

# THE TRENDS AND REASONS OF BEST RESULTS OF THROWING EVENTS OF TRACK AND FIELD WORLD CHAMPIONSHIPS FROM 1983 TO 2017

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**ABSTRACT.** The purpose of this study is to present the best results of the Athletics World Championships from the first competition in 1983 to the latest event held in 2017 in London. Besides highlighting the summarization and trends, we presented the results and its background of the London World Championships. In our study, we provide a comprehensive picture by interviewing the leading top throwing coaches and the most successful athletes (n = 12). With our questions, we were wondering what are their opinions, about the results of London World Championship and what the background of the Hungarian throwing results are. Looking for the reasons, with the answers of our deep interviews, we have found the following conclusions: the finding of talent is becoming more and more difficult today in Hungary, the disappearance of the special throwing workshops is typical, the decline of the technical (throwing movement) quality is very significant in the domestic throwing discipline, other sports have very strong extraction power, the lack of proper medical background in domestic athletics, concerning the sector.

**Keywords:** *Track and field, world championship, throwing events, performance prediction*

## Introduction

The 16th World Athletics Championship was held between the 4th and 13th of August 2017 in London. There were 16 Hungarian competitors who were given the right to compete, and 6 of them were throwers.

We would like to mention in the first row, Anita Márton, our Olympic bronze medallist who despite unfavourable weather – reached the best result of the Hungarian athletics team – she received the silver medal.

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We have 3 hammer throwers Krisztián Pars, Bence Halász and Réka Gyurácz. Krisztián Pars did not succeed getting into the finals, but Bence Halász did, with a convincing competition, where he came in 11<sup>th</sup>. Réka Gyurácz also did not get into the women final either.

In javelin throwing Norbert Rivasz-Tóth represented our country but he did not do well in the qualification round just as Zoltán Kővágó in discus throwing.

## **Methods**

We collected all the data of all Athletics World Championship from the beginning to the last Championship of London. These data were the winner results, all the 8th results of the finals, and the best non qualifiers result in throwing events. This data shows us an overall situation about the world's best athletes' actual form – and with it the leading performance characteristics of the picked event.

All the trend lines have to be handled with a strong consideration. We tried to find the most suitable polynomial trend line with the best approach what the data let us, but in a few cases (for example in the world records) some data was far beyond the average trend. Therefore to find the “smoothing” method with choosing the correct polynomial equation was not easy. We aspire to find the simplest equation for the given event, given data group. The more uniform were the data, the more suitable were the equation.

After the data collection and analysing of it, we interviewed the top throwing coaches and the most successful athletes (n = 12). With our questions, we were wondering what are their opinions about the results of London World Championship, and what the background of the Hungarian throwing results are.

## **Results of the four throwing final**

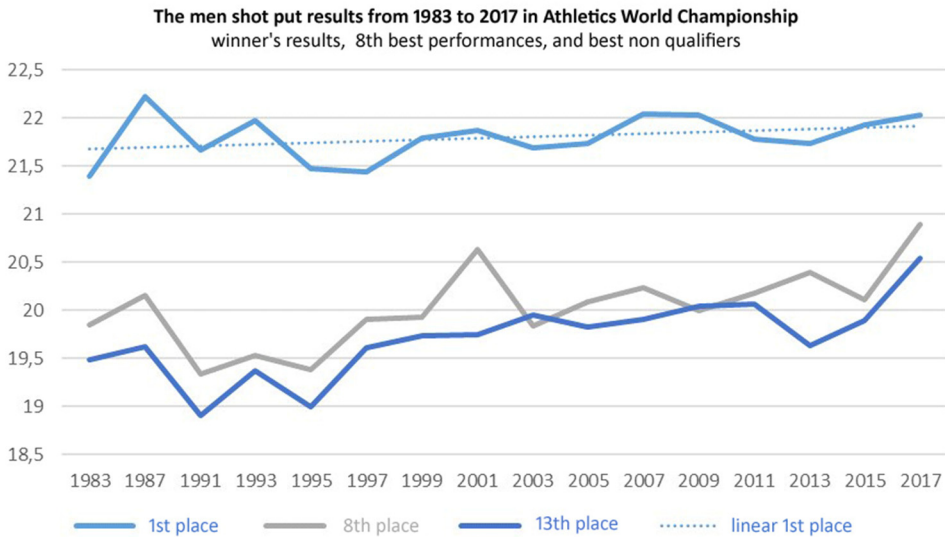
### ***Men shot-putt***

The former Olympic bronze medallist, Walsh won the 16th Athletics World Championship (pic. 1.) 22.03m. Kovacs from the USA came in second, and the Croatian Zunic, third. Since 2009 a result this high has not been needed to win.



