STUDY CHANGES IN SOME INDICATORS OF PSYCHO-PHYSICAL SUITABILITY OF STUDENTS PARTICIPATING IN SPECIALIZED TABLE TENNIS GROUPS

UDC: 796.342.012.1-057.875
(Preliminary communication)

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Abstract
The aim of our study was to identify climate in some psycho-physical qualities of students involved in specialized groups of table tennis in teaching physical education in the Higher School. The Object of the study are psycho-physical capabilities of students involved in two tests involving account and concentration of thought and speed of visual-motor reaction. The study was conducted with 60 students / 30 women and 30 men / of the University of Architecture, Civil Engineering and Geodesy- Sofia, divided into two control and two experimental groups aged 19-23 years. Both tests in the final study observed higher values for the participants of the experimental groups compared with the control, which allows us to claim that the resulting difference is due to improved mental and physical fitness of students.

Keywords: physical education, curriculum, attention and thinking, visual-motor reaction, women, men, control group, experimental group, coefficient of variability

INTRODUCTION
Table tennis is widely spread entertaining sports game with variable intensity, offered all-round physical development on the human body. It is responsiveness, agility, flexibility, endurance and power. It improves functions of the cardiovascular and respiratory system, development of orientation sense, attention stability, flexibility and other valuable psychological qualities. Because of these specifics and their very rich impact opportunities, the table tennis is a wonderful tool for physical education and requires its introduction in the curriculum content of physical education and sports in high schools.

The Purpose of our study was to identify climate in some psycho-physical qualities of the students involved in specialized groups of table tennis in teaching physical education in higher education. In relation with the objective the following tasks have been identified:

1. Application / piloting /of a development program for modular table tennis for beginner students.

2. Determination of the effectiveness of applications and general classes of table tennis on the psycho-physical fitness of students.

The Subject of our study are results of teaching table tennis, as an integral result in resolving educational issues during physical education in school.

The Object of the study are psycho-physical capabilities of students involved in two tests involving attention and concentration of thought and speed of visual-motor reaction.

The study was conducted with 60 students /30 women and 30 men/ of the University of Architecture, Civil Engineering and Geodesy- Sofia, divided into two control and two experimental groups aged 19-23 years.

METHODS
The study took place during the 2010/2011 school year. The control groups worked according to the curriculum table tennis approved by the Department of “Physical Education and Sports” in the UACEG- Sofia twice a week for 90 minutes, and also with experimental groups twice a week we developed a modular program in table tennis of learners, including theoretical, general and special phy-sical preparation, technical and technical-tactical training and cover control regulations. In this occasion two tests were used:

- Test of attention and thought-digit test performance of operations of addition, subtraction and multiplication of a pair of adjacent numbers which sum equals 10, the
difference of 2 and work 20 to 30 inclusive, for 30 seconds each action.

- Test of the speed of visual-motor response – reaction to a moving light signal inclusion in successive 50 times in 10 different positions for 28 seconds hold any position of 0.56 seconds, recording the resulting action of an electronic counter, as corresponding buttons are pressed with a finger of one hand. Both tests were performed at the beginning and end of the experiment, giving preliminary exercises as an introduction in the experiment.

**Mathematical and statistical methods:**

For a mathematical processing of received information we used analysis of variance, and for more accurate determination of changes in studied parameters we determined the coefficient of growth rate %.

**RESULT**

The analysis of results shows that after applying tests of attention and thinking, comparison of data obtained from the variation analysis of the observed groups in the initial measurements (Table 1), it can be concluded that there are not any statistically significant differences in average values between control and experimental groups in both sexes (Pt <0.95), which shows their uniformity of signs.

