

# The long-term competition activity of the world's top athletes

By Vadim Zelichenok

*With the aim of improving the preparation of athletes, particularly the long-term planning of their careers, the author examined the competitive careers of more than 1500 elite athletes in all the disciplines of athletics. The objective was to try to understand how they have been affected by the introduction of international championships for the 'Youth' (under 18) and 'Junior' (under 20) age groups and by the increase in competition opportunities and competition intensity for senior athletes. A general analysis produces a four-group classification of well-known athletes based on their international performances in youth/junior championships and subsequent senior championships. An analysis by event group provides examples of athletes who achieved international class results at a relatively young age and athletes who continued to excel at relatively older ages. The author concludes that (1) good results achieved at a young age do not have to compromise the athlete's career in terms of eventual level of success or duration, (2) the average age of the winners and medallists at the World Championships and Olympic Games has been gradually increasing, (3) there are quite a few examples of athletes who have remained in world's elite and even improved their results after the age of thirty.*

## ABSTRACT

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## Introduction

The design of a rational, scientifically based long-term competition programme for elite performers is one of the most difficult issues faced by coaches and federation leaders in modern athletics. The complexity and importance of the task has increased over the last 20 years as the sport has become more professional and the international calendar of events for all age categories has expanded. The number of championship events has increased, as has the amount of prize money on offer, and at the same time the circuit of Grand Prix and other commercial meetings has become more and more financially attractive for top athletes.

The increased financial incentives and the growth of the sport into many new countries have made the fight for the top places at major competitions tougher and tougher. It is

not surprising that more than 20 countries supplied winners in the four biggest events between 2000 and 2004 (Olympic Games in 2000 and 2004 and the World Championships in 2001 and 2003), that the medallists represented more than 40 countries and that the finalists (top 8) represented more than 60 countries.

In such a situation, even the most outstanding athletes face difficulties in repeating their successes. Thus, only four champions from the 1996 Olympic Games in Atlanta could win again in Sydney in 2000 (Johnson (USA), Gebrselassie (ETH), Zelezny (CZE) and Korzeniowski (POL)) and only two champions from Sydney could defend their titles in Athens (Aleknina (LAT) and Korzeniowski). Even maintaining the highest level of success from one year to the next is difficult. Eight winners at the 2003 World Championships in Paris went on to become Olympic Champions the following year in Athens (El Guerrouj (MAR), Bekele (ETH), Sánchez (DMR), Phillips (USA), Olsson (SWE), Klüft (SWE) Aleknina and Korzeniowski) but 11 world champions failed to win a medal and some were not even selected for Athens.

A second, closely related issue is that of planning the competition pathway of highly talented young athletes. Is success in the increasing number of international championships open to athletes in the 'youth' (under 18), 'junior' (under 20) and U23 (under 23) categories a pre-requisite for success at the senior level? Or does the intensity of the necessary preparation and competition in major events at an early age have a detrimental effect on an athlete's prospects as a senior? And what is the best way for a talented young athlete to make the transition to the senior ranks?

Until relatively recently those in the junior category had, in most of the IAAF Area Groups, the possibility to compete in a continental championship or Games every second year. With the creation of the biennial IAAF World Junior Championships in Athletics starting in 1986, major international compe-

tion opportunities were increased for athletes of this age group. Then, in 1999, the IAAF added the biennial IAAF World Youth Championships. Between continental and world events, young athletes can and do compete in a major international competition, or more than one, every year starting at 16 or 17 years old. Moreover, in Europe there is now a biennial continental U23 championships, which extends the possibilities.

Table 1: Athletes who won major junior championships and later won medals at the World Championships in Athletics or Olympic Games.

<p><b>Sprints and Hurdles</b>                      Ato Boldon (TRI), Grit Breuer (GER), Veronica Campbell (JAM), Svetlana Dimitrova (RUS), Monique Hennagan (USA), Colin Jackson (GBR), Katrin Krabbe (GER), Natalya Nazarova (RUS), Francis Obikwelu (NGR-POR), Falilat Ogunkoya (NGR), Jana Pittman (AUS), Julian Russell (XXX), Quincy Watts (USA), Lauryn Williams (USA)</p>
<p><b>Middle and Long Distance</b>                      Mathew Birir (KEN), Yuriy Borzakovskiy (RUS), Haile Gebrselassie (ETH), Wang Junxia (CHN), Moses Kiptanui (KEN), Daniel Komen (KEN), Peter Rono (KEN), Clodoaldo Silva (XXX), Gabriela Szabo (ROM), Derartu Tulu (ETH)</p>
<p><b>Race Walks</b>                      Francisco Fernandez (ESP), Ilya Markov (RUS), Jefferson Perez (ECU), Roman Rasskasov (RUS), Mikhail Shchennikov (RUS), Irina Stankina (RUS)</p>
<p><b>Jumps</b>                      Jacques Freitag (RSA), Jean Galfione (FRA), Lyudmila Galkina (RUS), Elena Isinbayeva (RUS), Marina Kuptsova, Tereza Marinova, Fiona May (GBR-ITA), Yoelbi Quesada (CUB), Maksim Tarasov (RUS), Artur Partyka (POL), Javier Sotomayor (CUB)</p>
<p><b>Throws</b>                      Yuriy Belonog (UKR), Marius Corbett (RSA), Tanya Damaske (GER), Natalya Sadova (RUS), Osleidys Méndez (CUB), Ilke Wyludda (GER)</p>
<p><b>Combined Events</b>                      Natalya Sazanovich (BLR), Carolina Klüft (SWE)</p>

