



## ANALYSIS OF THE PERFORMANCE RESULTS OF COMBATANT ATHLETES AT DIFFERENT TRAINING STAGES

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### Abstract

Successful and effective management of sporting training is impossible without a well-grounded prediction which creates necessary conditions for making intelligent management decisions in sporting activities of athletes. The analysis of competitive results of athletes allows to determine main tendencies in the development of the sporting career.

Summing up the results of scientific papers and researches in the sphere of athletes training, it is possible to form several approaches to discovery of sporting talents. One of the most common approaches to talent discovery is the analysis of the sporting career.

*The objective* – to discover interrelations of the competitive activity results of combatant athletes at different stages of their training.

*Methods.* The method of the analysis of research and methodological literature and Internet sources has been used. The papers, in which researches connected to athletes performance in the following Olympic sports: free-style wrestling, Greco-Roman wrestling and judo, have been analysed.

*Results.* During the analysis of sporting careers, the following parameters of combatant athletes have been considered: achieving maximum competitive result in each age period (cadet, junior U23 and adult age), age category, country, etc. Two the most currently important directions of analysis of sporting careers: retrospective and perspective have been characterized. The papers, which are dedicated to the analysis of athletes performances throughout their sporting career, have been systemized. The fact that over 60 % of combatant athletes, who have achieved international prizes as adults, have won medals at the international stage as juniors has been demonstrated. The perspective analysis has shown that approximately 30 % of athletes, who have had achievements at junior or cadet competitions, demonstrate top results in the adult sporting career. The optimal age for qualifying is as follows: pre-qualification at cadet age (specialized basic training stage) – from 13 to 16 years; more profound qualification at junior and adult age – beginning with 17–18 years.

*Conclusions.* The selection has to be hold at such periods of the sporting career: pre-qualification at cadet age (specialized basic training stage) – from 13 to 16 years; more profound qualification in junior and adult age – beginning with 17–18 years.

**Key words:** sporting career, Olympic types of wrestling, competitive results.

### Introduction

The growing popularity of sport and its commercialization promote sporting activity in the whole world. Spectacularity and prestige of the Olympic sports is growing alongside; social significance of the victory at the great competitions increases [24, 31].

Successful and effective management of sporting preparation is impossible without a well-grounded scientific prediction which is a way of

foreseeing the development paths of a sporting career [24, 28]. The main task of prediction is confined to the discovery of a possible development of a certain phenomenon, which corresponds to the scientific knowledge to the utmost. The prediction creates necessary conditions for making intelligent management decisions in the sphere of sporting training [5, 23].

The whole system of sporting training is confined to achieving maximum competitive



activity result. The result of this activity is the most objective parameter of the qualification level of an athlete or a team [19, 24].

Sporting career is a professional career of an athlete and can be considered as a sequence of active achievements of sporting results [1]. The professional career is closely connected to the professional becoming and mastery [8]. On the basis of the analysis of the athletes competitive result it is possible to discover the main tendencies of the career development and to predict its results in the future. The development path of talented young people and their transformation to highly-skilled (elite) athletes is an interesting topic for both practical men and researchers [33].

Summing up the results of scientific papers and researches in the sphere of athletes training, it is possible to form several approaches to discovery of sporting talents. One of the most common approaches to talent discovery is the analysis of the sporting career [9, 11, 12].

At the moment a significant number of papers is dedicated to the analysis of athletes achievements, though the need in researches connected to wrestling is discovered. The majority of papers is dedicated to cyclic sports [11, 12, 26, 29] or sport games [10, 20, 21]. In the majority of them [4, 18] several sports (only certain sports belong to wrestling types) are considered at the same time. Different levels of athletes (from participants of national teams to winners of international competitions) [22, 25] and different training stages [6, 14, 32] are also considered. It is possible to make a conclusion that systematization and generalization of the results of research papers is a currently important task, which will allow to discover the most relevant directions of the researches.

*The objective* – discovery of interrelations of the competitive activity results of combatant athletes at different stages of their training.

## Methods

The traditional and conventional methods have been used in the paper: the analysis of research and methodological literature and Internet sources, analysis and synthesis of information.

