

## REVIEW

of a dissertation for the award of the scientific degree "DOCTOR OF SCIENCE", in the field of higher education 7. "Health and Sports", professional field 7.6. "Sports" on the topic:

COMPLEX SYSTEM FOR CONTROL AND ASSESSMENT OF PHYSICAL DEVELOPMENT AND SPECIFIC WORKING ABILITY OF ADOLESCENT BASKETBALL PLAYERS

Author: Assoc. Prof. Mariana Aleksieva Borukova, PhD, Department of Basketball, Volleyball, Handball, National Sports Academy "V. Levski - Sofia  
Reviewer: Prof. Daniela Dasheva, DSc.

### Brief reference for the candidate

Associate Professor Mariana Borukova, PhD, graduated from the National Academy of Sciences "V. Levski" with a specialty - basketball coach. She also holds a master's degree in sports management. In 2014, she defended the educational and scientific degree of doctor. In 2019, she was selected as an associate professor of basketball in professional field 7.6. Sports at the "Basketball, Volleyball, Handball" department. Assoc. Prof. Borukova actively participates in the creation of curricula, in scientific and educational projects, in the organization of scientific conferences and scientific forums. Prof. Borukova is the editor-in-chief of the scientific journal "Vasil Levski NSA Yearbook". She is a member of the expert council on scientific and project activities of the NSA. Member of the Coaching Committee of the Bulgarian Basketball Federation, national basketball coordinator of the Special Olympics, Bulgaria.

The professional and scientific interests, research and academic activities of Associate Professor Mariana Aleksieva Borukova, PhD are mainly focused on the problems of the theory and methodology of basketball learning and training. They are the result of the long-term sports career of Prof. Mariana Borukova as a Bulgarian national basketball player and as a player in the representative teams of leading European basketball clubs in France, Spain, Italy, Greece and Slovakia. Winner of awards and medals from a number of prestigious international and national competitions - 7 times champion of the Republic of Bulgaria; 5 times winner of the "Cup of Bulgaria"; European vice-champion for girls in 1992; Award for "Best Female Basketball Player of 2002"; 2 times vice-champion of the Slovak Republic.

All these prerequisites shape her rich sports profile, now also academic and research, and her commitment to the development of the basketball game.

#### General data for the dissertation

The presented dissertation consists of 287 pages, structured as follows - introduction; three main chapters - Theoretical foundations of control in basketball; Research design; A system for monitoring sports training in adolescent basketball players; Following from Main conclusions and contributions, References and Appendices (normative tables and methodology of application of the complex control system).

Very richly illustrated with figures and graphs (46 in number) and tables - 42 in number.

#### Relevance of the issue

The relevance of the issues being developed cannot be doubted, and this is convincingly stated by the author already in the introduction. Of course, until now in basketball practice there are criteria and methods for control and evaluation of the level of physical development, physical preparation and technical skills of adolescent athletes, but of course the practice needs a new up-to-date system for the control of specific work capacity, composed of updated tests. For this purpose, it is necessary to know in depth the features of control in sports - in general and in basketball in particular, as well as the existing systems.

Effective management of the training process, especially in adolescent athletes, requires testing in the various stages of sports training, which carry up-to-date information on the state of specific performance of basketball players.

The generalizations derived in this way lead to the formulation of the main research thesis of the doctoral thesis, namely - Control of the specific performance of adolescent basketball players through a complex test battery as a new approach to effective management of the training process and a prerequisite for sports in elite basketball.

The object and the subject of the dissertation research are outlined concretely and eight research theses (tasks) are duly defined, on which confirmation is found on the pages of the third chapter.

The main goal of the research is aimed at developing a comprehensive system for controlling the specific working capacity of adolescent basketball players as an essential factor for increasing the effectiveness of sports training.

351 people took part in the research, of which 41 were basketball coaches and 310 were male and female basketball players, divided into three age groups - up to 12, up to 14 and up to 16 years.

The experimental approach to the problem is in five stages arranged in logical sequence and subordination. The research methodology includes 5 research procedures, described in detail and properly. Here we must pay special attention to the complex system for control of physical development and specific performance of adolescent basketball players, which consists of 23 tests - 7 for physical development and 16 for specific performance. The operational research activity was carried out within one year.

The data from the conducted studies were processed by adequate statistical methods such as descriptive statistics, hypothesis testing (variance analysis and Man Whitney U-test), correlation, regression and factor analysis. The SPSS statistical software was used for all statistical analyzes.

The first chapter presents the leading concepts for control in sports and in particular for the control of specific performance in basketball. Of interest here is the developed retrospective analysis of existing horse systems troll in basketball. Critical analysis of the literature used shows that 230 sources have been studied, of which 140 in Cyrillic, 83 in Latin and 7 Internet resources, most published in the last 10 years.

