

Adaptation of foreign female students to physical activity based on the dexterity development

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Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection.

Abstract

Purpose: to analyze the influence of physical qualities of foreign female students on their adaptation to physical activity. It is suggested to apply an individually-differentiated training program for this purpose.

Material: the comparative analysis of foreign female students from Turkmenistan, Tajikistan and Kazakhstan (n = 60) – an experimental group and females from Russian regions (n = 119) – a control group. It was applied the standards of the All-Russian sports complex "Ready for Labour and Defence" by levels (bronze, silver and gold badges) to determine the physical development level. It was applied the system of intragroup rating, which includes monitoring of students' activity at each practical class of physical education. Mathematical and statistical data processing was performed applying Chi-square (χ^2) at $p < 0.001$, $p < 0.01$ and $p < 0.05$.

Results: the speed and flexibility qualities are not sufficiently developed in students from Near Abroad. Comparative monitoring statistically proved the positive impact of the experiment on the implementation of the author's individually-differentiated program. The study significantly revealed that foreign female students statistically improved performance indicators of individual physical development. Female students adapted to the implementation of the educational process of physical education in the multicultural environment of the university.

Conclusions: the application of the coordination qualities development program allowed to statistically prove its more significant effect in comparison with the program of speed qualities improving. The students' dexterity development program could be applied in the process of adaptation to the physical activity at the university.

Keywords: dexterity, foreign students, physical qualities, adaptation, physical education, individualization, rating.

Introduction

The distinctive feature of modern Russian higher education institutions is the growing number of foreign students. The foreign students' study is an important part of university activities [1]. The foreign students' study is a specific indicator of the university, institute, or faculty status [2]. The quality of Russian higher education and the conditions of study correspond to the needs of foreign prospective students [3]. Problems of foreign students' adaptation to the study process are an important element in the vocational training system [4].

In this context, it is especially important for the foreign student to realize the significance of the socio-cultural factors' impact. These factors are able to provide each student with the opportunity to maximize the realization of his interests and abilities, ensuring a healthy lifestyle [5]. The physical education and sports is one of the factors of resolving the multicultural modern development of students. Physical education and sports appear in government documents as a mandatory academic discipline [6]. It is designed to harmonize the physical and spiritual potential of the student; ensure the formation of full physical and mental health; to achieve

the required level of functionality, general physical fitness, high working capacity [7]. The important task is to increase the availability and effectiveness of study in multicultural groups. This is especially important for pedagogical universities. Improving the process of foreign students' adaptation is promoted by various approaches in physical education classes [8]. Its solution requires an individually-differentiated approach; integration of modern pedagogical, psychological and physical education and sports knowledge; implementation of the multiculturalism principles, integration and synergy [9, 10]. Physical exercises should consider the individual cognitive interests and emotional comfort of students [11]. Classes should allow students to realize intercultural interaction [12].

Researchers identified contradictions in professional pedagogical education [1, 5]. Contradictions were observed between approaches devoted to improving the adaptation of foreign female students and the lack of the methodological basis development of physical activity. [13 The purpose of the study is to analyze the influence of physical qualities of foreign female students on their adaptation to physical activity. For this purpose, it is supposed to apply for an individually-differentiated training program.

Materials and methods

Participants.

The study involved: foreign female students from Turkmenistan, Tajikistan and Kazakhstan ($n = 60$) [experimental group (EG)]; females from Russian regions ($n = 119$) [control group (CG)]. The students of the EG were divided into two equal groups according to the individual level of physical qualities development: EG1 ($n = 30$) and EG2 ($n = 30$). The survey was conducted among female students and teachers of physical education ($n = 123$). The purpose of the survey is to identify the physical activity features of foreign female students.

Design of the study

The experiment was performed on the Physical Education and Life Safety Department of the Glazov State Pedagogical Institute (Glazov, Udmurt Republic, Russia). The All-Russian sports complex "Ready for Labour and Defence" (GTO) by bronze, silver, and gold badges were applied to determine the level of physical development: speed – 100 m; endurance – 2000 m run; strength – pull-up / chin-up test (low crossbar), quantity of times; dexterity – forward bend (standing position), cm; flexibility – shuttle run (3 x 10 m).