## General analysis

For more than 20 years I was closely involved in the preparation of the national teams of the USSR and then of Russia, starting with youth and junior teams and then moving to the senior national team. During this period, I was fortunate to witness the development of a whole galaxy of athletic stars. I was able to follow the careers of many of them from the age of 15-16 years, watch their performances in the junior competitions and see many of them join the world's elite. I have also been able to make detailed analyses of the careers of about 1,500 top athletes.

Table 2: Athletes who performed well at but did not win major junior championships and later won medals at the World Championships in Athletics or Olympic Games.

### Sprints and Hurdles

Chioma Ajunwa (NGR), Cathy Freeman (AUS), Marion Jones (USA), Kostas Kenteris (GRE), Samuel Matete (ZAM), Irina Privalova (RUS), Obadele Thompson (BAR), Tonique Williams (BAH)

### Middle and Long Distance

Kenenisa Bekele (ETH), Fermin Cacho (ESP), Hicham El Guerrouj (MAR), Wilson Kipketer (DEN), Svetlana Masterkova (RUS), Noureddine Morceli (ALG), Venuste Nyongabo (BUR), Sonya O'Sullivan (IRL), Fernanda Ribeiro (POR), Carla Sacramento (POR), Tatyana Tomasheva (RUS)

### Race Walks

Anna Sidoti (ITA)

### Jumps

Stefan Holm (SWE), Nick Hysong (USA), Sergey Klyugin (RUS), Tatyana Lebedeva (RUS), Ivan Pedroso (CUB), Irina Simagina (RUS), Yelena Slesarenko (RUS), Kirill Sosunov (RUS)

### Throws

Steve Backley (GBR), Yumileidi Cumba (CUB), Beatris Faumina (NZL), Svetlana Kriveleva (RUS), Yipsi Moreno (CUB), Lars Riedel (GER), Andreas Thorkildsen (NOR)

### Combined Events

Robert Zmelik (CZE)

My analysis of the careers of top athletes reveals that 75 Olympic champions (42 Men and 33 Women) since 1986 had previously taken part in the World Junior Championships in Athletics. The recent Games in Athens significantly expanded this list, adding 19 new names. On the surface, this seems a great endorsement for the junior event's role in the preparation of senior level performers.

Looking at all the athletes I have tracked, four groups with similar career patterns can be identified.

The first group comprises athletes whose careers could be defined as ideal: they all won either European or World junior championships and then went on to become winners or medallists at the World Championships in Athletics or Olympic Games. We can see from the sample of names in the group given in Table 1 that it contains athletes in all the event groups.

The second group (Table 2) is made up of athletes who did not win a major youth or junior championship but did play a prominent role at that level (finalist or minor medallist) and later became bright stars in the world of athletics. Very often, these athletes managed to surpass the results of the athletes who were ahead of them at the junior championships. Again, we can see from the sample of names that most of the events are covered.

The third group represents athletes, who did not achieve notable success in the youth

Table 3: Athletes who did not achieve significant success in major junior championships but later won medals at the World Championships in Athletics or Olympic Games.

Virgilijus Alekna (LAT), Ivano Brugnetti (ITA), Fani Chalkia (GRE), Shawn Crawford (USA), Svetlana Feofanova (RUS), Justin Gatlin (USA), Kelly Holmes (GBR), Anastas\_a Keles\_dou (XXX), \_imothy Mack (USA), Sergey Makarov (RUS), Andrei Mikhnevich (BLR) Felix Sanchez (DMR), Ivan Tikhon (BLR), Jeremy Wariner (USA),

or junior categories but eventually became top performers. Table 3 contains a sample of the names that have been included in this group in recent years

And, finally, the **fourth group** represents athletes, who were very bright as youths and or as juniors and then either disappeared or became athletes of an average level. I shall not list any names because in many cases even the experts have managed to forget about these athletes. However, I have to tell you with regret that this list is very long. My analysis of the results of all the World Junior Championships in Athletics to date shows that 60-70% of the winners and medallists do not go on to achieve any serious success at the senior level.