**Pic.1.** Thomas Walsh (New Zealand) 22.03 m

So far there were only two occasions where it was thrown better, in 1987 22.23 m and in 2007 22.04 m. The 8<sup>th</sup> best result was in 2017.



**Fig. 1.** The men shot put results from 1983 to 2017 in Athletics World Championship - winner's results, 8<sup>th</sup> best performances, and best non qualifiers.

We investigated all the results of World Championship qualifications to find what the score of the 13th place was, which did not reach the finals.

It can be said that in the men's shot put qualifications such a long result has never been needed for the 12 finals. The 20.54m result was not enough though.

### ***Women shot put***

The women shot put won by Gong (pic. 2) with 19.94 m and the silver medal went to Anita Márton, before Carter from the USA. From 2011 a decline can be observed when investigating the results of first places.

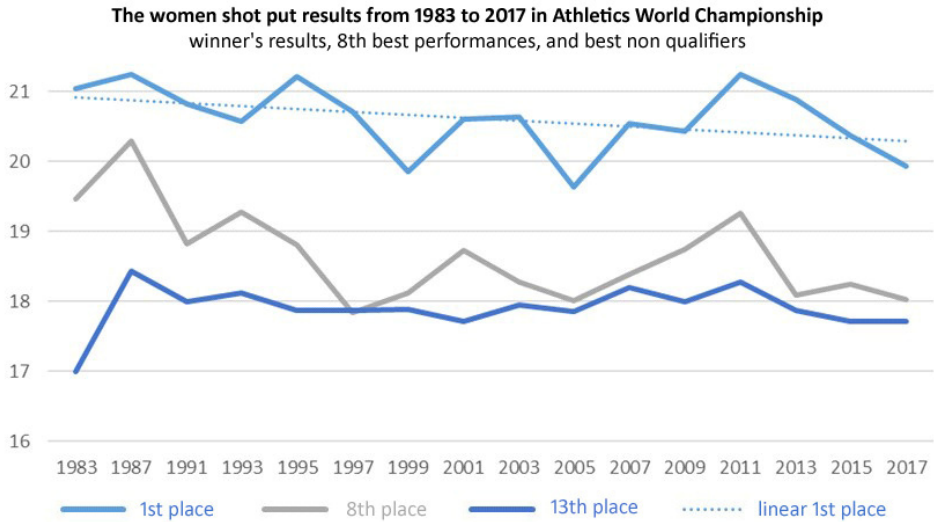
There were only 2 occasions when under 20m results were enough to win (1999- 19.85 m, and 2005 19.64 m)

On the other hand so far at 16 World Championship there were 4 occasions when results over 21 m. Two times the same result 21.24 m (1987 and 2011).



**Pic.2.** Gong Li-Csiao (China) 19.94 m

Investigating the final and the qualifier round (Fig. 2) we can state that there were weaker results achieved. There has not been such weak results in the final and the qualifiers since the first World Championship (1983 – 16.99 m and 2017 – 17.71).



**Fig.2.** The women shot put results from 1983 to 2017 in Athletics World Championship - winner's results, 8<sup>th</sup> best performances, and best non qualifiers.