The results of academic groups' ratings in physical education of foreign female students from the EG were analyzed at the first stage of the study (2016-2017 academic year). The study at the Pedagogical Institute is performed in various specialties and directions. Therefore, regulatory requirements were individual for each faculty and group. The system of intragroup rating included monitoring of students' activities at each practical class: performing special exercises; technical and tactical elements of various sports; professional applied physical education; performance standards for each physical quality [6]. All semesters summed up the final result in each academic group: 30% of students with very high scores among their academic group received the "high" status; 30% of students with high scores received the "medium" status; other students received the "low" status.

The author's program of the physical qualities development was implemented in the EG during one academic year (2017-18 academic year). The program was applied in the final part of the practical class. In this part of the class, the EG performed special tasks on the physical qualities development (5-7 minutes) in one of two classes per week. Group EG1 carried out special tasks for the development of speed (special running exercises, exercises for the reaction and frequency of single motor action, acceleration uphill, acceleration downhill, exercises with weights) [14, 15]. Group EG2 performed a set of exercises for the development of dexterity: 1) exercises with unusual starting positions; mirror exercise; exercises with changing speed and rate of motor actions; 2) space changing for the exercise; complication of exercises with additional motor actions. The training process in each class included three main stages.

The first stage was aimed at improving spatial accuracy and coordination of motor actions in any speed mode. Coordination exercises were performed on the interaction

of individual parts of the body: with a skipping rope, with balls (tossing and catching a tennis ball, dribbling two balls simultaneously, throwing at a target); walking and jumping (over the bench with wall ball, dribbling, performing jumps with a 90° turn, from side-to-side jumps, jumps over obstacles).

The improvement of spatial accuracy and coordination of motor actions in short periods of time was implemented at the second stage:

- special outdoor games (the first student jumps, and the second student rotates a rope under his feet (different speed of rope rotating); the repeat of the previous exercise (the rope is rotated over the first student's head);
- run with different tasks (jump the ball in motion); gymnastic movements (forward roll) without a ball, (forward roll) with a ball; to toss a ball – forward roll – to catch a ball), shuttle run.

The third stage finished with the complication of motor actions in the second stage. The third stage was associated with improving the ability to perform the motor actions accurately and fast in unexpectedly changing conditions: gymnastic exercises in pairs, acrobatic exercises, run with obstacles, certain elements of sports games for the development of coordination [16, 17].

Students of the CG were engaged in the "Approximate program in physical education" or played in the final part of the class in sports games.

Statistical analysis: mathematically-statistical data processing was performed applying χ -square (χ^2) at $p < 0.001$, $p < 0.01$ and $p < 0.05$. The statistical insignificance of the differences between EG1 and EG2 was established at $p > 0.05$ before the beginning of the experiment.

Results

It was revealed that foreign female students (focus group, $n = 60$) received the "low" status. It was established the significance of the difference between the EG and the CG in χ^2 at $p < 0.001$. This confirms the differences between the level of physical and sports activity of the represented target groups. It was revealed the reason for the lack of female students' adaptation from the Near Abroad to the implementation of physical education and sports activities. The insufficient physical fitness of female students is expressed in the weak level of certain physical qualities development. Table 1 represents the percentage results of the physical qualities development level of females from the Near Abroad (EG) and females from the Russian regions (CG). These females studied in the same groups as the focus group students.

The results of the physical qualities testing of the EG and the CG demonstrated that speed and dexterity qualities are not sufficiently developed in students from the Near Abroad.

The students' activity rating in each practical class of physical education was analyzed during and after the experiment. Comparative monitoring results at the end of the 2nd semester of the 2017-2018 academic year are presented in Table 2:

Table 1. The results of physical qualities testing of the EG and the CG in percentage

GTO badge	Speed		Endurance		Strength		Flexibility		Dexterity	
	EG	CG	EG	CG	EG	CG	EG	CG	EG	CG
Without badge	59	49	51	55	37	30	24	19	73	51
Bronze/silver	40	45	39	38	50	63	53	49	23	34
Gold	1	10	10	7	13	7	23	32	4	15
χ^2	8.509		0.693		4.027		2.211		12.394	
Significance	p<0.05		p>0.05		p>0.05		p>0.05		p<0.01	

Notes: EG – experimental group, CG – control group; p – is the significance level; GTO – All-Russian sports complex “Ready for Labour and Defence” (GTO) by levels (bronze, silver and gold badges); speed – 100 m; endurance – 2000 m run; strength – pull-up / chin up test (low crossbar), quantity of times; flexibility – forward bend (standing position), cm; dexterity – shuttle run (3 x 10 m).

