompanied by the same denomination.

A high criteria for the professional-personal qualities of the specialists Medical rehabilitation therapists - Ergotherapists are determined by their competencies for work in a team, manifestation of initiative and qualitative fulfillment of the professional activity.

The purpose of the present research is forming of a positive adjustment in students from the specialty Medical rehabilitation therapist - Ergotherapist, for improvement and maintenance of the basic motor qualities, grounding the assessment of the level of the development of the same.

For realization of that purpose, we have set the following tasks:
1. To collect the necessary data of the basic motor qualities of female and male students from the specialty Medical rehabilitation therapist - Ergotherapist.
2. To make assessment of the level of development and the variety of the basic motor qualities with those under the survey.
3. To make conclusions according to the level of development of the basic motor qualities of the students from the specialty Medical rehabilitation therapist - Ergotherapist, for the future following up of the dynamics of the results and upgrading of the programme on sports and examination norms.

METHODS
Ninety three students have been included within the research – first year in the educational year 2009/10 (1- 4 educational groups) and first year in the educational year 2010/11 (1, 2, 3 and 8 educational groups ) from the specialty Medical rehabilitation therapist - Ergotherapist, on average age of 21,3 years for females and 21,9 years for the males.

No doubt, there is a great variety of motor activity, exercised by human being in the different professions, and the scientific developments are inadequate, still an entire scientifically built theory in this trend, for preparation and control with students from the different specialties, is lacking. There are no synonymous requirements and criteria as regards the motor fitness of students, whose future professional activity is similar.

The existing scientific developments of specialists in this field, rather of sporadic character, af-
fects the different aspects of the physical education and sport, with the students (Dyakova (Дякова) & Barokova (Барокова), 2003.; Zlatarova (Златарова), 2003.; Peeva, (Пеева) 2008.; Doncheva (Дончева), Zlatev (Златев), Nestorov (Несторов) & Yordanov (Йорданов), 2010).

Basing on the sport-pedagogic literature and the results of the research for the statistic characteristics of the EUROFIT battery test with the application in higher schools too (Tsigilis (Цигилис), 2003), we have chosen the most suitable tests for measuring of the basic motor qualities.

The students included within this research have been subjected to testing on 7 indices for establishing the level of the basic motor qualities, necessary to the specialists Medical rehabilitation therapists - Ergotherapists for qualitative fulfillment of their professional manipulations. They are distributed into three characteristic groups (Block-Scheme No.1).

The results has been subjected to mathematical-statistic analysis as well as calculations have been made through the SPSS 13.0 programme. Analysis of variance has been applied – for defining the average values and variety of the researched indices. The following mathematical parameters have been calculated: average-arithmetic quantity (X), range (R), coefficient of variance (V), standard deviation (S) (Gigova (Ги́гова), 1999.; Gigova (Ги́гова), 2000).

The assessment of the basic motor qualities development level within the students from the specialty Medical rehabilitation therapist - Ergotherapist, has been made according to the norms for grading the motor fitness of female and male students, shown on Table 1. (Dyakova (Дякова), 2007).

RESULTS

Results from the variance analysis are presented on Table 2., giving possibility to reveal the average level and variety of the examined signs, at testing the female and male students.

### Table 1. Norms for grading the motor fitness of female and male students

<table>
<thead>
<tr>
<th>Grade</th>
<th>Sex</th>
<th>50 m dash</th>
<th>Taping</th>
<th>Sitting forward tilt</th>
<th>Standing long jump</th>
<th>Folding and unfolding of arms in support</th>
<th>Getting up from occipital lying position to sitting position</th>
<th>300/600m Run/race</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>Females</td>
<td>1</td>
<td>8.8-8.1</td>
<td>9.9-10,3</td>
<td>18-20</td>
<td>182-186</td>
<td>26-28</td>
<td>55-57</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>1</td>
<td>6.7-6.8</td>
<td>8.3-8,7</td>
<td>11-12</td>
<td>235-239</td>
<td>50-52</td>
<td>64-66</td>
</tr>
<tr>
<td>Very good</td>
<td>Females</td>
<td>1</td>
<td>8.2-8.6</td>
<td>10-4-11,3</td>
<td>14-17</td>
<td>174-181</td>
<td>22-25</td>
<td>49-54</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>1</td>
<td>6.9-7.0</td>
<td>8.8-9,7</td>
<td>9-10</td>
<td>225-234</td>
<td>43-49</td>
<td>58-63</td>
</tr>
<tr>
<td>Good</td>
<td>Females</td>
<td>1</td>
<td>8.7-9.5</td>
<td>11,4-13,4</td>
<td>4-13</td>
<td>155-173</td>
<td>13-21</td>
<td>36-48</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>1</td>
<td>7.1-7.5</td>
<td>9.8-11,8</td>
<td>3-8</td>
<td>204-224</td>
<td>30-42</td>
<td>45-57</td>
</tr>
<tr>
<td>Fair</td>
<td>Females</td>
<td>1</td>
<td>9.6-10</td>
<td>13,5-14,4</td>
<td>0-3</td>
<td>154-146</td>
<td>9-12</td>
<td>30-35</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>1</td>
<td>7.6-7.7</td>
<td>11,9-12,8</td>
<td>0-2</td>
<td>194-203</td>
<td>23-29</td>
<td>39-44</td>
</tr>
<tr>
<td>Poor</td>
<td>Females</td>
<td>1</td>
<td>10.1-10.2</td>
<td>14,5-14,8</td>
<td>-2 - -1</td>
<td>143-145</td>
<td>7-8</td>
<td>28-29</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>1</td>
<td>7.8-7.9</td>
<td>12,9-13,2</td>
<td>-1 - -2</td>
<td>190-193</td>
<td>21-22</td>
<td>37-38</td>
</tr>
</tbody>
</table>
Table 2. Average values and variety of examined indices with female and male students

