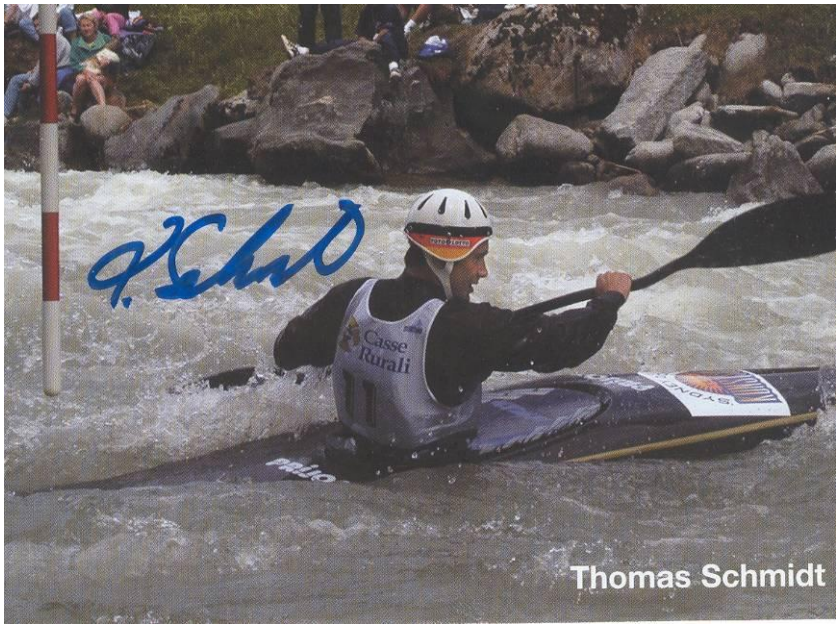
Analysis of competition results, methods of analysis, evolution of the analysis tools and limitations and elements that may condition the analysis

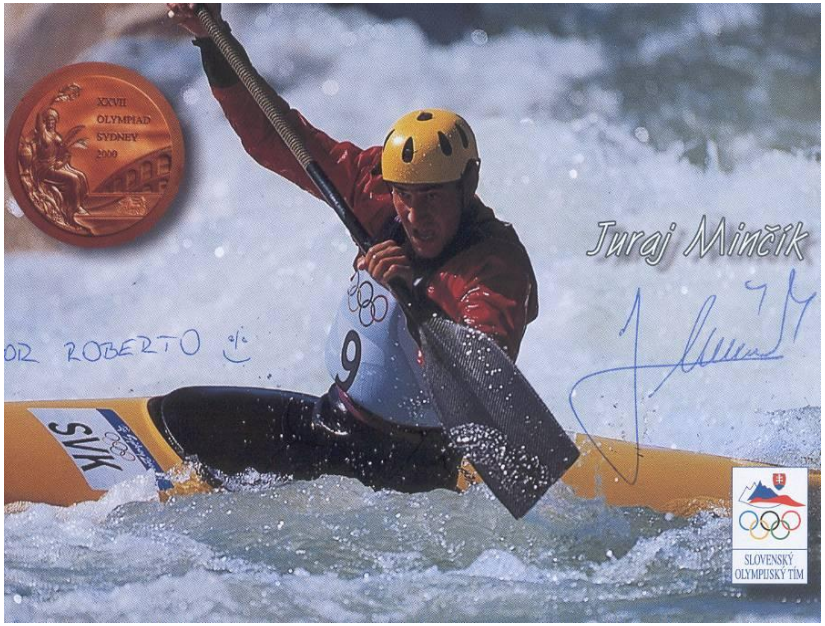
by Roberto D'Angelo

My first experience in this field dates back to 1991 when, as a representative of the Italian Canoe Federation Center for Research and Study, I was asked to write a report about the World Championships in Tacen that year.

I was asked to write technical article to analyze the competition through direct observation of the course and analysis of the video footage taken.

The exchange of ideas and information with various coaches was also quite useful, even though I noticed that in many cases their way of seeing was conditioned by personal beliefs and judgments, which made their analyses less objective.





Because of this, I decided to use **only objective data**, considering the results of the first ten athletes of each category and extrapolating whatever useful information might result.

The article, which I wrote in December 1991, is useful for me as a starting point to explain how I developed my analysis through the years and why I have turned my attention to certain aspects of the data.

Here below is a list of the key issues that was the starting point of my observations, taking the first ten athletes in each category into consideration for each point.

(1) – How many athletes were able to improve in their second run.
(2) – How many of the runs had no penalties (perfect run).
(3) – How many 50 second penalties (missed gates) occurred in the runs considered.
(4) – How many 5 second penalties (gate touched) occurred in the runs considered.
(5) – Calculate the lead percentage (%) in terms of time between the first placed K1 Men and the first place getter in each of the other categories; and the lead percentage (%) between the first placed K1 men and the tenth placed of each other category.
(6) – Calculate the lead percentage (%) in terms of time between the first and tenth in each category.

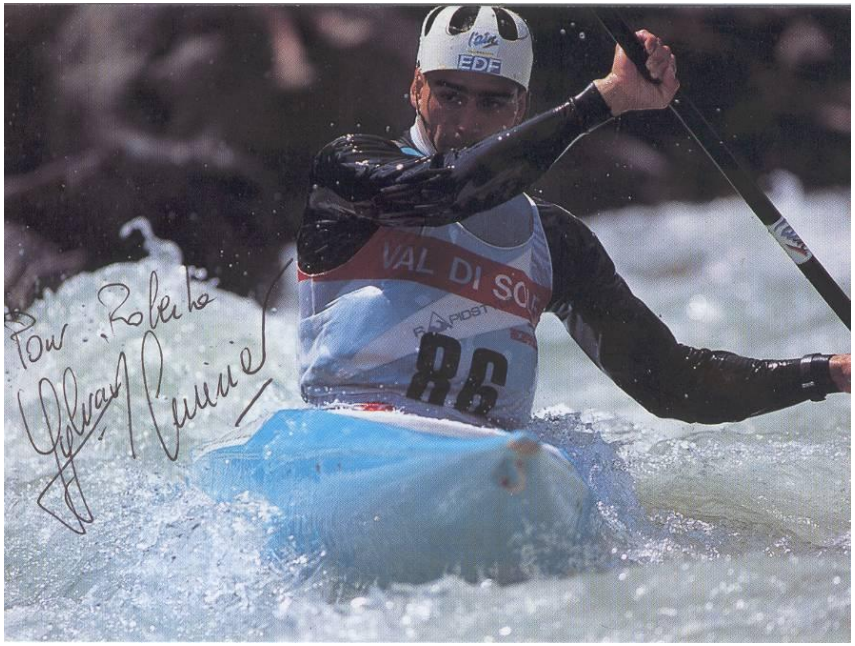
Following is a table with the analysis of the results of the first ten athletes in each category at the World Championships in Tacen 1991.

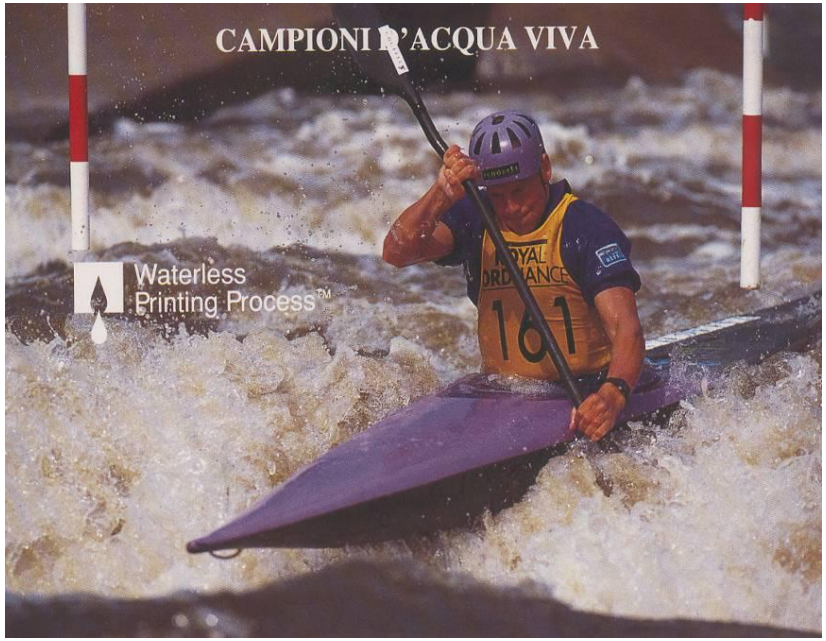
TACEN

cat.	(1)	(2)	(3)	(4)	(5) 1°	(5) 10°	(6)
K MASCHILE	8	8	6 (5 atleti)	21	0%	6%	6%
C 1	9	2	5 (5 atleti)	42	11%	21%	10%
K FEMMINILE	4	1	4 (2 atlete+1 rit.)	34	26%	39%	13%
C 2	9	1	6 (2 equipaggi)	52	21%	31%	10%

It should be noted that the results obtained from the data depend not only on technical and physical factors, but also on the kind of athlete and his mental characteristics.