Table 2. Comparative results of focus groups monitoring by rating system at the end of the experiment

Rating level	EG1 (%)	EG2 (%)	CG (%)
High	19	37	44
Medium	23	46	31
Low	58	17	25
χ^2	35.866		
Significance	p<0.01		
χ^2	5.051		
Significance	p>0.05		

Notes: Rating level – intragroup rating of students’ physical activity; EG – experimental group, CG – control group; p – is the significance level.

The obtained results confirm the effectiveness of the author’s individually-differentiated program implementation for the physical qualities development in the final part of the physical education practical class. It is determined more significant positive impact of the experiment on the dexterity development. It was significantly revealed that foreign female students of the experimental group improved the quality of special exercises and technical-tactical elements performing in sports games; tests indicators of individual physical development. These female students mastered certain aspects of professional-applied physical education and adapted to the implementation of physical activities.

Discussion

The results of our study are correlated with the results of other studies on the effect of active physical education on the effectiveness of the students’ professional training implementation in high school [18]. Researchers experimentally proved the improvement of physical fitness and health condition of foreign female students at the university, conducted applying the innovatively advanced motor action mode. Foreign females with an active motor position are significantly ahead of their peers in functional characteristics [1]. Only the implementation of a systematic educational and extracurricular physical education and recreational activities can enhance the effect of positive social and psychological adaptation of foreign students in higher education [4]. Therefore, our

study does not contradict these trends. Our study offers the individually-differentiated approach to the physical education classes’ design. The basis of such classes is the availability of study in multicultural groups in the pedagogical university.

Our results correlate with the opinion of a number of Russian and foreign experts concerning the individualization and differentiation of education. The basis of such study is various social and national-regional characteristics [19]. The most important issues are the individualization of physical training and sports training [20]; motivation level to keep healthy lifestyle [8]; the physical and mental performance level and physiological parameters [21]. Such studies support results that have been significantly proven in our study. Special tasks for the development of dexterity during 5-7 min have a positive effect on the further implementation of physical education activities of female students in the class.

Recently, many authors have found that physical exercises affect cognitive thinking operations, the students’ performance, the students’ adaptation to the educational process at the university [22]. Systemic development of individual physical qualities has a significant positive impact on student performance [23]. Certain aspects of our individually-differentiated program update the physical education and sports orientation of the vocational training of females [24]. It is defined that physical education classes create a positive psychological environment for physical education implementation at a

higher level. The authors emphasize the interrelation of physical activity with the implementation of training tasks during the academic day [18]. It is noted that physical exercises increase the level of psychological health, the success of training [25]. Our results are positively correlated with other scientific studies of this problem. The proposed exercises' design in our study motivates and engages all students into cognitive physical education and sports activities. Our program considers the individual educational interests and emotional comfort of students. It is considered the interrelation level of students' skills, allowing to realize intercultural educational interaction.

Our research helps to solve the problem of the readiness of physical education teacher to pedagogical interaction with foreign students. There are empirical studies on the implementation of modular advanced training programs. Such programs are aimed at the development of the subjective position of the trainer-teacher. The application of programs increases the level of pedagogical interaction of a teacher with foreign students [11, 26, 27]. Studies demonstrate that coordination training affects significantly the technical and tactical development [14, 24] and the athletes' performance in many sports [28]. Our study supplemented the information on the relationship of motor abilities with the skills and abilities formation processes to perform physical exercises. The study demonstrated

that the most informative are indicators of coordination abilities development. The level of coordination abilities development to a greater extent determines the ability of students to master the technique of motor actions and forms a high level of students' professional readiness for physical activity.

Conclusions

The application of the individually-differentiated program for the coordination qualities development demonstrated its more significant effect in comparison with the training process for improving speed qualities. This creates prerequisites for further study of the phenomenon of individually-differentiated physical education and sports activities realization with foreign students in methodological, content and organizational aspects. Practical experience in the development of students' dexterity could be applied in the professional activities of a physical education teacher at Russian or foreign university. This allows to improve the quality of the pedagogical interaction of the teacher with foreign students in the process of their adaptation to physical activity at the university.

Conflict of interest

The authors declare no conflict of interest.

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Cite this article as:

Nagovitsyn RS, Osipov AY, Manurov IM, Zhuikov RA, Vershinina NB. Adaptation of foreign female students to physical activity based on the dexterity development. *Physical education of students*, 2019;23(2):70–74. <https://doi.org/10.15561/20755279.2019.0203>

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Received: 03.03.2019

Accepted: 07.04.2019; Published: 28.04.2019