

A GENERAL THEORY OF PREPARATION OF ATHLETES IN THE OLYMPIC SPORTS; STRUCTURE AND CONTENTS OF THE SUBJECT

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INTRODUCTION

An intensive and multi-dimensional theoretical and practical activities of several generations of professionals have led to formation of a complex system of knowledge in the theoretical sphere of Olympic preparation of athletes. In the present time this subject has become an independent scientific discipline which we call "a general theory of preparation of athletes in the Olympic sports".

METHODOLOGY

A general theory of preparation of athletes in the Olympic sports is an example of an integrative science. Its foundation lies in the inner similarity of the structure of how objects function, even though to a superficial glance these objects belong to various separate traditional disciplines. Interdisciplinary approach allows us, first of all, to grasp all the multiplicity of objects which are relevant for a given discipline; second of all, such an approach allows us to look at the sum of knowledge from various traditional disciplines (such as theory and methodology of athletic training, physiology, biochemistry, morphology, psychology, etc.) from the point of view of their practical application to the training of professional athletes.

The reason for including into the general theory of preparation of Olympic athletes knowledge from various neighboring disciplines stems from the necessity of overcoming a mechanistic approach and professional specialization in various sciences. The goal is to develop such a synthesis of knowledge which will allow us to formulate an analytical-synthetic theory, and not one having simply a cumulative character.

Development of the general theory is constantly stimulated by an appearance of a new and different empirical material. A constructive approach to theory leads to incorporating this new material into further scientific investigations; it also leads to an integration of the empirical material from various neighboring disciplines into knowledge per se for a further development of our subject.

The general theory of preparation of athletes in the Olympic sports develops under the influence of a number of general subjects and theories. One of such sciences is cybernetics, which in the main deals with the management and processing of information. A large influence on the formation of the general theory of preparation of athletes in the Olympic sports was also exercised by the general systems theory, in particular its special methodological section which deals with philosophical (general) questions applicable to development of special sciences.

Also, an important role was played by such a discipline as an investigation of operations involved in a decision making. Other theories which influenced development of the system of knowledge in our interest sphere was a theory of the functional system (by P.K.Anokhin), a theory of activity, and a theory of adaptation.

One of the more positive influences on the formation of the general theory of preparation of athletes in the Olympic sports was played by a move away from an excessive mathematical formalism, which was so prominent in the works of the 1970's and in the beginning of the 1980's. An involvement with mathematical methods in such a complex and integrative discipline has not only sharply limited the circle of specialists capable of understanding and applying the new knowledge in their scientific and practical activities, but it also slowed down the interdisciplinary and integrative processes responsible for its formation. In the present time there is a sharply felt limitation of possibilities of applying mathematics for development of knowledge in the sphere of sports. A desire for a clear description of a phenomena, for explanation and forecast, as well as a desire for wide conceptions, have determined our attitude towards mathematics, its language and methods, which are used today mostly as a working apparatus for an analysis of results of investigations.

All of this has served as a foundation for formation of the structure and contents of a corresponding scientific subject; it has also led to a development of a textbook called "A General Theory of Preparation of Athletes in the Olympic Sports" which is aimed at the students of Physical Education and Sports colleges.

RESULTS AND DISCUSSION

When we were creating the textbook, we have incorporated in it data from the modern scientific investigations immediately in the sphere of the Olympic sports, as well as in the spheres of physiology, medicine, biochemistry, morphology, biomechanics, psychology, pedagogy, theory of management, technology, etc. We have touched upon the experience of modern athletic practice; generalization of the experience has allowed us to view in a basically new light the many problems which are relevant to the sphere which serves as the subject of the book.

In presentation of each chapter of the book the author has attempted to base himself on the knowledge and experience which is representative of a highest scientific level and most effective final results. Therefore, the contents of the chapters dealing with the questions of adaptation of the muscle, bone and connecting tissues, energy support of the muscle activity, etc. are based mostly on the research done by specialists in the Scandinavian countries, Germany, Italy, the USA, and Canada. In the scientific labs of these countries the most fundamental scientific investigations have taken place. Meanwhile, narration of the general theoretical questions pertaining to the preparation of athletes, methodology of building various stages of a training process, perfection of different aspects of preparation is based, mostly, on the work of specialists from Russia and Ukraine. We also have widely used the positive experience of the GDR.

