

## Age-group competition in the throwing events

With Yuri Bakarinov, Tapio Korjus, Didier Poppe, Peter Salzer, Wolfram Scholz

### Introduction

In line with “the Special Topic” Pathway to Elite Athletics, articles in this issue of NSA have looked at both the IAAF World Youth Championships and the IAAF World Junior Championships. The later article focused on the throwing events and made a point of the importance of junior competition to the long-term development of elite throwers. To broaden the perspective on the issues in this area, we asked five very experienced coaches specialising in the throwing events, including the author of the report Wolfram Scholz, the their views on the junior throwing scene and particularly the World Junior Championships. Their answers, edited for length and clarity have been brought together for this Round Table.

In the order that their responses appear our panellists are:

*Yuri Bakarinov (RUS)* has been a senior coach in the USSR and Russia since 1973 and is currently the national coach responsible for all throwing events. Among the athletes he has personally coached are Olympic medalists Igor Nikulin and Igor Astapkovich. Bakarinov holds doctorate degrees in both biology and pedagogical science and was himself a national champion and national record holder in the hammer.

*Tapio Korjus (FIN)* was the 1988 Olympic Champion in the javelin. He currently manages the Accredited Training Centre at Kuortane Sports Institute. His athletes include

Mikaela Ingberg (FIN) who was a European and World Championships bronze medallist.

*Didier Poppe (FRA)* was a French National Coach in charge of the South Pacific Territories and Head Coach in New Caledonia from 1976 to 2003. Now retired from those positions, he continues to coach individual athletes and works with the IAAF Coaches Education and Certification System. He specialised in the throwing events and has trained many national and international level athletes, including World Championship finalist Valerie Vili of New Zealand.

*Peter Salzer (GER)* works at the Olympic Center of Excellence in Stuttgart where he is responsible for strength and conditioning training, video service and biomechanic research. He has been a Regional Shot Put Coach (State of Baden-Württemberg in Germany) since 1981 and his top athlete has been Petra Lammert, who took a bronze medal in the shot put at the 2003 European Junior Championships. As an athlete, Salzer placed seventh in the 1977 European Junior Championships.

*Wolfram Scholz (GER)* is the Director of an athletics throwing school in Monza, Spain. He is a former German national coach for the Javelin and has worked for both the Spanish and Catalanian athletics federations.

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**NSA** Looking at performance development in the throwing events for the Junior (under 20 years old) age group since the first World Junior Championships in Athletics in 1986, what are your key impressions?

**Bakarinov:** The winning marks in the major senior and junior championships do not show any improvement and they are within generally narrow limits. It is clear that the junior championships can be important for the preparation of young throwers for their careers as senior performers, but this is not always the case. For example, in Germany there are many athletes who experienced victories when they were juniors but are no longer making an impact while in China we see many winners of junior competitions who are out of top sport altogether.

**Korjus:** If we look at the average of the top three placers at the World Junior Championships during the years 1986-2004, the women's results have gone down somewhat. The trend is clear in the javelin, discus and shot. The hammer is a fairly new event, only four Championships, so it is natural that a rise in the level of results can be seen. However, at the last two World Juniors, the results in the javelin, discus and the shot put have gone up a bit again. On the men's side, the average results of the top three placers in each of the events have stayed pretty much the same. In 2002 the implements were changed, which of course improved results, but the results have stayed on the same level in comparison to the results with the heavier implements.

**Poppe:** There has been an overall development in most of the throwing events since 1986, but we have to keep in mind that the first World Junior Championships was just a starting competition and it needed to reach its "cruising speed". Now that the event is established, I have the feeling

there is a relative stability in the level of performances needed to reach the finals or make the top 8.

**Salzer:** In almost all throwing events the development was characterised at first by a few exceptional athletes from countries like the former GDR, Germany, the USA, Cuba, China and Russia. These athletes usually had high standards of condition at an early age and the most important technique points were very well developed. After the first few World Junior Championships, we saw that the top athletes needed approximately 3-5 years from a good performance in the event before they would appear in the results of the World Championships in Athletics or the Olympics. This period has increased and the average now is 5-7 years. Moreover, if we look at the results of the last four World Junior Championships we see that only about 20 of the approximately 380 who took part in the throwing events subsequently went on to make the finals (top 12) in the World Championships in Athletics. This seems to be a consequence of lower conditional and technical standards and of the fact that world class athletes have longer careers and thus block the ranks for the younger athletes moving up. While the countries I mentioned still dominate the women's throwing events, we see that there is a wider distribution of the finalist places among nations on the men's side. The introduction of the lighter competition implements for the junior men seems to have brought nothing – performances have tended to stagnate or even decline.