Consider also, there was the fact that the whitewater course had very recently built, so the design of the course and placement of the gates could have influenced the results.





Therefore, for a more thorough analysis, I considered the Pre-Olympic competition in Seu d'Urgell and the World Cup race in Augsburg.

This allowed comparison of the Tacen data with other key races that took place in the same year.

Below are the tables of results for the first ten athletes of each category, in the competitions of Seu d'Urgell and Augsburg respectively.

SEO D'URGUELL

cat.	(1)	(2)	(3)	(4)	(5) 1°	(5) 10°	(6)
K MASCHILE	8	12	2 (2 atleti)	11	0%	6%	6%
C 1	6	3	3 (2 atleti)	43	11%	26%	15%
K FEMMINILE	5	1	2 (2 atlete+1 rit.)	43	22%	36%	14%
C 2	4	1	3 (1 equipaggi)	55	21%	38%	17%

AUGSBURG

cat.	(1)	(2)	(3)	(4)	(5) 1°	(5) 10°	(6)
K MASCHILE	7	10	1 (1 atleta)	19	0%	4%	4%
C 1	6	6	7 (5 atleti)	24	5%	15%	10%
K FEMMINILE	7	2	4 (2 atlete+1 rit.)	23	23%	28%	5%
C 2	4	3	5 (4 equipaggi)	32	17%	28%	11%

It should be noted that the results obtained from the data depend not only on technical and physical factors, but also on the kind of athlete and his mental characteristics.

Also, there was the fact that the whitewater course had been very recently built, so the design of the course and placement of the gates could have influenced the results.

Therefore, for a more thorough analysis, I considered the Pre-Olympic competition in Seu d'Urgell and the World Cup race in Augsburg.

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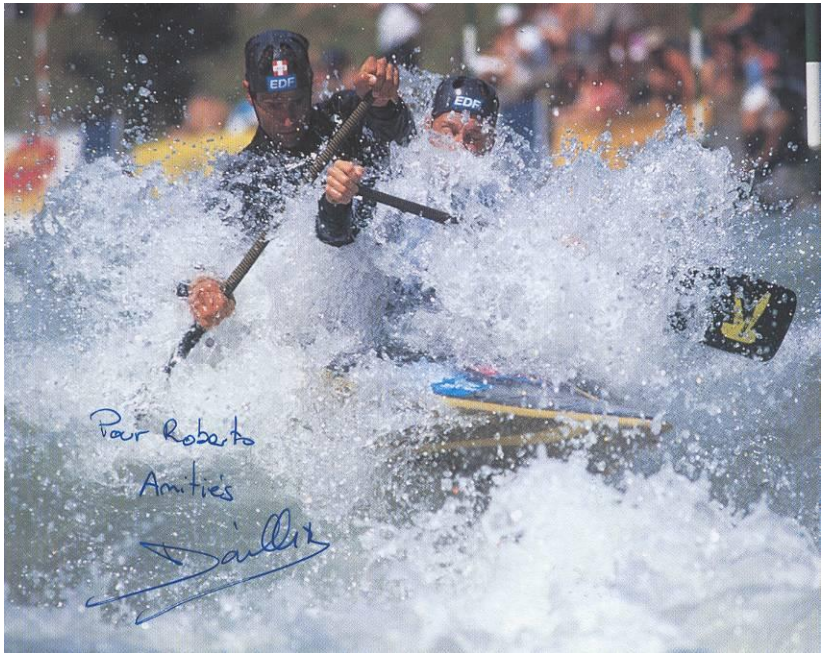
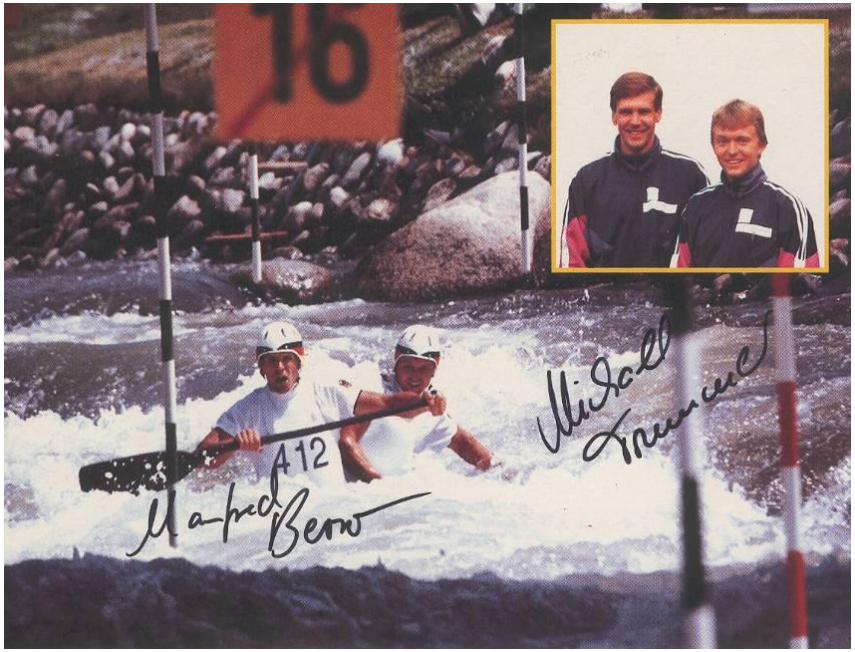




The data collection and analysis from these races gave me a baseline which helped confirm or highlight variations in the data obtained during the World Championships in Tacen. In the following table the data elaboration from these three competitions results:

	(1)	(2)	(3)	(4)	(5)		(6)
cat.					1°	10°	
K MASCHILE	7,6	10	3 (2,2 atleti)	17	0%	5,3%	5,3%
C 1	7	3,6	5 (4 atleti)	36,3	9%	20,6%	11,6%
K FEMMINILE	5,3	1,3	3,3 (2 atlete+1 rit.)	34,3	23,6%	34,3%	10,6%
C 2	5,6	1,6	4,6 (2,3 equipaggi)	46,3	19;6%	32,3%	12,6%

The article that I ended up writing, underlined the main characteristics of high level athletes in 1991 and how one should try, through appropriate methods, to improve the percentages found in the various categories.

For my own personal curiosity, and in preparation for this Coaches Conference in Ivrea this year, I decided to replicate the work done in 1991, using the data from the Semifinals and Finals of the 2013 slalom World Championships in Prague.

Even though many rules have changed since 1999, it highlights some interesting aspects of how slalom canoe has evolved in the last 20 years.

PRAGA 2013

	(1)	(2)	(3)	(4)	(5)		(6)
cat.					1°	10°	
K MASCHILE	4	12	2 (2 atleti)	14	0%	3%	3%
C 1	3	8	1 (1 atleta)	18	7%	11%	4%
K FEMMINILE	0	6	1 (1 atleta)	30	16%	23%	7%
C 2	4	5	0 (0 equipaggi)	25	19%	26%	7%

There are few important considerations that can be made by comparing the results from 1991 and 2013.

The first that can be noticed is that the number of penalties has been drastically reduced, especially in the C1 and C2 categories.

There is also an impressive reduction in the lead percentage between the first and tenth athlete of each category (column 6).

What are the reasons for these changes?

Could it be because the newer boats are easier to maneuver, or because of changes in the rules?

Or could it be due to the increased number of athletes, or technical improvements?

Or is it due to something else?

A second more in-depth and slightly different analysis was done when I wrote an article during the year 1996 after the Olympics in Atlanta. The performance time of 18 athletes from different nations was considered during 11 competitions.

