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**Original Article**

# Integration of fine motor skills in the physical education courses of law students

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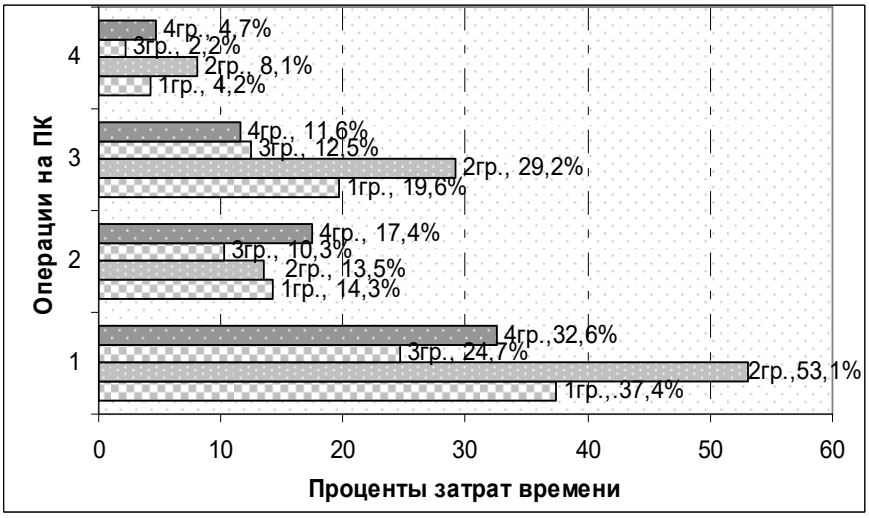
**Abstract.** Scientific literature raises the issues of optimizing intellectual functioning and overcoming hypodynamia, hypokinesia, and stress in professional and practical physical education [3, 5]. High-quality and fruitful performance of a lawyer is impossible without a personal computer, smartphone, or mobile phone. Professional and practice-oriented physical exercises aimed at the development of fine motor skills during university lessons can improve the quality of law education [7]. The experimental group performed general exercises for fine motor skills development and professional applied exercises imitating the movements used by lawyers in the workplace. At the end of the study when performing professional tests, the experimental group demonstrated 1.5-2 times better results compared to the control group.
**Keywords: lawyer, intellectual functioning, university, physical education, fine motor skills.**

**Introduction.**

A lawyer's education implies an active use of personal computers, notebooks, and smartphones [6]. However, exercises for the development of physical qualities that ensure finger coordination are rarely and randomly used in physical education classes at university. Well-selected physical exercises contribute to the development of finger endurance, flexibility, and mobility and improve human performance [2]. Usually, the application of such exercises is limited to elementary school and further considered as non-obligatory. However, the insufficient development of fine motor skills in high school and at university influences future professional activity.

**Materials and methods.**

As a result of studying video records made in law offices, loss of work time was registered when working with a PC. Figure 1 shows a loss of work time per week for different categories of people: Group 1 – university students of a relevant scientific field (on internship); Group 2 – experienced staff (3-year experience); Group 3 – 3 to 10-year experience; Group 4 – more than 10-year experience. The axis Y stands for the main groups of personal computer operations. There are four types of the average time cost indicators expressed in percentage of an 8-hour working day: 1 – total work on a PC; 2 – typing on a PC; 3 – searching for information; 4 – other PC operations (Figure 1).




Note: 1 – total work on a PC; 2 – typing on a PC; 3 – searching for information; 4 – other PC operations.
**Figure 1. Job analysis of a lawyer's work on a PC**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Total work on a PC is the most time consuming for Group 2 (3-year experience employees) and equal 53.1% of total work time, the majority of time is spent searching for information (29.2%). Compared to Group 2, Group 4 (more than 4-year experience) spends a lot of time typing on a PC (17.4) while the total amount of work on a PC accounts for 32.6%. It was established that an experienced employee (10-year experience) spent less time searching for information but required more time for typing on a PC. Therefore, better typing speed improves performance and creates favorable conditions for better information search and processing. Focusing on fine motor skills, one should not forget that hypokinesia and hypodynamia decrease professional efficiency [1, 4].

