

MEASUREMENT AND OBSERVATION OF RIO DE JANEIRO HALF MARATHON

Measurement of the course:

I was contacted by Rodolfo Eichler, IAAF "A" Measurer in Brazil, and asked to come to Rio to check his measurement of the course and to observe the race. I have always enjoyed working with Rodolfo, and I accepted. Rodolfo explained that he would be going to Rio on 31 August with a group of measurers to lay out the course, and that we would prevalidate on Saturday, 13 September, two weeks later. The Saturday was chosen for measurement because the traffic is much less than on weekdays.

The flight to Rio was exceptional in that I had three seats to myself both ways, thus was able to stretch out during the 12 hour overnight flight to and from Atlanta. Very nice. Not exactly like a bed, but a lot better than sitting upright in an economy-class seat.



Suzana and Rodolfo laying out the precalibration course.

On Friday I met with Rodolfo and his team - Suzana Gnaccharini, Paulo Silva, Gabriel Monteiro and Antonio Varela. We toured the course. It's quite beautiful, running as it does along the beaches and ending in Flamengo Park, with the Sugar Loaf as backdrop. The race was sponsored by O Globo, a Brazilian TV firm, and they wanted a finish that would show up well on TV.

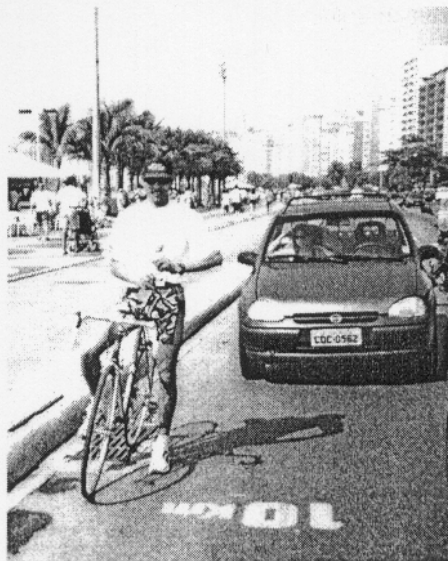
In São Conrado, at the start, we laid out a 300

meter calibration course, for use the next morning. We had no sticky tape for marking, but we had a plentiful supply of paper. Each mark was made on a piece of paper, which was firmly held in place until it was no longer needed. When we were done we went for a drive through the Tijuca Forest and a beer in a small bar at the edge of the forest.

Next morning we collected the bikes and people and went to São Conrado, where we were met by the O Globo TV crew, who wanted to film the measurement process. They grabbed my bike and moved to a sunny spot, then spun the front wheel and took pictures of the Jones/Oerth counter as its digits moved. I had a bit of trouble riding around one cameraman who leaned into my calibration path, but I held firm and he moved.

The course from São Conrado is two lanes wide for the first 3 km, and very winding with a few small hills. The police did a fine job of stopping cars on the blind curves, but we were relieved to finally get to the beaches of Leblon, Ipanema, Copacabana and Leme, where the course continued on the wide Av. Atlantica in a long, sweeping right-hand turn. The SPR was easy - just ride on the right, and the police had it easy there. In the first kilometer I had one minor problem with the TV cameraman, who established

himself on the SPR. I had to shoulder him out of the way, but managed not to fall nor deviate from the SPR.



Antonio taking a count.

At Leme, at the end of the beaches, at about 13 km, the course doubles back to the Meridien Hotel, then turns right through a tunnel, emerging on Botafogo Bay and continuing to the park and beaches of Flamengo, to the finish. As we had to cross the median and ride against three lanes of traffic here, the police had some difficulty, but got the job done. I never felt a moment's unease - we were superbly protected

At the finish we pounded two nails and recalibrated, then got out the steel tapes and measured the length between the nails, completing the data gathering. By then it was noon, we were hot and tired, and we went to the hotel to shower and calculate. Measurements agreed within 11 meters for all six measurements, quite agreeable. They also showed the course to be about 24 m oversize (full SCPF plus 24 m), which Rodolfo had known beforehand. Measurements confirmed the original layout closely. Because the TV people had already set up, and did not wish to change, the course was left as it was.

