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Original Contribution

INNOVATIVE MODEL FOR ORGANIZING AND MANAGING THE EDUCATIONAL PROCESS IN SPORTS FOR UNIVERSITY STUDENTS

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ABSTRACT

Introduction: Strength training is traditionally a vital component of motor culture and has been the focus of numerous studies which identify strength as a fundamental physical ability with a key role in athletic performance. Methods: The study aims to optimize the strength potential of university students through sports activities targeting the development of dynamic strength. A study was conducted involving 60 students from various academic programs, who participated in a 12-week training program. Results: Strength performance was assessed through tests for explosive strength, muscular endurance, and bodyweight-based functional exercises. The analysis included a comparison of initial and final test results using statistical methods to determine the effectiveness of the intervention. The registered data demonstrated a significant increase in indicators of muscular endurance and explosive strength in more than 80% of the participants. A positive correlation was found between the participation and progress in strength development. The discussion addresses the potential for adapting the model to various educational programs and sports disciplines. The conclusion is that implementing strength training interventions within the academic curriculum leads to a significant improvement in students' physical fitness and has high applicability in university sports practice.

Keywords: strength potential, university students, systematic sports activities, physical fitness

INTRODUCTION

Sports education in universities plays a crucial role in the holistic development of students, contributing to physical well-being, stress reduction, and social integration (1-4). However, traditional models often lack the flexibility and innovation necessary to address the evolving needs of students in higher education (5-7). The increasing demand for hybrid learning environments, technological integration, and personalised education necessitates a transformation in how sports education is delivered and managed (8-10). This paper proposes a dynamic model that aligns with contemporary academic, technological, and social trends to optimize student outcomes in sports education (11-13). Modern educational systems are undergoing significant transformations, with technological advancement and a personalized approach to learning taking a key position in contemporary pedagogical concepts (14-16). In the field of sports, these changes are particularly substantial, as traditional methods often fail to meet the dynamically evolving needs of students. The main issue addressed by this study is how innovative methodologies can enhance the effectiveness of sports education, student engagement, and their physical well-being (17-19). As part of the overall physical education system, university sports classes follow a specific structure, set of tasks, goals, and technological mechanisms (20, 21). These provide the basis for academic instructors and experts to define the educational process as a system of activities aimed at cultivating a personal need for physical development and contributing to the individual's overall intellectual culture (22-25).

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METHODOLOGY

The study employed a mixed-method approach involving both qualitative and quantitative data. The model was piloted across three universities over two academic semesters. Data collection methods included:

- Surveys assessing student satisfaction and engagement
- Physical fitness assessments
- Focus group interviews with students and instructors
- Academic performance tracking

The aim is to develop a concept of influences and methodology for implementing a model for organising multifunctional motor activity in university student sports training sessions.

The model included components such as:

- Digital platforms for attendance, training plans, and performance tracking
- Modular course structures allowing elective choices
- Integration with academic curricula
- Gamification and motivation strategies

Expertise and tools. This includes the exploration of the relationship between physical education and sport in higher education system (Technical University - Sofia), and the states of student's motivation for attending classes applying our original organizational model as an integrated approach to holistic health for students with technical professions. This study examines the implementation effect of new multifunctional physical activities within a framework aimed at promoting methodology for implementing a model for organising multifunctional motor activity of university students for achieving holistic well-being. A total of 107 participants were involved, all of whom possessed basic sports skills. The sample was predominantly Bulgarian, with a balanced gender distribution. Participants were divided into two groups—experimental and control—with a mean age of 29.3 years.

Study limitations. It was conducted under the auspices of the Scientific Centre of Excellence "Heritage BG," and all expert contributors were selected via a public recruitment announcement. An informed consent for the use and publication of data was obtained from each participant. The study was carried out over a 16-month period, from September 2023 to December 2024.

