

PROFESSIONAL APPLIED PHYSICAL TRAINING OF FUTURE SPECIALISTS OF AGRICULTURAL PRODUCTION

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Annotation. *Purpose:* develop and experimentally prove the contents, methods and forms of physical training of future specialists of agricultural production. This takes into account advanced course of professional applied physical preparation means kettlebell sport. *Material:* The study involved 141 students. Duration of study is 5 years. *Results:* It was found that a significant increase in indicators of flexibility, strength, coordination abilities of students promoted the use of exercises using weights of different weights. Confirmed the legitimacy of the use of such means of physical education for the development of muscle strength of the upper body, back, legs, abdominals. These muscles are the most loaded in the performance of professional activities of mechanical engineers. *Conclusions:* The program meets the basic criteria for the formation of curriculum for physical education. The program promotes the development of professional applications of physical qualities, motor skills and improve physical performance of students.

Keywords: professional, application, students, physical, training, weight-lifting, program, exercise.

Introduction

Recent years there has been observing increasing of difficult of work in agro-industrial sphere. In this case social pedagogic significance of professional-applied physical fitness of future specialists in agro industrial sphere increases. As on to day we can see deepening of contradictions between requirements to personality, functioning of specialists in agriculture branch and actual level of readiness of higher educational establishments' graduates to fulfillment of professional functions. There are contradictions between demands of modern production in specialists, who would be able to adapt to constantly changing professional environment and insufficiency of physical fitness components, between system of physical training and individual character of specialist's functioning.

In conditions of public education's upgrading many scientists underline urgency of significance of professional-applied physical training and choosing of innovative educational technologies for improvement of specialists' condition in higher educational establishments [4, 6, 8, 11]. Modification of content of modern system of students' physical education is becoming the most important pre-condition of innovative processes' development in sphere of agricultural education. Scientists R.T. Rayevskiy, V.P. Krasnov, V.I. Ikyinich, A.Ts. Deminskiy et al [2, 3, 5, 10] determined that ensuring of physical fitness and reliability of specialists, who work in sphere of national economy, the most effectively are achieved in process of special professionally oriented application of physical culture means.

Insufficient foundation and effectiveness of physical education program for future specialists of agro-industrial complex not only reduces effectiveness of physical trainings and health recreation processes but can result in more negative after-effects.

One of means of professionally-applied physical trainings, which facilitates preparation for future professional functioning can be weights lifting, which have a number of positive features: simple character, low level of traumatism, accessibility, simple material provisioning (V.Ya. Andreychuk, Yu.V. Scherbina,, K.V. Protenko, M.F. Pichugin) [1, 7, 9, 12, 13, 14, 15].

This research work is a part of scientific programs of faculty of physical education and department of theory and methodic of physical education and sports of Zaporozhye National university (state registration number 0106U000583). The role of the author is to provide scientific development of academic plan on physical education, considering professional-applied physical training of future specialists in agro-industrial sphere.

Purpose, tasks of the work, material and methods

The purpose of the research is to work out and experimentally ground content, methods and forms of physical education of future agro-industrial complex specialists on the base of deepened course of professional-applied physical training with means of weights lifting.

During five years on the base of Tavriya state agro-technical university in order to determine effectiveness of worked out program we were conducting experimental research.

General quantity of participants of experiment was 141 students. Observation was conducted at equal stages of training; by results of deep medical examinations all participants were related to main group of physical education.

For solution of the set task we used such *methods of the research*: theoretical analysis and generalization of literature sources; studying of normative documentation on agriculture professions and physical education at higher educational establishments; programming; pedagogic experiment with the help of pedagogic tests; pedagogic observation; methods of mathematical statistics.

Results of the research

As a result of pedagogic experiment on testing of effectiveness of experimental program of professional-applied physical training with the help of weights lifting we determined that in experimental group indicators of physical fitness increased more significantly than in control group.

It should be noted that comparative analysis of results of experimental and control groups after experiment showed confident differences ($p < 0.05$) (Table 1).