**Scholz:** The tendency in the last years has led to a broader top level, which does not exclude the presence of exceptional athletes, but led also to a special importance within the different federations and the extended interest for the throwing events worldwide. At the World Junior Championships in Athens in 1986, the seven champions came from four federations (URS

– 3, GDR – 2, BUL – 1, CUB – 1). Eighteen years later, in Grosseto in 2004, the eight champions came from seven federations (RUS – 2, USA – 1, BUL – 1, CHN – 1, IRI – 1, BLR – 1, GER – 1).

**NSA** Do you think performance development in these events has been due to increased depth or the appearance of exceptional athletes?

**Korjus:** The fact that results have stayed stable on the men's side, might indicate that the number of talented young athletes coming into the throwing events is the same as it was in past years but it might also show that the overall level of technical skill has improved, thus allowing the results to remain the same even though there are fewer talented participants. On the women's side it seems interest in the throwing events has decreased and fewer are becoming involved. Coaching and technical skills levels have improved, but results have dropped due to lower participation.

**Poppe:** The situation differs between disciplines. There are, from time to time, exceptional athletes, whatever the event. I would say that these days there are more athletes capable of reaching the finals and that they are coming from a wider variety of countries than the traditional "throwing countries" like Russia, Belarus, Hungary, Finland, Germany and Poland.

**Salzer:** Performance development in the junior age group throwing events has been characterised by exceptional athletes from countries with strong throwing traditions. We could name 15 or more athletes in this category who won medals or made the finals at the World Junior Championships and then went on to set the standards as seniors.

**NSA** How do you assess the level of technique of the top junior athletes in the throwing events? Are they on the same technical level as top senior athletes?

**Korjus:** It seems like the technical skills of young athletes have improved during the last 20 years. This development has happened thanks to more focus on junior coaching – especially coaching event techniques, which has improved much thanks to the international knowledge exchange between coaches. Long throws with light junior implements, is a good indicator that technical skills have improved. Young athletes are able to achieve very good release speeds, which require good body control and body alignment. There is not too much difference between the throws of juniors and adults – adult athletes can, thanks to good physical development, achieve technically sound performances with heavier implements.

**Poppe:** Through the years there has been a real improvement in the technical level of the best juniors, as well as in their physical and specific preparation. Their technical level is very close to the level of elite senior athletes, especially in the men's events where the juniors use lighter implements. On the women's side, there is still a gap as sometimes the level of strength is not sufficient to allow for the right technique.

**Salzer:** Due to the fact, that I was allowed to accompany the German team as an analytic coach at five World Junior Championships between 1992-2002, I have a lot of video material of the throwing events. After a short examination of this material, I can say that the finalists tend to show well-established technique. For a few athletes it was possible to make a long-term comparison and thus say something about their further technical development. Here one can say confidently that only in a few cases is the

technique demanded by the biomechanics of the event actually reached. It seems that coaches value finding an individual style in their athletes.

**Scholz:** Young athletes should not and must not be encouraged to copy the technique of the elite athletes. The technique of top-level athletes should only serve as an orientation. A copied technique is always worse than the original and to throw as Zelezny you must be Zelezny. The development of sport specific performance requires an organisational frame, but the coaches should consider that the adaptation processes of the human body are different at different stages of physical development and the training plans need to take this fact into consideration. Age specific and performance related abilities and skills need to be developed in close unity during the youth training and coaches should avoid early adaptation to a single event.

**NSA** Do you have any specific observations related to the top junior athletes in your specialty event?

**Bakarinov:** Women's hammer throwing has been included in the competition programme only recently, that is why it is now at the stage of development and winning results are improving significantly.

**Korjus:** The spread of medals in the throwing events changed in the 90's after the changes in Eastern Europe. In the 80's "the old" strong countries in throwing events (Russia, GDR) took most of the medals. Since then, the medals have been spread considerably (South Africa, Australia, South Korea, China, etc). Many new countries have also been able to get athletes to finish in the top 10. One must remember, though, that the physique of young throwers has not improved over the past 15 years – probably the opposite. The

notable change in physique now takes place during the ages of 19 to 22 years. Both the results and the physique have clearly improved when you compare results of 19 to 22 year-olds. This is an indication that at the age of 20, those athletes who have chosen to commit to the sport have made that decision at that age. Developing strength takes years, and it's not until a young athlete turns 20 that the strength levels start getting up the same as the adults.