The parameters that were here used were different because I was considering the athletes individually, highlighting the following aspects:

- (t1) – Time of the 1st run.
- (p1) – Penalties in the 1st run
- (t2) - Time of the 2nd run
- (p2) - Penalties in the 2nd run
- t (1-2) – Difference in time between the 1st and the 2nd run. (a negative number indicates improvement between the 1st and 2nd run)
- p (1+2) – Sum of the penalties of the two runs.
- best 1 – Lead time in seconds between the time of the 1st run and the best race time.
- best 2 – Lead time in seconds between the time of the 2nd run and the best race time.
- media – Average between best 1 and best 2

Following is an example of one of the 11 competitions considered. This table has the data of the April 1996 competition in Ocoee.

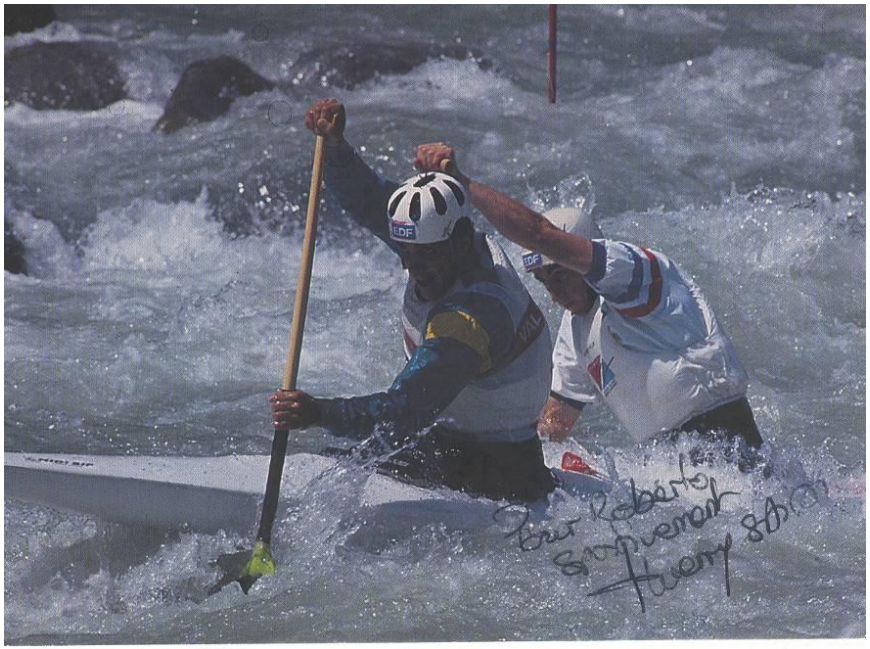
VALUTAZIONE GARE ANNO OLIMPICO 1996

	Nome		Località	data	t 1	p 1	t 2	p 2	t (1-2)	p(1+2)	best 1	best 2	media
1°	Ratcliffe Paul	GBR	Ocoee – USA	20/04/96	163,43	5	157,12	0	-6,31	5	6,31	0,00	3,16
2°	Shipley Scott	USA	Ocoee – USA	20/04/96	157,97	0	162,28	5	-4,31	5	0,85	5,16	3,01
3°	Abramic Jernej	SLO	Ocoee – USA	20/04/96	167,27	0	161,98	0	-5,29	0	10,15	4,86	7,51
4°	Giddens Eric	USA	Ocoee – USA	20/04/96	162,53	0	166,50	110	3,97	110	5,41	9,38	7,40
5°	Fix Oliver	GER	Ocoee – USA	20/04/96	163,14	0	170,81	60	7,67	60	6,02	13,69	9,85
6°	Nagy Peter	SVK	Ocoee – USA	20/04/96	161,20	5	163,60	0	2,40	5	4,08	6,48	5,28
7°	Lettmann Jochen	GER	Ocoee – USA	20/04/96	163,81	0	160,05	15	-3,76	15	6,69	2,93	4,81
8°	Lazzarotto Enrico	ITA	Ocoee – USA	20/04/96	164,88	0	165,25	5	0,37	5	7,76	8,13	7,94
9°	Ferrazzi Pierpaolo	ITA	Ocoee – USA	20/04/96	165,88	0	165,49	0	-0,39	0	8,76	8,37	8,57
10°	Becker Thomas	GER	Ocoee – USA	20/04/96	162,80	15	165,77	0	2,97	15	5,68	8,65	7,17
11°	Vehovar Andraz	SLO	Ocoee – USA	20/04/96	165,95	0	165,55	15	-0,40	15	8,83	8,43	8,63
12°	Raspin Andrew	GBR	Ocoee – USA	20/04/96	166,29	0	169,95	10	3,66	10	9,17	12,83	11,00
13°	Kohler Manuel	AUT	Ocoee – USA	20/04/96	163,46	10	162,26	5	-1,20	15	6,34	5,14	5,74
14°	Pearce Shaun	GBR	Ocoee – USA	20/04/96	167,47	25	167,35	0	-0,12	25	10,35	10,23	10,29
15°	Ford David	CAN	Ocoee – USA	20/04/96	164,95	10	167,52	0	2,57	10	7,83	10,40	9,11

Later, the data from each of the 18 athletes was compiled to compare athlete performances. Following is an example of the data from one of the 18 athletes, with numbered columns corresponding to:

1 – Number of runs considered
2 – Percentage of competitions in which the 1st run was the best run.
3 – Percentage of competitions in which the 2nd run was the best run
4 – Percentage of runs without penalties
5 – Percentage of competitions in which access to the finals was gained
6 – Average of the percentages between the athlete's time and the best time of the race
7 – Average of penalties in the 1st run (1 touch = 5 second. For data purposes, no more than 5 touches were input, so as not to excessively skew data due to a bad run).
8 - Average of penalties in the 2nd run (1 touch = 5 second. For data purposes, no more than 5 touches were input, so as not to excessively skew data due to a bad run).

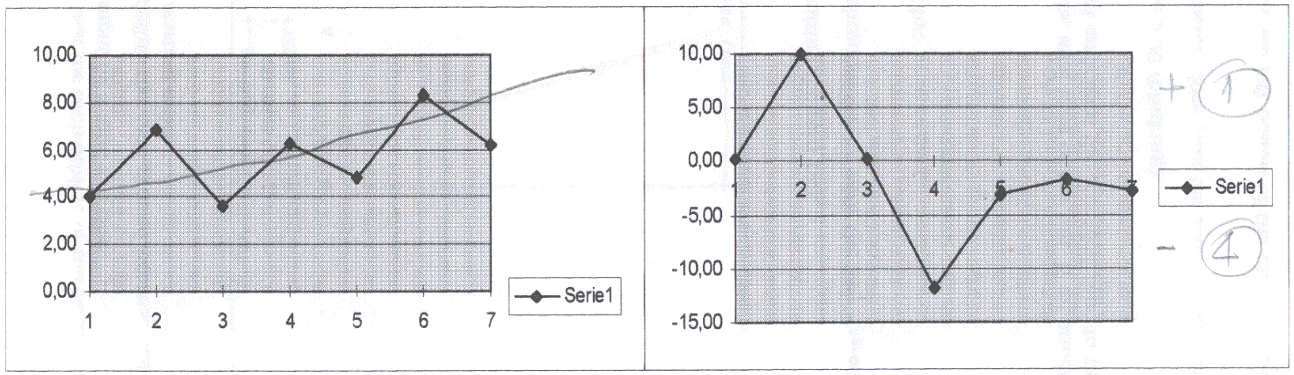
7+8 – Average of penalties between 1st and 2nd run



	Nome	Naz	Località	data	t 1	p 1	t 2	p 2	t (1-2)	p(1+2)	best 1	best 2	media
5°	Oblinger Helmut	AUT	Augsburg - GER	15/06/96	116,67	0	116,88	5	0,21	5	3,95	4,16	4,06
5°	Oblinger Helmut	AUT	Augsburg - GER	16/06/96	112,29	0	122,23	5	9,94	5	1,92	11,86	6,89
11°	Oblinger Helmut	AUT	Praga - CZE	24/08/96	109,71	0	109,90	0	0,19	0	3,53	3,72	3,62
15°	Oblinger Helmut	AUT	Praga - CZE	25/08/96	125,96	10	114,17	55	-11,79	65	12,17	0,38	6,27
12°	Oblinger Helmut	AUT	Augsburg - GER	30/08/96	110,17	0	107,02	15	-3,15	15	6,44	3,29	4,86
11°	Oblinger Helmut	AUT	Tres Coroas - BRA	28/09/96	118,85	5	117,14	0	-1,71	5	9,14	7,43	8,29
10°	Oblinger Helmut	AUT	Tres Coroas - BRA	29/09/96	124,25	0	121,57	0	-2,68	0	7,55	4,87	6,21

1	2	3	4	5	6	7	8	(7+8)
14	71 %	29 %	57,1 %	100 %	3,6 "	5x3 50x0	5x5 50x1	5x8 50x1
						0.43	1.43	0.93

LEGENDA: **1)** = n° manches effettuate **2)** = percentuale di prove migliori effettuate in prima manche **3)** = percentuali di prove migliori effettuate in seconda manche **4)** = percentuale di prove effettuate senza penalità **5)** = percentuale di partecipazione a finali **6)** = media dei distacchi in secondi dal miglior tempo di gara (nel calcolo, il distacco maggiore viene sostituito con una media dei distacchi più alti) **7)** media delle penalità effettuale in prima manche (ogni penalità di 5" equivale ad 1 punto. Se il numero delle penalità è superiore a 5 punti, quindi 25", questi verranno calcolati come massimo per non modificare sproporzionalmente il risultato del coefficente) **8)** = media delle penalità effettuate in seconda manche **7+8)** = media delle penalità fra prima e seconda manche.