Table 1

Changes in percentage indicators of physical fitness of experimental and control groups' students in process of pedagogic experiment

Description of tests	Control group, %					Experimental group, %				
	Year of study									
Forward torso bents from sitting position, cm	1	2	3	4	5	1	2	3	4	5
		4.3	4.1	1.9	2.9	-6.6	30.1	6.5	5.3	6.5
100meters' run .	2	1.3	0.6	0	-2.8	6	1.4	1.4	0.7	0
Chin ups, quantity of times	0.9	5.4	3.4	0	-4.9	28.8	4.1	0.6	2.6	2.6
3000 meters' run.	1.4	0.7	1.4	0	-2.2	4.9	1.4	0.7	0.7	0
Torso rising from lying position in sitting one for 1 minute, quantity of times	1.4	2	0.2	2	-4.2	10	0.6	2.1	1.4	0.4
Long jump from the spot, cm	1.3	0.8	0.4	0	-1.2	4.8	0.8	0.40	0.41	0
Shuttle run 4 x 9 meters, sec.	4.9	1	2	0	3.1	6.8	2.1	2	1	1

Analyzing dynamic of physical fitness of experimental and control groups' students at the beginning of experiment we can note that majority of students have low physical condition.

Comparing changes, which happened during training with indicators of physical fitness we should regard dynamic of results, received in every test. For example in exercise "Forward torso bents from sitting position" indicator of experimental group students gradually increased at every stage. At the beginning of the research experimental group students had initial indicators 9.45 ± 1.46 cm, and at the end - 15.0 ± 0.8 cm., that is 58 %. Comparing of the received result with indicator of control group (9.9 ± 0.8 cm) at this stage permitted to determine confident differences ($p < 0.05$) between groups. Indicators of flexibility of control group students turned out to be lower than in experimental; increment was only 6.4 %. As per governmental tests we determined that flexibility indicators of experimental group are in "good" zone, while indicators of control group in zone "satisfactory". It permits to assert that load of existing physical education program of agriculture higher educational establishments can be characterized as insufficient for development of this quality.

Indicators of 100 meters' run test of experimental group's students improved by 1.4 ± 0.51 sec. ($p < 0.05$), or μ 9.4 %, while control group's students improved indicators by 0.2 ± 0.26 sec. or 1.3%. In our opinion significant improvement of quickness indicators in experimental group is connected with application of exercises with elements of highly intensive weights lifting, which were oriented on increasing of explosive power and speed-power qualities. Also high level of motivation to the best fulfillment of exercises is very important.

Substantial changes were also proved by results of chin ups, characterizing strength. For example, in experimental group results improved by 4.7 ± 0.94 times, or 42.3 %, while results of control group improved only by 0.5 ± 0.42 , or 4.5 %. It proves validity of application of weights lifting exercises in experimental group (pushes and jerk of weights), exercises with weight bar (pressing in lying position, squatting with weight bar, push from breast). Analysis of results of test for endurance (3000 meters' run) showed that at the beginning of pedagogic test this quality was nearly equal in both groups ($p > 0.05$). Gradual, stage-by-stage improvements of results in experimental group led to increment by 11 ± 0.17 min., or 7.8%. During five years' period of studying we did not find confident changes of endurance indicator in control group; general result of this indicator's increment was 1.4% (See fig.1).

