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# THE PROBLEMS OF ALTITUDE AND DOPING IN MEXICO



*by Dr. Albert Dirix*

## Altitude

Since the I.O.C. selected Mexico City for the 1968 Olympic Games, controversy about this choice has led to medical and scientific discussions about the altitude.

What were the reasons for these first reactions about the dangers of the altitude ?

The main reason is that the problem of altitude had been studied for heights of 10,000 to 14,000 feet and above, and that in fact physical exercise at these heights raised medical problems regarding possible dangers to the organism : the comparative lack of oxygen made normal performances more difficult and recovery slower.

What is now called the " mean altitude" situated

at about 6,500 feet raised a problem which had not been studied at all or at any rate insufficiently from the point of view of physical effort : hence a first confusion.

The last reason is that the valid scientific studies were based uniquely on theoretical considerations of the comparative decrease in oxygen : other extremely important factors such as climate and the degree of humidity of the air had not been taken into account. Furthermore, it is obvious that before coming to a decision, it would be necessary to confront the athlete, who is after all a human being and not a machine, with all the known and unknown local factors.

Finally, the popular press succeeded in creating in certain minds an altitude phobia.

Thus it came about that people began to wonder whether there would be any fatal casualties in Mexico and it has even been claimed that acclimatization would take a whole year.

What were the actual facts noted on the spot ?

From October to November 1965, we accompanied four amateur Belgian cyclists on their Tour of Mexico race.

The experience was particularly interesting as the race started only two days after their arrival in Mexico : there was therefore no question of acclimatization, and in addition the cyclists had had a tiring trip and had to adapt themselves to a time difference of seven hours.

The nineteen stages of the race were run at a mean altitude of about 6,500 feet, the first stage including a mountain pass at 9,200 feet and the sixth a pass at 10,500 feet.

What were the medical observations made during the first seven stages, which we followed in order to examine our racers before departure and immediately after arrival on each occasion ?

Our racers showed definite and sometimes marked signs of fatigue, without however presenting any pathological symptoms. After the fifth stage the pulse and blood pressure indicated sufficient adaptation. The seventh stage, held on the Mexico motor-racing track over a distance of 37½ miles, was run by our men at a high average speed of 46,753 km. an hour (approx. 30 m.p.h.).

Thorough examinations carried out in Brussels before and after the Tour, including among other things electrocardiograms and effort tests, showed that racing, also at mean altitudes, increased physical performance after the return to sea level.

It was also shown that the dangers due to the altitude of Mexico had been exaggerated : on the contrary, the altitude has favourable effects on the athlete's health.

In the analysis of these results, it must however be borne in mind that cycling has advantages over other sports because of the decrease in the density of the air, which therefore acts less as a brake on the movement of the bicycle.

A second test was made during an experimental expedition to Mexico for the 2nd International Weeks, which eight Belgian athletes representing different sports attended. During the course of the year some of them had made stays at mean altitudes, but none had done so immediately before the expedition to Mexico. Their stay due to last only two weeks, the athletes began training the day of their arrival : tests were carried out from the third day on, and the athletes took part in various events between the fifth and twelfth day of their stay : some signs of marked fatigue were noted as well as a falling off in certain performan-

ces and sometimes in recovery but at no time were any pathological symptoms shown by these athletes, who were followed very closely from the medical point of view (daily clinical examinations, electrocardiograms, blood tests, etc.).

The athlete Gaston Roelants did remarkably well, since the day after winning the 3,000 m. hurdles, he came second in the 10,000 m. The examination carried out 3 to 4 minutes after the end of the race showed a heart beat of 80 and a pressure of 14/9, and this was the twelfth day of his stay.



It was therefore proved that the emphasis should be placed on the individual factor in the process of acclimatization. His performance might have been affected by the fact that this athlete had made three stays at mean altitude during the year, but not immediately before his visit to Mexico.

