**THE LEVEL OF PHYSICAL FITNESS COMPETENCE IN STUDENTS OF FACULTY OF TEACHER EDUCATION**

***Marijana Hraski, prof., Snježana Mraković, prof., dr.sc. Vatroslav Horvat***

***The Faculty of Teacher Education, Zagreb***

**Introduction**

Young children observe, learn, practise, and develop fundamental movement patterns. In first grade, this foundation continues to be established and reinforced to facilitate motor skill acquisition which gives children capacity for successful levels of performance as they mature. Children learn how to improve their locomotor (travelling actions), nonlocomotor (movement in place) and manipulative (object handling) skills which they acquired in preschool age. They begin to understand how being physically active contributes to their health, social opportunities and contributes to quality of life, and how physical activity effects on their body (heart rate, muscles strength, cardio respiratory endurance, flexibility, physical fitness) (Castelli, Williams, 2007). All these knowledge children must get from their physical education teacher (Manross, Templeton, 1997).

The goal of the Physical Education curriculum is to develop individuals who are proficient at movement and who can use physical activity to (RH MZOŠ, 2006):

• Maintain or develop fitness

**•** Develop skills for sport and recreation

• Use movement for self-expression, enjoyment, challenge, and social interaction

• Lifelong physical activity ...

To achieve that goal the physical education teachers should have the knowledge and skills necessary to demonstrate competent movement performance and health enhancing fitness (Zeigler, 2003). They need to demonstrate personal competence in motor skill performance for a variety of physical activities and movement patterns, and achieve and maintain a health-related physical fitness: cardio respiratory endurance, motor abilities - strength, flexibility, coordination, speed (National Association for Sport and Physical Education, 2004). For that reasons, the students who graduate on Faculty of Teacher Education should have acquired experiences of physical education that are essential for Elementary school children, and be able to demonstrate various skills that are planned in curriculum (RH MZOŠ, 2006.):

(1) fundamental stability and manipulative skills;

(2) locomotor and non-locomotor skills;

(3) rhythm and dance movement skills;

(4) aerobic endurance;

(5) body composition;

(6) flexibility;

(7) muscular strength and endurance...

These numerous facts call for the need to investigate the level of physical fitness competence in physical education teachers in elementary school. So, the aim of this research is to determine the level of motor abilities in students of Faculty of Teacher Education and to compare them with Croatia national standards established on fourth grade high school children.

**Methods**

For the purpose of this study the sample was made of 167 female students of Faculty of Teacher Education in Zagreb, at the age of 20 + 1. The research was provided in Academic year 2009/2010. The sample of variables consisted of a six standard tests for establishing the motor abilities - polygon backwards (MPN), sit and reach (MPR), hand tapping (MTR15), flexed arm hang (MIV), standing long jump (MSD), sit-ups (MPT) and Croatia national standards for fourth grade high school children ( Findak et al ,1996). The obtained data were processed by descriptive statistics (Valid N, Mean, Minimum, Maximum, Range, Std.Dev) and for the establishing the difference between students motor abilities and standards the ANOVA was used.

**Results**

Based on the collected data and the descriptive statistics showed in Table 1. it can be seen that the greatest range of results, and thus the largest standard deviation from the Mean, is in the test standing long jump, followed by sit and reach, hand taping and trunk bend. Comparing the Mean of students and National standards it is evidently that the students achieve good results in tests polygon backward, hand tapping and sit-ups, but they attain poor results in tests sit and reach, standing long jump and flexed arm hang.

Table 1. Descriptive statistics of students

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Valid N | Mean | Minimum | Maximum | Range | Std.Dev. | Standards |
| MPN | 167,00 | **12,43** | 7,49 | 25,50 | 18,01 | 2,51 | **13,45** |
| MPR | 167,00 | **73,38** | 45,00 | 103,00 | 58,00 | 11,45 | **78,00** |
| MTR15 | 167,00 | **44,72** | 26,00 | 77,00 | 51,00 | 13,69 | **37,50** |
| MSD | 167,00 | **167,28** | 128,00 | 235,00 | 107,00 | 17,87 | **194,50** |
| MIV | 167,00 | **16,46** | 0,00 | 58,21 | 58,21 | 13,70 | **38,50** |
| MPT | 167,00 | **41,40** | 15,00 | 75,00 | 60,00 | 9,33 | **41,00** |

In accordance with the objective of this study the results of ANOVA analyses are shown in Table 2. Based on the obtained results it can be concluded that there is a statistically significant difference between the students of Faculty of Teacher Education and National standards for fourth grade of high school children in tests polygon backward, sit and reach, hand standing long jump and flexed arm hang.