Observation of the race:

The race was to start at 9:30 AM. This is a bit late when there is a chance of hot weather, but O Globo wanted to be sure their potential audience was awake. Besides, it was winter in Rio, and a hot day had not been expected. Surprise! It was about 30C (86F) at the start, and later rose to the high 30's (high 90's) at the finish.



Flavio Cretaro da Luz, showing the counter he made. He gave it to Pete for testing.



The measurement is finished, and all are smiling.

The 6000 runners were held back before the race by a crew of people who kept them 20 meters back from the start line. Just before the start, the elite runners were permitted to take their place at the start, and the crowd permitted to move up.



Gabriel getting set to lead the race.

As observer, I was assigned a "moto" (motorcycle) on which to ride ahead of the race. The area in front of the start was crowded with two big press trucks, a commercial radio reporter in a car, and 20 or 30 motos. I smelled a potential problem. During the first two winding kilometers on the two-lane road the vehicles were caught by the runners, with runners pounding on the press truck to make way. Since I could not see the runners anyway, and was only needed to verify the route, I asked my driver to speed up and get as far forward as possible, well out of the traffic. This we did, riding in sight of Gabriel (former Colonel of Marines, now retired and a Rio policeman), who was leading the race on his police motorcycle. I had no idea what was happening behind me, but in front could see what looked like millions of people lining the beaches and watching the race.

Near the finish I was caught by Rodolfo's moto, and he said to hang back until the leader appeared. We followed him for a while. He was absolutely surrounded by motos. Once he looked over his shoulder to check out the competition (he was well clear), but I doubt he was able to see anything. It is interesting how so many races would love to have a fast time, yet permit conditions to exist that impede the runners.

I don't know who won, but the first two men were Brazilian, which pleased the crowd, as several Kenyans also ran. The first woman was from Italy. The men's winning time was just over 1:04. Quite fast for such a hot day. I heard that back in the pack they were shuttling people to hospital with heat problems, no surprise.

All in all, in spite of the vehicle and heat problems, it seemed a quite successful event to me. Although it was hot, finishers seemed happy. The route itself was one of the most beautiful I've seen, and the race was well-organized.



Rodolfo, Pete, Paulo pointing at the result of their handiwork - the start line. The peak in the background may be reached by a 7 hour climb, and is used by hang-gliding enthusiasts

MEASUREMENT OF RIO DE JANEIRO HALF-MARATHON

13 September 1997

All calculations are based on average constant and include 1.001 short course prevention factor.

Measurement of precalibration course at 20C. No temperature correction.

First: 10x30 metres = 300 metres
 Second: 10x29 + 9.989 = 299.989 metres
 Average = 299.9945
 Added 5 mm = 0.005
 Final length = 299.9995 Use 300.00 metres

Precalibration: 7:45 AM - 20C - Dry

Paulo Silva Gnaccarini	Suzana Pneumatic	Peter Riegel	Gabriel Monteiro	Antonio Varela	Rodolfo Eichler
Pneumatic	Pneumatic	Pneumatic	Pneumatic	Greentyre	Greentyre
98098	5255	72000	92500	497000	39280
101517.5	8031	68587.5	95336.5	500317	42677
104939	10809	65175	98171	503635	46073.5
108358	13587.5	61762		506952	49473
111777	16365	58349	1105	510268.5	52869.5
			3940		
			6775		

Elapsed counts:

3419.5	2776	3412.5	2836.5	3317	3397
3421.5	2778	3412.5	2834.5	3318	3396.5
3419	2778.5	3413	2835	3317	3399.5
3419	2777.5	3413	2835	3316.5	3396.5

Average	3419.75	2777.5	3412.75	2835.25	3317.125	3397.375
Precal Counts/km	11410.57	9267.592	11387.21	9460.284	11068.14	11335.91

Measurement of postcalibration course:

First: 14X30 + 6.325 = 426.325 metres
 Second: 14X30 + 6.324 = 426.324 metres
 Average = 426.3245 metres
 Pavement Temperature = 38C (estimated)
 Temperature correction = 0.089017 metres
 Corrected length = 426.4135 metres Use 426.41 metres

