

ABSTRACT OF THE DOCTORAL THESIS BY MR. DEACU MARCEL ALEXANDRU

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The theme of the doctoral thesis

The development of combined motion qualities “force-speed” and “speed-force” by means of sport games in the college physical training

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The doctoral dissertation contains three parts, according to the academic evaluation standards of C.N.A.T.D.C.U. and I.O.S.U.D. A.N.E.F.S., thus in the first part we have made a theoretical substantiation of the entire process. We began by defining and explaining the key words, the notional meaning of the given terms and motivating the chosen theme. Afterwards we have dealt with man's motion, especially the aspects related to young students' motion. Further we have presented the physical training peculiarities in the unspecialised university education, from its beginning, its modernization tendencies, its university independence to its objectives and organization forms.

The components of the motion capacity are dealt precisely for each category: conditional, intermediate and coordinative capacities, motion skills and abilities, attitudes and habits.

In this part we have also considered sport games as means of university physical training from their definition, history, characteristics, organization to their objectives, education principles and methods concerning the application of sport's games in the physical training course. In the last chapter of the first part we have established and delimited the concepts of projection and planning, stage by stage, activities and strategies.

In the second part of the doctoral dissertation we have made a preliminary study concerning the development of the combined motion qualities „force-speed” and „speed-force” in the university physical training course and the evaluation of instruments by means of a pilot experiment.

We have begun by establishing the biological and motional features of the students, the influence of physical training and also the manifestation of the effort capacity in the sport games as disciplines which influence the development motion qualities combining force and speed.

The research instruments verification has been realised within the pilot experiment, carried on the physical training courses with the students of Petroleum-Gas University of Ploiesti. There have been studied and verified methods and techniques of research useful for the verification experiment to avoid the situations which would affect its normal display.

Some conclusions detached from the pilot experiment:

➤ The identification of the tests regarding the measurement of the combined motion qualities has been realized, these tests being found in the specialized field;

➤ Combined motion qualities measuring tests can be sustained within physical training courses without sophisticated equipments, the field having the necessary means for their achievement.

➤ The pilot experiment has been realized with all its stages and goals.

The pilot experiment conclusions gave us new openings to establish the verification experiment hypotheses.

In the third part of the doctoral dissertation we have elaborated the operating methodological field of research establishing the purpose, the pre-requisites, the hypotheses, the goals, the tasks and the organization of the research with place, period, subjects and development stages of the scientific process.

We have elaborated a program project for instruction, and after the interpretation of the initial testing results we established the instructional goals and operational structures for each experimental group.

Motivation of choosing the subject

Considering the games' characteristics and implications, especially sport games, concerning the formation and development of the human being, and also the increasing number of students who choose to practice those games we have chosen in our work to refer to the most solicited sport games within physical training courses accomplished in the Petroleum-Gas University of Ploiesti, that is: basketball, football and handball.

The goal of the research

The goal of our research lies in showing the efficiency of some sport disciplines, in our case sport games, upon the evolution of the conditional capacities, especially those combined, within physical training courses with the students of Petroleum-Gas University of Ploiesti. With this process we followed the identification of the resulting effects after applying the education programs

and the operational structures proposed for research, addressed especially to the development of the combined motion qualities, the effects being related to the quality and quantity of biological, motional and psychic modifications.

The research premises

Our dissertation studies the quality and the efficiency of some strategies of approaching the instructive process, where there are promoted sport games methods, trying to develop the combined motion qualities of the students of the other faculties. In order to accomplish what we said we have followed the next premises:

➤ We consider the subject of the physical training activity of unspecialized faculties to be based on a methodical system out of which the sport games have a main role;

➤ We consider the improvement of the combined motion qualities within the sport games course to be a decisive element for the efficiency of the training process;

➤ We consider that for a decisive contribution to the accomplishment of different complex motion actions, the motion qualities must acquire a higher level;

➤ The differences between initial and final amounts and also the evaluation of determinative causes will objectified the correct methods of the training process for the theme of our research.