Media del distacco in (") riferito al tempo migliore di gara/ differenza in (") fra il tempo della 1^ e della 2^ manche

» ascendente

This new analysis highlighted two especially important aspects:

- **The average percentage behind the best competition time**
- **The percentage of touches per run.**

Here are the results obtained:

Name	% Average behind best race time	Touches per run
Shipley Scott	1,3%	0,72
Marisic Fedja Ratcliffe Paul	1,6% 1,6%	1,12 1,12
Becker Thomas	1,9%	0,60
Wiley Jan	2,2%	0,88
Fix Oliver	3,0%	1,40
Lettman Jochen	3,2%	1,00
Oblinger Helmut	3,6%	0,93
Ferrazzi Pierpaolo	4,3%	1,30
Koehler Manuel	4,4%	1,19
Lazzarotto Enrico	4,5%	1,04
Reys Michael	4,9%	1,12
Vehovar Andraz Nagy Peter	5,1% 5,1%	0,30 0,94
Raspin Andrew	5,6%	1,10
Abraham Tomas Abramic Jernej Ford David	5,8% 5,8% 5,8%	1,00 0,20 0,94

This new analysis underlined a personal and different behavior in each one of the athletes, notwithstanding the fact that these were the best in the world during the period under study.
Thus began a more diligent and in depth observation of the individual athlete, with the purpose goal of explaining underlying causes and offering improvement strategies, instead of narrowly and focusing on technical solutions to specific errors which do not address the real cause.

After these experiences, I started collecting my data on an excel sheet and analyzing it better.
While working in Greece from 2002 to 2009, I collected data from every single race that my athletes competed in.

This helped me see more clearly the improvement of my young Greek athletes. Below is an example of data collected between 2002 and 2005 for the competitions of the athlete Tsakmakis Christos.

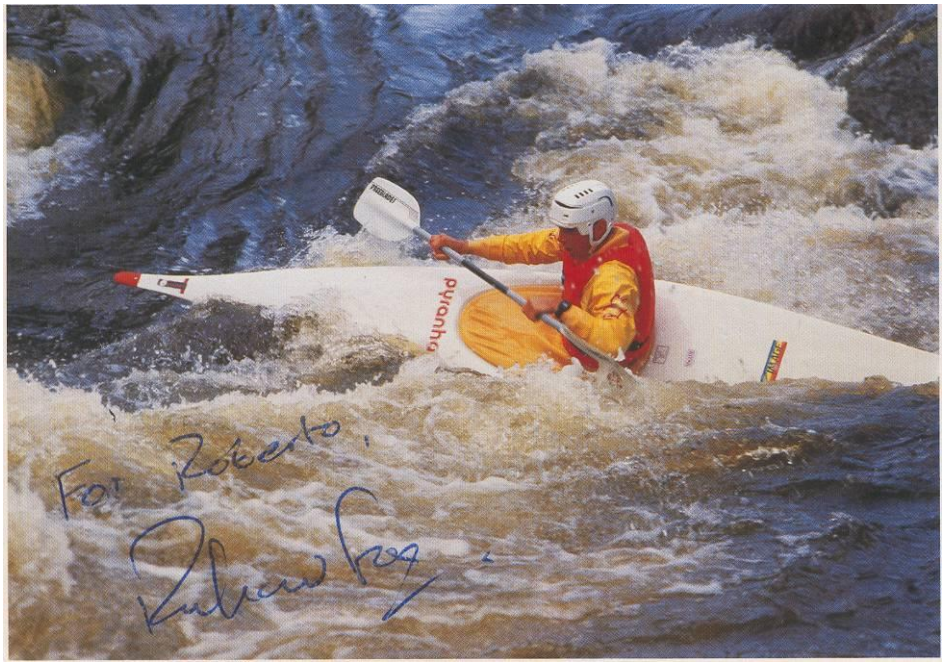
As you can see, this was the period in which there was the rule that the sum of the runs counted; this rule was subsequently changed back to how it was at the Augsburg 1972 Olympic Games in which the best run is counted.

Αποτελέσματα	ΑΘΛΗΤΗΣ	Τύπος Αγώνα	ΤΟΠΟΣ	ΗΜΕΡΟΜΗΝΙΑ	Χρόνος 1ης διαδρομής	Ποινές 1ης διαδρομής	Χρόνος 2ης διαδρομής	Ποινές 2ης διαδρομής	Σύνολο χρόνου 1ης & 2ης διαδρομής	Σύνολο ποινών 1ης & 2ης διαδρομής	Σύνολο χρόνου και ποινών 1ης & 2ης διαδρομής	Καλύτερος χρόνος όλων των κατηγοριών του αγώνα	Απόκλιση από το καλύτερο αποτέλεσμα (%) (χρόνος & ποινές)	Απόκλιση από τον καλύτερο χρόνο όλων των κατηγοριών του αγώνα χωρίς ποινές (%)	Καλύτερος χρόνος όλων των κατηγοριών της καλύτερης διαδρομής	διαφορά από τον καλύτερο χρόνο της 1ης διαδρομής	διαφορά από τον καλύτερο χρόνο της 2ης διαδρομής	Μέσος όρος χρόνου από το άθροισμα 1ης & 2ης διαδρομής	Διαφορά χρόνου 1ης & 2ης διαδρομής
50°	TSAKMAKIS Christos	A	Augsburg-GER	19/07/2002	122,40	8	116,97	2	239,37	10	249,37	185,14	35	29	91,40	31,00	25,57	28,29	5,43
15°	TSAKMAKIS Christos	B	Lipt. Mikul.-SVK	30/07/2002	126,41	0	124,81	0	251,22	0	251,22	220,84	14	14	108,54	17,87	16,27	17,07	1,60
39°	TSAKMAKIS Christos	B	Lipt. Mikul.-SVK	31/07/2002	144,85	8	140,62	6	285,47	14	299,47	215,15	39	33	106,91	37,94	33,71	35,83	4,23
33°	TSAKMAKIS Christos	A	Nowy Sacz-POL	09/08/2002	123,30	4	124,75	2	248,05	6	254,05	211,62	20	17	104,07	19,23	20,68	19,96	-1,45
22°	TSAKMAKIS Christos	A	Nowy Sacz-POL	11/08/2002	119,73	0	Semif.		119,73	0	119,73	Semif.	99	99	99,00	20,73	99,00	99,00	99,00
11°	TSAKMAKIS Christos	C	Solcan-SLO	22/03/2003	90,24	6	89,48	0	179,72	6	185,72	155,11	20	16	75,41	14,83	14,07	14,45	0,76
1°	TSAKMAKIS Christos	C	Konitza-GRE	29/03/2003	106,15	2	104,82	2	210,97	4	214,97	211,31	2	0	103,90	2,25	0,92	1,59	1,33
1°	TSAKMAKIS Christos	C	Konitza-GRE	30/03/2003	107,40	4	104,86	2	212,26	6	218,26	212,83	3	0	102,93	4,47	1,93	3,20	2,54
21°	TSAKMAKIS Christos	C	Merano-ITA	01/06/2003	136,60	0	130,15	2	266,75	2	268,75	216,92	24	23	107,75	28,85	22,40	25,63	6,45
20°	TSAKMAKIS Christos	C	Bovec-SLO	07/06/2003	123,79	0	122,88	0	246,67	0	246,67	207,13	19	19	102,36	21,43	20,52	20,98	0,91
20°	TSAKMAKIS Christos	C	Bovec-SLO	08/06/2003	115,83	2	115,83	0	231,66	2	233,66	207,09	13	12	102,93	12,90	12,90	12,90	0,00
O°	TSAKMAKIS Christos	C	Ivrea-ITA	14/06/2003	108,68	10	110,82	2	219,50	12	231,50	185,56	25	18	89,99	18,69	20,83	19,76	-2,14
O°	TSAKMAKIS Christos	C	Ivrea-ITA	15/06/2003	95,69	8	91,55	0	187,24	8	195,24	167,78	16	12	81,29	14,40	10,26	12,33	4,14
10°	TSAKMAKIS Christos	A	Hohellimb-GER	11/07/2003	104,32	2	106,11	0	210,43	2	212,43	190,27	12	11	94,00	10,32	12,11	11,22	-1,79
10°	TSAKMAKIS Christos	A	Hohellimb-GER	13/07/2003	105,53	0	104,82	0	210,35	0	210,35	190,88	10	10	93,98	11,55	10,84	11,20	0,71
44°	TSAKMAKIS Christos	A	Augsburg-GER	23/07/2003	112,43	2	118,13	4	230,56	6	236,56	192,07	23	20	94,54	17,89	23,59	20,74	-5,70
1°	TSAKMAKIS Christos	C	Evinos-GRE	27/03/2004	118,55	2	122,21	2	240,76	4	244,76	244,76	0	-2	120,55	-2,00	1,66	-0,17	-3,66
1°	TSAKMAKIS Christos	C	Evinos-GRE	28/03/2004	124,53	2	124,91	4	249,44	6	255,44	255,44	0	-2	124,53	0,00	0,38	0,19	-0,38
13°	TSAKMAKIS Christos	C	Augsburg-GER	12/04/2004	103,93	8	102,67	0	206,60	8	214,60	191,49	12	8	93,85	10,08	8,82	9,45	1,26
24°	TSAKMAKIS Christos	C	Augsburg-GER	11/04/2004	97,61	6	97,06	6	194,67	12	206,67	176,38	17	10	86,94	10,67	10,12	10,40	0,55
27°	TSAKMAKIS Christos	A	Athens-GRE	22/04/2004	106,73	2	106,94	2	213,67	4	217,67	187,20	16	14	95,85	10,88	11,09	10,99	-0,21
39°	TSAKMAKIS Christos	A	Athens-GRE	23/04/2004	119,82	56	Semif.		119,82	56	175,82	Semif.	99	99	99,00	20,82	###	###	###
27°	TSAKMAKIS Christos	A	Skopja-FIROM	04/06/2004	109,96	2	107,22	2	217,18	4	221,18	193,39	14	12	95,56	14,40	11,66	13,03	2,74
25°	TSAKMAKIS Christos	A	Skopja-FIROM	06/06/2004	107,81	0	Semif.		107,81	0	107,81	Semif.	99	99	94,43	13,38	###	###	###
7°	TSAKMAKIS Christos	A	Lofer-AUT	03/07/2004	124,01	4	113,94	2	237,95	6	243,95	221,09	10	8	107,44	16,57	6,50	11,54	10,07