The contents of the book are mostly based on the original investigations of the author and his students in the period of 1970-1996. Experiences of the author and his colleagues in the sphere of a general strategy for Olympic training, as well as in the spheres of scientific, methodological and organizational support of many outstanding athletes and teams which have achieved success in the Olympic games of the 1976-1996, have also found their place in the book.

Therefore, the textbook generalizes the modern knowledge based on the achievements of modern science and practice of preparation for competitions of outstanding athletes.

The first part of the book is dedicated to the Olympic kinds of sports, and their place in the program of summer and winter Olympic Games. It also discusses system of competitions in the Olympic sports, and foundations of competitive activities of athletes.

In the second part of the textbook we find foundations of the modern system of preparation of athletes. To a necessary extent we present material dealing with morphology, physiology, biochemistry, biomechanics, pedagogy, which form the basics of the system of preparation of professional athletes.

Study of the third part of the book allows us an opportunity of getting to know technical, tactical and psychological sides of athletes' preparation. We analyze the most important aspects of these components and their role in achieving high athletic results.

The fourth part is dedicated to the characteristic of physical conditioning and physical preparation of athletes. We look at the factors determining speed, coordination and strength capabilities; we also look at the flexibility and stamina of athletes and narrate the methodology of developing these qualities.

In the fifth part the reader will find information about the structure and development of the process of preparation of athletes. We look at the fundamentals of a long-term preparation in the Olympic sports, methodology of building macrocycles of various levels, meso- and microcycles, as well as different training sessions and parts of them.

The sixth part includes material from different branches of athletic preparation which were under intensive development in the last two decades. This includes athletic selection and orientation in the process of training, prognosis, control and management in the system of preparation of athletes.

And finally the seventh part is dedicated to the so-called outside the training and outside the competition factors in the Olympic sports. We narrate fundamentals of rehabilitation and stimulation of working capacity of athletes. We look at the peculiarities and competitive activities of athletes in various climate and geographic zones - in the mountains, in the conditions of a hot and cold climate, in the conditions of sharply changing the time zones, etc. We touch upon the problems of using various means for rehabilitation and stimulation of working capacity; we also discuss traumas and their prophylactic treatment. A large amount of attention is paid to the questions of a technical, material, and scientific support of the training and competition processes.

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In the modern conditions of exceptionally high training and competitive loads typical for the preparation of top-level athletes, who train for the Olympic Games, the problem of achieving by an athlete the level of readiness for the highest achievements at the time of the main competitions became particularly acute. The achievement of this condition is mainly ensured by rational periodization of the annual training, but more significant are the structure and content of the short period immediately preceding the main competition and associated with such concepts as load and overload, stress, etc. The Olympic preparation may enable planning of higher external TL compared to the preseason (TD, 21 \pm 13%, moderate; total accelerations, 27 \pm 4%, moderate) whereas no difference was observed for internal TL values between these two periods. High-intensity distance (HID) and internal TL (session-RPE) were lower (\sim 11.0 \pm 7.8%, small and \sim 38 \pm 3%, moderate, respectively) during the in-season compared to preseason. A cohort of 14 elite athletes playing within the French national Rugby-7s team gave their written informed consent to participate (age: 26 \pm 5 years, height: 179 \pm 9 cm, body mass: 90 \pm 11 kg). Only players participating across the entire season were selected. This was due to the stadium structure preventing capture of the satellite signals.

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The aim of technical preparation is to create and improve sports skills. Each sports skill has a given way of solving a motor task (contents of a sports skill) in accordance with the rules of a given sport, biomechanical rules and locomotive possibilities of the athlete which are referred to as technique. Specific individual adjustment of technique by an athlete is referred to as style. Procedure of acquiring motor skills: Sports skills are created on the basis of information on external and internal environment of the athlete and their synthesis into a complex image about the situation (skill)