The hypotheses of the research

The pedagogical and social valences of sport games acquire a conceptual form by distributing strategies for each objective, their practice supposing the assurance of the internal training conditions, generated by the natural availabilities of the subject (his capacity of learning and execution, motional intelligence, motivations, needs, motional abilities, his capacity of self-control and self-regulation), but also by external conditions (the courses' planning, psychic-pedagogical events). Considering the mentioned premises we advance the following hypotheses:

➤ Frame and reference objectives destined to improve the motion capacity of students will be better realized by using sport games methods within the university physical training courses;

➤ Playing sport games within the physical training courses would bring about improvement of the motion capacity, implicitly of the combined motion qualities „force-speed” and „speed-force”;

➤ The adequate and correct application within the university physical training courses of sport games methods will bring about the appropriation of some correct motional actions transformed into specific motional skills;

➤ The training programs structured according to sport games that correspond to the students' needs and aspirations lead on the one hand to the gathering of immediate bio-psycho-motric effects and on the other hand to the establishing of systematic practice of physical exercises during the spare time as a counteracting factor to the lack of movement and social, professional and family-related integration;

➤ The creation of a didactic strategy based on the different treatment of the students can lead to the improvement of the abilities of self-training and self-evaluation, a strategy superior to the frontal one.

The objectives of the research

➤ Stating the conceptual aspects regarding the sports disciplines within physical education in the superior education system: basket ball, football and handball;

➤ Elaborating the instructional design regarding the influence of the specific means in sport games on the combined moving abilities and on the degree of influence of their development dynamic;

➤ Identifying the positive effects of practicing sport games, but also the spotting of negative effects caused by the lack of movement;

➤ Elaborating and experimenting specific programs regarding the development of combined moving abilities „strength and speed” and „speed and strength” in basketball, football and handball;

➤ Through the investigations made, with a minimal discomfort for the students, one can assume the obtaining of the realistic information about the researched parameters in different moments of the training;

➤ Processing the gathered data regarding the statistic-mathematical methods, that lead to a realist analysis;

➤ Drawing conclusions based on the research and outlining the relationships between the content of the study and the practical activity.

The requirements of the research

➤ A lot of gathering of multidisciplinary documentary information for setting the theoretical and methodical ground for the theme;

➤ Studying the curricular area of physical education in the non-specialized superior education;

- Establishing the necessary stages of conducting the research(preparatory and operational stages);
- Establishing the specimen of work to put into practice the operational didactic project;
- Establishing the level of manifestation of the combined moving abilities of the student;
- Elaborating the planning documents: annual calendar plans, referential objectives, content, number of lessons per semester correlated with the purpose of the research;
- Conducting the verifying experiment by applying the programs of training in the physical education modulus in the superior education system;
- Establishing the level of manifestation of the combined moving abilities of the students(final test);
- Ordering and gathering the data obtained to process them in a statistic-mathematic manner;
- Verifying the efficiency of the training programs by expressing the data obtained after the final test;
- Processing and analyzing the data gathered and drawing conclusions of the experiment.

In order to realize our scientific research we have used a wide range of research methods. Starting from the fact that the method is a way of handling or solving a problem, we have used in our research:

A. Methods with a high degree of applicability:

- -Scientific documentation;
- -Historic method;
- -Mathematic method;
- -Statistic method;

B. Particular methods:

- - Descriptive method- observation and inquiry;
- -Experimental method;

C. Processing and interpretation methods:

- -Logical method;
- -Statistic method;
- -Graphic method.

Organising the research

The place and period related to the conducting of the verifying experiment

The verifying experiment was carried out during the physical education lessons with students from the Petroleum-Gas University of Ploiesti. The applying these particular programs for basketball, football and handball was realized in a sporting ground that had the required equipment(basketball board, handball and football goals, equipment for developing different muscular groups, etc.).

The verifying experiment was carried out all throughout the scholar year 2007-2008, but for the mandatory breaks represented by the holidays and the examination period.

The subjects of the scientific investigation

To be able to come up with reasonable evaluations, we needed groups of subjects sufficiently big to be able to represent as real as possible the characteristics of the segment of the population that they represent. The research was made on a group of 100 students of the Petroleum-Gas University of Ploiesti. The groups were assembled on the criterium of freedom of choice of a sport discipline. The age of the subjects is between 19-21 years and the sex is male. The 3 experimental groups consisted of students that chose basketball, football and handball and the control group consisted of students that opted for classical lessons of physical education(general training lessons).

The stages of the scientific research

The research activity took 3 year (2005-2008), with preparatory stages, with precise tasks:

- Stage 1- its objective was the accumulation of specialized knowledge, as detailed as possible, regarding the theme of the thesis;
- Stage 2-conducting the pilot experiment;
- Stage 3- conducting the verifying experiment;
- Stage 4- logical and statistic interpretation of data;
- Stage 5- writing the thesis.