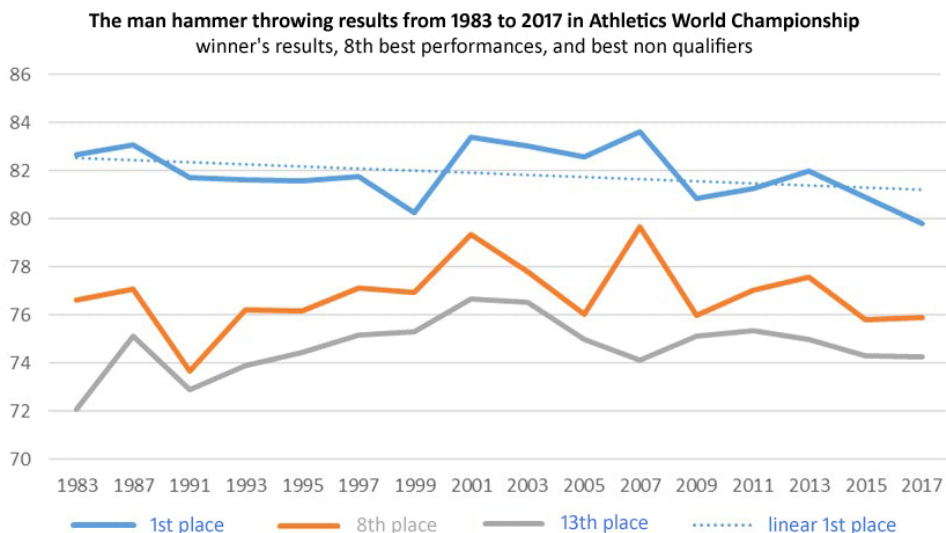
### ***Men hammer throw***

In men hammer throw two Polish athletes could stand on the podium. The winner was Fajdek with his 3<sup>rd</sup> gold (Pic 3) before Pronkin and Nowicki.



**Pic. 3.** Pawel Fajdek (Poland) 79.81 m

In the history of Athletics World Championships this was the first time that results under 80m were enough to win the gold. Also in the qualifying results there is a downturn. There were only 4 times, when the results - not enough for final - were weaker so far on the Athletics World Championships (Fig. 3)



**Fig. 3.** The man hammer throwing results from 1983 to 2017 in Athletics World Championship - winner's results, 8<sup>th</sup> best performances, and best non qualifiers.

The best results were set in 2007, because the winner result was 83.63 m and the 8<sup>th</sup> best result was 79.66 m. From the qualifying rounds we have to highlight the year 2001, in this year 76.66 m was not enough to get in to the finals.

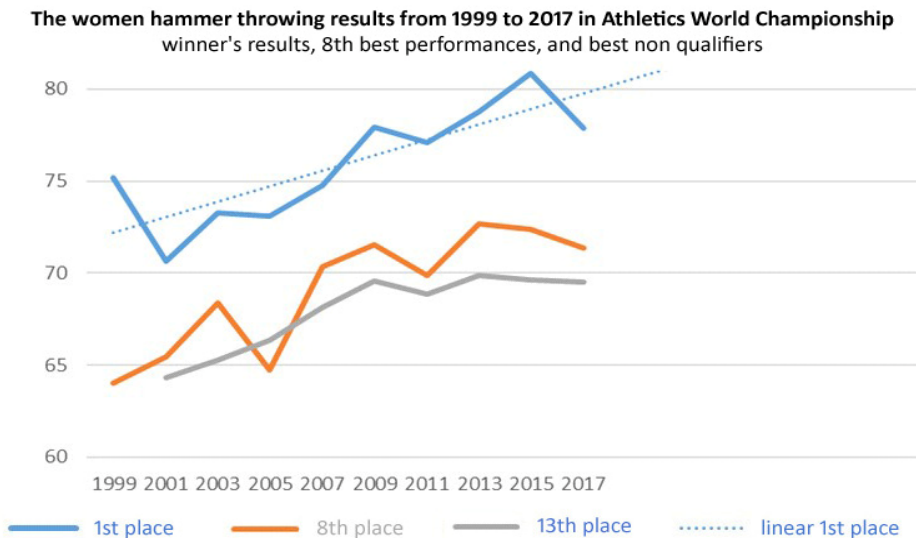
### ***Women hammer throw***

In the competition of women hammer throwing there were two Polish competitors who could stand on the podium. The winner was the world record holder Włodarczyk (Pic 4), the second was the Chinese Wang, and the third was Kporon, the other athlete from Poland.



**Pic. 4.** Anita Włodarczyk (Poland) 77.9 m

There was a relapse in the results of finals and qualifications during the two World Championships. So far there is only one time where a result over 80m was born in the finals in 2015 – 80.85 m. It can also be found that the best 8<sup>th</sup> result was 72.38 m. We must take into account that the female hammer throwing got into the program of Athletics World Championship only in 1999.



