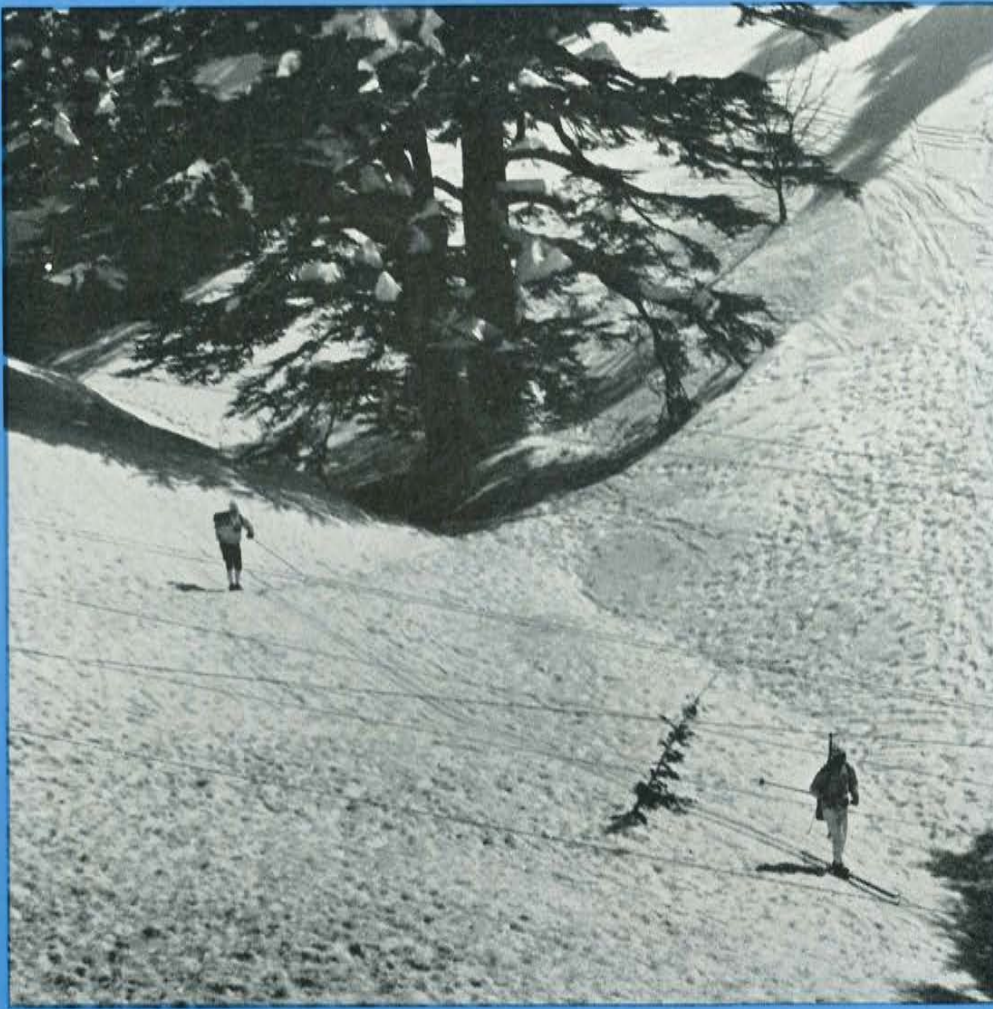


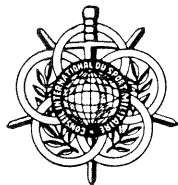
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# Military Sport at service of athletes teams

## Final decisions

1) The Contribution by the Armed Forces to high competitive sport is justified by the concern and the duty of sharing the increasingly important and complex effort made by countries for the benefit of their best athletes. In fact, due to the increasing development of sports programmes and the phenomenon of physiological acceleration of the youth, athletes join the military service when they are already well known and prepared.

For such reasons, the Armed Forces have the mission of :

- protecting the athletes so that the important work already accomplished by the club be not jeopardized;
- improving the athlete's conditions through the application of the most up-to-date training and dietetic methods;
- in addition, to orientate officers and non commissioned officers towards sports of a high technical level or implying a long organic training.

2) The Sports Unit presents a great number of possibilities for an adequate fulfilment of these missions :

- time available,
- discipline,
- educational aspect,
- introduction of new methods,
- rational diet,
- formation of coaches and trainers,
- complete medical control,
- cooperation with civilian organizations.

The following negative factors should be mentioned :

- difficulties in meeting the operational requirements of an unit,
- difficulty in ensuring the military formation of officers and non-commissioned officers.

3) The Armed forces have to discover boys endowed for certain sports which can be started at the conscription age.

4) The contribution by the Armed Forces to high competition sport — through the establishment of a sports unit or another selective system — has an important psychological repercussion on the young man who finds himself in a favourable and beneficial environment and on his family or social environment as well.

*A considerable propaganda will result in favour of the Armed Forces.*

5) It seems most useful that the Armed Forces should be requested to furnish an important contribution by the preparation of athletes in sports of a high technical level such as shooting, modern pentathlon, bob, and in sports « of endurance » where the average age of competitors is high, such as marathon.

6) Medical control can be easily conducted by the Armed Forces through :

- a most complete control (concentration of athletes and modern equipment);
- study and research :
  - scientific cooperation : e.g. the altitude problem;
  - national contribution (statistics, sampling, etc.).

7) Type of sports Unit :

- integration of sport training in the operational formation (Northern Countries);
- simplified military formation, but total and intensive training.

R. MOLLET.

## Editorial

From 8th to 12th May the Italian Armed Forces have organized at La Spezia a Symposium on the theme: Role of the Armed Forces for the preparation of « elite » athletes.

On one side, the delegates of 10 countries have outlined the organization and working of a specialized sporting unit created to bring together « elite » military athletes in order to intensify and improve their preparation.

On the other side, highly qualified personalities and medical professors have staded in their reports the aid afforded by Armed Forces in different spheres :

- psychological aspect of sport,
- altitude problems,
- detection of young talents,
- selected methods of training for staff officers and non commissioned officers.

Presided over by Lt. General Doctor Francesco Jadedvai, General Director of the Board of Health of the Italian Armed Forces, the Symposium has been of very high standing, has risen great interest and known a very great success.

Strict and constructive resolutions have been adopted. We have the pleasure of giving them hereafter.