We used several types of measurements for our research: somatic measurements, measurements of the motion capacity, specific to the combined motion qualities and functional determinations.

The tests were established after consulting the specialized materials, and the measurements aimed at identifying the following indicators:

Anthropometric indicators:

➤ Height and Weight – on the basis of the gathered data, we calculated and interpreted the anthropometric indicators of proportion, as well as the Quetelet nutritional indicator.

Motion indicators:

- High standing jump;
- High jump with two steps impulse;
- Standing throwing oina ball;
- Long standing jump in two legs detachment;
- 30 meters speed running standing start;
- Triple standing jump landing in the sand pit;
- Quint-standing jump landing in the sand pit;
- Ahead throwing 2 kg. medicinal ball;
- High ahead throwing 2 kg. medicinal ball (over the head);
- High back throwing 2 kg. medicinal ball (over the head);

Tests for determination of the maximum anaerobic alactacid characteristics:

- The Sargent Test and the Instantaneous relative power – we interpreted the results of the Sargent test on the basis of the dal Monte scale used for men.

After the initial testing, and as a result of the evaluation of the game abilities and motion parameters level, we established the training programs for each experimental group, aiming at developing the conditional capacities and especially of the combined force-speed capacities, using the specific tools of the specific sport.

A first important objective was improving the physical and wealth condition through taking physical training classes, the volume and quality of the used methods. A point of interest in our study was the priority development of the conditional force and speed capacities, as well as their combination.

For the most efficient analysis of the obtained results we used the statistic synthesis parameters, the “*t*” - *Test – dependent test*, used for verifying the null hypothesis for a group of individuals tested with the same variable at different time intervals and the *Simple ANOVA Test*, analyzing method of establishing significant statistic differences between the medium results obtained from the two groups (Experiment and Control) at the respective test.

Conclusions drawn from the pedagogic experiment

➤ The obtained results indicate a harmonious physical development of the tested individuals, having normal growing indices and an optimal weight. From the somatic perspective, we measured light growing of the waist and insignificant weight loss. The subjects being at the 19-21 age, the training program didn't influence these indicators. The differences between the medium results of the experiment and control groups, calculated at the final testing, show that they are not significant;

➤ After statistic analyzing the results, we concluded that the experiment group was superior to the control group, the difference between their medium results being significant. This way we infirmed the null hypothesis. The training program applied to the experiment groups was efficient in correlation with the particularities of the motion qualities development at the specific age of the subjects that cannot spectacularly improve their motion values, on the background of limited hours allocated to exercise and of the surpassing of the critical period of intervention;

➤ We can therefore appreciate that there is still the possibility of improving the anaerobe alactacid capacity of the subjects using the specific methods of the sport games. This brings us to the conclusion that the young people functional resources are insufficiently explored;

➤ The training programs were put entirely into practice, the students from the experiment group dealing successfully with the methods used, as well as the working volume;

➤ After using the methods of the sport games during the physical education classes, we recorded a growth in the manifestation level of the subjects' motion combined qualities, shown in the results of the second testing, which also confirms the correctness of the concept and organizational methodology, and of the study's development and evaluation;

Practical-methodological Conclusions

➤ The independent variable causes significant growth of the motion indices measured with the above tests;

➤ The differences between the groups were significant for all motion tests applied. The experiment group was superior to the control group, obtaining significant different values in the final testing;

➤ The verification experiment confirms the fact that methods used in the sport games are efficient for the combined motion qualities „force-speed” and „speed-force”;

➤ The sport games as ways of physical education in the non-specific faculties contributes to the general motion qualities of the students, including the level of manifestation of the combined motion qualities. The sport games constitute, therefore, into a real, coherent and efficient system of projection and solving the experimental didactic approach, perfectly integrating among the other methods of the physical education classes in the non-specific faculties;

➤ The physical education classes in the universities embrace the form of the sportive training using the specific sport games methods.

Recommendations

Organizing the physical education classes around sportive games offer favorable conditions for instruction for all students, irrespective of their motion qualities or technical and tactical knowledge specific to the respective game.

Taking into consideration that the methods used for the developing of the motion combined qualities „force-speed” and „speed-force” are well tolerated and with no accidents, and the fact that they can be used in smaller spaces and with no special amenities, we recommend using these methods on a larger period during the educational year.

The treatment of the motion combined qualities can be well realized through the specific methods of the sport games. These methods are undertaken at a superior level and at maximum intensity during the game.