It seems to me that two conclusions can be drawn. The first relates to the fact that the study of the results of the major championships and Games of recent years shows that almost 70% of all the medallists at the senior level achieved high level performances at a young age, medalling and sometimes winning at world and continental junior championships. This is consistent across all events. However, the career achievement of the stars of the sport at senior level is not dependent on their actual place in the junior championships – first or second or eighth or tenth. The second conclusion is that elite athletes, having successfully started to compete internationally at youth and junior level, can in some cases continue as winners of the major senior level competitions during two or even three Olympic cycles, often having a training and competition period of over 20 years.

## Analysis by event group

I would now like to look at the long-term competition activity of leading world athletes in the different event groups of athletics.

### Sprints and Hurdles

My analysis shows that most of the world's current top 100m sprinters recorded

times in the range of 10.8 to 11.0 (men) and 11.7 to 12.0 (women) when they were 15 to 16 years old. To achieve this level of performance it is necessary to have trained for two to three years in athletics (or in other sports) and to be prepared to undergo large training loads. In normal cases, the athletes studied started to show results of international standard sometime between the ages of 20 to 21 years. There are, of course, some exceptions. Marion Jones, for example, was much faster earlier on, having run 11.17 at the age of 16 (this refutes a widely held belief that this athlete, after playing basketball as a youngster, started to practice athletics only at the age of 20 and then with just six months training became a world leader).

At the other end of the career, we can see that some of the world's elite sprinters compete successfully until 30 years of age, and, frequently, even longer. For example, Bruni Surin (CAN) ran 9.89 at the age of 32, Linford Christie (GBR) did 9.97 at the age of 35 and Merlene Ottey (JAM - SLO) did 10.74 at the age of 37 and 11.09 at the age of 44!

A great age range of best results can be seen in the 400m as well. On the one hand, you have Steve Lewis (USA) and Jeremy Wariner (USA) who became Olympic Champions at the ages of 19 and 20 respectively. On the other hand, there are a number of athletes who have achieved world class results after the age of 30, including Tatiana Alekseeva (RUS), Pauline Davis (BAH), Antonio Pettigrew (USA), Butch Reynolds (USA), and, of course, Michael Johnson (USA) who set the current men's world record at the age of 32.

A similar picture emerges in both the sprint and 400m hurdles. We see athletes achieving world class marks at or before 20 years old, including Glory Alozie (NGR), Llewellyn Herbert (RSA), Colin Jackson (GBR), Xiang Liu (CHN), Aliuska Lopez (CUB), Heike Meissner (GER), Stanislavs Olijars (LAT) and Jana Pittman (AUS), and we see world leaders setting personal bests in the

30 to 35 age range, including Mark Crear (USA), Gail Devers (USA), Ludmilla Engqvist (RUS-SWE), Deon Hemmings (JAM), Allen Johnson (USA) and Roger Kingdom (USA).

### Middle and Long Distances

If only recently, 10 to 15 years ago, it was considered that success in middle and long distance running was a privilege of relatively "old" athletes (26–28 years). However, we have seen the situation change and runners under 20 are now proving successful at the highest level. Along with the African runners, whose biological age is sometimes somewhat higher than their chronological age, this list includes quite a few Europeans. Names that can be mentioned here include Kenesisa Bekele (ETH), Yuriy Borzakovskiy (RUS), Fermin Cacho (ESP), Tirunesh Dibaba (ETH), Haile Gebrselassie (ETH), Japheth Kimutai (KEN), Daniel Komen (KEN), Maria Mutola (MOZ), Paula Radcliffe (GBR) and Gabriela Szabo (ROM).

In fact, the average age of the elite athletes in these events is not decreasing because of the balancing effect of world class results being achieved by athletes over 30. For example, Dieter Baumann (GER) set his personal record at 32, William Tanui (KEN) set his at 33, Anna Quirot (CUB) equalled hers at the age of 34 as did Kelly Holmes (GBR), not to mention becoming a double Olympic Champion. It would be incorrect not to highlight the case of Ekaterina Podkopaeva (RUS) who became World Champion at 44 after a career of more than 20 years, 10 of which were at top international level.

