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Pilates as an effective means of agriculture specialists training at physical culture lessons at a higher educational establishment (by the example of Izhevsk State Agricultural Academy)

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Abstract: Nowadays Federal state educational standard of the 3rd generation are used at a higher educational establishment. They demand students', the future specialists', physical readiness for social and professional objectives solution. In some research works pilates is considered as health-improving means and the means of motivation among students. However, the essence of pilates, as the means of specialists training, is not revealed. ***Material.*** Pilates as the means of training students for the future profession of an agricultural worker. Research methods. Information sources review and analysis, questionnaire, students' health indices analysis, pedagogical experiment. ***Results***. We created and introduced the methodology of pilates lessons taking into account the applied qualities upbringing among the future specialists. It includes pilates organization at regular physical culture lessons during the academic year. We created the complexes of exercises and visual teaching cards for independent lessons. The organized questionnaire helped to define the opinion of students concerning professionally important qualities of agriculture specialist. The materials of medical check-ups among students helped to reveal the most common problems with students' health – cardiovascular diseases and locomotor apparatus disorders. ***Conclusion.*** As a result of the organized research we proved that pilates is an effective means of agriculture specialists training at physical culture lessons at a higher educational establishment.

Keywords: pilates, elective courses in physical culture and sport, agriculture specialist, students.

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Introduction

An effective means of training agriculture specialists during many recent years was profession-applied physical training (PAPT). With the help of PAPT lessons students of higher educational establishments and specialized secondary educational institutions were trained for labor activity objectives in different spheres – medical, technical, agricultural and others. PAPT was included into the program of higher educational establishments in 1964, but nowadays earlier popular PAPT lessons are excluded from the program. In 2014 Federal state educational standard of the 3rd generation started to function at higher educational establishments and students started to master two disciplines – "Physical culture and sport elective courses" and "Physical culture and sport". Elective courses provide the choice of this or that specialization by students and the second discipline includes general physical and theoretical training. However, in the opinion of some authors, the main objective of physical upbringing at a higher educational establishment is general physical and profession-applied physical training of students, [1,2]. Agricultural higher educational establishment is not an exception. At Izhevsk State Agricultural Academy in Izhevsk aerobics and one of its directions-pilates are very popular among female students in terms of Physical culture elective course.

The aim of the research is to reveal the effectiveness of pilates as the means of training agriculture specialists at physical culture lessons at a higher educational establishment (by the example of Izhevsk State Agricultural Academy) and create the methodology of pilates lessons in terms of Physical culture and sport elective course.

The objectives of the research:

1. To analyze literature sources.
2. To organize a questionnaire survey among students concerning the problem of agriculture specialists' professionally important qualities revelation.
3. Reveal the dependency between the principles of pilates and professionally important qualities of

the future agricultural workers.

4. To analyze students' health indices.

5. To create the methodology of pilates lessons taking into account the revealed professionally important qualities.

6. To define the significance of pilates for the students with the help of a questionnaire survey.

Materials and methods

We analyzed the information sources and normative documents concerning the topic of the research. One of the main normative documents was Federal State Educational Standard.

FSES of the 3rd generation 3+ concerning professional activity of agroindustrial complex (AIC) workers included general cultural and professional competencies. They are described by E.V. Bocharova (2017). In the opinion of the author general-cultural competencies include the following values:

- personality (character, temperament, peculiarities of behavior);
- cognitive skills (memory, attention, imagination, perception);
- adaptive skills (responsible self-determination in extreme situations, external factors analysis);
- research and creativity skills (imaginative ability);
- the level of intellectual development (outlook, polymathy, flexibility of thinking)
- capacity for socialization (authority among colleagues, cooperation);
- learning and self-education ability;
- self-assessment ability (self-analysis, critical attitude to oneself and own labor potential);
- discipline (high volume and quality of works fulfillment);
- motivation to labor activity, to innovations mastering.

Professional values include the following:

- managerial – current economic situation understanding in the sphere of AIC, the ability to make managerial decisions and etc..;
- general-professional – orientation towards promotion at work and professional development and etc.;
- special, technological – knowing the directions of technologies development in AIC;
- project – creating the events connected with effectiveness increase of agricultural production;
- scientific-research – readiness to organize the research works connected with the forms of agriculture organization improvement [1].

Bachelor's program, according to FSES of the 3rd generation 3++, sets universal competencies, including physical culture, EC (educational competencies)- self-organization and self-development (including valid social and professional activity provision".