The search of literature has been conducted with the help of the search system Google Scholar (scholar.google.com). The sources from libraries

of Ukraine and foreign countries have also been analyzed.

The papers, in which there are researches connected to the performance of athletes in the following Olympic sports: free-style wrestling, Greco-Roman wrestling and judo, have been analyzed.

## Results and discussion

During the analysis of sporting careers, the following parameters of combatant athletes have been considered: achieving maximum competitive result in each age period (cadet, junior U23 and adult age), age category, country, etc. [14, 27].

The most common approach to the analysis of the competitive career of athletes is *retrospective*. The sporting career is considered upside down when the athletes have achieved top results. The age of starting sport training, achievements in cadet and junior periods, education, social conditions and other aspects are taken into account.

In the papers [2, 3] age tendencies of starting sport training, duration of training record prior to the achievement of international sporting result of combatants, who have won a medal in European championships in the period from 2002 to 2012 have been established. The given parameters have been separately considered depending on the weight categories. The performance results of 180 Greco-Roman wrestlers have been analyzed. The medalists of European championships have started training at the age of  $10,27 \pm 2,79$  years, have had a wrestling record equal to  $14,61 \pm 4,02$  years before they have won the medal. They have obtained victory at the age of  $24,86 \pm 3,29$  years. The results confirm that the optimal age for starting wrestling trainings is 10–11 years.

The training record and the age of achievement of the maximum result correlate to each other ( $r = 0,48$ ). Wrestlers of light and heavy weight categories have started training at a later age and their training record prior to getting the first medal is shorter. This research offers a set of information concerning the optimal age for the start of training and at what age one can expect that the wrestler will win at their first great competitions in accordance to their weight category to wrestling trainers.

The analysis of the performances of the athletes of the teams of Ukraine, Turkey and Hungary has shown that 34, 31 and 7 athletes respectively have



achieved success at the international stage over the period from 1993 to 2008 [17]. The researches have been conducted and it has been established how successful have been performances of the mentioned athletes before adult categories competitions – at the cadet and junior age. The researches have demonstrated that among all the Ukrainian athletes, who have achieved results at the international adult stage, 24 % have previously been winners of the European and world championships among the adolescent, 70 % have been winners among the youth and 88 % have entered top 5 of the best European and world championships. Similar results have been obtained for Turkish and Hungarian wrestlers.

The *perspective* analysis of a sporting career, when the achievements are determined bottom-up is also currently important. In this case the professional growth of the athletes who have demonstrated a significant result at cadet and junior age and their following achievements are analyzed.

The analysis of sporting careers of all the judoist athletes (1974–1978 years of birth), who have been members of the national team of Portugal [4], has been conducted. The number of athletes who pass all the stages of competitive practice: cadet, junior, adult, has been analyzed. It has been shown that out of 32 male athletes and 15 female athletes, who have taken part in competitions at the cadet age at the national level, only 12 (37,5 %) male athletes and 7 (46,7 %) female athletes have also participated in competitions at the junior age. Furthermore, only 9 (28,1 %) men and 3 (20,0 %) women have continued their performances as adults. The full line-up of the national team of athletes 1974–1978 years of birth has comprised 29 and 10 male and female athletes respectively. It is possible to make conclusion that less than 30 % of athletes pass all the age stages of competitive practice. It is also worth noticing that most of the athletes start their sporting career much later (or do not take part in competitions at the early stages of training).

The analysis of the interrelation of the early specialization and general successes in judo during the sporting career has been made [13]. The stability of individual competitive results of athletes at the level of the São Paulo state championship in judo has been established. During 10 years (starting from 1999) surveillance over 406 athletes (204 men and 202 women) has been conducted. The age of the athletes during the surveillance varies from 9 to 20

years. At the end of the period only 7 % of male athletes and 5 % of female athletes have preserved their competitive level. The interrelation between the successfulness of competitive performances in judo at the early and adult age has not been discovered.

The research [18], in which the achievements of two groups of athletes at the adult category, who have had achievements at the international level at the junior age, are compared, have been conducted. The first group – athletes who have achieved results at junior competitions at the junior age, while the second one – athletes of the junior age who have achieved significant results at the adult competitions.