The columns of this table are as follows:

position obtained in the race, athlete's name, competition type (A–World/European championships or World Cup competition, B–International or World Ranking competition C–National competition), country where competition occurred and the date.

- From the sixth column we have: the time of the 1st run, penalties, time of the 2nd run and the penalties of that run.
- In the tenth and eleventh column we have the sum of the times of the two runs and then the sums of the penalties.
- In the twelfth column we have the sum of time and penalties of both runs.
- In the thirteenth column there is the best result of the competition.
- In the fourteenth column we have the percentage of separation between the result of the athlete (time+ penalties) and the best result.
- In the fifteenth column we have the percentage of separation between the time of the athlete (not counting penalties) and the best result.
- In the sixteenth column there is the time of the best run of the race.
- In the seventeenth we have the difference between the athletes 1st run and the best run of the race.
- In the eighteenth we have the average of the detachments of the 1st and 2nd run and the best run of the race.
- In the nineteenth we have the average of columns 19 and 20.
- In the last column then there is the difference between the 2nd and 1st run.



And to conclude, I have one last example from the past few years since I have been back in Italy, this is actually the current Excel version now used to evaluate the performance of the athletes I train inside and outside of Italy.

Collecting data and verifying it in detail with more objective methods of analysis allows me to confirm or disprove what I observe during training sessions.
Also, the attached Excel file, with data from most of the competitions of the past three years, can be broken up into parts and analyzed in various ways, and in great detail.

In this way one can observe the progress of the athletes over time, or simply understand what their mental preparation is and how they approach the race. These aspects are easily missed if one only looks at the final result of the competition or the athletes' standing. Also, over a longer period, one can identify weak points that should be corrected.

After corrections are implemented, the data can demonstrate how effective these adaptations were. **As I have said, the data can help give us information on the different aspects of the athlete (technical, physical, mental), but it can also aid us in understanding how to modify the training and what aspects need more attention or are more useful in improving the results.**

Piazzamento	Categoria	Atleta	Categoria della gara (C - Naz. B - Internaz. A - Camp. Mond. e Coppa)	LOCALITA'	DATA	Gara E-liminat. Q-ualif. S-emifin. F-inale	Tempo della 1^ prova	Penalità della 1^ prova	Tempo e Penalità della 1^ prova	Tempo della 2^ prova	Penalità della 2^ prova	Tempo e Penalità della 2^ prova	Penalità considerate nella migliore prova	Miglior prova	Miglior tempo di gara	Percentuale rispetto al tempo più veloce di gara (%) (tempo e penalità)	Percentuale rispetto al tempo più veloce di gara (%) (solo tempo)	Tempo in sec. 2^ vs 1^	Penalità 2^ vs 1^
7°	K M	Athleta 1	B	Solcan-SLO	16/04/2011	Q	91,91	4	95,91	91,19	0	91,19	0	91,19	89,11	2,3%	2,3%	-0,72	-4
23°	K M	Athleta 1	B	Solcan-SLO	17/04/2011	S	85,64	4	89,64				4	85,64	80,89	10,8%	5,9%	-85,64	-4
1°	K M	Athleta 1	C	Ivrea-ITA	30/04/2011	Q	98,69	2	100,69	100,94	0	100,94	2	98,69	98,69	2,0%	0,0%	2,25	-2
1°	K M	Athleta 1	C	Ivrea-ITA	30/04/2011	Q	98,13	4	102,13	97,22	0	97,22	0	97,22	97,22	0,0%	0,0%	-0,91	-4
1°	K M	Athleta 1	C	Valstagna-ITA	07/05/2011	Q	89,40	6	95,40	87,92	0	87,92	0	87,92	87,92	0,0%	0,0%	-1,48	-6
2°	K M	Athleta 1	C	Valstagna-ITA	08/05/2011	Q	82,78	0	82,78	82,86	2	84,86	0	82,78	82,69	0,1%	0,1%	0,08	2
40°	K M	Athleta 1	B	Tacen-SLO	21/05/2011	Q	97,47	4	101,47	101,75	0	101,75	4	97,47	92,42	9,8%	5,5%	4,28	-4
26°	K M	Athleta 1	B	Tacen-SLO	22/05/2011	S	100,74	4	104,74				4	100,7	96,08	9,0%	4,9%	-100,74	-4
4°	K M	Athleta 1	C	Vobarno-ITA	29/05/2011	Q	80,99	4	84,99	79,86	4	83,86	4	79,86	80,77	3,8%	-1,1%	-1,13	0
2°	K M	Athleta 1	B	Bourg-FRA	18/06/2011	Q	92,44	2	94,44				2	92,44	89,64	5,4%	3,1%	-92,44	-2
4°	K M	Athleta 1	B	Bourg-FRA	19/06/2011	S	93,29	0	93,29				0	93,29	89,93	3,7%	3,7%	-93,29	0
2°	K M	Athleta 1	B	Bourg-FRA	19/06/2011	F	90,56	0	90,56				0	90,56	89,65	1,0%	1,0%	-90,56	0

In this table, starting from the left we have:

the standing of the athlete, the category they are racing in (KM, KW, C1, C2, C1W), name, the competition type (A–World/European championship or World Cup competition B–International or World Ranking competition C–National competition), and the location of the competition, the date of the event.