<table>
<thead>
<tr>
<th>Indices</th>
<th>Sex</th>
<th>$\bar{X}$</th>
<th>$S$</th>
<th>$V$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 50 m dash (s)</td>
<td>Females</td>
<td>9,91</td>
<td>0,97</td>
<td>9,81</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>7,87</td>
<td>0,69</td>
<td>8,77</td>
</tr>
<tr>
<td>2. Taping-test (EUROFIT test) (s)</td>
<td>Females</td>
<td>12,1</td>
<td>1,49</td>
<td>12,32</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>11,57</td>
<td>1,95</td>
<td>16,86</td>
</tr>
<tr>
<td>3. Sitting forward tilt (EUROFIT test) (cm)</td>
<td>Females</td>
<td>7,28</td>
<td>7,40</td>
<td>10,66</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>0,84</td>
<td>7,34</td>
<td>81,41</td>
</tr>
<tr>
<td>4. Standing long jump (EUROFIT test) (cm)</td>
<td>Females</td>
<td>144,69</td>
<td>20,38</td>
<td>14,08</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>195,84</td>
<td>77,94</td>
<td>39,80</td>
</tr>
<tr>
<td>5. Folding and unfolding of arms in support (times)</td>
<td>Females</td>
<td>14,93</td>
<td>6,17</td>
<td>41,32</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>24,63</td>
<td>11,82</td>
<td>48,02</td>
</tr>
<tr>
<td>6. Getting up from occipital lying position to sitting position (times)</td>
<td>Females</td>
<td>41,62</td>
<td>23,25</td>
<td>55,85</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>38,16</td>
<td>17,60</td>
<td>46,12</td>
</tr>
<tr>
<td>7. 300/600m Run/race (s)</td>
<td>Females</td>
<td>78,24</td>
<td>7,89</td>
<td>10,08</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>175,50</td>
<td>19,20</td>
<td>10,94</td>
</tr>
</tbody>
</table>

With the first index „50 m dash”, female students have shown an average result of $\bar{X}=9,91$ s, which is a “fair” grade on the normative table (Table 1.). Male students have average achievement of $\bar{X}=7,87$ s, which falls into the column of “poor” grade. With both groups, we observe slight dispersing of the sign, and the coefficient of variance being $V=9,81$% with females and $V=8,77$% with the males.

With the second index “Tapping-test”, the average results for female and male students are $\bar{X}=12,1$ s and $\bar{X}=11,57$ s respectively, which per the normative table is a “good” grade. Average dispersing of the sign is observed with $V=12,32$% and $V=16,86$%, i.e. the quotation is approximately homogeneous.

With the third index “Sitting forward tilt”, female students are with a “good” grade ($\bar{X}=7,28$ cm), and the value of the coefficient of variance ($V=10,66$%) defines them as a homogeneous combination. Here, the male students have shown poorer results, the average achievement is defined by a “fair” grade (Table 1.), and the combination is highly non-homogeneous ($V=81,41$%).

With the fourth index “Standing long jump”, the opposite tendency is observed, the female students are with poorer average result ($\bar{X}=144,69$ cm) as a “poor” grade and average dispersing of the index ($V=14,08$%). With female students, the average result is $\bar{X}=195,84$ cm, corresponding to a “fair” grade. With this index too, the quotation is highly non-homogeneous, with a coefficient of variance ($V=39,80$%).