Once more, the CISM with the help of its Academy and particularly thanks to Col. Doctor G. Tatarelli chief of the 2nd Section, has realized a good job, jointly with the sport technicians, the doctors and managers.

Fidelity to our Academy's aim and purposes has been proved once more.



# Adaptation to altitude of Italian athletes for the Olympic Games at Mexico City

*Italian Air Force Center of Aerospace Medicine  
(Director : Colonel Prof. A. Scano, IAF MC)*

## 1 Introduction

The 19th Olympic Games (which will take place in a city of more than 2 200 m altitude) have caused a renewed interest in the study of athlete's behaviour acclimatized to medium altitude. This problem is well known already, since it was also presented by sport and general information press in widely different ways, the facts sometimes being distorted.

Consequently in the last few years scientific and research meetings have increased our knowledge and stressed some particular aspects of athletes acclimatization to broadened altitude of Mexico City.

We will report some considerations on the experiments carried out by investigators of different countries, specially Italian. But we think it useful to explain the fundamental physic and physiological data necessary to correct formulation of the problem; the solutions fitting for our present concepts will be exposed.

\* \* \*

The decrease of  $O_2$  partial pressure in correspondence with rising on sea level (that depends on decrease of barometric pressure only, not on decrease of air  $O_2$  percentage at altitude as still reported by some) lowers  $O_2$  tension in lung alveoli, and hence in arterial blood (hypoxemia).

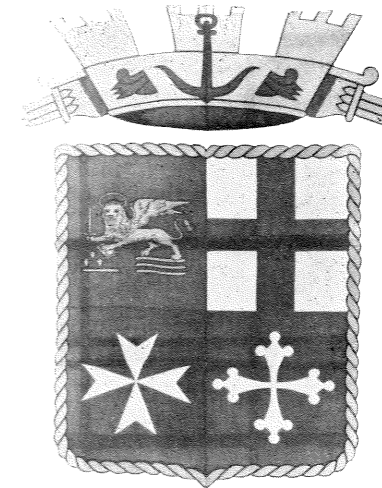
Severeness of hypoxic condition that follows, doesn't depend on the physical factor of barometric depression only, but also on the physiological phenomena of body response.

In fact, healthy individuals at 2 300 m altitude and rest, with 6 liters min pulmonary ventilation, will show an  $O_2$  alveolar tension about 10 torr (mm Hg) lower than the one found with 10 liters per min pulmonary ventilation. In this last case, in fact, a proportionate decrease of  $PA_{CO_2}$  takes place, due to the higher pulmonary ventilation. This single phenomenon will lead to a difference of « physiological altitude » of about 400 m; to the prejudice of the subjects with lower ventilation. Nevertheless this phenomenon influences also blood  $O_2$  saturation, as hemoglobin affinity to  $O_2$  is higher when pulmonary ventilation is increased.

This is due to the addition of three factors, decrease of  $CO_2$  tension, decrease of hydrogen ions concentration, decrease of lung temperature, all of them shifting dissociation curve to the left.

Synthetically, at the altitude considered,  $O_2$  saturation of arterial blood ranges about 92 to 87 per cent, or less, as function of the different ventilatory response. It is not necessary to remind this is only one of the factors that regulate oxygen delivery to tissues. Blood capacity to  $O_2$  is equally important, depending fundamentally on available hemoglobin percentage being present in the subject considered. This value can change according to the erythropoietic response of the individual to hypoxia, as well as to preexistent oligemia, or to the presence of carbon monoxide, in moderate percentage, as in smokers. An equally important part is played by changes of both general and distrectual blood flow.

These examples show both complexity and interconnections of the phenomena of adaptation to barometric depression, as well as necessity of preliminary study on individual capability to adjust performance



to altitude as much as possible and promptly. Other climatic factors, of course, have to be considered for their effects, sometimes determinant, average temperature and its variations, relative humidity, sunlight hours, etc...

Bearing in mind surrounding factors — different in the various mountain places — we will limit ourselves, to the results of experiments carried out at Mexico City, the reports of which are known. We will report in our bibliography other studies and reviews dealing mainly with muscular exercise and sport at altitude. In this paper the word acclimatization means « short acclimatization » or physiological adaptation to altitude. In fact, real acclimatization, that is connected to changes, even anatomic ones, of living organisms, is a typical phenomenon of natives or many years residents of mountains.

## 2 Brief information on athletes acclimatization in Mexico City

In 1965 highly valuable experiments were carried out by a team of experts, headed by the physiologist Dr. L. G. C. Pugh, and sponsored by the British Olympic Association. The experiments, that were carried out on six middle-distance runners (5 000 m) included tests of maximum  $O_2$  intake at cyclo-ergometer (5 min. of maximum work) and increasing work load tests.  $O_2$  debt in 40 minutes of recovery, pH after exercise, Hb and hematocrit before and after exercise were measured. In some experiments, of the

four ones carried out at 1 week interval, after the arrival at Mexico City,  $HbO_2$  saturation of ear capillary blood was determined with oxymetry.

The results confirmed what previous research had already demonstrated: decrease of maximum  $O_2$  intake (on the average 14.3 per cent at beginning and 9.8 per cent at the end of sojourn) higher hyperventilation and tachycardia at lower work loads, decrease of  $HbO_2$  — average value 87 per cent; accordance between physiological data and races results, increase of Hb, on the average from 14.3 to 15.3 per cent. They showed also the same  $O_2$  intake than at sea level in 4 subjects and a higher intake in 2 subjects, in the 40 minutes recovery period. These results lead authors to conclude for a high individual difference of adaptation to altitude. Even if most of the adaptation phenomena develop in the first 3-4 weeks, the Authors stress the favourable effects of a prolonged stay (apart from the convenience), lasting months instead of weeks, in order to obtain a true acclimatization — Other objective considerations are reported on more gradual training, on 3 weeks adaptation needed for all the athletes, on hygienic and alimentary precautions, on need of accurate medico-physiological selection of athletes, on games safety, when all the sayed expedients are accomplished.

The French experiment was directed by Colonel Prof. F. Violette, Air Force physiologist, assisted by three physicians (among these a dietician and a cardiologist). The experiment was carried out on 34 athletes of different specialities. Part of the athletes (19) have been acclimatized for 3 weeks at 2 000 m about, in their own country.