- In the seventh column we have the phase of the race (E – Eliminatory, Q – Qualification, S – Semifinal, F – Final)
- In the eighth we have the time of the 1st run and then the penalties.
- In the tenth the sum of time and penalties of the 1st run.
- In the eleventh we have the time of the 2nd run and then the penalties.
- In the thirteenth the sum of time and penalties of the 2nd run.
- In the fourteenth the result of the best run (and therefore, the athlete's race result)
- In the fifteenth the best time in the competition.
- In the sixteenth we have the percentage between the athletes best run (time+ penalties) and the best time in the competition.
- In the seventeenth we have the percentage between the athletes best run (only time) and the best time in the competition.
- In the eighteenth column we have the difference in time between the 2nd the 1st run.
- In the nineteenth nth column we have the difference of penalties between the 2nd and 1st run.

What we can observe from the time analysis and how they can be considered

A worksheet so full of numbers may create some problems of comprehension and limit us to a superficial study of topics that we think we already know very well.
But a closer reading can give us much information, and will open a whole new world of analysis.

Before talking about this, though, it must be said **that this is not offer a solution to every problem and is not an infallible approach, but it does help us understand our athletes better**.

Each coach can get what is most useful and pertinent by using the data highlighted in colors, explained in the following sections.

CLEAN

For example when an athlete does a run with no penalties, the box is colored in green, [0] this "0" can be read in various ways, but the most amazing thing is that there are some athletes who, already from a young age, have no difficulty doing clean runs, while for others this is quite hard to achieve.

Also, some people do a good clean 1st run and then do worse on their 2nd run, others do the exact opposite, improving their 2nd run.

So if in a competition there are many athletes with green clean runs it might mean that the athletes are very good technically or the course is simple.

All this is to prove how each person, through analysis and evaluation, can find different things about the athletes, even though with experience one also **understands the attitude of the athlete considered in this analysis.**

FAST

In the other boxes then we can evaluate the percentages refers to the best race time, this is actually an **absolute reference that can be used to verify the improvement of the athlete over time.**

In the yellow column there is the percentage between the result of the athlete (time plus penalties) and the fastest run of the race, as we can see in this example it is conditioned by a touch [4,5%] whereas in the grey column we have the same calculation but here the penalties aren't counted [2,5%].

Qualification, semifinals, finals

In the Qualification races (Q) when the time is in light blue [98,63] this means that the athlete did his best time in that run, and if this is in the second run it means that **the athlete was able to improve himself.**

But also in this case there can be different ways of analyzing the issue, for example the improvement could be because the athlete could have understood and corrected his errors, or it could be that he was not sure of himself, or wanted to be careful in the first run so he didn't do his very best.

There could be also other meanings added to the interpretations.
If we then look at how many times the athlete gets into the Semifinals and Finals we can evaluate the level of the athlete by seeing in what percentage of races there is access to Semifinals (S) and Finals (F).
This document can be a starting point for **further analysis, classifying and observing the results of athlete, and not just focusing on judging or jumping to simplistic conclusions.**

During the past years these results have directed me through choices to improve my analysis methods and is proven by my athletes obtaining better results.

The necessity to understand the reasons that this type of data collection could not be improved, especially after having unsuccessfully tried to solve problems solely from a technical aspect, led to the interesting insight resulting from the **collaboration with psychologists Gabriella Covacci from Milan, Giuseppe Vercelli from Turin and Armin Binz from Augsburg**, whom over time have helped me find important interpretations of my new methods of observation in the search of the individual problems of the athletes.

I think that the technical level obtained by many athletes is so high that it cannot be further improved enough to drastically change the athlete's performance.

Much more useful work can be done if these athletes are considered as individuals.

By listening to them, understanding their psychology and philosophy one can help them by finding the right way to stimulate them in their psychological growth and in understanding their own limits.

For this reason, the factors that can influence athletic performance should not be limited to physical and technical aspects, but should be enlarged to include the complete understanding of the man-athlete.

Motivation

Is an essential component for the research of results and it guides the behavior of the athlete.

On this subject there is a fundamental distinction brought forward by Tory Higgins in 1997, who for the first time talked about

"Regulatory Focus Theory,,

distinguishing between two kinds of motivations in the research for success:

Promotion focus

and

Prevention focus

These are both present in the life of each athlete, expressed with different characteristics.

With **promotion** focus the athlete is **projected toward the objective of succeeding, so towards winning.**

If an athlete expresses **prevention** focus it means they don't like to fail.

In this case, their objective is not failing, so they are oriented towards what is secure and what will enable them to not lose time.

To explain this better I have some examples of the attitudes observed in athletes during the arc of three years, each athlete has two graphs.

The first one, titled **CLEAN***,* refers to penalties and to the limit of penalties to get into the final. The second graph, titled **FAST***,* refers to the percentage of time from the first one, needed to access finals.

In the table **CLEAN**, referring to the data taken from this year's world championships in Prague, one can see the % of the various kinds of penalties.

Different colours are used to define the penalties.

0 (dark green) ***= 0 penalty seconds"***,
2 (ligth green) ***= 2 penalty seconds",***
> 2 (orange) this is pretty much the limit for getting into the final, it is pretty much impossible to get in with ***> than 2 penalty seconds".***

In the table **FAST** there is the maximum percentage allowed from the first time of the race to access the final (updated from the last World Championships in Prague) :

- ***in K1M the separation from the first time must be < 3"***
- ***in C1M it must be < 11"***
- ***in K1W it must be < 23"***
- ***in C2M it must be < 26"***

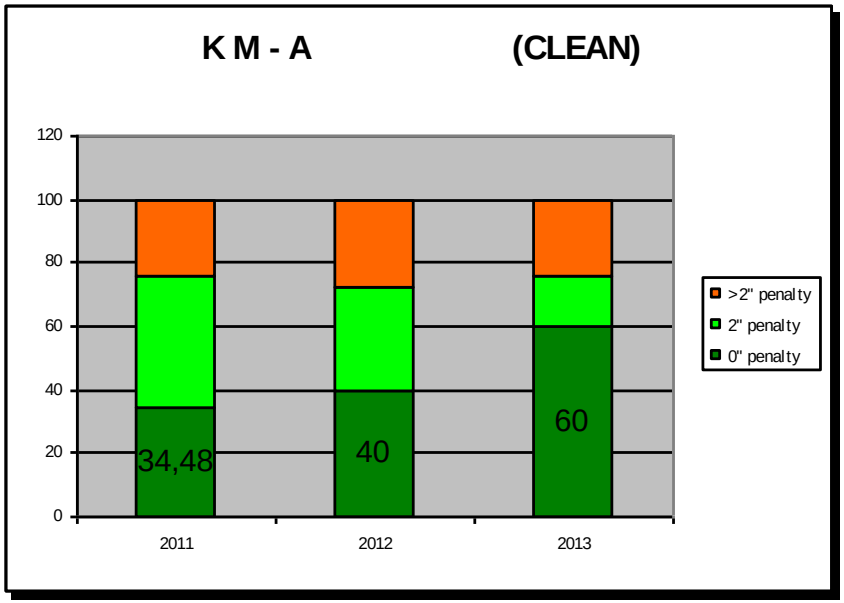
} In Final

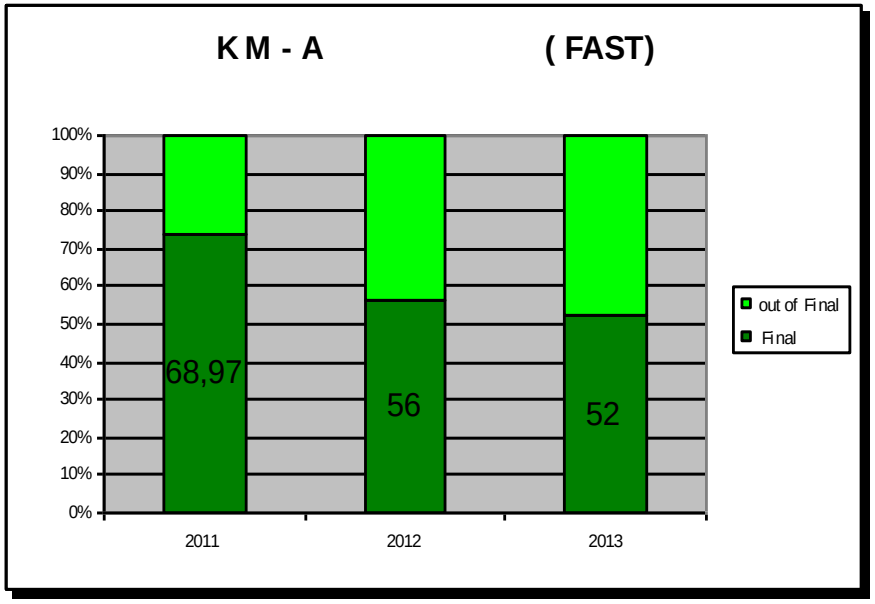
- ***in K1M if the time is >3"***
- ***in C1M if the time is > 11"***
- ***in K1W if the time is > 23"***
- ***in C2M if the time is > 26"***