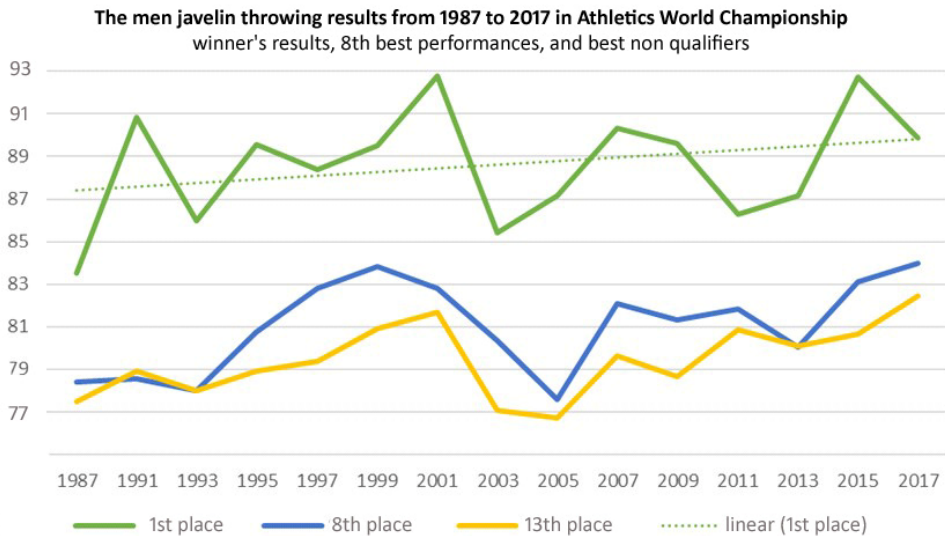
**Fig. 4.** The women hammer throwing results from 1999 to 2017 in Athletics World Championship - winner's results, 8<sup>th</sup> best performances, and best non qualifiers.

### Men javelin throwing

In men, the German Vetter (Pic. 5) defeated the two Czech competitors. The silver medallist Vadlejch and the bronze medallist Frydrych got on the podium with a personal best. Both throwers coach was the world record holder Zelezny.



**Pic. 5.** Johannes Vetter ( Germany) 89.89vm



**Fig. 5.** The men javelin throwing results from 1987 to 2017 in Athletics World Championship - winner's results, 8<sup>th</sup> best performances, and best non qualifiers.



During the final, it was enough to win with a result below 90 m (89.89 m).

Although we can say this result is very good, in sight of the recent gold medallists, since they only won four times with better results, which were all above 90 meters. The best result was in 2001 where the throw was 92.80 meters.

In the qualifications there were very good results. The 13<sup>th</sup> place was 82.46 m, which is could have been enough for the final 12. It can be seen that the 8th result has never been so far (pic 5).

### ***Women javelin throwing***

The women javelin throwing was won by world record holder, Olympic champion Sportacova (pic 6) before the Chinese Lí and Lyu.

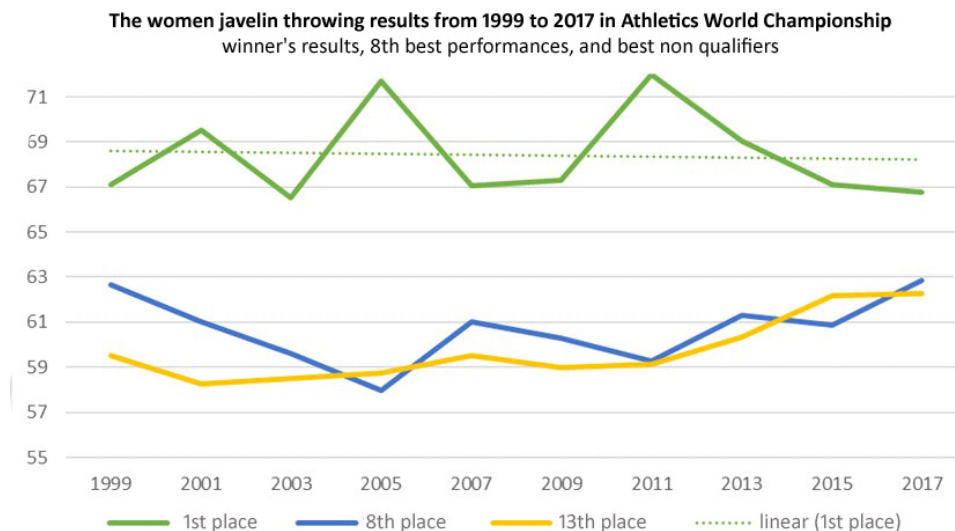


**Pic. 6.** Barbara Spotáková (Czech Republic) 66.76 m

There was a recession in the first places from 2011 (Fig. 6). There was only one time when the winner results was shorter than the 2017 result, in 2003 when the gold medal winner threw 66.52 m.