This second group showed changes of pulse, of blood pressure and ecg, at rest, lower and shorter than the ones recorded in the 15 athletes coming from sea level. Ballistocardiographic examination demonstrated the progression of myocardium adaptation, while prolonging the stay at altitude. In respect to the values recorded in France, in all the subjects the recovery period was longer; in long-distance races unusual tachycardia uneasiness and, in one case, noticeable hypotension (60-80 torr) were reported. Red blood cells number increased on the average of 540,000, Hb of g 1.7, hematocrit of 4.1, but the subjects coming from Font-Romeu were already acclimatized, from hematologic point of view.

A tendency to hemolysis was observed about the 5th day, with decrease of red blood cells and Hb. Alkaline reserve changed from 25 mE to 10 mE per liter, in non acclimatized subjects. We are very perplexed about this value, if one refers to the date reported by Hurtado and coll. (1948) :  $21.48 \pm 0.31$  at about 2 400 m.

A larger amount of alimentary carbohydrates was requested spontaneously. In every case a crisis of acclimatization was observed between the 9th and the 12th day.

The Swedish experiment, headed by the sport physiologist Bengt Saltin, was carried out in 19 days, on 9 athletes, most practising long duration games, which request an essentially aerobic work.

In these subjects too, tests of muscular exercise, both maximum and medium, at cyclo-ergometer, were performed. Analysis of gases  $O_2$  and  $CO_2$  was carried out, as well as measurement of Hb, iron of blood serum, lactic acid, heart volume according to Larssen-Kjellberg method, and ecg recording. Before and after the transfer muscular exercise tests were run also in depression chamber.

The study considered was very careful and evidenced or confirmed aspects of high practical interest : long period of adaptation needed by subjects practising aerobic sports — individual variability — severe impairment from intervening diseases — usefulness of depression chamber runs, in a general preliminary orientation on individual adaptation capability — uneffectiveness of 40 hours stay a sea level on adaptation progression, no changes of capacity to anaerobic work in the 19 days spent at 2 500 m — We are perplexed only about the decrease of maximum  $O_2$  intake, found after the return at Stockholm. This

was attributed by the writer, partly to the health of some athletes which was not up to standard.

Japanese investigators (K. Asahina, M. Ikai and collaborators) carried out, from 1963 to 1964, research in depression chamber, on Norikura mountain and at Mexico City. They achieved results essentially concordant with those above reported.

J. Jliev and Kr. Krastev, physicians of the Bulgarian Olympic Committee, performed a large research, where the classic tests of muscular exercise were completed with test of tolerance to severe acute hypoxia (breathing of gas mixtures corresponding to 7 000 m at rest, and 5 000 m during exercise). This research would have shown some increase of anaerobic work capacity after acclimatization.

This is a brief and incomplete survey of the experiments carried out by physiologists and sport physicians at Mexico City (not including those carried out in 1966, not yet being published). Nevertheless we think it can give notion of how, in international field, the problem of athletes preparation to the now close Olympic games is tackled, both from scientific and practical points of view.

Further information can be found in the valuable collection of papers presented at Macolin (1965) by the outstanding investigators of this field (Schw. Ztschr. für Sportmedizin, 1966, 14, 1-329) as well as in the papers of the Symposium held at St. Vincent in 1966. In regards to the general problem of acclimatization, which is by far older and larger, we refer to the new extremely vast physiologic and aeromedical literature.

### III. Research and tendency of Italian investigators

In 1965 already, a first experiment of adaptation was carried out at Mexico City, on a group of athletes, by the Institute of Sport Medicine of the CONI (Italian National Olympic Committee). We send the investigations and their detailed results to the papers of A. Venerando, A. Dal Monte, W. Severini. We only notice here that this transfer, in addition to orientative physiological data on respiratory, circulatory, hematologic and central nervous system adaptation afforded a great deal of practical suggestions on how to attenuate or avoid inconvenience of circadian rhythm shifting, because of the large time zone interval, hygienic inconveniences (foci control, immunization against digestive and respiratory infections), and

alimentary inconveniences (control of food and drinks, national cooking) etc.

The study showed also the actual importance of the problem of acclimatization, as well as the opportunity to tackle it by availing of the long experience of aviation physiologists, as well as that of the staff and of the highly specialized facilities of the Center of Aerospace Medicine of the Italian Air Force.

To this end the CONI established in 1965 a Consultant Committee of Sport and Medicine, and invited the director of this Center to collaborate. The Committee was established with the main and immediate aim to study the medico-physiological approach and action towards the realization of optimal preparation and assistance to Italian athletes before and during the 19th Olympic games.

This policy led to the decision of performing a second experiment, mainly physiological, in the months of September and October 1966.

Its project included the selected athletes being submitted to preliminary examinations, under general and specialized medical side, at the Institute of Sport Medicine, and, at the Center of Aerospace Medicine, in order to a functional evaluation of respiratory and cardiocirculatory efficiency and capability of adaptation to altitude.

Consequently a group of athletes, four oarsmen and one steerman, four cyclists, two boxers, four swimmers, was submitted to the following tests, before leaving :

1. — Thorough spirometric examinations, both static and dynamic;
2. — Maximum  $O_2$  intake test, at cyclo-ergometer. Pulmonary ventilation, respiratory frequency,  $O_2$  intake, heart rate, blood pressure were recorded before, during and for 15 minutes after the exercise; this was performed at increasing work load up to 30 kgm per sec., and prolonged as long as possible. From the data recorded the values per kg of body weight and the known ratios Cal/l, according to Margaria, and  $V_{O_2}$ /heart rate were calculated, as well as other indexes of maximum aerobic and anaerobic capacities of the subjects.
3. — Simulated ascent in depression chamber. The following physiological data were recorded at sea level, at 2 300 m and at 5 500 m : pulmonary ventilation, alveolar air composition, heart rate, blood pressure, mental efficiency (by means of a psychotechnic test), red blood cells number, hematócrit, hemoglobin percentage, The same date were recorded during the

levelling at 2 300 m for about 30 minutes and at 5 500 m subsequently.

Tests of muscular exercise at simulated altitude, recording ear oxymetry and measurement blood carbonic anhydrase were scheduled also, but were carried out only partly, because of technical difficulties arisen during the tests.

On a second group of athletes (fencers, light athletics, canoeists, cyclists, boxers, swimmers, divers) blood cells count, spirometry, alveolar air analysis were carried out.

All these examinations were repeated, for each subject, four times at least, during the sojourn at Mexico City, from September 15th to 24 October 1966. To this end an actual, even if small laboratory of physiology was established in the hotel that lodged the Italian group. The laboratory was equipped mainly with apparatuses and instrumentation from the Center of Aerospace Medicine, completed with others from the Institute of Sport Medicine. This equipment was transported under the care of the CONI.