In general, Assoc. Prof. Borukova has achieved a good quality of critical analysis of the main theoretical statements of schools regarding the control in sports of individual Bulgarian and foreign authors. In most cases, its author's position and assessment is well articulated.

### Evaluation of the obtained scientific and scientific-applied results

The present dissertation is a theoretical and experimental study on the problems of control in basketball with adolescent athletes to develop and experiment with a comprehensive system for evaluating and optimizing some of the main factors of sporting achievement. In its essence, it is a representative study that fully meets the high criteria of a large doctoral thesis.

In confirmation of the above are the obtained scientific and applied results of the dissertation, as follows:

1. The average values and variability of the different components of the specific working capacity of adolescent basketball players - girls and boys in terms of age and gender have been established.

2. The applicability of the tests for control of the specific working capacity of adolescent basketball players - girls and boys - has been established. The reliability and content validity (specificity) of the used tests have been established. It has been proven that most of the measured parameters are highly reliable, which testifies to their specificity and applicability in basketball.

3. The dynamics of physical development in girls is shown and shows that there are no statistically significant differences between U14 and U16. While in

boys there is a significant influence of age on the development of the main signs of physical development.

4. It has been proven that in the indicators of physical fitness in all three ages of U12; U14 and U16, boys have an advantage in terms of speed capabilities, explosive power of the lower extremities in horizontal and vertical efforts, as well as agility, and in girls the advantage is in terms of flexibility. The values of the Student's t test increase over time.

5. It has been found that the level of physical fitness of boys and girls from U12, U14 and U16, who train in organized basketball with age, improves. In terms of technical skills in all three ages, the boys have an advantage in terms of skills related to terrain and ball handling at high speed, hunting and passing, basket shooting and realization skills. For girls, the advantage is in terms of shooting time, but not in terms of accuracy.

6. It is statistically confirmed that in all age groups of both sexes, high values of Fisher's F test indicate the strong influence of the age factor on the time achieved when shooting in the basket, as well as the percentage of penalties.

7. The factor structure of the studied indicators of the specific working capacity is revealed. There are three components (factors) that explain over 70% of the total variance of the studied features. The grouping of indicators by individual components in adolescents is consistent with their age and gender development.

8. A normative base for assessment of the specific working capacity of adolescent basketball players by age and sex has been developed.

#### Evaluation of the contributions of dissertations:

The dissertation paper presents 4 specific contributions to the applicability of the results in the field of specific control in basketball. They sound like this:

1. Information has been collected on the average level and variability of the main signs of physical development and the specific working capacity of adolescent basketball players in terms of age and gender.

2. A complex system for control of adolescent basketball players has been developed, which provides an opportunity for coaches for a new approach in the selection and selection of young players and effective management of the training process.

3. A regulatory framework has been created and regression models have been developed that allow objective assessment of the results of tests for specific performance of adolescent basketball players – girls and boys in terms of age, and which provides rich information about their condition. It is possible to create other tests to assess the parameters of specific performance.

4. Given the dependence of physical development on biological maturation, sports experience and the specifics of the methodology of training in technique and tactics of the game, it is necessary for the different ages studied, developed models of young basketball players to use in modern sports practice.

The complex system for control of the specific working capacity in basketball presented with the present work p Adolescents not only have the potential to help improve the training process in sports, but can also be used successfully by national teams at older ages and even in Bulgaria's neighbouring countries.

All this can give a further impetus to the development of basketball in adolescents.

In the spirit of constructivism, I can point out some omissions that reduce the value of the presented dissertation. For example, I consider the first part of the work to be less constructed and developed - theoretical, compared to the practical-applied - third chapter! Some claims can be made to the "originality" of the included test battery!

The dissertation is accompanied by three publications that meet the requirements of ZRAS, PRAS and the internal rules of NSA "V. Levski"- one published in scientific journals, referenced and indexed in world-famous databases with scientific information, and the other two in non-refereed journals with scientific review or published in edited collective volumes.

The abstract objectively reflects the content of the dissertation.

### Conclusion

Undoubtedly, a serious and in-depth scientific development in the field of basketball has been presented to our attention. The results of the present work expand not only the specific theory and practice of basketball, but also the general theory and practice of diagnosis and control of specific performance in sports. The innovative research approaches applied in the present paper can be used in other sports, where the improvement of the factors of specific performance is of great importance for sports achievement.

Assoc. Prof. Mariana Borukova, PhD is a thorough and consistent researcher and this is clearly evident in the writing of this dissertation, which I appreciate.

In this regard, I propose to the distinguished members of the scientific jury to award Assoc. Prof. Mariana Aleksieva Borukova, PhD, the scientific degree "DOCTOR OF SCIENCE" in the field of higher education 7. Health and Sports, PF 7.6. Sports.

Sofia, July 15, 2022

Full Prof. Daniela Dasheva, DSc.