From 1999 women have thrown with the new javelin, but before this date there were better performances. After that there were only two occasions (two winner results) when they have thrown over 70m. The first was in 2005 with 71.70 m, and the second was in 2011 with 71.99 m.

It should be emphasized that a score such high has never been needed to get in the final round. A throw of 62.26 m was not long enough to receive even a 13<sup>th</sup> place which is still a non-qualifying result.



**Fig. 6.** The women javelin throwing results from 1999 to 2017 in Athletics World Championship - winner's results, 8<sup>th</sup> best performances, and best non qualifiers.

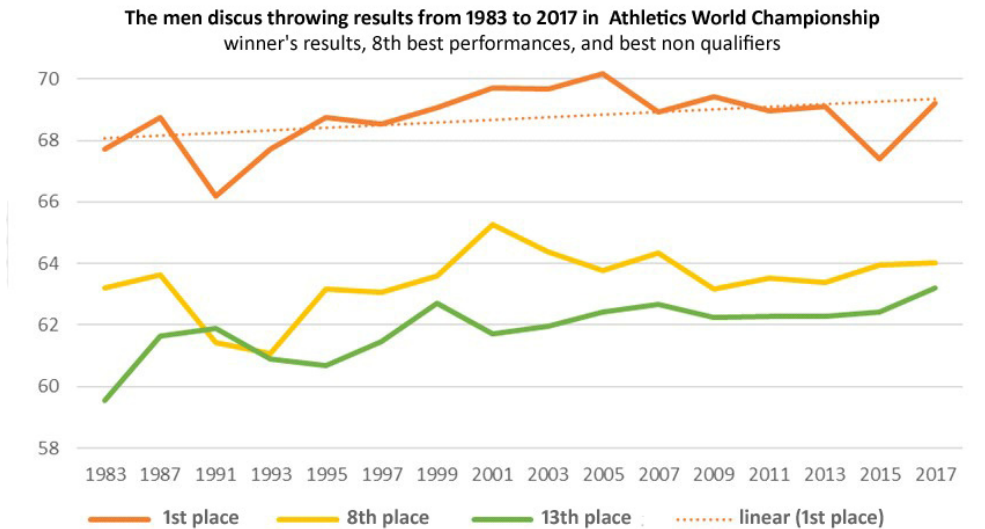
### ***Men discus throwing***

The men's discus throwing competition was won by Lithuanian Gudzius (Pic.7) before the Swedish Ståhl and the American Finley. From 2009 this has been the best gold winner throwing (69.21 m) and it can be seen fluent improvement at the results of 8<sup>th</sup> places. From the 16 Athletics World Championship there were only four occasions when the winner results were better (Fig. 7). The longest throw was thrown in 2005, 70.17m. Of the 8 athletes who placed, his was the 4<sup>th</sup> best.

From the men's competition it has never happened in the Athletics World Championship that the result 63.21 m received 13<sup>th</sup> place and didn't meet the finals. We can say that the qualifications of discus throwing shows an improving tendency.



**Pic. 7.** Andrius Gudzius (Lithuania) 69.21m



**Fig. 7.** The men discus throwing results from 1983 to 2017 in Athletics World Championship - winner's results, 8<sup>th</sup> best performances, and best non qualifiers.

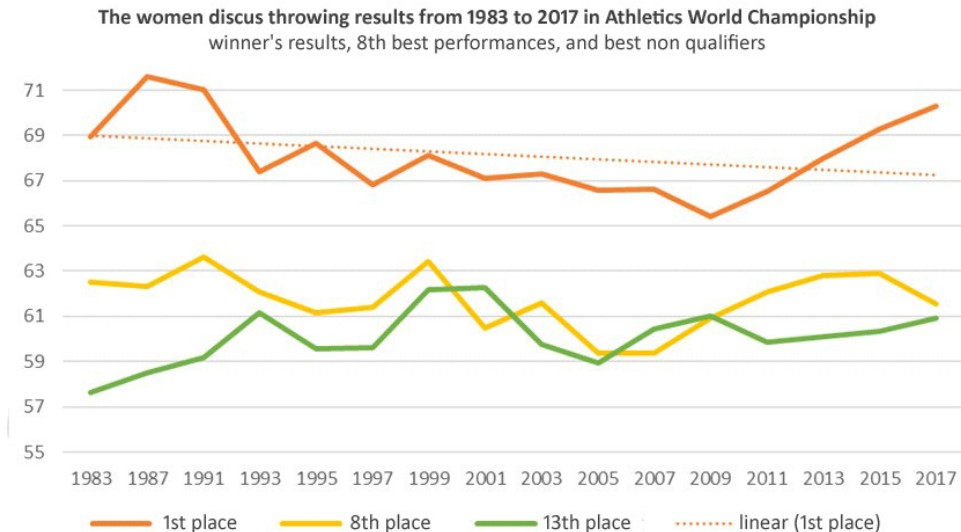
### ***Women discus throwing***

The Olympic champion Perkovics (Pic. 8) won the competition with a throw over 70m. The second was the Australian Stevens and the third was the French Robert – Michon.