The team of investigators, that consisted of the Director of the Center of Aerospace Medicine, assisted by Dr. A. Dal Monte of the I. S. M. (that carried out also ophthalmologic and ecg examinations) and of two technicians (aeromedical technicians, non commissioned Officers of the Italian Air Force) performed all the examinations with its own equipment. The team executed tests also during the training (on oarsmen, cyclists and boxers) and participated in the assistance of those of the athletes engaged in the games of the « Semana Deportiva Internacional ».

At the return to the country all the above said functional tests were repeated at the Center of Aerospace Medicine, by the Officers of the Italian Air Force Medical Corps, that had already performed the same tests before the departure.

This complex scientific work, set up for and supported by the CONI, is now in the phase of elaboration and comparative evaluation of the results. This will allow the Consultant Committee of Sport Medicine to propose a positive program for the preparation of the Italian athletes to the next Olympic games.

#### This program can be outlined as follows :

- 1) Phase of medico-physiological selection of Possible Olympic athletes of 1968. This phase will be distincted

in two main parts. The first one, that will be carried out at the Centers of Sport Medicine of the CONI, aims at ascertaining, through general and specialized medical examinations, the perfect health conditions of the young people chosen by the various Sport Leagues, fit to taken an honorable part in the Olympic games.

The second part, with which the Center of Aerospace Medicine was entrusted by the CONI, consists of functional evaluation of athletes, mainly in respect to adaptation to altitude and to particular requirements of the different sports.

2) Acquisition of larger knowledge on the acclimatization of athletes — that has different aspects from acclimatization of sedentary people — through new experiments in country and at Mexico City. These new experiments aim mainly at individualizing the peculiar requirements of different sport activities at altitude, both from the point of view of the muscular exercise and of sensorial and superior nervous efficiencies, and conditioning mechanisms.

3) Accomplishment of a convenient period of acclimatization to altitude in country, of duration conformed to the sport practised, with a progressive sport training, and organization of the transfer, in view of preserving the favourable results of the adaptation. As fulfillment of this information, we add that Italian Air Force Military Athletes are examined from a functional and clinic standpoint at the Center of Aerospace Medicine and the Medico-legal Institute of Italian Air Force in Rome. The Light Athletics Italian League has used also the depression chamber of this Center to carry out simulated ascents in the program of experiments organized by Prof. Riccioni.

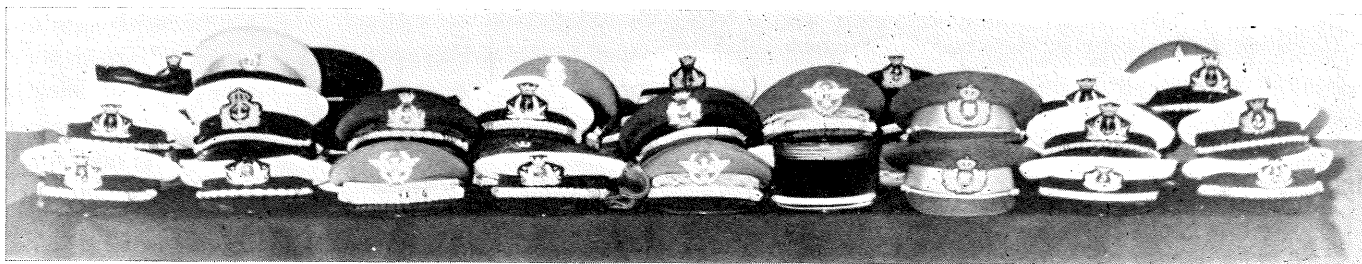
We think that this report gives clearly evidence of the scientific and practical contributions of the Medical Officers of the Italian Air Force, as well as of the main institute of aeromedical research, to selection and preparation of Italian athletes of international rate.

This co-operation is useful to the Air Force also, as it leads to the acquisition of new knowledge, that can be transferred in the field of the psycho-physiological improvement of flying staff. It represents also the present expression of a noble military tradition of study and interest in the physiological, medical and social problems of the sport.

### Summary

After a short survey of the particular environmental conditions of Mexico City, and of the most important physiological phenomena of adaptation, the writer describes some of the experiments carried out by investigators of different countries in order to study practically the behaviour of athletes engaged in those sports, for whom altitude is a hindrance as far as maximum performance and recovery are concerned.

The writer reports the investigations carried out already by Italian researchers, particularly the ones performed under the care of the Center Aerospace Medicine. The program is also reported, being studied for acclimatization and medico-physiological preparations of the Italian athletes to the Olympic games of 1968. The writer stresses the contribution of the Medical Officers of the Italian Air Force to the scientific formulation and the practical realization of this program.



# *Like the Greek hero, the modern hero of the track has a vulnerable tendon*

On the occasion of the CISM's 17th cross-country championships, the Academy's work on the medical aspects of sport have been devoted to tendonitis, which has floored many athletes and wrecked many promising careers.

Once again we have admired the invaluable contribution made by officials of the organization, in the field of interpreting the disturbances and changes to the human body when it is carried in sport to the extreme limits of its resistance, and in the field of preventing these accidents and of deciding on the most reliable form of treatment.

This aid answers an imperious need in young countries where sporting medicine is generally only just being instituted, and where the trainer has no other alternative but to base his action on a superficial knowledge of so complex and marvellous a mechanism as the human body.

In the modest synthesis which follows, we have attempted to pursue the CISM's aim to help sportsmen of every country to understand and solve their health problems.

The Italian school, which is brilliantly represented by Professor Silviy has devoted a considerable part of its contribution to a very advanced anatomic and physiological study of the Achilles' tendon, which is the most frequent source of sportsmen's tendon injuries.

From the Italian contribution, it is apparent that the whole muscle-tendon-insertion complex should be regarded as a functional unit; but it is also clear that the annexes to this whole, which are closely related functionally and by being a physical extension of the complex, must be carefully studied. The annexes in question are: the mucous and synovial membranes, the fibrous membranes, the mesotendon and the membranes surrounding the tendon. An anatomic and functional analysis of this kind demonstrates that these organs are indivisible from the tendon.

After these studies, the various papers and speeches have enabled us to reach the following conclusions and to set them forth in a very summary manner.