**Poppe:** In the men's javelin throw, a new generation has now emerged with athletes like Thorkildsen, Pitkamaki, Varnik and Ivanov. They look to be able to produce throws over 95m in the next years and eventually challenge Zelezny's world record. The situation is different for the women where Menendez, Manjani and Nerius have been leading the event for a decade or more and where the new generation is still far from the 70m mark. In the women's shot put, Valérie Adams-Vili, who recently threw over 20m in New Zealand, may be the greatest talent ever discovered in this event. She is still a very young thrower who is progressing every year and her huge potential could bring her to become the world number one and one day able to break the world record.

**Salzer:** In the women's shot put, it seems to be very easy at the moment to venture relatively fast to the top level. Athletes like Valerie Adams-Vili, Petra Lammert and Christina Schwanitz have shown, that it is possible within a short time (1-3 years) to reach the world class if one is ready for it, is very fast and has a very high standard of maximum strength.

**Scholz:** In some athletes we can observe that despite the high level of performance, there are variances in technical execution, differences in the fitness level and changing competition behaviour (e.g. best attempt in the first or last throw). A preliminary judgment is possible by considering single crite-

ria but a more meaningful prognosis on the performance development of some athletes is still not possible. In most of the cases the athletes are new to the top level and information on how they found their way to the World Junior Championships is scarce.

**NSA** Have you noticed any gender-specific differences among junior athletes in the different throwing events?

**Bakarinov:** The suggested training methods for men and women do not have any fundamental differences. However, it is considered that girls do get ahead of the boys in biological development. A greater ability to coordinate movement supports females' advantage in learning throwing technique, however a lower level of physical strength works against their further improvement. Individual biological differences in the female body are relevant to periodic changes of ability.

**Korjus:** There is not a significant difference in coaching methods between the genders. It seems though that female throwers need more weight training during the competitive season to maintain a good strength level. Female athletes are usually more thorough – they are more committed to carrying out their training programmes. The biggest difference in performance level can be seen between young men and women in the javelin. Although the women's javelin is 25% lighter, they throw 18-20m less than the men. This can be explained by the fact that the throwing power for women, especially in over the shoulder movements, is clearly weaker than for men. In the other throwing events, the women's results are considerably closer to the men's.

**Poppe:** Yes, it is clear that there are many fewer female throwers coming up to the elite level than males. I think that one of the

reasons for this is the inadequate weights of implements for the young women. The evolution of implement weights with age is much better for the men. Because the weights are the same for women in the youth, junior and senior groups 17 year-old girls will be treated and trained like senior athletes and too much emphasis will be given to strength in comparison to speed and technique. This has a negative effect on the career progression. It would be much wiser to have adapted implements weights for the women like for the men to ensure a smooth progression through the years.

**Scholz:** Female athletes seem to have a higher level of tactical skills. This can be indirectly proven by a lower number of fouls. This raises the question of whether they are better prepared for competition or are they not taking risks?

**NSA** What are the key athlete services and support measures that junior throwers need to make it to the elite level as a senior?

**Korjus:** The most important things that can help a young athlete to get to the top at adult level are good coaching, good training facilities and possibility to combine training and studying. The ages of 20-25 years are a very crucial phase. During this period, training needs to be of high quality for the athlete to be able to achieve international-class results.

**Poppe:** First there is a need for a middle- or long-term career plan developed with the personal coach and the national athletics authorities. Then there is a need to plan for the social future of the athlete concerning study and job qualifications. Financial support may be necessary, according to the social situation, but this should not become a "performance rent". Young athletes must be aware that there is very little chance of

having a “professional career” in the throwing events, where there are fewer opportunities and less money than in the other events. Therefore, they must be prepared to be able to make their living without depending on improbable performances and results. There also needs to be good medical monitoring and good planning of yearly goals and competitions, especially when entering competitions with seniors.

**Scholz:** There is a need for biomechanical studies at both World Youth and World Junior Championships. We also need specific criteria of age group specific techniques. They are much more important than loading norms.

**NSA** Do you believe that athletes who come to the throwing events at a relatively late age, say after their 18th birthday, have a realistic chance to be successful in top-level athletics?