**Pic. 8.** Sandra Perkovic (Croatia) 70.31 m

Investigating the gold medallist throwing (Fig.8) we can state, that the results are getting better continuously from 2009. 1991 was the first year when the women throwers succeeded to win with an over 70 m throw. Before that it was succeeded only in 1987 (71.62 m) and 1991 (71.02 m). We should emphasize that the silver medallist almost reached the 70 m border (69.64 m) which was a National Record as well.



**Fig.8.** The women discus throwing results from 1983 to 2017 in Athletics World Championship - winner's results, 8<sup>th</sup> best performances, and best non qualifiers.

The qualification rounds were also strong just as the men's rounds. In the past 8 years a throw this long has not been needed to get in the final rounds. Taking in to count all the World Championships there were only 4 occasions when longer throws were needed.

## Deep interviews and results

We can say by investigating the results that there are no outstanding results between gold medallists. The grouping of the results are typical. We can also state that except in the hammer throwing (in 2017) in all the throwing events qualification rounds have never needed such good results to qualify.

We should emphasize the fact, that there were five medallist places which were won by personal best.

The clustering of the field is shown well by the results of the medallists, in mens discus throwing there was only a 2 cm difference, in javelin throwing there was a 26 cm difference between the silver and gold medalists, and in hammer throwing there was a 13 cm difference between the silver and bronze medal winners. (átírtam) The women javelin throwing was only won by 51 cm by Spotáková.

We wanted to know better what the hypothetical reasons of the results were, therefore we asked Hungarian world elite level athlete coaches and throwers as well (n =12).

We did not find any literature or analysis about the Hungarian and foreigner throwing results. In domestic relations - based on the answers - the root of the Hungarian results are the day by day discontinued track and field associations and sections, and the newly built malls on thrower fields. Coaches have come up with an unequivocal opinion that there is less and less space to operate a throwing athletics, but in Budapest it is almost impossible.

The most influencing in the case of country kids are the attitude of the school, the personal and material conditions which determine the successes of the throwing events. As our responders state the main problem is the new politics of funds distributions of Hungarian sport, because the "interest" is getting bigger and bigger about the team and "money" sports. The coaches formulated in a complete agreement on the extraction power of other sports.

A lot of the thrower athletes opinions are that there is no value of their 3<sup>rd</sup>-4<sup>th</sup> place on the national rank no one remembers that but just as much money can be earned with a 100<sup>th</sup> place on the football rank list. There was a thrower who explained his thrower carrier breaking decision with - "if he cannot be first on the rank list, there is no sense to straggle.

Many of the asked refer today - mainly girls - to the doping, because "the only way to get international level is by using performance enhancing drugs", and they do not undertake this procedure (Benczenleitner, 2014).

Searching the reasons about the interviews we can make the following states:

- Finding talent is getting harder;
- The disappearance of the throwing workshops are getting more common;
- The backsliding of the technique level of throwing;
- The extraction power of other sports;
- The medical background deficiency.

## Conclusions

The results of finalist showing grouping which is meaning that the group of the leaders got closer to each other's, mainly because falling back of the top-first results.

After 1988 it can be seen a falling back tendencies in performances. This phenomena can be seen not only at men's hammer throwing but also at every throwing event except the men and women javelin throwing. There was a significant fall-back to the deterioration of development, mainly because of the Ben Johnson doping scandal in 1988 which resulted a very strict doping control.

According to the collected data the performances show – mainly in hammer throwing – in the second half of the 90's a slight development, moreover the years after the turn of the century a new, well detected performance rising, although this tendency not reach the height of the 1988 top.

Regrettable that the mentioned trend in the second half of the decade again shows a significant decline, crushed down to the performance averages of beginning of the 80's (Benczenleitner et. al., 2012).

Our conclusions are that the most important tasks are the following - the selection, high level of education and the competing of our young athletes.

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