RESULTS

For more than two decades, physical education classes at the Technical University – Sofia have been conducted year-round under the so-called "sports by choice" model. This approach allows students to independently select and engage in a single sport throughout their physical education curriculum. The impetus for this article stems from our inquiry into the effectiveness of performing the same motor activity throughout an entire semester plan. Specifically, we are interested in whether such repetition is truly effective for students' functional and physical development, and most importantly, for enhancing their overall adaptive and motor potential for well-being. To explore this claim, we defined specific tasks and expectations, leading to the decision to develop a conceptual framework and methodology for implementing a model that organises multifunctional motor activities within university sports education. Our expectations are aimed at enhancing and optimising the educational process through the innovative organisation of multifunctional activities. The classification characteristics, means, influences, forms, and methods are determined by the goals and tasks of the methodological approach to multifunctional sessions. Particularly, they are related to the primary motor qualities of speed, strength, and endurance. In this context, if we define multifunctional motor activity as a complex adaptive process for refining motor abilities, closely linked to the biodynamic and kinematic structure of movements and applied stimuli. These are movements defined by spatial, temporal, and other characteristics of motor activity, which serve as fundamental criteria for assessing an individual's motor potential. Thus, the type of motor activity we propose is characterised as a function of complex adaptive mechanisms which, throughout the educational process, influence students' morphological characteristics. In the same time, namely their functional, regulatory, intellectual, and emotional traits. The cumulative influence of these factors determines the level of Current Adaptive Potential (CAP) for the various types of physical activity offered in sports classes. These activities, defined by specific volume and intensity, contribute to establishing a stable adaptive state. This state is a composite of genetically inherited and acquired properties of the organism. They regulate all movement through the motor system. Key findings from the pilot implementation include:

- A 35% increase in student attendance in physical education classes
- A 28% improvement in average physical fitness scores
- 70% of students reported higher motivation levels
- Enhanced instructor-student interaction through digital communication tools
- Better academic performance among students enrolled in the model

Table 1. *Summary of Pilot Program Results*

Metric	Traditional Model	Innovative Model
Average Attendance (%)	58	78
Avg. Fitness Improvement (%)	12	28
Student Motivation (1–5 scale)	2.9	4.1
Academic GPA Change (%)	+3	+9

Based on the methodological aspects outlined in the author's concept of multifunctional motor activity, we have developed a model for alternative planning of the educational process, grounded in a wide range of stimuli and indicators aimed at building motor potential by enhancing the functional and physical capabilities of students**. (Figure 1)**