Tendon injuries in sportsmen are very often due to a variety of factors of a static or infectious nature; these factors begin by provoking phenomena of degeneration in the muscle-tendon-insertion complex and its annexes.

Static factors in particular, if repeated, can lead to the rupture of a tendon in a state of degeneration.

## **Static factors**

— Excessive use leads to functional strain, particularly when no account is taken of the time the organ needs to adapt itself (specific reactions). This strain leads to disturbances in the blood circulation, characterized by physical and chemical irregularities, which may make the tendon over-sensitive, and by phenomena of degeneration.

— Any disturbance in the balance of the forces in action, during the sportsman's movements (e.g. bad body-position due to poor style or poor technique, mere rocking of the supporting foot, sudden abrupt increase in muscular tension) may lead to abnormally high and recurrent tensions in the ligaments, articulations and insertions of the tendon. This functional disequilibrium often provokes the aforementioned microtraumas.

Doctor Martin has informed us that « most frequently these cases are caused by external rocking of the rear tarsal column of the foot, what is called the valgus of the heel ».

## **Infectious factors**

Centres of sepsis or infection (infected teeth, even when drawn, tonsillitis etc.) give rise to a toxic condition, which often remains latent, but which can undergo sudden developments, provoking even in other parts of the body, an allergic reaction by some tissues, or inflammation in the delicate arteries which lubricate the areas surrounding the tendons. Even if it does not cause any inflammation, this toxic condition decreases the body's general resistance; the



body then becomes more vulnerable, and is no longer able to stand the intensive and repeated demands made on the tendons and their annexes.

### Prevention

In the field of static factors, bad training (and not overtraining) is the first foe. In other words it is essential to stop short of the dangerous point, where the athlete is exposed to coaching which is too intensive and onerous for his physiological level of adaptation. We should like to recall that for several years this idea has been advanced by Major Mollet. In his book « Total Training », he emphasizes the need to ensure that an athlete is in good physiological condition before he launches into the field of proper training.

Sportsmen who are taking on a high work-load, both as regards quantity and intensity, should be made familiar with a static diagram, which shows possible deviation of the axis of the heel from its normal movement; adequate means of correcting any deviation should be applied.

In general it is advisable to avoid wearing spiked shoes during long training-sessions particular on uneven ground; it is preferable to wear shoes with low heels and a sufficiently thick, supple sole.

Massage is, of course of the greatest value, both before and after training-sessions, though only when carried out by specialists. Apart from its intrinsic advantages, massage is quick to detect injuries to the tendons.

In the field of preventing infectious factors, the centre of infection must be detected and the measures necessary to eliminate them must be taken.

### Cure

The case of a ruptured tendon, is generally a matter for a surgeon.

In the case of inflammation or microtrauma, rest, even immobility is of primordial importance. Phenomena of degeneration of *different types* give rise to corresponding phenomena in the process of healing. These are characterized by the growth of conjunctive tissues between tendons which evolve like scars.

Premature massage or resumption of training can lead to polymicrotraumas, which upsets the process of healing. « This leads to the superimposition of phenomena of degeneration and healing, in histological chaos, which may culminate in the formation of cartilaginous or bony structures » (Professor Silviy). Massage can begin again, on doctor's orders, a few days after the rest-period is over.

In the experience of Dr. Kreishi, treatment with cortisone should not be adopted until cicatrization is complete (generally several weeks).

Cases of hardening should be treated by radiotherapy. The treatment should be completed by activities related to the static or infectious factors concerned. In the case of static factors, a static diagram generally allows effective orthopaedic action to be taken. In the case of infectious factors, the centre of infection must be destroyed if a lasting cure is to be made.

After this brief survey, which is only intended to be informative, we cannot conclude without paying tribute to all the delegates, and in particular to Professor Lacava, who has taken the chair. He has had the rare quality of uniting absolute scientific rigour and a perfect sense of urbanity. Never lacking in civility, Professor Lacava has yet been omnipresent, giving an admirable résumé of each contribution, discreetly encouraging fertile discussion, bringing the trainers into the conference — in a word ensuring that there is a feeling of inter-dependence without which the most valuable contributions run the risk of remaining isolated and unprofitable.

Abdelaziz CHAOUACHI  
(Tunisia)

# SOCCER WORLD CHAMPIONSHIP

## INTRODUCTION

At a meeting of the Technical Development Committee of FIFA in May 1965, it was agreed that a selected group of coaches should make a technical study of the final stages of the World Cup 1966 in England. The purpose was to collect factual data and opinion on preparation from the national coaches of the 16 teams taking part, and to observe matches of the Competition with a view to submitting a report and recommendations to FIFA.

Five coaches were invited to join the Study Group: Mr. Gavriil Katchaline of Russia; Mr. Ernesto Santos of Brazil; Mr. Ron Greenwood of England; Mr. Roger Quinche of Switzerland, and Mr. Dettmar Cramer of Germany West, who was asked to direct the work of the group. Mr. Santos later withdrew and Mr. Harold Hassall of England took his place. Mr. Cramer also had to decline because of duties with the West German team in the Competition, and Mr. Walter Winterbottom agreed to direct the study instead.

## SUMMARY OF MAIN FACTORS AND RECOMMENDATIONS

### Technique, fitness and team tactics

The Study Group and most team coaches agreed that physical condition of the players, skill technique and tactical play are the three main elements upon which the success of a team's performance in the final competition depends. Though skill technique, individually and collectively, is important, greater emphasis is now being given to physical condition and team tactics. In general terms it is considered that technique is of higher standard among South American teams, whereas fitness and variation of tactical play are more highly developed in Europe and Asia. As has frequently happened before, it is expected that the winning teams will tend to dictate future style and method, and it is thought that the success of England and Germany West in this Competition is likely to influence measures of team preparation for Mexico, with even more stress on the two factors of physical condition and tactics.

It was also considered by some members of the Study Group and some national coaches that the psychological attitudes of the players and factors affecting these attitudes were of importance. It was noted that in several matches players seemed to be uncertain and apprehensive, and to show excessive exuberance or depression according to the state of the game, which had a

## TECHNICAL STUDY GROUP

Mr. Valentin Granatkin (USSR), Chairman  
Mr. Walter Winterbottom, O. B. E. (England), Director  
Mr. Ron Greenwood (England), member  
Mr. Harold Hassall (England), member  
Mr. Gavriil Katchaline (USSR), member  
Mr. Roger Quinche (Switzerland), member  
Mr. René Courte, Secretary

marked effect on their play. The Study Group and national coaches of the Semi-Final teams, after discussion of this matter, felt that without more exact scientific information it would be wrong to hazard opinion as to the way in which the varied personality traits of players could be evaluated as factors of play or moulded by training procedures.