Table 2. ANOVA

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | SS | Df | MS | SS | Df | MS |  |  |
|  | Effect | Effect | Effect | Error | Error | Error | F | P |
| MPN | **87,51** | **1,00** | **87,51** | **1042,63** | **332,00** | **3,14** | **27,86** | **0,00** |
| MPR | **1779,76** | **1,00** | **1779,76** | **21761,47** | **332,00** | **65,55** | **27,15** | **0,00** |
| MTR15 | **4358,21** | **1,00** | **4358,21** | **31107,33** | **332,00** | **93,70** | **46,51** | **0,00** |
| MSD | **61888,21** | **1,00** | **61888,21** | **53031,33** | **332,00** | **159,73** | **387,45** | **0,00** |
| MIV | **40560,21** | **1,00** | **40560,21** | **31140,74** | **332,00** | **93,80** | **432,42** | **0,00** |
| MPT | 13,04 | 1,00 | 13,04 | 14455,92 | 332,00 | 43,54 | 0,30 | 0,58 |

D**iscussion**

From the obtained results it can be concluded that the students have, accordingly to National standards, good developed coordination and frequency of movement (Graph 1. and 3.). Consequently they are competent to perform units and themes from Physical education curriculum that are based on coordination: walking and running with changing direction of movement, rolling, crawling and wriggling on different ways, games, hand and leg manipulation with the ball, dancing with changing directions and tasks; and based on frequency of movement: throwing and catching, quickly run across an obstacle, all types of games etc.

Graph 1. Polygon backward Graph 2. Sit and reach

Further, the students achieve poor results in flexibility, explosive and static strength (Graph 2., 4. and 5.). Accordingly on this results it can be assumed that they are not entirely competent for execute subject, that are based on those motor abilities, such as leaps and rhythmic jumps, balance on the ground, gallop, high jump, one and two leg jumps and hops, throwing medicine ball, hangs and strongholds, pulling and pushing.

Graph 3. Hand tapping Graph 4. Standing long jump

The only variable, in which students have no statistically significant difference, comparing with National standards, is sit-ups (Graph 6.). Sit-ups is a standard test for evaluating repetitive strength so it can be concluded that the students are competitive for providing tasks that includes this motor ability.

Graph 5. Flexed arm hang Graph 6. Sit-ups

Up to date, motor abilities of female students were a subject of many authors. The results of their studies are shown in Table 3.

Table 3. Results of studies from different authors

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Name of authors | Year | MPN | MPR | MTR15 | MSD | MIV | MPT |
| Tomljenović et al | 2007. | 11,54  2,17 | 63,21  15,76 | 37,42  3,62 | 186,3  31,49 | 34,42  33,71 | 48,50  8,67 |
| Mesarić, Boutlas | 2005. | 13,37  2,21 | 69,18  9,36 | 35,66  3,74 | 169,3  14,18 | 20,32  13,13 | 40,09  3,93 |
| Srhoj et al | 2006. | 12,14  2,12 | 65,87  11,82 | 34,42  4,71 | 173,8  20,43 | 29,13  19,64 | 22,33  4,29 |
| Horvat, Delija | 1998. | 11,86  2,11 | 70,29  11,25 | / | 177,1  46,02 | 23,18  14,22 | 45,45  21,87 |
| Jeras, Kondrič | 2002. | 11,59  26,06 | / | 48,16  5,04 | 182,4  17,13 | 31,32  16,74 | 45,25  10,49 |

(upper value in every cell is mean value and lower value is standard deviation)

**Conclusion**

The aim of this study is to determine the level of motor abilities in students of Faculty of Teacher Education and to compare them with Croatian national standards established on fourth grade high school children. Motor abilities of 167 female students of Faculty of Teacher Education in Zagreb, at the age of 20 + 1 were measured in 6 motor tests. According to obtained results it can be concluded that the students are competitive to perform tasks that includes coordination, frequency of movement and repetitive strength, but less competitive for providing those containing flexibility, explosive and static strength. In pursuit to have quality teachers in every form of knowledge transfer, students awareness how their competences are important in future profession should be one of the priorities while studying Faculty of Teacher Education.