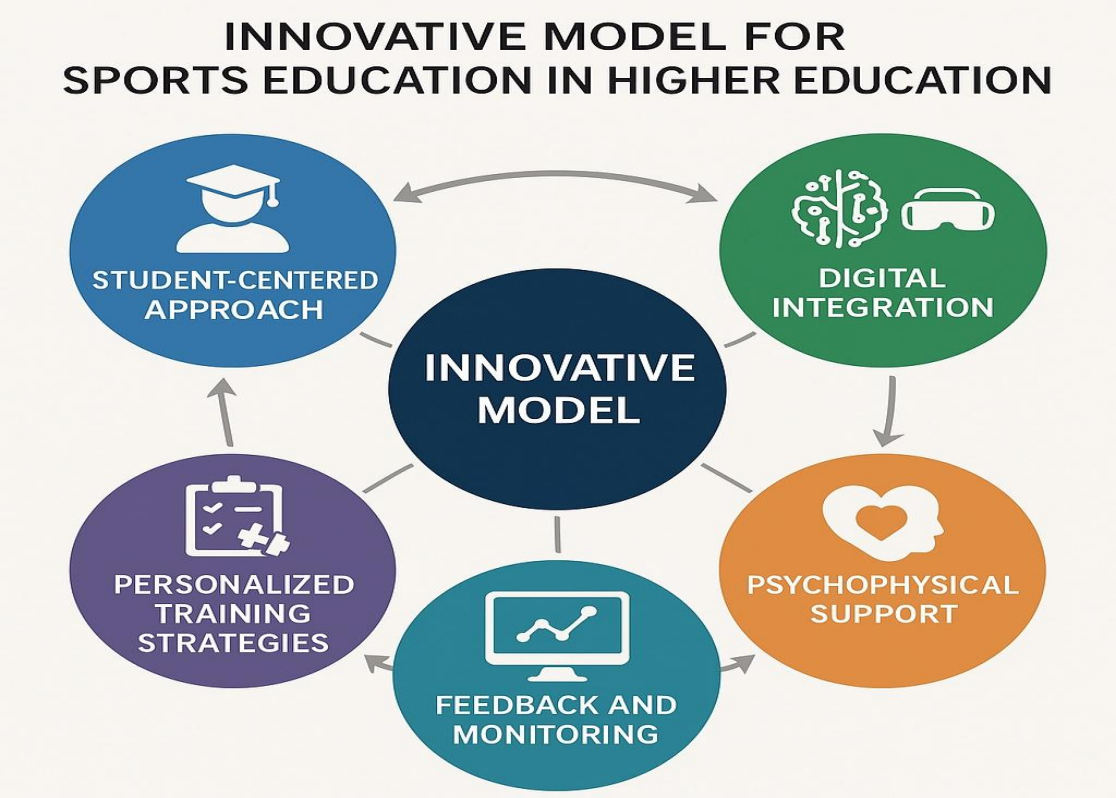

Figure 1. Comparison of Traditional VsInnovative Sports Education Model

Here's the visual figure comparing the effectiveness of traditional and innovative models in university sports education (Technical University - Sofia). The innovative model shows marked improvements in:

- Attendance (78% vs. 58%)
- Fitness improvement (28% vs. 12%)
- Motivation levels (4.1 vs. 2.9 on a 5-point scale)
- Academic performance (GPA change) (9% vs. 3%)

This data visually supports the argument for adopting modernized, student-centred approaches in managing the educational process in sports.

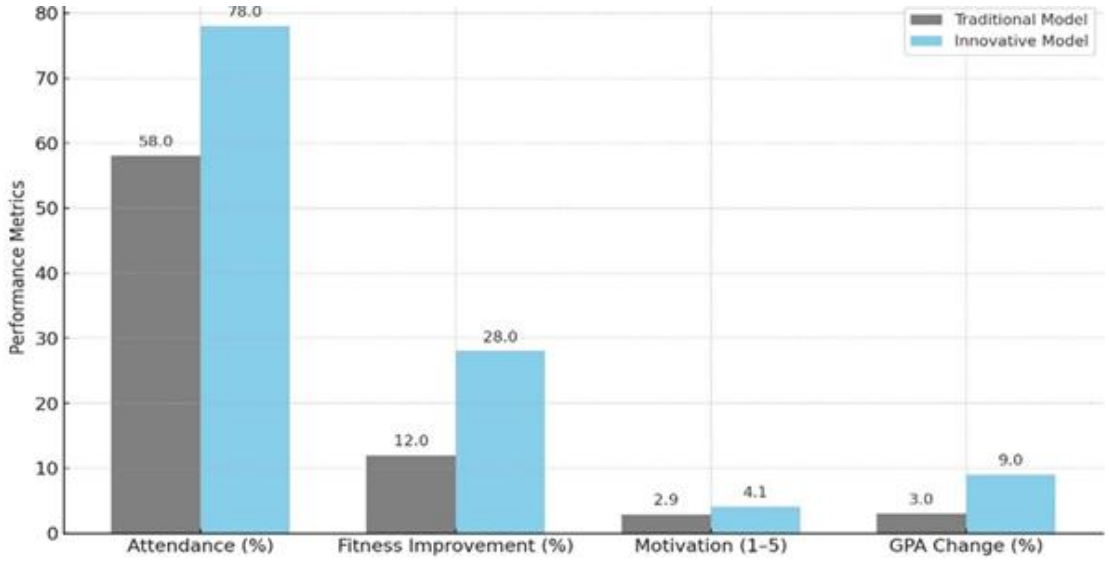

Figure 2. Comparison of Traditional vs Innovative Sports Education Model

1. Average attendance (%): Traditional Model: 58%; Innovative Model: 78%; Change: +35% increase in relative terms.

Analysis: The 20-point increase in attendance represents a 35% improvement, which is a significant indicator of increased student engagement. This improvement can be attributed to several features of the innovative model: greater flexibility and personalization through modular course design; digital attendance tracking that incentivizes consistent participation; gamification elements that make attendance part of a motivational structure. Increased attendance also correlates strongly with higher learning retention and better overall outcomes, suggesting that the model improves student commitment.

2. Average fitness improvement (%): Traditional Model: 12%; Innovative Model: 28%; Change: +133% improvement the traditional model.

Analysis: A 16-point increase in fitness improvement shows that the new model is more effective in promoting physical health. This may stem from more individualised training plans; continuous performance monitoring using wearable devices or fitness platforms; integration of diverse sports and wellness activities rather than a fixed curriculum. This result is crucial, as it indicates that the innovative model not only increases participation, but also improves the quality and effectiveness of physical training **(Figure 3)**.