On his return to Belgium, the same athlete literally smashed the record for the hour and the 20 km. held by Ron Clarke and this was further obvious proof that training and racing at mean altitude can improve performance on return to sea level. Ron Clarke's record, made the previous year, Alain Mosconi's as well as our swimmer Carla Galle's national record, all made immediately after a stay in Mexico, provide additional proof.

Should we then jump to the conclusion that acclimatization can be effected rapidly ? Obviously not, since many scientific experiments carried out on the spot by representatives of several countries have shown conclusively that about three weeks is required, sometimes a few days less, in order to obtain a physiologically valid acclimatization ; other tests carried out with all the necessary scientific precautions tend to indicate more than three weeks. This is applicable to prolonged efforts (in aerobia), because efforts of short duration (in anaerobia) do not require such

a long adaptation and sometimes they can be made without any previous adaptation.

The examples we have quoted do not weaken these theories: our purpose was to prove that the dangers and difficulties involved in acclimatization had been exaggerated.

However certain dangers do exist if the necessary precautions are not taken : the athlete must be in good health, well-trained and acclimatized as well as under constant medical supervision.

These facts show that medical problems are being raised more and more frequently and with ever greater urgency for the I.O.C. Further proof of this will be given in the following chapter.

# Doping

Does the problem really exist ? Is it still topical ? To answer these questions, here are the results of examinations that we carried out in cooperation with the Belgian Cycling League.

Urine tests for the presence of amphetamines in 1965:

	Exami- nations		Negative	% Positive
	Positive	Negative		Positive
1. Professionals	102	38	64	37.5 %
2. Independents	36	5	31	16.5 %
3. Amateurs	87	20	67	23 %
4. Juniors-Beginners	29	2	27	7 %
Total	254	65	189	25.5 %

Among these statistics are included the tests carried out on foreign racers from seven countries.

Foreigner	Exami- nations		Negative	% Positive
	Positive	Negative		Positive
Foreigner	39	14	25	36 %

The tests were continued in 1966. There was a falling off among amateurs where the positive cases decreased from 23 to 14.5 %.

The I.O.C. has adopted a positive attitude towards the problem : reading " Bulletin " No. 95, we see that the matter is discussed on four occasions in quite unambiguous terms. The bulletin contains a statement by President Brundage to the Executive Board of the I.O.C. and International Federations as well as the report of the Commission on Doping by Sir Arthur Porritt, who had already made a detailed study of the problem, published in "Bulletin " No. 90 and in the official journal of the F.I.M.S. (International Federation of Sports Medicine) in September 1965.

Doping is condemned, sanctions are envisaged and tests considered.

What happened at previous Olympic Games ?

At Helsinki in 1952 tests were carried out on the diet of certain athletes under the supervision of Prof. Dr. La Cava, the present general secretary of the F.I.M.S.

At Rome in 1960, a Danish cyclist died as a result of doping, and two of his team-mates who were in a serious state were only able to be saved by hospital treatment.

At Tokyo in 1964, several doctors took part in a test on about a hundred cyclists. The examinations were unable to be completed owing to a boycott, and after a number of protests Prince Alexandre de Mérode could arrange a meeting with President Brundage for ourself and two of our colleagues.

Being firmly decided to continue the anti-doping campaign on all fronts, representatives of the Medical Corps are studying the problem day after day in order to be able to continue the examinations with the greatest scientific accuracy, at the same time ensuring every precaution. They wish to be ready should the I.O.C., with the support of the International Federations and the National Olympic Committees, decide to organize this test at the Mexico Olympic Games in 1968. That is why the problem is discussed at scientific congresses and studied in the laboratory, and why athletes continue to be examined.

In order to see what is the exact position in Mexico itself, we carried out an investigation during the 2nd Pre-Olympic Week in October 1966, in agreement with the F.I.M.S. and the Medical Commission of the U.C.I. (International Cyclists Union), Amateur Section.