**Bakarinov:** At present examples of this happen rather seldom. One may speak about certain regularities in the distribution of the speed of the performance improvement over the years. It has been proven that the average speed of performance improvement is practically the same among throwers who achieve elite level. For this reason, the age at which an athlete starts serious sport is a significant determinant of the time he/she will achieve elite level performances. Athlete's performance tends to gradually improve until they reach their top level (in each individual case this level is determined by many conditions). In particular, winners of the throwing events at the major competitions tend to be older: the average throwing champion's age in the 2000 Olympic Games in Sydney was 28.5 years, in Athens it was 28.42 years, at the 2005 World Championships in Athletics it was 28.42 years. It doesn't seem that top throwers are becoming younger. Throwers

who achieve significant success in the World Junior Championships and other major competitions have, as a rule, trained for 5 – 6 years or more by the time they reach this level. In addition, throwers often change specialisation at an early age. For example, Astrid Kumbernuss was the junior record holder in the discus before switching to shot put. This is not an exception. In this particular case, time spent for specialisation, could cover a lesser period, but the total period of training is significant.

**Korjus:** In the throwing events it is possible to achieve top level at a more mature age. It is possible to start serious training at the age of 18, but that requires basic technique and a strong base to start with. If an 18 year-old has good basic coordination and a fairly good physique he/she can achieve international level results in 6-8 years. This of course also assumes that the athlete is very talented.

**Poppe:** Yes, I don't think it is uncommon to see “late starters” in the throwing events arrive at the top level in athletics. The main reason is that throwers need quite a long “maturation” to reach peak performances (6-10 years) with the possible exception of javelin throwers (5-7 years). With the necessity to build strength through a long-term programme and to take care about the natural evolution of morphology during the growth, it may be wiser to “wait” until the athlete is 17-18 years before training really hard and seriously. Moreover, I think that too often “early performers” are disappearing from the athletic scene too early. As we talk about the “training age” we might also talk about “competing age”. Knowing that high level competition is so demanding on the mind and the body, it is very difficult to extend an elite career and keep the motivation and a top level of fitness for for 12-15 years

**Salzer:** Due to the fact that the best performance age is always increasing, talented



late entrants absolutely have a realistic chance to reach the top standard after some time, say after 6-8 years.

**Scholz:** Let's take the example of the men's shot put. At the latest major events such as Olympic Games or World Championships we found almost only athletes with extensive experience on the international junior level. Only in a very few exceptional cases we will find in the future athletes in top events without a considerable amount of experience. But there are exceptional cases, for example Peter Blank (GER). At 18 years old he was a finalist in the national youth championships in the javelin. Later he changed to high jump and decathlon but finally he decided to go back to the javelin throw and competed at 41 at the 2003 World Championships in Paris.

**NSA** What is the value of the World Junior Championships in Athletics in the overall career development of a young thrower?

**Bakarinov:** Competition activity plays a very important role in the system of the athletes' preparation. In my time, we only had the opportunity to compete in major international competitions every four years in the Olympic Games, and in between in the Continental Championships, and very seldom in matches. The introduction of the World Youth Championships has significantly expanded the opportunities for improvement in the throwing events.

**Korjus:** The World Junior Championships is an important step on the ladder towards success at an adult level. The event motivates talented young athletes to train well at the ages of 15-19 years. At the World Junior Championships, the atmosphere is a bit more relaxed but athletes can use the experience of competing against athletes from other nations

and all the other aspects of an international event to prepare for future championships. One should not also forget that it is important that the Junior Championships don't become the ultimate goal for an athlete's career. It should be a motivator for young athletes to try to develop and to achieve success at adult level.

**Poppe:** The World Junior Championships are indeed a great possibility for top-level junior athletes to compete at the highest international level of their age group and to gain experience of this sort of competition, which they will need when they compete later in the senior events. The junior championships can also help motivate them to make the necessary investment for a top-level career. A negative point might be the fact that early successes in the junior events does not necessarily mean immediate access at the same level with the seniors. In fact, the transition years may prove to be long and with few rewards for hard work. Therefore, it is of value to have a "transition" age group for the "espoirs" (under 23).

**Salzer:** The value of the WJC in the career development of young athletes cannot be assessed highly enough. Here, for the first time, they can meet international competitors and see how their own performance compare. The statistics shows, that not less than 25% of the finalists at the World Championships in Athletics participated at a WJC. The results of the women's shot put at the 2005 World Championships in Helsinki were particularly remarkable. Eight finalists had been participants at a WJC and five of these had won a WJC medal.

**Scholz:** For me a further development of the throwing events is impossible without the Junior Championships. This event serves the "young stars" as a spring board to the top level, even if success at junior level is not a guarantee of success at elite senior level.