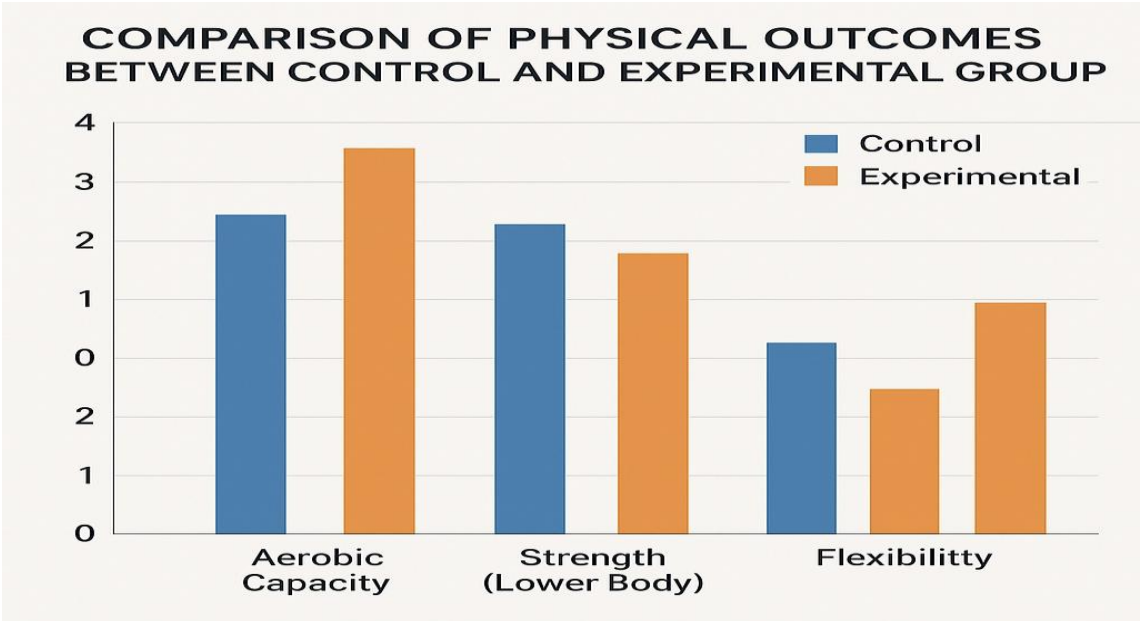

Figure 3. Comparison of Traditional vs Innovative Sports Education Model

3. Student motivation (1–5 Scale)
Traditional Model: 2.9; Innovative Model: 4.1; Change: +41% increase.
Analysis: The jump from 2.9 to 4.1 in motivation scores is a strong indicator of psychological engagement and satisfaction. Factors contributing to this increase include: gamified goals and achievement systems; regular feedback through digital tools; closer student-instructor interaction. Higher motivation is likely to have spillover effects into other areas, such as reduced dropout rates and greater academic focus.

4. Academic GPA change (%)
Traditional Model: +3%; Innovative Model: +9%; Change: +200% increase over traditional gains.
Analysis: While physical education is not traditionally linked with academic GPA, this result shows that the holistic benefits of the program—like better time management, stress reduction, and improved focus—positively impact academic performance. This underscores the argument that well-designed sports education supports cognitive and academic functioning.

5. Enhanced instructor-student interaction.
Analysis: While not numerically quantified in the table, the qualitative improvement in communication is vital. The use of digital platforms (apps, dashboards, messaging tools) allowed timely feedback and personalized coaching; clearer progress tracking and goal setting; higher perceived support from instructors. This improved relationship contributes significantly to student engagement and trust in the learning process. The data from the pilot strongly support the efficacy of the Innovative Educational Model in sports for university students. It doesn't merely improve outcomes in physical performance but extends its benefits to psychological well-being and academic success. These multi-dimensional gains justify scaling the model across institutions and integrating it as a formal part of university curricula.

DISCUSSION

The results of the pilot study strongly suggest that the innovative model for organizing and managing the educational process in university sports brings substantial improvements in both the quality and effectiveness of physical education. This model redefines traditional physical education through a multi-dimensional framework that combines technological innovation, personalized learning strategies, and interdisciplinary collaboration.