### Defensive play

Teams are adopting more defensive dispositions of play. Formations of 1-4-2-4 are giving way to 1-4-3-3, 1-1-4-2-3 and 1-1-4-3-2. According to the view of several national coaches, this emphasis on defensive strength in team play is spreading throughout world football. One prominent reason is that team coaches in modern competition cannot afford to lose a match. Similarly, in the early rounds of the World Cup Finals, it is essential to be sure in defence in order not to lose. More coaches are looking for means of overcoming this defensive trend in order to stop the game from being stultified as a spectacle. Several proposals for alterations to the laws of the game to make for attacking play and reduce numbers of players packing into defence were considered by the group, but rejected on the grounds that the suggested remedies would create more problems. It is the feeling of the Study Group that to bring about a solution, coaches and teams must work to develop higher standards of penetrating attacking skill.

It was noted that while most teams use a defensive barrier as a major tactic of play, only a few beginning to evolve methods of attack which can spring from this defensive style in such forms as:

- (i) High personal skill of the few advanced attacking players.
- (ii) Rapid change from defence situations to support the attack, often using defenders in overlapping movements to become the advanced line of attacking approach.
- (iii) Players, who have been coached in earlier years to deal with packed defen-

ces, and who can readily adapt their play to defend or attack.

(iv) Variation of individual and combined approach play with better developed skill in shooting and heading at goal.

### Refereeing

Differences still exist between South America and Europe in terms of players' attitudes to referee control, and of the general interpretation and practice in implementing the laws of the game. These differences were sharpened by several incidents which tended to affect the outcome of matches. Arising from interviews of national coaches before the matches started, there was some opinion that World Cup games in England would naturally tend to be played with greater fervour and vigour and with more powerful tackling and body contact. It was noticeable that in early games many serious infringements were committed and star players appeared to be marked men. The sending off of players in subsequent matches proved a disaster to the fortunes of the teams concerned, and it is likely that this acted as a deterrent to foul play in many later matches which were almost free of this kind of incident. The Study Group feel that players are primarily responsible for match incidents, and that they must adhere to a stricter code of behaviour in not showing dissent towards referees' decisions.

Refereeing is considered to be of particular importance to the successful outcome of the matches in the Finals of the World Cup Competition. In this Competition, differences in referee practice were noted, some strange but of a trivial nature, others revealing variance in fundamental attitudes built up by years of experience. In order to attain higher standards of efficiency, uniformity of interpretation and impartiality, the following suggestions are made:

- (i) There should be wider exchange of top class referees between Europe/Asia and South America.
- (ii) A provisional panel of referees should be selected for the World Cup

Competition Finals at least one year before the event to give opportunity for rehearsal of teams of referees, practice as linesmen, and conference/courses where difference in methods are analysed in a practical way.

(iii) FIFA should be responsible for appointing referees to all international matches of outstanding importance.

(iv) In the final selection, fewer referees should be involved, say approximately 8 teams of three with 3 reserve teams of young referees watching and gaining experience for future competitions. The reserve teams might well be selected from a «B» list of FIFA referees of younger age but with high potential.

(v) FIFA should produce films and arrange international conference discussions of referees to help to obtain uniform interpretation of practical play situations particularly in respect of :

- (a) Control of hard forceful play bordering on dangerous play.
- (b) What constitutes a foul.
- (c) Tackling which is acceptable and that which is not.
- (d) Obstruction.
- (e) Challenging the goalkeeper and shoulder charging.
- (f) Application of advantage.
- (g) When a caution is given and method of cautioning.

There was also a suggestion that to ensure neutrality and impartiality, the selection of referees should be confined to countries whose teams are not participating. At the present time this measure seems to be too drastic and would inevitably eliminate experienced referees from the countries where football is most highly developed.

Russia — Hungary : Lev Yashin of Russia dives to save as Ferenc Bene of Hungary (in white shirt right) runs for the ball with Russia's Vasily Danilov, right, during their world cup soccer quarter-final match at Roker Park, Sunderland, July 23. Russia won the match 2-1.



### Preliminary competition

From interviews with national coaches there seems to be a general feeling that the preliminary competition should now be less tied to geographical principles. It was commented that certain teams, by the geographical system, were regularly guaranteed a place in the final matches, whereas many clearly better teams were eliminated.

As the World Cup is assuming such national and international importance, it is suggested that every step should be taken to ensure that the final sixteen represent the best in the world. It has been proposed that both the winners and the host country should qualify in the same way as others. The Study Group feel that the host country should be exempted from preliminary competition, but that winners should not have open entry to the next final competition.

There is also a suggestion that consideration should again be given to « seeding » of the teams taking part. In the first place it is suggested that some emerging countries (in the sense of football) should be allowed to take part in a « B » or « Junior » tournament, the winners of the sections of this tournament challenging in the competition proper with the « A » teams. Classification on this basis tends to be resented, but for a competition on the scale of the World Cup it may be inevitable.

Other suggestions include :

- (a) Increasing the number of countries from Sixteen to Twenty for the final competition to give opportunity for more teams from the geographical preliminary competitions to take part.



West Germany — Russia : Lev Yashin, the Russian goalkeeper, makes a full-length dive to save from a West German free-kick during their world cup semi-final match at Goodison Park, Liverpool, North England, last night, July 25. West Germany won the match 2-1.

(b) Having a central financial pool to meet some of the travelling costs involved, particularly if teams are to be grouped in such a way to ensure that weaker teams do not have easy entry to the final group.

(c) Relying on the international competitions in each continent or region to produce team entry to the final competition.

The Study Group is conscious of the many political, geographical and financial factors which need to be considered before deciding upon a new procedure for the preliminary competition, and recommend that FIFA should set up a small study group of expert administrators to analyse the many possibilities before changes are recommended by FIFA Executive Committee.

### Final competition

There is always the basic problem of reconciling the desire to produce a competition arrangement which is equally fair to participating teams, against the need to provide the public, and especially overseas visitors with World Cup interests, with the opportunities to see as much football as possible and, indeed, what is considered to be equally important, to have the best match arrangement to ensure the greatest financial returns from attendances and television.