Postcalibration: 11:15 AM - 28C - Dry

Paulo Silva Gnaccarini	Suzana Pneumatic	Peter Riegel	Gabriel Monteiro	Antonio Varela	Rodolfo Eichler
Pneumatic	Pneumatic	Pneumatic	Pneumatic	Greentyre	Greentyre
70557	29010	106400	18000	68000	2600
75407	32952.5	101556	22018.5	72715	7431
80257	36895.5	96711	26045	77431	12262.5
85108	40837.5	91868	30070.5	82146	17093.5
89958.5	44781	87024	34091	86861	21923
	48724				
	52664.5				

Elapsed Counts:

4850	3942.5	4844	4018.5	4715	4831
4850	3943	4845	4026.5	4716	4831.5
4851	3942	4843	4025.5	4715	4831
4850.5	3943.5	4844	4020.5	4715	4829.5
	3943				
	3940.5				

Average	4850.375	3942.417	4844	4022.75	4715.25	4830.75
Postcal Counts/m	11386.28	9254.846	11371.32	9443.429	11069.08	11340.21

Day's Average	11398.42	9261.219	11379.26	9451.857	11068.61	11338.06
Change, counts	-24.3	-12.7	-15.9	-16.9	0.9	4.3

80257 = probable data recording error, corrected here

Recorded Counts at Points

	Paulo Silva Gnaccarini	Suzana Pneumatic	Peter Riegel	Gabriel Monteiro	Antonio Varela	Rodolfo Eichler
	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Greentyre	Greentyre
Start	11780	16414	258000	10000	510000	52900
5 km	68881	62802.5	200997	57380	565451.5	109690
10 km	126022	109239	143971	104779	620948	166505
Ref 1	157977	135224.5	112073	131272	651994	198298
16 km	194723	165106.5	75387	161738	687699.5	234845
Ref 2	233352	196494	36854	193718.5	725210.5	273256
Finish 1	252553	212137.5	17647	209659	743908.5	292403
Finish 2	252943	212449	17267	209974	744281	292786

Interval Counts at Points

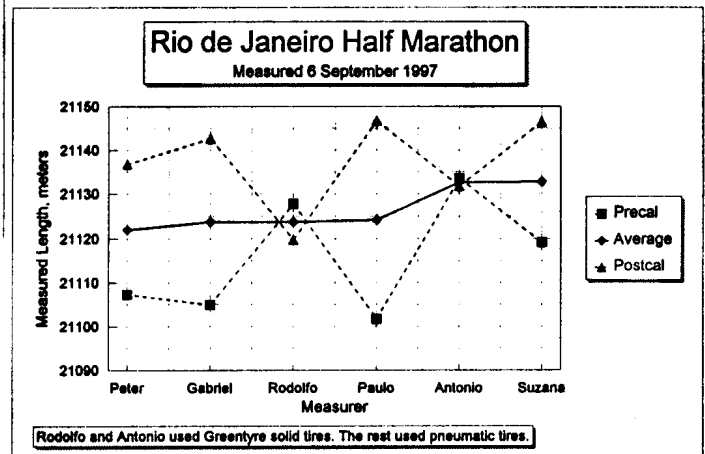
	Paulo Silva Gnaccarini	Suzana Pneumatic	Peter Riegel	Gabriel Monteiro	Antonio Varela	Rodolfo Eichler
	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Greentyre	Greentyre
Start						
5 km	57101	46388.5	57003	47380	55451.5	56790
10 km	57141	46436.5	57026	47399	55496.5	56815
Ref 1	31955	25985.5	31898	26493	31046	31793
16 km	36746	29882	36686	30466	35705.5	36547
Ref 2	38629	31387.5	38533	31980.5	37511	38411
Finish 1	19211	15643.5	19207	15940.5	18698	19147
Finish 2	380	311.5	380	315	372.5	383