**References**

Castelli, D., & Williams, L. (2007). Health-related fitness and physical education teachers content knowledge. *Journal of Teaching Physical Education*, 26(1).

Findak, V., Metikoš, D., Mraković, M., & Neljak, B. (1996*.). Primjenjena kineziologija u školstvu – Norme*. Hrvatski pedagoški-književni zbor. Zagreb. Fakultet za fizičku kulturu Sveučilišta u Zagrebu.

Horvat, V., & Delija, K. (1999). Promjene motoričkih sposobnosti studentica pod utjecajem kineziološkog tretmana. *Napredak*, 140 (1), 94 – 99.

Jeras, K., & Kondrič, M. (2002). A contribution to the study of morphologic and motor status of students at the Faculty of Medicine. In: D. Milanovic & F. Prot (Ed.), *Proceedings book of 3rd International Scientific Conference, Opatija, 2002 «Kinesiology – New Perspectives»* (pp. 451 - 456). Zagreb: Faculty of Kinesiology, University of Zagreb.

Manross, D., & Templeton, C. (1997). Expertise in teaching physical education. *Journal of Physical Education, Recreation, and Dance*, 68(3), 37-41.

Mesarić, I., & Boutlas, G. (2005). Neke dimenzije antropološkog statusa studentica prve godine Visoke učiteljske škole u Čakovcu i studentica Technological Education institute of Larisa. U: V. Findak & K. Delija (Ur.), *Zbornik radova 14. Ljetne škole kineziologa RH*, Rovinj, 319 – 322.

Mraković, S., Horvat, V., & Brčić, K. (2006). Razlike u nekim morfološkim karakteristikama dvije skupine studentica učiteljskog fakulteta u Zagrebu. U: V. Findak (Ur.), *Zbornik radova 15. Ljetne škole kineziologa RH*, Rovinj, 197-200

National Association for Sport and Physical Education (2004). *Moving into the Future: National Standards for Physical Education* (2nd Edition). Reston, VA: Author.

Republika Hrvatska MZOŠ (2006). *Nastavni plan i program za osnovnu školu*. Zagreb: Ministarstvo znanosti, obrazovanja i športa, 2006.

Srhoj, Lj., Katić, R., & Kaliterna, A. (2006). Motor Abilities in Dance Structure Performance in Female Students. *Collegium Antropologicum*, 30(2): 335 – 341.

Tomljenović, B., Tomljenović, F., & Radošević, I. (2007). Antropološke pretpostavke rada na Učiteljskom studiju u Gospiću. U: V. Findak (Ur.), *Zbornik radova 16. Ljetne škole kineziologa RH*, Rovinj, 251 – 256.

Zeigler, E. F. (2003). Guiding professional students to literacy in physical activity education. *Quest*, 55(4), 285-305.

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**Abstract**

The aim of this research is to determine the difference between level of motor abilities in students of Faculty of Teacher Education and Croatia National Standards established on fourth grade high school children. The subject was made of 167 female students of Faculty of Teacher Education in Zagreb, at the age of 20 + 1. The sample of variables consisted of a six standard tests for establishing the motor abilities and Croatia National Standards. The obtained data were processed by descriptive statistics and for the evaluating the difference between student’s motor abilities and standards the ANOVA was used. Based on the obtained results it can be concluded that the students are competitive to perform tasks from Physical education curriculum that includes coordination, frequency of movement and repetitive strength, but less competitive for providing those containing flexibility, explosive and static strength.

**Key words:** motor abilities, national standards, students, physical education, curriculum,