Original Article

Theory of physical culture - a massive open online course in educational process

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Abstract
The conducted researches showed the demand for the developed online course "Physical Culture: Theory" in the educational process among students.
To theoretical knowledge, we include such as: monitoring your health, exercise and self-training methods, how to support yourself in stressful situations, how to properly provide first aid in case of trauma. This is the information that students are taught in the theoretical part of the course "Physical Culture". However, not all listeners understand the need for such knowledge and miss the attendance of lectures. Therefore, the authors of the course of our University developed a mass open online course "Physical Culture: Theory". It is placed on the National Platform "Open Education" and attracts a large audience of listeners. The introduction of this course in the educational process has allowed not only to solve the problems with attending lectures, but also to significantly improve the progress of students. The course is in demand also by other educational organizations of higher and secondary vocational education. The involvement of the course in the educational process of external (external) organizations takes place within the framework of network interaction. The course became one of the first in our university, introduced into the educational process in the format of mixed education. Final attestation on "Physical Culture: Theory", students are held in a streaming audience equipped with modern computer equipment. The creation and introduction of the course in the educational process allowed to increase the motivation of students to study the theory of physical culture.
Key words: online courses, physical culture, educational trajectories, healthy generation.

Introduction
        To date, the relevance of the use of various online resources in the educational process is no one's doubt. Despite the ongoing controversy over the possible loss of the quality of education, the need to communicate with the audience, the lack or weak motivation of students and the inability to build the educational process "as it should", online courses firmly take their place in the "educational niche (Kalmykova, Pustylnik, & Razinkina, 2017; Toni Mohr, Holtbrugge, & Berg, 2012). It has been established that with the help of the online course the theoretical knowledge in the field of physical culture is raised, habits of a healthy lifestyle are formed, methodical methods of independent physical training are opened, the students' academic performance is increased, and the risks of injuries are reduced when exercising (Bakaev, Bolotin, & Vasil'eva, 2015; Bakaev, Bolotin, & Aganov, 2016; Bolotin, & Bakayev, 2015; Ednie, & Stibor, 2017; Bolotin, & Bakayev, 2016; Harvey, Kirk, & O'Donovan, 2014; Kirk, 2013; Rochelle, & Warren, 2009).
        Analysis of existing online resources has shown that today there are quite a few educational platforms offering online courses (Table 1).

Table 1. The most famous Russian and international educational platforms

№	Name of platform	Platform's characteristic	Website
1	«Открытое образование» (НПОО)	National platform of basic disciplines studied in Russian universities	https://openedu.ru/
2	Coursera	large-scale	https://www.coursera.org/
3	Khan Academy	interactive	https://ru.khanacademy.org/
4	EdX	professional	https://open.edx.org/
5	Udacity	specialized	https://www.udacity.com/
6	Canvas Network	democratic	https://www.canvas.net/
7	Udemy	diverse	https://www.udemy.com/
8	Lektorium	educational	https://www.lektorium.tv/
9	Intuit	National Open University	http://www.intuit.ru/

Notes: НПОО - National Platform for Open Education (NPOE)

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The range of courses presented on these platforms is very diverse, as well as the goal setting of the platforms themselves. In more detail, we will focus on the National Platform for Open Education (NPOE), since this is the first Russian platform where courses are placed that fully comply with federal state educational standards (FSES), which allows them to be actively integrated into the educational process of any Russian university. Today more than 250 courses have been placed at the NPOE, the number of applicants for training has exceeded 1 million people.

There is one more difference of the NPOE from other platforms - it is the place where the theoretical course of the authors of the St. Petersburg Polytechnic University "Physical Culture" fully complies with the requirements of FSES. Initially, the idea of creating such a course seemed somewhat absurd. However, the analysis of the curricula has shown that the theoretical part of the course "Physical Culture" takes 72 hours (2 credit units), requires a sufficiently large load of the auditor fund and the work of the teachers.

Methods of research

Based on the above approaches to the organization of online learning, we have developed a theoretical online course "Physical Culture". The introduction of the course into the educational process took place in four stages.

At *the first stage* (autumn 2015) it was decided to create an online course "Physical Culture" (approved at a meeting with the Minister of Education and Science of the Russian Federation).

In *the second stage* (January-June 2016), the creation of the course "Physical Culture" (defining the course topics, writing lectures, recording video, posting on the national portal of "Open Education").

The *third stage* is a pilot launch in the fall semester 2016/2017 academic year. of the year.