In our opinion, competence based approach is necessary during physical culture lessons organization. During the lessons students should get education and the skills of the future profession.

As the analysis of many works showed, scientists wrote only about health-improving effect (T.V. Derkach, A.M. Imashev, G.R. Shamgullina, 2008; I.A. Zhurova, 2016) and motivational value of pilates (E.V. Kaerova, L.V. Matveeva, 2017; V.D. Ivanov, Z.I. Matina, 2018; O.Yu. Druzhinina, N.B. Vershinina, 2021) [3,4,5,6,7].

Thus, information sources analysis showed that the existing research works reveal pilates only as the means of health improvement and motivation, but it is not studied as the means of training agriculture specialists. Moreover, FSES of the 3rd generation analysis demands "necessary level of physical fitness support" from the future specialist, including professional activity.

During the second objective of the research solution (to reveal professionally significant qualities of agricultural worker) we organized a questionnaire survey among the 3rd course students at Izhevsk State Agricultural Academy. It should be noted that the students of the 3rd course were chosen not accidentally: they have already had work experience and industrial practice, they knew the specificity of the future profession and could define professionally important qualities taking into account not great practical experience.

The students of the 3rd course revealed professionally important qualities and underlined complexity in development. This fact is underlined by M.S. Vorotova, 2018 in her dissertation [2].

Complexity means simultaneous development of physical, psychophysical and personal qualities.

Results and discussion

As a result the respondents defined the following professionally important qualities: Physical working capacity – 55%, stability of nervous system– 22%, professional power of observation – 15%, information memorizing and retention– 32%, geoclimatic resistance – 78%, ability to concentrate – 64%, accurate actions – 79%, working capacity steadiness in terms of height and narrow support – 54%, hypodynamia resistance – 88%, static endurance – 60%, operative thinking – 45%, ability to orient oneself – 59%, leadership potential – 83%, accurate eye – 95%, diligence – 91%, independance – 96%, self-control – 67%, sense of purpose – 66%.

We consider that these qualities can be developed with the help of pilates. For this purpose let's draw a parallel between the principles of pilates and professionally important qualities of agriculture specialist (table 1).

Table 1

Principles of Pilates [4] and professionally important qualities upbringing [2]

Principles of Pilates	Professionally important qualities
Attention focusing	ability to focus attention, stability of nervous system, hypodynamia resistance
Muscle control	sense of purpose
Regularity of trainings	physical working capacity, geoclimatic resistance, strength, dexterity, diligence
Body centralization	working capacity steadiness in terms of height and narrow support
Accuracy of movements	Accurate actions, static endurance, accurate eye, information memorizing and retention, ability to orient oneself
Correct breathing	Independance, self-control
Smothness of movements	Flexibility
Visualization	professional power of observation, thrift

In the third objective consideration we found direct dependence between pilates principles and professionally important qualities upbringing among agriculture specialist. Table 1 shows that for this or that professionally important quality development it is necessary to follow pilates principles.

Pilates is a valuable health-improving means of fitness and it is especially urgent nowadays, as the problem of health state among young people still prevails at schools, specialized secondary educational institutions, higher educational establishments. Let's consider health indices among the students (by the example of Izhevsk State Agricultural Academy, Izhevsk) in order to get complete information and underline the significance of physical culture lessons according to Pilates system.

During recent years we see health indices and physical fitness level decrease among the students of different higher educational establishments. The level of interest in physical culture lessons at higher educational establishments decreases and after graduation some graduates, who didn't attend physical culture lessons, completely lose any interest in motor activity and gain some diseases, including professional sphere of activity. This fact should be paid attention to and it is necessary to create and introduce effective physical culture means into schools and higher educational establishments.

At physical culture department of agricultural higher educational establishment in Izhevsk this unfavorable situation concerning health state of the 1st course students is a well-known fact. Many years the amount of students with health state disorders doesn't decrease. Applicants with different diseases enter Izhevsk State Agricultural Academy and we revealed the most popular among them (Fig.).

Let's consider the sickness rate of the 1st course students at Izhevsk State Agricultural Academy in terms of the most popular diseases – cardiovascular diseases and locomotor apparatus disorders (table 2 and Fig.).