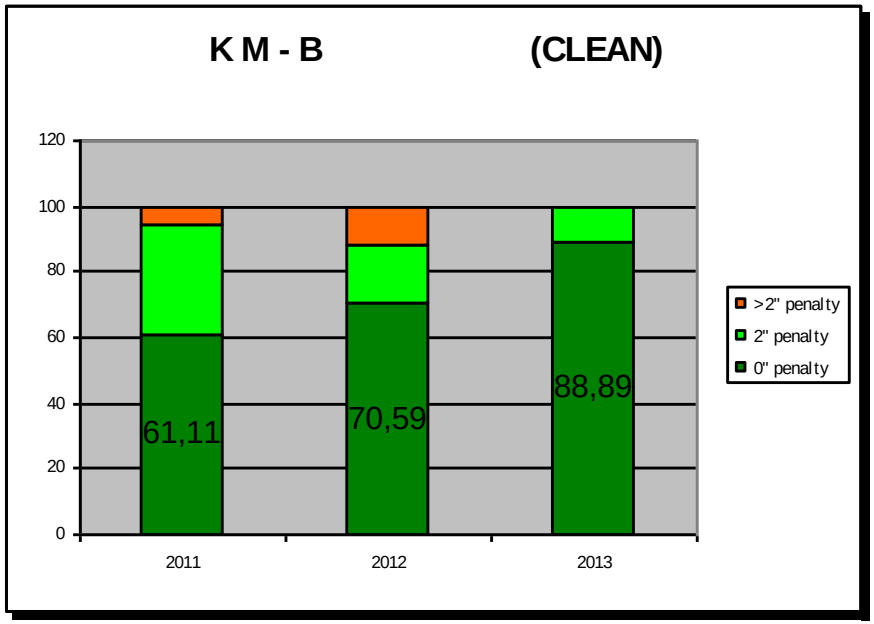
} Out of Final

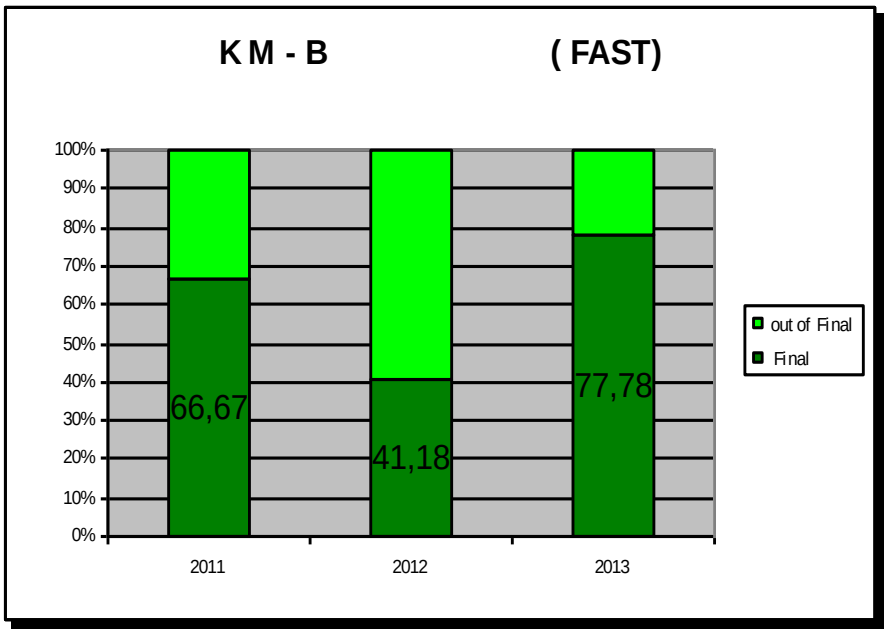
As we have earlier said, in the left side there are the **CLEAN** graphs in which the penalties of the athletes have been considered.

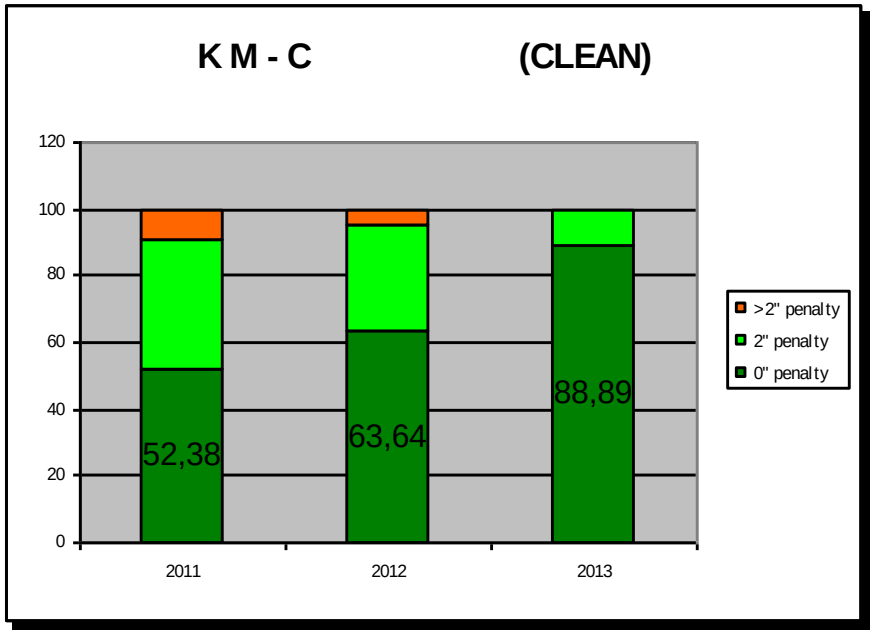
On the right side of the page there are the **FAST** graphs, regarding the annual percentages of the athletes' access to the finals.