### Jumps

It is not surprising that world class marks are frequently achieved by athletes under 20 years old. Names that stand out in this category include Alina Astafei (GER), James Beckford (USA), Sergey Bubka (UKR), Heike Drechsler (GER), Jacques Freitag (RSA), Elena Isinbaeva (RUS), Marina Kuptsova (RUS), Carl Lewis (USA), Christian Olsson

(SWE), Ivan Pedroso (CUB), Yoelbi Quesada (CUB), Steve Smith (GBR), Javier Sotomayor (CUB), Maksim Tarasov (RUS) and Dragutin Topic (SCG). A significant number of these athletes continued as elite performers for period of 12 to 15 years. Standouts among these include Bubka, Drechsler, Stefka Kostadinova (BUL), Lewis, Sotomayor, Yelena Yelesina (RUS). I do not think that I will be mistaken if I suggest that this list will be expanded as time goes by.

At the same time I want to mention a group of athletes who started to demonstrate world class results in the jumping events at a relatively late age and continued improving their performances practically annually, setting personal (and, sometimes, world) records at the ages of 30 to 34. This group includes Iolanda Chen (RUS), Mike Conley (USA), Jonathan Edwards (GBR), Jeff Hartwig (USA) and Niurka Montalvo (CUB).

### Throws

As with the middle and long distance runners, modern throwers have started to demonstrate world level results 3 to 4 years earlier than was the norm in the 1970s and 1980s. However, the average age of elite athletes is not decreasing here either, as a relatively large group is still among the world leaders at the ages of 32 to 34. The group of athletes who entered the world's elite at the age of 20 to 21 and remained at a high level for 12 to 15 years includes Andrey Abduvaliev (RUS), Franka Dietzsch (GER), Tibor Gicsek (HUN), Trine Hattestad (NOR), Svetlana Krivelyova (RUS), Astrid Kumbernuss (GER), Lars Riedel (GER), Natalia Sadova (RUS), Irina Yatchenko (BLR) and Jan Zelezny (CZE).

### Combined Events

It is all but natural that world class performances in the combined events are almost always achieved by relatively experienced athletes. In recent years, the average age of the top performers here increased from 24 to 25 up to 28 to 30 years old. The

exception to this trend is, of course, Carolina Klüft (SWE), who starting from the age of 19 has been the world leader in the heptathlon for the last three years.

## Main Conclusions

1. Despite the significant expansion of the calendar of international junior and senior championships, a large group of athletes has managed to achieve high level performances as juniors and then to stay among the world leaders for 10 to 15 years, and sometimes even longer. At the same time, athletes who have achieved their first significant success at a relatively mature age keep their place among the elite not longer than 5 to 6 years. It is obvious that with correctly organised work on selection, well planned long-term preparation and rationally organised competition activity, high level results achieved at a young age do not have to compromise the athlete's career in terms of level of success or duration.

2. In recent years, the average age of the winners and medallists at the World Championships and Olympic Games has been increasing slowly but steadily. At present, it does not exceed 26 years. The results of the 2004 Olympic Games in Athens have only confirmed this tendency: the average age of the champions in the individual events was 26.6 years (27 years – men and 26.2 years – women). On one hand, there was a large group of athletes who became Olympic Champions at the age of 20 to 22 - Kenenisa Bekele (EYH), Yuriy Borzakovskiy (RUS), Veronica Campbell (JAM), Meseret Defar (ETH), Justin Gatlin (USA), Xing Huina (CHN), Yelena Isinbayeva (RUS), Ezekiel Kemboi (KEN), Carolina Klüft (SWE), Xiang Liu (CHN), Yelena Slesarenko (RUS), Andreas Thorkildsen (NOR) and Jeremy Wariner (USA). On the other hand, many veterans who had already celebrated their 30th birthdays also became winners in Athens - Virgilijus Alekna (LAT), Stefano Baldini (ITA), Hicham El Guerrouj (MAR), Kelly Holmes (GBR), Robert Korzeniowski (POL), Olga

Kuzenkova (RUS), Timothy Mack (USA) and Natalia Sadova (RUS). We see a similar picture if we analyse the ages of the medallists in Athens.

3. Though, as already mentioned, winners and medallists change rapidly in the major competitions, there are quite a few examples, of athletes who remain in world's elite and even improve their results into their thirties. A number of the most convincing examples are: Olga Kuzenkova (RUS) was second at the age of 28 in at the Olympics in Sydney and at 32 won in Athens; Natalia Sadova was second in Atlanta at 24, failed to get any medal in Sydney and at 32 won in Athens; Kelly Holmes was fourth in Atlanta at 26, third in Sydney at 30 and at 34 she became a double Olympic Champion in Athens.

In any case, the submitted data are of an average character. Experts working with young athletes should consider them as a model but they should not be seen as dogma. I am confident that in your experience you have met or will meet outstanding athletes who do not fit in the set frames outlined here. But this does not make their career experience any less significant.

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