

# Improvement of training process of powerlifters on the basis of an interactive program "PersTrainer"

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**Purpose:** to develop and scientifically substantiate the program "PersTrainer" for improving the training process of powerlifters.

**Material & Methods:** the study involved the powerlifters of 16–18 years. The following research methods were used: analysis and generalization of the literary sources and data of the Internet, pedagogical observation and the method of information modeling.

**Results:** the interactive program "PersTrainer" is developed and theoretically justified, which allows individually calculating the training load in different training cycles.

**Conclusion:** it is possible to plan training loads on the basis of individually proposed exercise complexes, which are presented in the interactive program "PersTrainer".

**Keywords:** powerlifting, training process, information and communication technologies, mobile training.

## Introduction

To improve the training process, a scientific search for the most optimal loads is constantly carried out in order to increase the level of special physical performance of athletes [7; 10; 11; 13; 18; 19; 22–27].

Powerlifting, as a power sport, includes three competitive exercises in the program: squats, a bench press and a deadlift. The sports result in powerlifting is determined by the sum of the lifted weight. To achieve a sporting result, powerlifters need to develop strength qualities that provide the ability to raise the maximum weight in three basic exercises [3; 20; 28]. Results in each weight category are evaluated separately. With the same strengths, a victory is awarded to an athlete who has a lighter body weight.

Analysis of scientific literature shows that increasing the effectiveness of the training process in powerlifting depends on the rational planning of physical activities and the formation of techniques of competitive exercises [2; 5; 6; 8]. In addition, a clear application of physical exertion should be carried out taking into account the individual characteristics of powerlifters. The construction of a program for the physical training of powerlifters requires the analysis of a large number of individual indicators. Practice of improving the training process in various sports shows that for this the most effective is the use of modern interactive technologies [1; 4; 9; 12; 14; 16; 17; 21]. The modern development of information and communication technologies provides the possibility of using mobile devices in the training process [15], which allows the coach to improve the process of managing the training process, as well as to control the rational load distribution taking into account the individual features of the powerlifters.

**Relationship of research with scientific programs, plans, themes.** The research was carried out in accordance

with the theme of the scientific research work of the Kharkov State Academy of Physical Culture 1.1 "Scientific and methodological foundations of the use of information technologies for the training of specialists in the field of physical culture and sports", the state registration number 0111U003130.

**The purpose of the research:** to develop and scientifically substantiate the program "PersTrainer" for improving the training process of powerlifters.

*Objective of the study* is to develop a "PersTrainer" interactive program.

## Material and Methods of the research

To solve the task, the following research methods were used: analysis and generalization of the literary sources and data of the Internet, pedagogical observations and the method of information modeling.

## Results of the research and their discussion

The interactive program "PersTrainer" is designed for athletes, powerlifters and coaches. With its help, you can analyze the training process of powerlifters, thanks to the calculations that the program executes.

Program includes an information block in which the base of training programs developed by highly qualified trainers and athletes is presented. The variety of these programs makes it possible to analyze their training and find the right program, given their sporting experience.

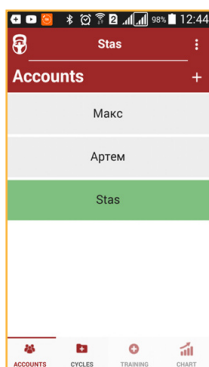
One of the features of the program – the ability to create an individual account for each athlete and the ability to quickly switch between them, which allows to speed and simplify the work of the coach with several athletes at once.

The main difference of the interactive program is the ability to distribute the load in a one-year training cycle, which increases the efficiency of the training process.

The main component of the program is the personal recording of the athlete's data in the training session, which makes it possible to control the volume and intensity of the load in the training session (tonnage and the number of bar lifts per training session), thus avoiding overloading.

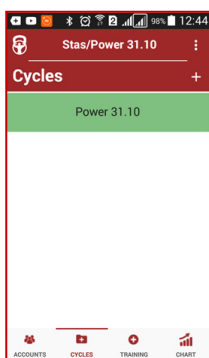
The interactive program includes a tab "graphics", which reflects the data calculated in training sessions during the year. This makes it possible to monitor and plan the loads for each athlete.