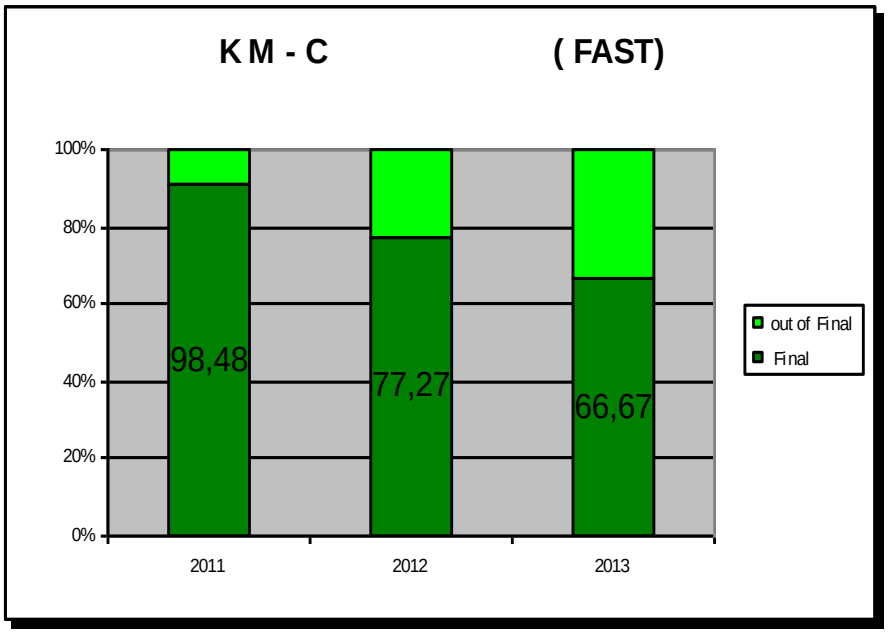


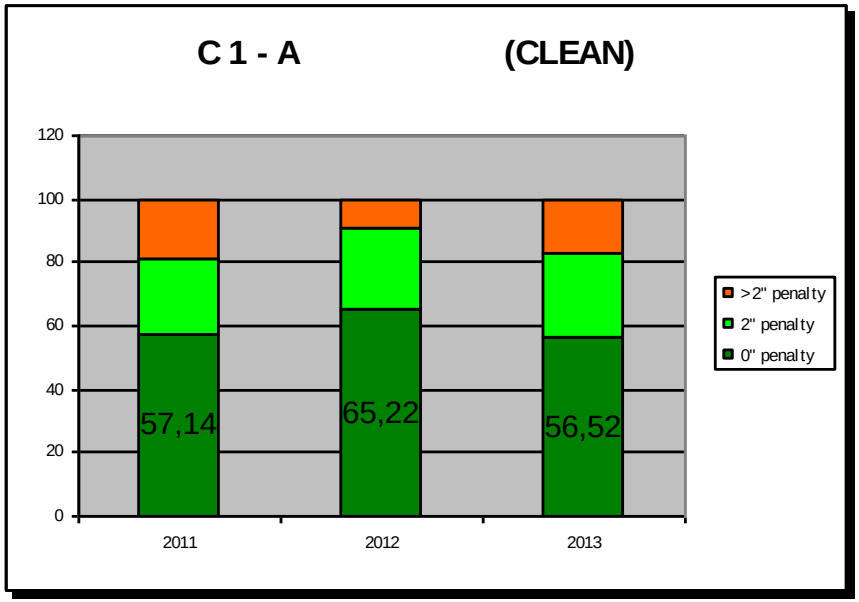


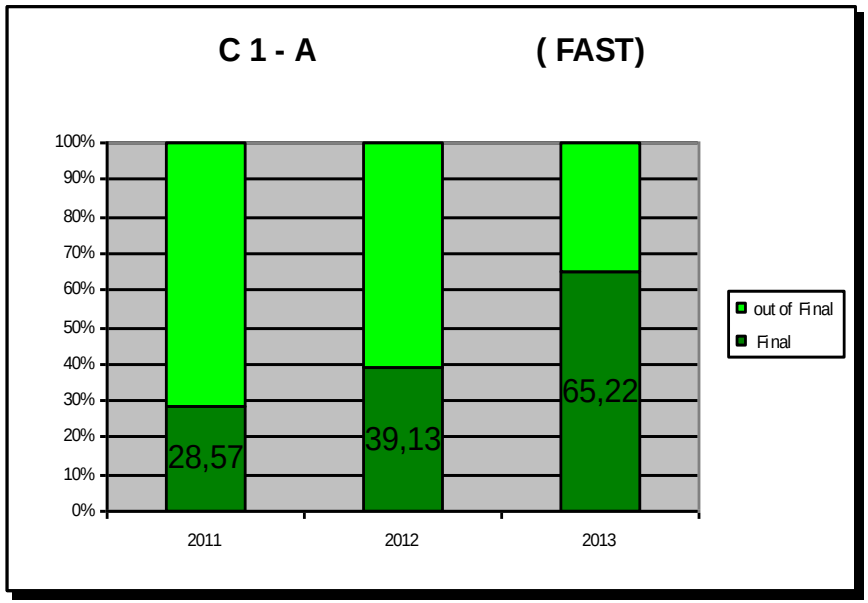

K M - B (CLEAN)
120
100
80
60
40
20
0
61,11
70,59
88,89
2011
2012
2013
>2" penalty
2" penalty
0" penalty

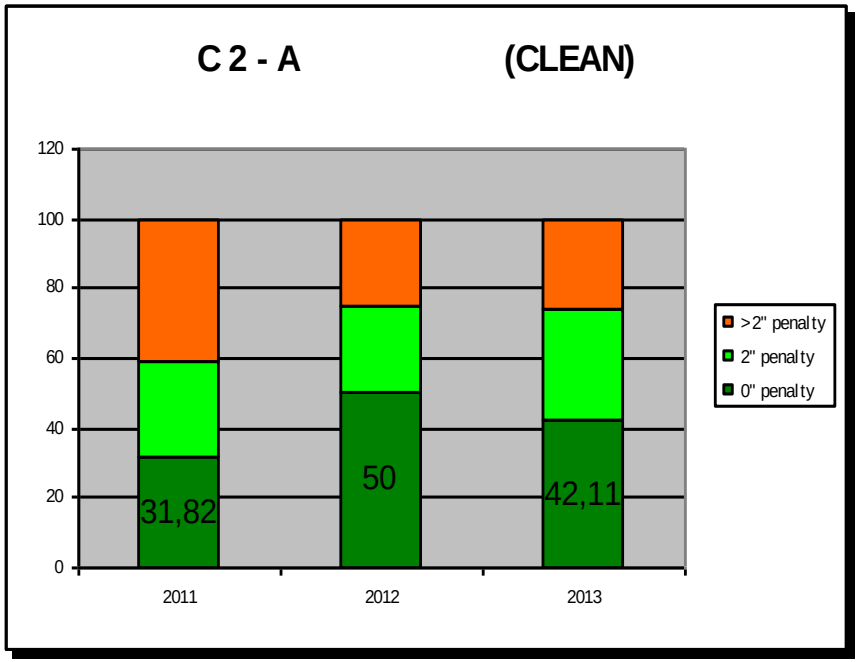

K M - B (FAST)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
66,67
41,18
77,78
2011
2012
2013
out of Final
Final

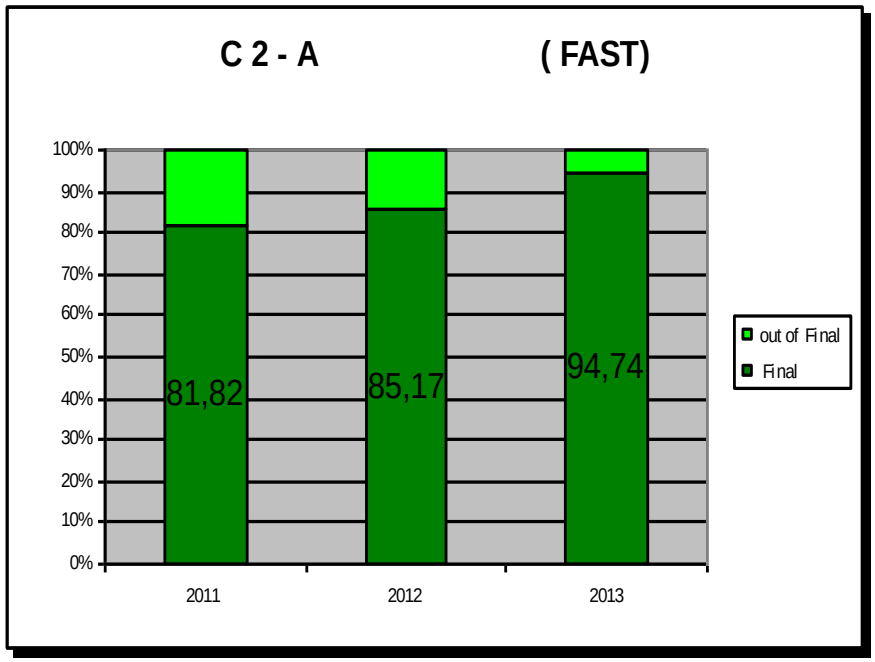

K M - C (CLEAN)
120
100
80
60
40
20
0
52,38
63,64
88,89
2011
2012
2013
>2" penalty
2" penalty
0" penalty


K M - C (FAST)
100%
80%
60%
40%
20%
0%
98,48
77,27
66,67
2011
2012
2013
out of Final
Final


C 1 - A (CLEAN)
120
100
80
60
40
20
0
57,14
65,22
56,52
2011
2012
2013
>2" penalty
2" penalty
0" penalty


C 1 - A (FAST)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
28,57
39,13
65,22
2011
2012
2013
out of Final
Final


C 2 - A (CLEAN)
120
100
80
60
40
20
0
31,82
50
42,11
2011
2012
2013
>2" penalty
2" penalty
0" penalty


C 2 - A (FAST)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
81,82
85,17
94,74
2011
2012
2013
out of Final
Final

The data is much easier to understand and is very intuitive, very different though is the value that one can give to one side or the other based on the training proposals offered.

All of this can help us verify the correct realization of the strategies applied, by checking the athletes' changes during time.

If there is a negative result it means that the training strategies must be changed if one wants to reach the chosen objective.

The other aspect referred to by Higgins can help us clarify the behavior of athletes who are more concentrated with a **prevention focus**, these will have a higher percentage of runs with "0" penalties, often reducing to 0 % the number of times that they do more than one touch in a run; the down side of this **attitude usually reduces the number of times that the time is good enough to access finals** (because they lose time trying not to touch, like in the case of (K M – A or K M - C).

When athletes are concentrated on **promotion focus** instead, the % of runs with penalties can increase, stay the same or decrease, but at the same time there is an **increase in the speed which facilitates the access to finals**, this is the case of (C 1 – A or C 2 - A).


Ivrea Canoa Club thanks for your attention…