The experiment was conducted among 3rd-year students on the premises of South Ural State University. The experimental group (35 students) followed the experimental program consisted of the exercises for fine motor skills and professional and practice-oriented exercises for lawyers. The control group (43 students) followed the traditional program. At the end of the academic year, the control tests were conducted to establish general physical fitness, applied physical fitness, psychophysiological and professional fitness (work on a PC). Professional tests (T) were chosen to analyze fine motor skills: T-1 – typing on a PC; T-2 –information processing (answering to professional questions per unit of time); T-3 – filing standard documents; T-4 – printing and sending SMS. To evaluate psychophysiological fitness, the following tests were used: speed processing of ordinal digits in the tables – the Schulte test; the tapping test; simple motor reaction - reflexometry.

**Results and discussion.**

Professional operations require the improvement of qualitative and quantitative indicators. The experimental and control groups demonstrated changes in all tests and types of fitness (Table).

**Table. Psychophysical and professional fitness in lawyers**

| Tests | Experimental group | | Control group | |
|---|---|---|---|---|
| | x±m at the beginning of the experiment | x±m at the end of the experiment | x±m at the beginning of the experiment | x±m at the end of the experiment |
| Physical fitness | | | | |
| Muscular strength of the left wrist (kg) | 53.2±0.52 | 57.4±0.64 | 53,3±0,43 | 55,3±0,49 |
| Differences | 4.2* | | 2.0* | |
| Muscular strength of the right wrist (kg) | 59.2±0.55 | 64.5±0.51 | 60,4±0,51 | 63,5±0,47 |
| Differences | 5.3* | | 3.5* | |
| Moving on a narrow beam (s) | 17.5±0.68 | 14.8±0.67 | 18,6±0,78 | 16,1±0.75 |
| Differences | 2.7* | | 2.5* | |
| 10 m shuttle run test (s) | 31.5±1.32 | 27.6±1.11 | 30,4±1.34 | 28,0±1.13 |
| Differences | 3.9* | | 2.4” | |
| 1 km cross-country running (s) | 258± 8.6 | 240±7.6 | 256±9,1 | 244±8,3 |
| Differences | 18” | | 12” | |
| Complex applied physical exercises | 318±14.2 | 263±10.5 | 312±16,3 | 298±14,8 |
| Differences | 55* | | 14” | |
| Psychophysiological fitness | | | | |
| Tapping test (quantity) | 173±7.6 | 217±10.3 | 185±8,9 | 212±9,9 |
| Differences | 44* | | 27” | |
| Simple motor reaction (s) | 0.27±0.019 | 0.23±0.015 | 0,26±0,017 | 0,25±0,015 |
| Differences | 0.04” | | 0.01” | |
| Schulte test (s) | 56.1±3.45 | 44.6±2.13 | 49,4±3,65 | 43,7±2,37 |
| Differences | 11.5* | | 4.7” | |
| Professional fitness | | | | |
| Typing on a PC (symbols per min) | 76.2±4.47 | 107.5±6.11 | 73,3±5,14 | 87,7±4,46 |
| Differences | 30.7* | | 14.4* | |
| Information processing (s) | 1532±58.7 | 1277±37.4 | 1655±64,5 | 1489±49,0 |
| Differences | 255* | | 166* | |
| Filing documents (s) | 579±21.3 | 519±17.7 | 556±19,6 | 503±18,4 |
| Differences | 60* | | 53* | |
| Sending SMS (s) | 78.4±4.13 | 62.2±5.67 | 81,3±3,24 | 68,1±3,43 |
| Differences | 16.2* | | 13.1* | |

Note: * - results are significant; “ – results are not significant

Wrist flexor muscles strength changed significantly during the experiment. However, in the experimental group, the increase in strength in the left wrist was 2.1 times higher and in the right wrist – 1.5 times higher compared to the control group. Special exercises applied in the experimental group for the

development of wrist flexor muscles and fingers proved their efficiency. The changes in general coordination at the end of the experiment were significant and equal for both groups. 10 m shuttle run used for establishing quickness in participants demonstrated better results at the end of the experiment: 3.9 s in the experimental group ($P<0.05$), 2.4 s in the control group ($P>0.05$). Differences between groups in the results of 1 km cross-country running at the end of the experiment were insignificant. Complex applied physical exercises reflect most effectively the applied performance of the important movements of lawyers. In the experimental group, complex applied physical exercises demonstrated a significant increase of 55.0 s ($P<0.05$), which corresponded to the improvement by 17.3%. In the control group, the same parameter demonstrated an insignificant increase of 14 s ($P>0.05$). The physical exercises used for the development of fine motor skills showed greater efficiency in the experimental group compared to the control group.