Nevertheless, there is strong feeling from the national coaches of the competing countries in this Competition in England that some steps should be taken to make future Final Competitions more fairly balanced. For example, no team should be compelled to play twice within 48 hours and possibly with a change of headquarters, and each team should have equal periods of relaxation between games. Then, too, it is suggested that



the groupings in the final sixteen should be drawn by open and not geographical lot.

There is one suggestion that the Competition should be organised as at present in leagues of four groups of four, but that only the winners of each group should go forward to the Finals to decide the first four teams, and that the second in each group should play-off to decide the next order five to eight.

From Brazil, however, comes the proposal that there should be two leagues of eight teams, which ensures that each team will at least play seven matches. The two teams of each group would then draw for the Semi-Finals. Such a system is worth considering, especially for Mexico where there is likely to be small attendances until the more vital stages of the Competition.

Yet another proposal is made that the present structure of four groups should play as leagues to produce eight teams (first and second in each group), but that these should again form two groups of four teams to play on a league principle, the winners contesting for the Championship and the second teams contesting for Third and Fourth place.

If at all possible, the present idea of drawing lots to settle a tie situation between teams should be avoided. One proposal is that the group position should be decided by the greater number of goals scored and not by goal average. Then in the case of a draw at the end of a game, the winner should be the team having scored the first goal, so that extra time would follow only where no goals had been scored.

The Study Group is of opinion that the time has now been reached when consideration of equality of opportunity

should not necessarily be outweighed by matters of spectator viewing, television or finance.

These various possibilities need careful examination.

#### Substitution

With two exceptions, the national coaches of the competing teams were convinced that substitution of players is essential in the Finals. The penalty of losing a player through injury is so heavy that four years of endeavour can balance on just such a mishap. It is also pointed out that there may be less resort to forceful and wild play if it is known that damaging a player is not of such vital consequence as it is under present regulations.

It is suggested that substitution for one player in the field and a goalkeeper should be permitted at any time during the match. There is no point in proposing that substitution should only take place when a player is injured, since both definition and proof of injury cannot be regulated.

#### Mexico — World Cup finals 1970

Because of the problem of acclimatisation, it is suggested that careful observation and medical tests should be taken of the players participating in the Olympic Soccer Tournament in 1968, and countries making acclimatisation tests in special high altitude training camps, should be invited to submit

evidence to a special medical advisory committee of FIFA.

#### FIFA Direction and Influence

It is important that FIFA should continue its present role of encouraging its members associations to improve the game by enlisting their help and co-ordinating their efforts in raising standards, particularly in the organisation of large-scale events such as the World Cup Competition which, because of mass communication, are rapidly becoming a spectacle for the whole world.

There is need for more international exchange of experience, method and opinion in coaching, refereeing and organisation. Bulletins, reports, coaching manuals and films should be increased in numbers and quality, and more frequent use should be made of international seminars to reach understanding on common problems.

A stage has been reached in football competition when the prize of winning a tournament is of high prestige value and when failure is unfortunately received with demoralising shame. The Study Group is convinced that the future of the game depends upon continual striving for higher standards in organisation, refereeing and play. There is need to find new techniques and encourage leadership to apply these techniques to overcome the present negative attitudes. All steps should be taken, irrespective of chauvinistic and financial pressures, to foster the true spirit and best traditions of the game of Association Football.

*(Reproduction of extracts from or translation of this report authorized provided the source is indicated.)*

Germans on the attack : England fullback George Cohen (2nd left) breasts down the ball after a hard shot from West Germany's Siedfried Held (extreme right) during the final of the World Cup at Wembley Stadium, London, Today July 30. England centre-half Jackie Charlton (centre) moves in the help out. England won the match by four goals to two after extra time.



# TOTAL TRAINING

## Circuit (Power) Training

by Major OTTOT (USMC)

Director of the Marines  
Physical Training School

Circuit Training is a relatively new method of physical conditioning originally pioneered at the University of Leeds, England, within the past ten years.

Circuit Training is the scientific arrangement of known and proven exercise designed to elicit maximum overall training effectiveness. Circuit Training has as its objective the development of muscular and circulo-respiratory fitness. It aims at the development of all-around fitness rather than the fitness required for any particular game or activity. It is based on sound physiological principles and aims at the kind of varied activity and continuous challenge which are attractive to larger numbers of boys and men, many of whom show little enthusiasm for ordinary forms of physical training.

This form of training has three characteristics :

1. It improves both muscular and circulo-respiratory fitness.
2. It applies the principles of progressive resistance.
3. It enables large numbers of performers to train at the same time, each according to his individual capacity, and acquiring a maximum workout in a relatively short period of time.

Circuit Training is a major part of the physical training curriculum at the Royal Marines Recruit Training Center. According to their reports, and first hand observation, it has proved to be a most effective and popular form of physical conditioning.

In recent years circuit training has been greatly advanced through the efforts of the International Military Sports Council (CISM) and in particular by its General Permanent Secretary, Raoul Mollet.

The Marine Corps has developed an integrated circuit-interval outdoor course for the conditioning of large groups of personnel. This course has reduced training time by over fifty per cent while achieving equal results.

Circuit Training courses are most economical and can be developed around many varieties of training apparatus by anyone with a sound knowledge of the technics and physiology of physical conditioning.

According to all available reports this is one of the most popular methods of physical conditioning. The following factors appear to account for this popularity :

1. Everyone has the satisfaction of a bout of hard physical activity in a very short period of time (according to university studies, as little as ten minutes a day produces excellent results).
2. Everyone works at a rate which is suited to him. He is fully extended but not over-trained.
3. Trainees know in advance what they are to do. Weaker trainees can work independently among the best performers.
4. Instructor supervision is not required. The circuit gym can be organized to provide maximum training effectiveness through fully self-directed programming.
5. The circuit layout inspires motivation. The movement from one station to another introduces an element of variety which is missing from a sequence of exercise performed in one location.
6. Each trainee assesses his own improvement and adjusts the intensity of his circuit according to his rate of progress.

It is apparent that the circuit training principle can be of significant value in military fitness programs. It is a method whereby the monotony and drudgery of physical training, so often found in the military, can be greatly reduced; it is a flexible training technics that can employ an interesting variety of effective exercises rather than the standardized movements of bygone days; and it is method of training that is achieving wide prominence because of its ability to produce physically hardened individuals in a minimum amount of training time.