Table 2 and the picture show that cardiovascular diseases prevail in percentage locomotor apparatus diseases and vary between 25,4% till 45,3%, locomotor apparatus disorders - from 7,4% to 27,3%. The main peaks of cardiovascular diseases among students were in 2017-2018 and 2018-2019 academic years. The main peaks of locomotor apparatus disorders were in 2012-2013 and 2019-2020 academic years. Both groups of diseases present a great group of students. They need additional lessons on the basis of health-improving practices. It should be noted that inside these groups of diseases there are different diagnoses. They should be considered individually. Moreover, among the students, who have cardiovascular system disorders and locomotor apparatus disorders, there are the representatives both of preparatory and special medical group and therapeutic physical training. Physical culture lessons have different means, suitable for this or that medical group, including aerobics means – pilates. Pilates is the system of exercises. They have health-improving, upbringing and educational value. Pilates is also a great means of

motivation among students as it includes stretching, power load and control over the correct breathing – the combination of three available and interesting physical culture means.

Table 2

The main groups of diseases, revealed among the 1st course students at Izhevsk State Agricultural Academy (in % from the amount of those, who have health state disorders)

Academic year / diseases	Cardiovascular diseases	Locomotor apparatus disorders
2005-2006	28,2	16,6
2006-2007	37,6	15,1
2007-2008	36,3	11,8
2008-2009	25,8	12,3
2009-2010	32,1	11,5
2010-2011	27,5	14
2011-2012	25,4	10,6
2012-2013	26,3	21,5
2013-2014	32	10,3
2014-2015	24,6	11,6
2015-2016	25,9	10,5
2016-2017	36,5	5,6
2017-2018	45,3	7,4
2018-2019	42	13,8
2019-2020	27,9	27,3
2020-2021	26,2	16,2

Сердечно-сосудистые заболевания – cardiovascular diseases
Заболевания опорно-двигательного аппарата – locomotor apparatus disorders

Fig. Dynamics of sickness rate among the 1st course students at IzhSAA according to cardiovascular diseases and locomotor apparatus disorders

In order to solve the 5th objective we created the methodology of pilates lessons. It included pilates organization at regular physical culture lessons during the academic year. The students of the 1st-3rd course of different directions of training at IzhSAA took part in the research. We created the complexes of exercises and visual teaching cards for independent lessons. The importance of the lessons was defined with the help of a questionnaire among the students. They attended pilates lessons.

The main form of pilates practical realization was "classical lesson of gymnastics" of a group type two times a week.

The programs of lessons were divided in accordance with the level of difficulty:

– basic course;

– program for the beginners;

– program for students of the average level of physical fitness.

The means was the following: 7-10 exercises of the system.

The main methods were the following: recurrent in the regimen of interval load and also the use of the method of split-constructive and integral-constructive exercise. Basic exercises are the easiest exercises in pilates. They are slow movements, twisting and untwisting – the main complex of pilates. The exercises were fulfilled, preserving the main principles of Pilates.

The program of the basic level combined the exercises. They followed one another: Hundred – twisting – circles with a leg – back rolls-over– spine stretching.

The duration of the period – 1 month.

The methodology of the initial course lessons organization had the following means: 12-14 exercises, including modified exercises apart from the basic ones.

The initial level was directed toward the basic movements of high accuracy fulfillment (in details and in general), the tempo of exercises fulfillment increase in terms of smoothness and continuity of movements preservation, movements and breathing synchronization.

The duration of the period – 2 months.

Let's consider the methodology of average level lessons organization.

The means: 22-24 exercises, including modified exercises apart from the basic ones.

The average level was directed toward the basic motor skills and the skills of exercises repetition mastering with the transfer from one to another without pauses, increasing the speed exercises fulfillment.

The duration of the period – 4 months.

The significance of the lessons was defined with the help of a questionnaire among the students. They attended pilates lessons.

For the 6th objective realization in order to define the importance of pilates lessons among female students of IzhSAA we organized a questionnaire survey. 300 female students (1st-3rd course) took part in the survey. They trained at the groups of "Aerobics" specialization. The results of the questionnaire survey showed that among the kinds of aerobics 67% of respondents define pilates lessons as the most effective ones in health-improvement. 89% of the respondents underline educational value of pilates. 92% of respondents speak about an effective upbringing value of pilates, as pilates develops the main professionally important qualities of agriculture workers, 655 of the respondents underlined the applied value of pilates at work practice (this group of students said that at practice they demonstrated their professionally important qualities, brought up during regular pilates lessons. These lessons they attended even being on practice).

Conclusion

Thus, we organized a detailed research and revealed that pilates is really an effective means of training agriculture specialists at physical culture lessons at a higher educational establishment. In this connection we created and introduced the methodology of pilates lessons taking into account the applied qualities of the future specialists upbringing.

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