The psychophysiological tests revealed an advantage in the experimental method. The test results for the Schulte test improved in the experimental group by 11.5 s ($P <0.05$), and in the control group only by 4.7 s ($P> 0.05$). The results of the tapping test improved in the experimental group by 44 units, and in the control group - by 27. The changes in the results of the tapping test turned out to be reliable in both groups. When performing a simple motor reaction, the data of self-reflection did not yield significant results and positive changes. Most likely, progress in this area requires a greater contribution of effort and time.

The analysis of the performance of professional norms and standards is of great interest. In such tests as 'typing on a PC' or 'searching for information' the improvement was significant in both the experimental and control groups. However, in the experimental group, the results of the T-1 test improved by 30.7 s, which was 2.1 times higher than in the control group. The improved results of the T-2 test in the experimental group were registered at 4 min 15 s, which is 1.5 times higher than in the control group. The results of the T-4 test known as 'sending SMS' improved significantly in both groups: by 20.6% in the experimental group and by 16.1% in the control group. The results of the T-3 test on 'filing documents' improved by 10.4% in the experimental group and by 9.5% in the control group. There was no obvious advantage of the experimental group over the control group in the tests T-3 and T-4. However, the experimental group performed the tests T-1 and T-2 1.5-2 times better than the control group. This will improve lawyers' performance per unit of work time significantly. Physical performance and functional status at the end of the experiment maintained both in the experimental and control groups.

Regular performance of professional and practice-oriented physical exercises is a reliable tool for successful and productive work. The driving force was the control, professional, and psychophysiological tests. The very fact of the presence and the obligatory nature of their performance has already given impetus to an increase in fine motor skills.

**Conclusion.**

The modern production process is unthinkable without personal computers (PC). Fine motor skills essential for typing on a keyboard, quick thinking, and information processing have become the principal element in improving productivity. Further improvement of fine motor skills at university will increase the efficiency of performing professional tests. Standardization of applied physical exercises for lawyers and objective control allow permanently developing the personality and creating the conditions for self-improvement at work.

**References**

1. Bobkov V.V.,. Evaluation of readiness of students of educational institutions to delivery of standards of ASC RLD, (2018), Uchenye zapiski universiteta imeni P.F. Lesgafta, 3 (157), pp. 42-45.
2. Golubkov A.V., Gromov V.A, Psychophysical readiness of lawyers for implementation of professional responsibilities, (2019), Izvestiya Tula State University. Physical culture. Sport, 2, pp. 21-27.
3. Galimova A., Kudryavtsev M., Galimov G., Dagbaev B., Doroshenko S., Arutyunyan T., & Smirnova L, Functional training as an effective way for the adaptation of the military students and students of educational institutions in the system of the ministry of internal affairs of the Russian Federation, (2018), Human. Sport. Medicine, 18(2), pp. 119-125. https://doi.org/10.14529/hsm180211
4. Myrgorod D., Kolomiytseva O, Status and prospects of improvement of physical education of lawyers, (2015), Slobozhanskyi herald of science and sport, 2(46), pp. 124–127.
5. Cherepov E.A., Kalugina Gh.K., Khafizova A.S., Melnikova O.V, Computer addiction control model in application to physical education college students, (2018), Theory and Practice of Physical Culture, 5, pp. 19-21.
6. Skead N.K., Rogers S.L. Running to well-being: A comparative study on the impact of exercise on the physical and mental health of law and psychology students, (2016), International Journal of Law and Psychiatry, 49 (1), pp. 66-74.
7. Skead N.K., Rogers S.L. Doraisamy J, Looking beyond the mirror: Psychological distress; disordered eating, weight and shape concerns; and maladaptive eating habits in lawyers and law students, (2018), International Journal of Law and Psychiatry, 61, pp. 90-102.