When you start the program – opens the "Accounts" tab (Figure 1), in which there is a button "+" and previously created accounts. If there are no accounts, click on the "+" button, then a window for the account name will appear (the optimal name for the account is the name or surname of the athlete).



**Fig. 1. Window "Accounts"**

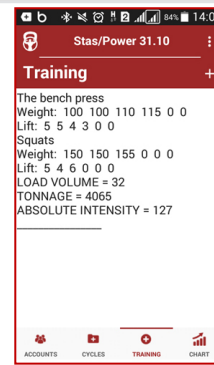
The next tab that can be found at the bottom of the screen is "Cycles" (Figure 2), in which there is a button "+" and the cycles created earlier (where the personal data of the physical load are indicated). If there are no cycles, you need to press the "+" button, after which a window will appear for the name of the cycle.



**Fig. 2. Window "Cycles"**

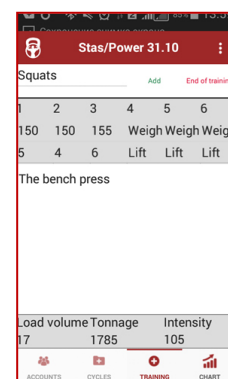
After that, it becomes possible to go to the "Training" tab (Figure 3), where the trainings for this cycle and the account are recorded. The "+" button opens the training designer (Figure 4).

This training constructor consists of a place for recording the name of the exercise, a table for filling in the weight and the number of repetitions, a field with the exercises done, cells with countable data and the "Add", "End of training" and



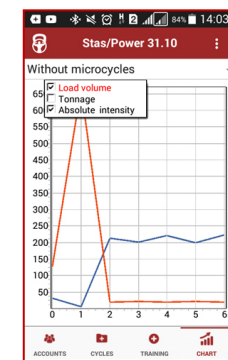
**Fig. 3. Window "Training"**

"Change" buttons (available by changing the attached exercises). Button "Add" – adds a written exercise with repetitions and weight (recorded in the field below). "End of training" button – closes the training designer and adds the received data to the training record ("Training" tab).



**Fig. 4. Designer training**

The last tab at the bottom of the "Chart" (Figure 5) – consists of a field for the graph and data settings, with which the "number of trainings in a microcycle" chart is constructed and the data displays a graph.



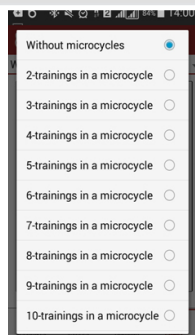
**Fig. 5. Window "Chart"**

"Number of trainings in a microcycle" – opens a window with the choice of the number of trainings in the microcycle (Figure 6).

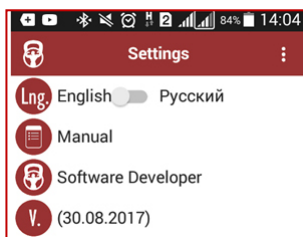
Data, displays a graph (tonnage, number of bar lifts, intensity) – construct a schedule based on the selected settings.

The app has an English translation, is in the "Settings" window (Figure 7) and "Manual" – to use the app.

Interactive program "PersTrainer" is developed for the ac-



**Fig. 6. Window with the choice of number of trainings in the microcycle**



**Fig. 7. Window "Settings"**

count and control of physical qualities, enables the coach to make a training program, calculating the number of bar lifts,

the total weight lifted the entire workout, and the average weight that the athlete raised in one repetition. The program on a numerical array of tabular data allows the analysis of statistical indicators. Thus, the interactive program "PersTrainer" is developed provides the process of planning and correcting the training of athletes in powerlifting.

## Conclusions

Developed an innovative software product allows you to plan training loads on the basis of the proposed exercises. The modern interactive program "PersTrainer" allows the coach to keep a record of the level of physical preparedness of the athlete, on the basis of which the coach can receive recommendations on the use of complex special exercises in the individual training program for each athlete.

Thus, the use of the interactive program "PersTrainer" on the mobile device in the training process will contribute to the opportunity to learn in one's own rhythm, supports communication and the dialogical nature of learning. At the same time, it provides access to additional information resources, promotes motivation and stimulates cognitive activity and interest.

**Prospects for further research** are the introduction of the interactive program "PersTrainer" in the training process on powerlifting to improve its quality and efficiency.

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