This research explains at which stage the international success of the adult generation can be predicted on the basis of the success which the athletes have achieved either at the international junior competitions or at the international adult competitions at the junior age. Four thousands and eleven male and female athletes in three types of combat sports (taekwondo, wrestling and boxing), who have been born in the period from 1974 to 1990 and have participated in international junior and adult competitions in the period from 1990 to 2016 have taken part in the research. The following competitions at the adult age have been considered: continental and world championships and the Olympic Games. The results have shown that 61,4 % of junior medal winners and 90,4 % of all the athletes who have won a medal at the adult championships at the junior age have had success at the adult championships, too. Considering particularities depending on the sports, out of all the juniors – 92,2 % athletes in taekwondo, 68,4 % wrestlers and 37,9 % boxers have achieved a significant result at the adult international competitions. The results demonstrate the specificity of prediction for each sports as well as the significance of juniors' performances at the international adult competitions.

Complex researches of judo [5, 7, 23], in which the significance of the right selection of the potentially highly-qualified athletes is demonstrated, have been conducted: over 80 % of Bulgarian athletes, who have won medals at the Olympic Games, have previously been acknowledged as potential athletes of the international level. Whereas, in a similar way, 500 perspective athletes in judo have been counted in Cuba, but they have won 1 silver and 5 bronze medals at the Olympic Games over the period under consideration.



It is also shown that if better trainers and sports base are provided to talented young athletes from an early age then the possibility of their becoming athletes of the international level is higher [21, 34].

For comparing with other sports we provide an example of the most extensive study of the track-and-field athletics [11, 12]. Out of 137 world champions (gold medal in individual classification at the world track-and-field athletics championship), who have previously taken part in world junior championships, 80 % have been medallists and winners. Eighty-one winners of the Olympic Games of 1992–2004 have previously performed at the world junior championship; 90 % have been finalists and medal owners as juniors.

One hundred and twenty-one medallists have been at the 2018 Olympic Games in Beijing, out of which: 57 (47 %) have taken part in previous competitions at world junior championships; out of these 57 athletes – 47 (82 %) – medallists or finalists of these competitions.

Furtermore, the percent of performance results (medallists, finalists or participants) has demonstrated that the higher the level of achievements (medallist – finalist – participant) at world junior championships in the period from 1986 to 2006 the higher the achievements at the world championships level (from 1987 to 2007), the Olympic Games (from 1988 to 2008). Thus, the similar results have been obtained, nevertheless it is necessary to make a comparison by the same parameters: the time of conducting research, competitions and athletes rank, volume of athletes sample, etc. It is important to state that for combatant athletes such researches have not been conducted (which demonstrates the interrelation of performances at the early stages with the achievements as an adult).

On the basis of the conducted analysis of literature sources data it is possible to establish

age periods in which it is necessary to conduct qualification (discovery of talents) and sport specialization. They have to be connected to the stages of training and the competitive age range.

The competitive result as a selection criterion has to be used at such periods of the sporting career: pre-qualification at cadet age (specialized basic training stage) – from 13 to 16 years; more profound qualification in junior and adult age – beginning with 17–18 years [5, 7, 17, 19, 23].

### Conclusions

On the basis of the conducted analysis two the most currently important directions of analysis of sporting achievement of athletes: retrospective and perspective have been separated. The fact that over 60 % of combatant athletes, who have achieved international prizes as adults, have won medals as juniors has been demonstrated. At the same time the perspective analysis has shown that approximately 30 % of athletes, who have had achievements at junior or cadet competitions, demonstrate top sport results as adults. Among the athletes who have previously had achievements at the world junior championship, over 90 % have achieved success as adults. The selection has to be hold at such periods of the sporting career: pre-qualification at cadet age (specialized basic training stage) – from 13 to 16 years; more profound qualification in junior and adult age – beginning with 17–18 years.

*Prospects for the future research.* The analysis of athletes performance in the Olympic wrestling types and establishment of the interrelation between the successfulness at the international stage with achievements at the cadet and junior periods.

### Conflict of interest

The authors claim that there is no conflict of interest.

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