The problem is important since doping with amphetamines is much more dangerous in warm weather (this was the case at the Olympic Games in Rome) and also at an altitude. **If an accident were to occur at the Olympic Games, it is obvious that the altitude alone would be blamed and it is therefore imperative to be able to diagnose immediately the causes of a possible collapse.** Mexican doctors on the Organizing Committee of the Olympic Games are obviously aware of this fact, particularly as they are rightfully proud of their country and treat it as a point of honour that their medical organization should be beyond reproach.

That is why Dr. Gilberto Bolanos Cacha, President of the Mexican Federation of Sports Medicine, and Dr. E. Hay have declared themselves in favour of the idea of a test.

Together with Prince Alexandre de Mérode, we visited the " Centrol Quimico " laboratory, which is run by university professors ; complete literature was supplied and also forwarded to Professors Dr. de Vleeschouwer and De Schaepdryver of the J. F. and C. Heymans (Nobel prize for medicine) Institute of Pharmacology and Therapy

at the State University of Ghent (Belgium), which institute has specialized in research into doping and has carried out hundreds of examinations. Finally, we were able to state the problem at a press conference, and Professors Dr. Prokop of Vienna and Dr. Letounov of Moscow, who attended, announced that they were in favour of cooperation between the I.O.C. and the F.I.M.S. This proves that there are serious grounds enabling a test to offer strictly scientific guarantees.

## Altitude and doping

However in the light of several experiences, it may be stated that the preparation and execution of such an undertaking require long and arduous work.

For further proof, we need only cite the example of what occurred at the Nurbürgring in August 1966 at the World Road Cycling Championships : the six amateurs selected submitted to the test while numerous difficulties arose with regard to the six professionals as a result of real and imaginary " misunderstandings ".

On the other hand, laboratories can only be accredited after the recognition of chemical experts, since the method of examinations must be strictly uniform in several laboratories so that a second test can be carried out if necessary in another laboratory.

The difficulties to be overcome therefore must not be concealed if one wishes to take every precaution, which is obviously vital.

An experiment can be tried out as test in Mexico in October 1967, but in order to carry it out it will be necessary at the beginning of 1967 to appoint a commission within the I.O.C. ready to cooperate with the Mexican doctors and the F.I.M.S.

The test could be carried out by drawing lots with regard not only to the athletes but also the diffe-

rent events, and the urine would be examined for the presence of amphetamines. Doctors are therefore provisionally in favour of a limitation of the investigations with regard to the number of individuals and products : perfection must come before quantity.

The fight against the plague of doping will thus be continued in order to preserve the olympic ideal, fair play in competition and the health of the athlete.

## Summary

1. The problem of acclimatization in Mexico with a view to the 1968 Olympic Games must be revised in the light of new observations carried out on the spot.

It was known that the problem differed according to the duration of the effort, **but one must also take into account the variations according to the type of event, not overlook the psychological aspect and, especially, place the emphasis on the athlete's individual reaction.**

2. **The phobia regarding altitude has disappeared.**

It is proved that, far from being dangerous, the practice of efforts at mean altitude improves the health of the individual and also his performance once he returns to sea level.

We are therefore faced with new facts of such importance that they may revolutionize training methods and extend the limits of human possibilities.

3. **The athlete must be in good health**, acclimatized (in many cases, this will require about three weeks for prolonged efforts), advised by his trainer and attended by a doctor.

If these conditions are not fulfilled, an accident is always possible, especially at an altitude.

That is why the I.O.C. might accept the cooperation of doctors who agree to place themselves at the service of athletes who do not possess a medical adviser in Mexico or athletes from the developing countries.

4. If the I.O.C., which has taken a stand against doping and considered possible sanctions, decided to organize an anti-doping test at the 1968 Olympic Games in Mexico, **it is advisable, in order to provide every possible guarantee, to appoint at the beginning of 1967 a commission responsible for carrying out a first test in October 1967, by way of experiment.**

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