**Table 1. Changes in visual-motor reaction and concentration and thinking for learners in the groups profiled in table tennis**

<table>
<thead>
<tr>
<th>Index</th>
<th>Control group</th>
<th>Experimental group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=15</td>
<td>n=15</td>
</tr>
<tr>
<td></td>
<td>( \bar{x}_1 \pm \Delta_1 )</td>
<td>( \bar{x}_2 \pm \Delta_2 )</td>
</tr>
<tr>
<td>Test of account and thought</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/number/</td>
<td>46.73 ± 3.27</td>
<td>51.40 ± 2.44</td>
</tr>
<tr>
<td>Men</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test of speed of visual-motor response /number/</td>
<td>29.86 ± 4.18</td>
<td>33.60 ± 4.16</td>
</tr>
<tr>
<td>Test of account and thought</td>
<td>49.93 ± 2.65</td>
<td>52.20 ± 2.52</td>
</tr>
<tr>
<td>/number/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test of speed of visual-motor response /number/</td>
<td>31.60 ± 4.75</td>
<td>36.66 ± 5.01</td>
</tr>
</tbody>
</table>

**Test of account and thought**

![Figure 1](image1.png)

![Figure 2](image2.png)
bearing information about their mental fitness.

In the final study higher values were observed with participants of the experimental groups, where with female students this difference is supported by the necessary confidence (Pt> 0.95). This finding is confirmed by the higher rate of growth in male students (Figure 1) and female students (Figure 2) from experimental groups where the values are respectively 10.88% and 15.75%. Increases occurred in the control groups, but the values are lower from 4.44% in men to 9.51% in women.

Furthermore, the data from applied test of speed of visual-motor response showed no statistically significant difference (Pt <0.95) between experimental and control groups in the initial and final study, although values in experimental groups were higher. In both groups the average difference between initial and final study is statistically significant (Pt> 0.95), but in the final examination for both sexes, these values were higher in experimental groups, where a higher rate of growth was observed, with values of 15.21% for male students (Figure 3)and 17.49% for female students(Figure 4).

Both tests in the final study observed higher values for the participants of the experimental groups as compared with the control ones, which allows us to claim that the resulting difference is due to improved mental and physical fitness of students in these groups after we had elaborated and developed a modular program for table tennis beginners.

CONCLUSIONS

1. Applied tools in our developed modular program for table tennis have contributed to positive changes both in the growth rate of participants from the experimental groups, as well as in terms of their development compared to those of control groups.

2. The final results supported with the necessary statistical accuracy (Pt> 0.95) in tests of speed of visual-motor response in both groups of both sexes are proof positive impact of the means used in training classes and table tennis on improving psychosocial-motor functions of the body of students participating in them.

3. The module training program for table tennis beginner students in specialized groups is effective and the observations our study can be included in curricula of physical education in high schools.

REFERENCES

Дряновски, Й., Коен, И., & Шишков, М. (1993). Тенис на маса [Table Tennis]. България: Национална спорна академия.


Test of speed of visual-motor response

<table>
<thead>
<tr>
<th>men</th>
<th>women</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEGINNING</td>
<td>FINAL</td>
</tr>
<tr>
<td>CONTROL GROUP</td>
<td>EXPERIMENTAL GROUP</td>
</tr>
</tbody>
</table>

Figure 3

Figure 4.
ИСТРАЖУВАЊЕ НА ПРОМЕНИТЕ ВО НЕКОИ ПОКАЗАТЕЛИ НА ПСИХОФИЗИЧКАТА СПОСОБНОСТ НА СТУДЕНТИТЕ КОЈИ СЕ ВКЛУЧЕНИ ВО ПРОФИЛИРАНИ ГРУПИ ПО ПИНГ-ПОНГ

UDK: 796.342.012.1-057.875
(Преходно соопштение)

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Апстракт
Целата на истражувањето беше да се утврдат промените во некои психофизички способности на студентите кои учествувава во профилиран групи за пинг-понг во наставата по физичко воспитување на Универзитетот. Предметот на истражувањето се психофизичката подготвеност, дефинирана со два теста: 1. за проценивање на концентрацијата на вниманието и мислењето, 2. брзината на визуелната моторна реакција. Истражувањето беше реализирано на примерок од 60 студенти (30 женски и 30 мачки) од УАСГ - Софија. Примерокот на испитаниците беше поделен во две контролни и две експериментални групи на возраст од 19-23 години. Во двата применети тестови во финалната состојба се забележани повисоки вредности кај испитаниците од експерименталните групи во однос на контролните групи, што овозможува да се тврди дека добиената разлика е результат на подобренаата психофизичка способност на студентите.

Ключни зборови: физичко воспитување, наставни програми, внимание и мислење, брзина на визуелно-моторните реакции, женски, мачки, експериментална група, коелерацион ргрупа, коекфициенци на варијабилност

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