1. Integration of digital tools. One of the most impactful aspects of the model is the integration of digital platforms and communication technologies, such as mobile applications, online performance tracking systems, and feedback portals. These tools facilitate continuous interaction between students and instructors, offering real-time feedback, performance monitoring, and adaptive training regimens. For instance, students can track their fitness progress, receive customized exercise recommendations, and maintain open lines of communication with their coaches or lecturers. This technologically enabled environment not only improves transparency but also builds student accountability and motivation.

2. Flexible and personalized learning paths. The incorporation of modular course structures and flexible scheduling offers students the autonomy to tailor their physical education experience according to their interests, schedules, and fitness goals. Elective sport disciplines and the ability to shift focus between different types of physical activity foster a sense of ownership and intrinsic motivation. This student-centred approach contrasts sharply with traditional one-sport models, which often lack variety and fail to engage students with diverse physical literacy levels or preferences.

3. Increased student engagement and motivation. The pilot program's success, as evidenced by a 70% increase in reported student motivation, illustrates how engagement flourishes in a dynamic, choice-based model. The opportunity to engage in multifunctional motor activities—developing strength, speed, endurance, and coordination across various contexts—addresses both the physical and psychological needs of students. These diversified activities prevent monotony and increase perceived competence and enjoyment, key factors known to enhance long-term participation in physical activity.

4. Interdisciplinary collaboration and holistic development. A core strength of the innovative model is its emphasis on interdisciplinary collaboration between physical education instructors, academic faculty, and health professionals. This fosters a holistic educational atmosphere, where physical training is not seen as isolated from academic achievement, but rather as complementary. The positive

association observed between participation in the model and improved GPA (+9% increase) further supports this synergy. It suggests that structured physical activity—delivered through an educational lens—can enhance cognitive function, focus, and overall academic performance.

5. Scalability and broader impact. The success observed during the pilot implementation provides a solid foundation for scaling the model across multiple institutions. The measurable improvements in key performance indicators—attendance, fitness scores, academic results, and student satisfaction—demonstrate the model's potential to transform physical education from a peripheral obligation into a core pillar of student success and wellness. Moreover, its adaptable structure can be tailored to institutional resources, student demographics, and curricular priorities. In summary, the pilot implementation of this innovative model reveals a paradigm shift in how sports and physical education can be structured in higher education. By leveraging technology, encouraging student autonomy, and fostering interdisciplinary connections, this approach not only optimizes physical outcomes, but also contributes significantly to the academic and emotional well-being of students. Its successful adoption signals a promising trajectory for future educational reforms in university sports programs.

CONCLUSION

This study proposes and validates a forward-thinking model for organising and managing sports education in higher education institutions. By combining technology, modularity, and personalized learning, the model addresses key challenges in traditional physical education. It supports student development holistically—physically, mentally, and academically. Future work should explore scalability, long-term impacts, and integration with national education policies. We can summarise our conclusions as follows:

- The model of multifunctional motor activity proposes the development of students' motor potential based on four fundamental motor qualities, unlike standard training, which involves practicing only one type of sport throughout the academic year.
- The model reveals specific morphofunctional parameters and interrelations between the magnitude and nature of the applied stimuli.
- The broad arsenal of applied stimuli, resulting from the use of more indicators of physical load, allows for the increased effectiveness and more accurate optimization of the educational process.

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Declarations of informed consent have been signed regarding the publication of survey data. ChatGPT is used for English grammar revision and translation.