Interval Metres at Points

	Paulo Silva Gnaccarini	Suzana Pneumatic	Peter Riegel	Gabriel Monteiro	Antonio Varela	Rodolfo Eichler
	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Greentyre	Greentyre
Start						
5 km	5009.55	5008.90	5009.37	5012.77	5009.80	5008.79
10 km	5013.06	5014.08	5011.40	5014.78	5013.86	5011.00
Ref 1	2803.46	2805.84	2803.17	2802.94	2804.87	2804.09
16 km	3223.78	3226.57	3223.93	3223.28	3225.83	3223.39
Ref 2	3388.98	3389.13	3386.25	3383.52	3388.95	3387.79
Finish 1	1685.41	1689.14	1687.89	1686.49	1689.28	1688.74
Finish 2	33.34	33.63	33.39	33.33	33.65	33.78
Finish 2	21157.57	21167.3	21155.41	21157.11	21166.26	21157.59
Finish 1	21124.23	21133.66	21122.02	21123.79	21132.6	21123.81

Finish 1 is the Official Finish

	By Precal	By Average	By Postcal	Tire
Peter	21107.28	21122.02	21136.77	Pneumatic
Gabriel	21104.97	21123.79	21142.64	Pneumatic
Rodolfo	21127.82	21123.81	21119.80	Greentyre
Paulo	21101.76	21124.23	21146.76	Pneumatic
Antonio	21133.50	21132.60	21131.71	Greentyre
Suzana	21119.13	21132.77	21146.43	Pneumatic



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Luzinete	Av. Prof. Mendes de Moraes, em frente ao edifício São Corrado, nº 1150
KM 01	Prac. de rede - "Atrezo" Das Irês 13...
KM 02	Prof. Mendes de Moraes, em frente a Caixa da PMA, salas do H. Nacional
KM 03	Av. Niemöller, em frente a escola (Plano) 30m antes do
KM 04	estacionamento near a pedras dos "resolvidos"
KM 05	Início da Descida da Niemöller, 20m antes das escadas de Pedras de
KM 06	Acesso ao Morro.
KM 07	Av. Niemöller, em frente ao muro do nº 162, depois da Viduad.
KM 08	Leblon, Av. Dedim Moreira nº 1172, em frente a rua Rina Ludloff antes de
KM 09	Reformação e colinas de PMA.
KM 10	Dedim Moreira nº 138, em frente a Afazio de Melo Franco.
KM 11	Em frente ao nº 462, ardois antes do Casuar Park Hotel.
KM 12	Viera Souto em frente a Gomes Carneiro (antes do Barril 1800).
KM 13	Av. Atlântica - Posto 06 altura de nº 4740 - Rio Palácio Hotel, 5m antes da
KM 14	Caixa da PMA
KM 15	Av. Atlântica 3196, após Rio Olhos Palácio, na Xavier de Silveira.
KM 16	Av. Atlântica 2172, esquina do Posto do BPS (Kenzelbach), antes a Villário
KM 17	Geovazi.
KM 18	Av. Atlântica 3122, em frente ao edifício oficial entre Prade Jr. E Princese
KM 19	Isabel.
KM 20	Leoni, na volta em frente ao nº 554 - Ad. Aracoz.
KM 21	Francisco Imbeli altura do nº 509 - antes do túnel do Leme, em frente ao
KM 22	Real Residence Hotel
KM 23	Início do 2º Túnel (Túnel do Presaço) - internamente
KM 24	Prata de Bonifácio, contra muro, altura da rua Marques de Olinda e Jareira.
KM 25	Atorro do Fumacento, quarta curva do morro da Viúva, Muro do Paratice.
KM 26	Placa Ref. "Passo Encruzado"
KM 27	Atorro - início da descida subterrânea. Contra Mto, após o Rio's.
KM 28	Atorro 1ºm após passagem sob a pista, início das curvas de sinalete
KM 29	Atorro antes da descida subterrânea, entre a muralha biométrica e de
KM 30	finelito.
KM 31	Atorro logo após e retorno final da lava de Lacer, antes do Rio's.
KM 32	Em frente a rampa de acesso ao "passo-mare Rio's"