With the fifth index “Folding and unfolding of arms in support”; female students have achieved average result of $\bar{X}=14,93$ times, which corresponds to a “good” grade as per the normative table (Table 1.). With the male students, the average result on this test is $\bar{X}=24,63$ times, which defines a “fair” grade for them. The high coefficient of variance with both combinations ($V=41,32$% with females and $V=48,02$% with males) speaks about the significant individual differences in work for strength of arms and shoulders.

With the sixth index “getting up from occipital lying position to sitting position”, again low average values have been determined. Female students are with a “good” grade on this test with $\bar{X}=41,62$ times, while the male students are with poorer result $\bar{X}=38,16$ times, which corresponds of course to a “poor” grade. High values of coefficients of variance ($V=55,85$% and $V=46,12$%) are index for highly non-homogeneous quotation, on the sign for the force / strength of the abdominal muscles.

With the seventh index “300/600m Run/race” the grades are identical to the preceding ones. Female students have achieved average result of $\bar{X}=78,24$ s, and male students $\bar{X}=175,5$ s, which according to the normative table show “good” and “poor” grade respectively. With this index, the dispersing is insignificant, with low coefficient of variance ($V=10,08$% with female students and $V=10,94$% with male students).

**CONCLUSIONS**

The research made by us is part of a complex of examinations and analysis within the topic, for the motor fitness of students from the specialty Medical rehabilitation therapist - Ergotherapist.

From the concrete analysis which has been made, the following conclusions could be drawn:

1. Students from the specialty Medical rehabilitation therapist - Ergotherapist are subjected for the first time to tests for establishment of the level of their basic motor qualities, necessary for qualitative fulfillment of professional manipulations – speed and flexibility, endurance and force/strength capabilities. At starting of their education in the University of Medicine, they have shown poor average results of the basic motor qualities.

2. With female students, it is determined that they are with a “poor” grade on the test for strength of lower limbs (No.4.), with “fair” grade on the test for speed (No.1.), and on the remaining, they have gained a “good” grade – tests for speed of movement of upper limb and flexibility (No.2. and 3.), for strength of arms and shoulders and abdominal muscles (No. 5. and 6.) and for endurance (No.7).
3. Within the male students it has been determined that they are with “poor” grade on three of the tests – for speed (No.1.), for strength of the abdominal muscles (No.6.) and for endurance (No.7.), with “fair” grade are on three of the tests – for flexibility (No.3.), for strength of the lower limbs (No.4.) and for strength of arms and shoulders (No.5.) and only one “good” grade on the test for speed of movement of upper limb (No.2.).

4. There are significant individual differences existing in the capabilities of students, which is proved by the high coefficient of variety on most of the tests (No.3.,4.,5. and 6.).

5. Lacking of “very good” and “excellent” grades for the basic motor qualities with the students, on the specialty Medical rehabilitation therapist - Ergotherapist is an important fact. The absence of examination/test normative for assessment of the motor fitness, on admittance of students in this specialty, imposes strict control and profound and specialized work with their education, on sports in the University.

REFERENCES

ОЦЕНКА НА РАЗВОЙНОТО НИВО НА ОСНОВНИТЕ МОТОРНИ СПОСОБНОСТИ НА СТУДЕНТТЕ ПО СПЕЦИЈАЛИЗАЦИЈА ЗА МЕДИЦИНСКИ РЕХАБИЛИТАТОР - ЕРГОТЕРАПЕВТ

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(Изображуваща белегика)

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Англаст
Целта на истражувањето беше да се формира позитивна подготвеност кај студентите за подобрување и одржување на основните моторни способности врз основа на оценката за нивото на нивната развитост. Во истражувањето беа опфатени 93 студенти – специјализанти за медицински рехабилитатор – ергоотерапевт, со прсечна возраст од 21,3 години на студентите и 1,9 години на студентките. На нив беа применети 7 моторни тестови од одделни карактеристични групи за проценување на брзната, флексибилноста, снагата и здравствената. Анализата на добиените резултати покажа дека студентките и студентите во почетокот на
нивното студирање на Медицинскиот универзитет во Софија, постигнаа посебни и средни ре- зултати на моторните способности. Според оценките на соодветна нормативна табела, тие имаа оценка „добар”, односно ниту во еден применет моторен тест, не постигнале оценка „многу добар” или „одличен”. Оваа констатација ја налагаше потребата за построга контрола и продлабочена и специјализирана работа во наставата по спорт на Медицинскиот универзитет во Софија.

Ключни зборови: студентки, студенти, моторни тестови, тест на брзина, тест на снага, тест на издржливост, нормативна табела, коекција на варијабилност

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