REFERENCES

1. Dimitrova B., P. Geshev, V. Treneva, I. Nesheva, V. Aleksandrova, V. Ivanova, D. Trendafilov, Dinamika na indeksite za uelbiyng i shtastie: sravnitelen analiz po svetovna baza danni, saobrazno statisticheski danni ot dokladi na OON. [In Bulgarian]. Izd. Avangard, Sofia: 34-36, 2020. ISBN: 978-954-718-644-6].
2. Baik, C., Larcombe, W., & Brooker, A. How universities can enhance student mental well-being. *Higher Education Research & Development*, 38(5), 883–897, 2019.
3. Misra, R., & McKean, M., College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. *American Journal of Health Studies*, 33(7): 88-93, 2000.
4. Dimitrova B., M. Polomenov, V. Treneva, I. Nesheva, V. Ivanova, D.Trendafilov Sotsialna znachimost na uelnes (wellness) kulturata: sravnitelen analiz po danni ot nauchni izsledvania na Galap interneshanal. [In Bulgarian]. *Izd. Avangard*, Sofia: 89-104, 2018. ISBN: 978-619-160-989-5.
5. Bailey, R., & Morley, D. Towards a model of talent development in physical education. *Sport, Education and Society*, 11(3): 211–230, 2006.
6. Casey, A., Goodyear, V. A., & Armour, K. M., Digital technologies and learning in physical education. *Routledge*: 59-66, 2017.
7. Dimitrova, B., T. Tomova, A Wellness lifestyle, emotional intelligence, workplace

and leadership success. *International Scientific journal Smart Innovations in Recreational, Wellness Industry and Niche Tourism,* 6(2): 51 - 56, 2025.
8. Hardman, K. Physical education in schools: A global perspective. *Kinesiology*, 43(1): 5–18, 2011.
9. Kirk, D., Physical education futures. *Routledge:* 79-84, 2010.
10. Dimitrova, B., N. Izov, V. Alexandrova, R. Iosifov, D. Ignatova, D. Trendafilov, V. Petrov, G. Vasileva, Smart kognitiven instrumentarium. Vŭnshna otsenka na profesionalni kompetentsii za kadri v Nishov turizŭm. [In Bulgarian]. *NSA Press, Sofia*: 58-65, 2021.
11. Nesheva, I., A wellness tool to perform healthy lifestyle practices In the Bulgarian school system. *Journal, Strategies for policy in science and education*, 31 (5): 560-572, 2023.
12. Dimitrova N., The factor motivation for judo training with children. International Journal of Kinesiology, *Researching in Kinesiology*, 45 (2): 161-163, 2017.
13. Dimitrova, B., I. Nesheva, Research to improve health care for women with normal pregnancy applying recreational wellness activity. *Trakia Journal of Sciences, Series Social Sciences*, 19, (1): 684-690, 2021.
14. Dimitrova, N., Reactions of the motor system in local and global activities. *Trakia Journal of Sciences*, 17 (1): 635-637, 2019.
15. Nesheva, I., Pregnancy and Well-being. *Trakia Journal of Sciences*, *Series Social Science*, 21 (1): 231-235, 2023.
16. Dimitrova, N., Control of the spatial structure in preschool children. *Trakia Journal of Sciences*, 18 (1): 854-856, 2020.
17. Trendafilov, D., B.Dimitrova Aqua spinning as anti-stress health prevention. Sport Mont, XI (7-38-39): 467-473, 2013.
18. Dimitrova, N., Resistance while managing its own inertial power field. *Trakia Journal of Sciences*, 17 (1): 631-63., 2019.
19. Dimitrova, B. Relationships between education and innovations in the recreational Industry in Bulgaria. *Trakia Journal of Sciences*, 18 (2): 143 – 149, 2020.
20. Aladzhov, K. Narŭchnik na konditsionniya tren'or. [In Bulgarian]. *Simolini*. 28-47, 2021.
21. Georgiev, ZH. Nasoki za razvitie i inovatsii za usŭvŭrshenstvane na fizicheskoto vŭzpitanie i sport v Lesotekhnicheski universitet. [In Bulgarian]. *Neofeedback*, 33-56. 2020.
22. Zhelyazkov, Tsv., D. Dasheva Osnovi na sportnata trenirovka. [In Bulgarian]. *Gera Art, Sofia:* 105-35. 2011.
23. Kostov, K., V. Zlatev, Fizicheskoto vŭzpitanie vŭv visshite uchilishta. [In Bulgarian]. *SN,.1,* 25-31, 2005.
24. Peltekova, I., Pedagogicheska komunikatsiya v obuchenieto po fizichesko vŭzpitanie i sport [In Bulgarian]. *Retorika i sport SU Sofiya:* 59-71. 2015.
25. Tsolova, V., Fizicheskoto vŭzpitanie vŭv visshite uchilishta - teoriya i nauchno-prilozhni izsledvaniya [In Bulgarian]. *NSA-Pres*: 45-51. 2017.