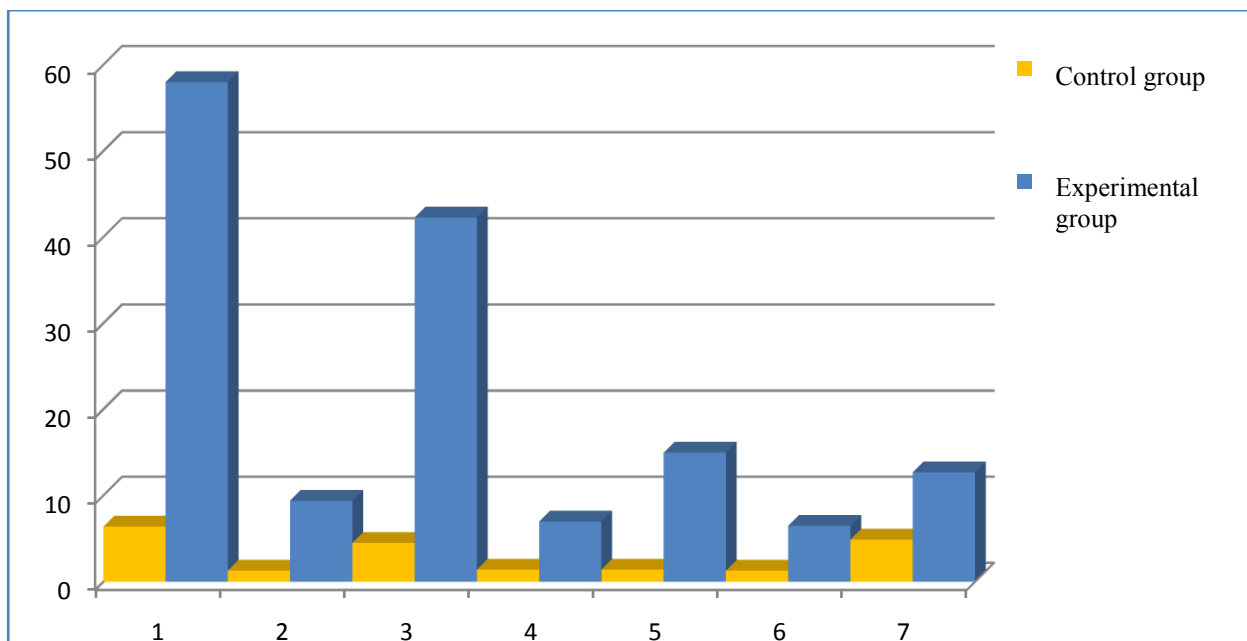


Fig.1. Dynamic of results' improvement (percentage) during experiment, comparing experimental and control groups.

Notes: 1– Flexibility (forward torso bends from sitting position, cm); 2 – quickness (100 meters' run); 3 – strength of muscles (chin ups); 4 – endurance (*3000 meters' run); 5 – strength of abdomen muscles (torso rising from lying position in sitting one for 1 minute, quantity of times); 6 – explosive power (long jump from the spot); 7 – dexterity (shuttle run).

Testing of strength of abdomen muscles (torso rising from lying position in sitting one for 1 minute, quantity of times) in experimental group showed improvement by 6.5 ± 0.7 times, or 15.2 %. At the same time, in control group improvement equals to 6 ± 0.94 times ($p > 0.05$), or 1.4%. It is explained by application of exercises for overcoming of own weight in preparatory and main part of trainings (pressing ups on supports of different height), for overcoming of external resistance (bents, turns of torso with different weights, pressing of weight bar in sitting on gymnastic bench position, pressing of weight bar from lying position, torso rising from lying position).

Indicators of speed-power qualities (long jump from the spot) of experimental group's students were improved by 15 ± 4.45 cm. ($p > 0.05$), or 6.5 %, while at control group they improved by 3 ± 3.86 cm, or 1.3 %.

Testing of coordination (shuttle run 4x9 meters) of experimental group's students showed increment of indicators by 1.3 ± 0.23 sec., or 12.7%. Result of control group's students were improved by 0.5 ± 0.24 sec., or 4.9 %.

Significant increment of flexibility indicators, of strength and coordination of experimental group's students resulted from application of weights lifting elements with weight of restricted masses and it witnesses validity of application of such means for development of girdle muscles, back, legs and abdomen, muscles, which are under highest load in professional functioning of specialists-mechanics.

Conclusions:

Thus, analysis of students' physical fitness resulted in determination that experimental program of professional-applied physical training with application of weights lifting exercises influences positively on professional applied physical qualities and motion skills. With fulfillment of most of control tests experimental group's students confidently exceeded physical fitness's indicators of control group's students. Results of five years' observation over students' physical condition point, that adaptation potential of control group's students reduce. It is caused by insignificant motion activity, dense academic program, loads, violations of eating and rest regime and so on.

So, experimental group, having significant distinctions in educational process with accent on development of general and speed endurance in complex combination with development of other physical qualities significantly facilitated increasing of both general and professional-applied physical fitness of specialists of agriculture profile.

The prospects of further researches imply systemic approach to research, improvement and implementation of working program of physical education for future specialists of agro-industrial production.

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