The *fourth stage* is the inclusion of the online course in the compulsory curriculum for the study of discipline (reflected in the schedule of classes and in the load of teachers).

The course was created and posted on the portal "Open Education" (https://openedu.ru) in September 2016.

Results and discussion

The authors of the course conducted initial monitoring studies. In the course of the study, we obtained the following results (Table 2).

Table 2. Results of the initial monitoring study

№	Name of indicator	Value
1	Duration of the course (academic hours)	72
2	Number of students (people)	More than 1800
3	Number of teachers (people)	37
4	Time spent on taking a theoretical test (min / person)	25
5	Percentage of first-time passers (%)	70
6	Time spent on receiving debts (min / person)	25

The course "Physical culture" is studied for one semester, without restriction as to a particular semester of the first year of study. The course is among compulsory fundamental subjects.

It is possible to take various views of the online courses. It has been found out during the study, that many higher education institutions do not pay it any attention at all and implement in their curricula only the practical component, without due attention to physical culture theory, despite the compulsory character of a theoretical part.

We could not but oppose this suggestion. Our trainers are positive that it is impossible to foster a healthy generation without laying relevant theoretical basis.

However, the undertaken analysis, the results of which are presented above, confirmed the inefficiency of a traditional form of implementation of a theoretical part of the course.

During the study, we identified major gaps that are:
- poor attendance of lectures by students
- poor preparation to theoretical credits
- necessity to use large shift classrooms
- significant amount of students with academic debts (falling behind) of "Physical culture" course.

Poor knowledge of theory, methodical techniques of physical activity and sport can negatively affect work and health of a future professional. It was therefore decided to develop online course with its increasing inclusion in educational process (Figure 1).

294 --

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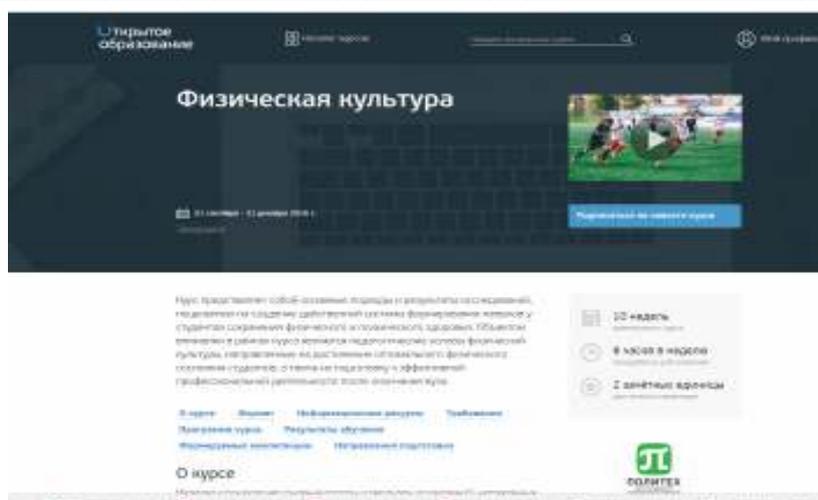
Figure 1. Page of the course on "Open education" portal.

In *autumn semester of 2016/2017* academic year, 5400 participants subscribed to the course, among whom:
- 1900 students of Polytech
- others – independent trainees, lecturers, University staff.

The first start revealed gaps, subsequently dealt with. Among these:
- approximately 1/3 of students missed kick-off lecture (held in person), highlighting how best to study the course, its structure, assessment system. As a result – all those who missed the introductory lecture not so much as thought about subscribing for a course.
- students who do not meet training criteria were left out of final testing. As a result of "ease off" attitude over many years a lot of inscribed trainees did not pay due attention to training, and receipt of sufficient number of points to access final testing.
- imperfections in the testing system of the course. As this was the first experience of the authors of the course, the need in "dynamical" testing was not obvious, thus a problem of cheating off and copying right answers of a final test (which was the same for everyone, with no randomly sampled checklists)
- necessity in changing the way the raising students' awareness of the course is approached (compulsory kick-off lecture, affecting the most urgent issues, newsletters for upcoming events, etc.)
- necessity to keep trainees abreast weekly on start/end of modules and tests.
- necessity in admission questionnaires.

The identified mistakes were taken into account and the course started again in spring semester. During the *spring semester 2016/2017* over 4400 listeners applied for the course, among whom:
- 2529 students of Polytech,
- Others – independent trainees, lecturers, University staff
- 2353 students successfully completed the course
- 176 students enrolled but choose not complete

The results demonstrated appropriateness of the first start conclusions and allowed to significantly improve the organizational constituent of the course support.

The second start revealed one more need – prohibition against change of student's name of registration.

The course "Physical culture" consists of 6 modules, 22 academic hours, including 18 in electronic format, individual work of students and its control takes 50 hours.

The main sections of the course:

Module 1. Physical culture theoretical framework
- Lecture 1. Introduction to physical culture theory
- Lecture 2. Methodological skills in physical activity and sport

Module 2. Physical culture medical and biological fundamentals
- Lecture 3. Aspects of person psycho-physiological adaptation
- Lecture 4. Physical culture physiological and bio-chemical fundamentals

Module 3. Self-guided physical exercises
- Lecture 5. Methodology for a self-guided physical training
- Lecture 6. Self-monitoring of those exercised
- Lecture 7. Healthy way of life of a student

Module 4. Physical culture in professional activity of a specialist
- Lecture 8. Vocational and applied physical training fundamentals

Module 5. Sport as a social phenomenon

- Lecture 9. Structure and social functions of sport

Module 6. Final assessment

- Final test with proctoring (personal identification)

During the course trainers and trainees have an opportunity to observe the "progress in training" – to control the scoring, see passed tasks, etc. (Figure 2).
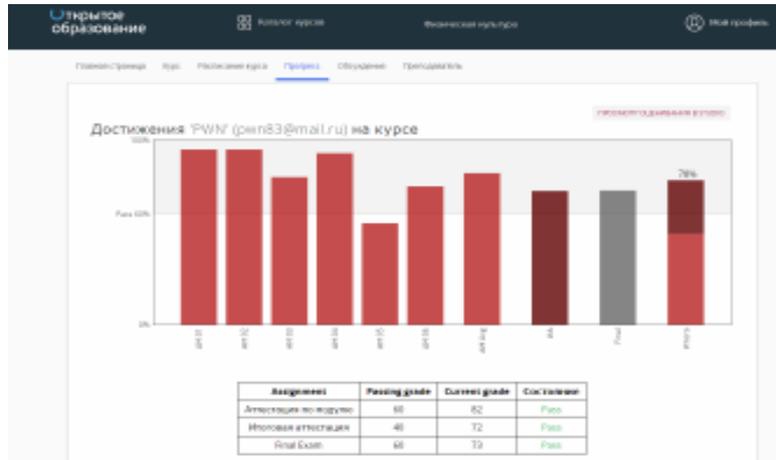
Figure 2. Trainee's progress bar.

Upon successful completion of the course, a trainee is getting a certificate with an opportunity to transfer credit in higher education institutions of the Russian Federation (Figure 3).

Figure 3. Certificate, issued by higher institution – the developer of the course.

The experience was very instructive having shown the optimum conditions for preparation and implementation of the online course:

1. List of participants should be open at least one month before the start.

2. The kick-off lecture for our University students is mandatory.

3. Regular monitoring (minimum once per month) of achievements rate, bringing information to trainees.

4. For SPbPU students the final assessment is held in offline-proctoring format. The special classroom should be equipped with minimum 50 computers connected to the Internet. Selected for final assessment students are recognized in a statement, including their login and e-mail apart from name, number of student's record book and dates. Afterwards they are admitted to pass the exam (final test of the course). Trainer (usually, two of them) stays in the classroom during the whole exam and records the results in the statement.

5. For external trainees different variants of passing final test are featured. For individuals – online-proctoring (online testing at their convenience in accordance with the agreed timelines). For groups of trainees within the framework of network contract the «blended online and offline-proctoring format» is available – in other University classroom, equipped with video cameras. Proctors monitor testing, while SPbPU staff monitors examination.

Undertaken measures provided significant improvement already at the third start of the course: autumn semester 2017/2018:

- Students' achievements rate increased

- Network contracts are signed with other Universities (VOLGATECH, Krasnoyarsk SFU, Ural FU)
- External trainees' involvement improved
- Trainees' number exceeded 5000.
- Number of learners who successfully completed the course exceeded 3000

Conclusions

Thus, some recent experience has been gained on physical culture theory online education among students of Peter the Great Saint Petersburg Polytecnical University. We consider these results can be used by other educational institutions as a positive example and for the purpose of bilateral activities. The results demonstrate the positive impact of these online courses on theoretical preparation of future specialists, motivation to maintain healthy living, trauma prevention, enables to take physical exercises more professionally during the time out of education.

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