## THE ROLE OF THE INSTRUCTOR IN CIRCUIT-POWER TRAINING

To an observer of a class engaged in Circuit Training it might appear that there was very little for the instructor to do, other than to give appropriate signals at the beginning and end of the period. But like all systems which employ « activity » methods, Circuit Training makes great demands on the instructor. It demands, in the first place, knowledge-an adequate grasp of human biology upon which to frame the circuit. Secondly, it demands careful and intelligent organization. And, thirdly, it demands an enthusiasm for fitness which will communicate itself to the boys and ensure that the training will never be a mechanical routine but always an exhilarating pursuit of physical power and efficiency.

### WARNINGS

The writing of this section is prompted by the observation of certain misunderstanding and errors in presentation among some users of Circuit Training.

*In the first place it must be emphasised that this is a form of training and not a form of testing.* It should not be used in a competitive or comparative way as a fitness test or assessment. One reason for this is the impossibility of any accurate standardisation of the activities employed. Even with the most watchful of officials it is possible to « cheat » by putting a little less effort into each activity. Provided the exercises are performed in a standardised fashion, the time taken on the circuit will be, to the individual performer, a measure of his rate of work and a useful guide to his fitness level; but even with standard performance it should not be used to compare one performer with another because of differences in body weight and proportion which will affect speed on the circuit. This should be explained to performers.

*A second observation follows. Circuit Training, especially with younger performers, can be spoilt by too great a preoccupation with the clock. Proper value can only be obtained from any of the exercises suitable for Circuit Training if they are performed fully and correctly.*

Some exercises demand a maximal effort at a certain point in the movement. No one but the performer can tell whether this effort is being fully applied. The upshot of this is that the instructor must have the wholehearted and honest co-operation of each performer. He must carefully instruct each exercise at the beginning of the training before there is any question of timing; and even when the clock is introduced the instructor should emphasise that its function is not to compare one performer with another but to give each performer information about his rate of work. It can only do this so long as he performs each activity correctly. *Circuit Training should never become a race.* If the circuit is properly constructed,

and the performer maintains continuous activity and good form his progress round the circuit will certainly not be at a braeckneck speed.

*With boys it has been found more useful to cultivate pride in performance rather than pride in a fast time.*

From this it is clearly wrong to claim, as some investigators here and abroad have claimed, that Circuit Training as such will have this or that precise effect. In fact one of the merits of the system (and one which makes it universally applicable) is the ease with which it can be used to produce widely differing kinds and degrees of physical effect. The variable factors are the content of the circuit and the ambition and energy of the performer. The expert instructor should be able to use his technical experience to devise the kind of circuit he needs and his influence over his pupils to stimulate in them a proper attitude towards the training. This attitude may justly vary between one person or group and another. We are not all ambitious seekers after maximum physical fitness, willing to submit ourselves to the inexorable increase in the intensity of the training. Circuit Training can be used — say with older performers — not as a means of further development but as a means of maintaining what is considered to be an adequate standard of fitness. The merit lies in the facility with which the expert to the spot can with the co-operation of his pupils, control the kind and amount and pace of the work they do.

But he must have this co-operation. He must make them want to be fit. If he can succeed in presenting this not as a drill or a penance, but as an avenue to success, enjoyable in itself and leading to skilled activities capable of engaging the imagination and spirit of his pupils, he may direct them into a pursuit of fitness which has both meaning and passion. This is physical education.

(Excerpted from *Circuit Training*,  
Morgan & Adamson, London 1961)

## COMBAT CONDITIONING COURSE

### CIRCUIT-INTERVAL TRAINING

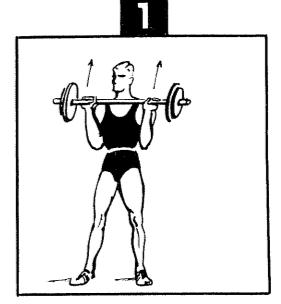
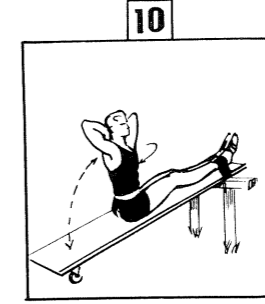
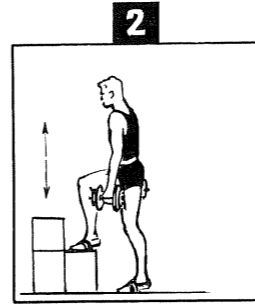
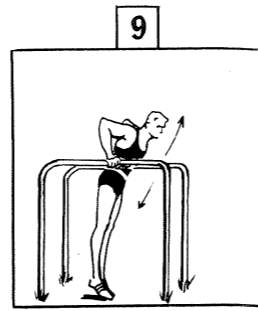
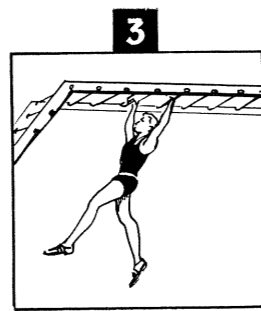
#### PART I

##### Course Administration

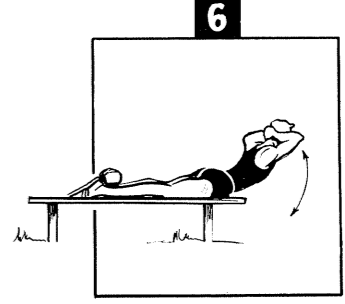
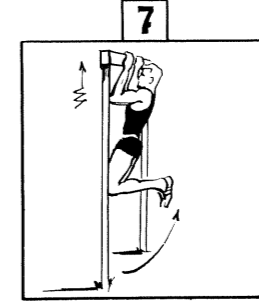
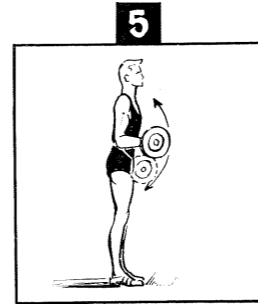
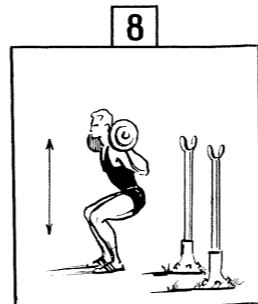
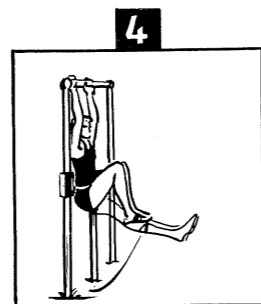
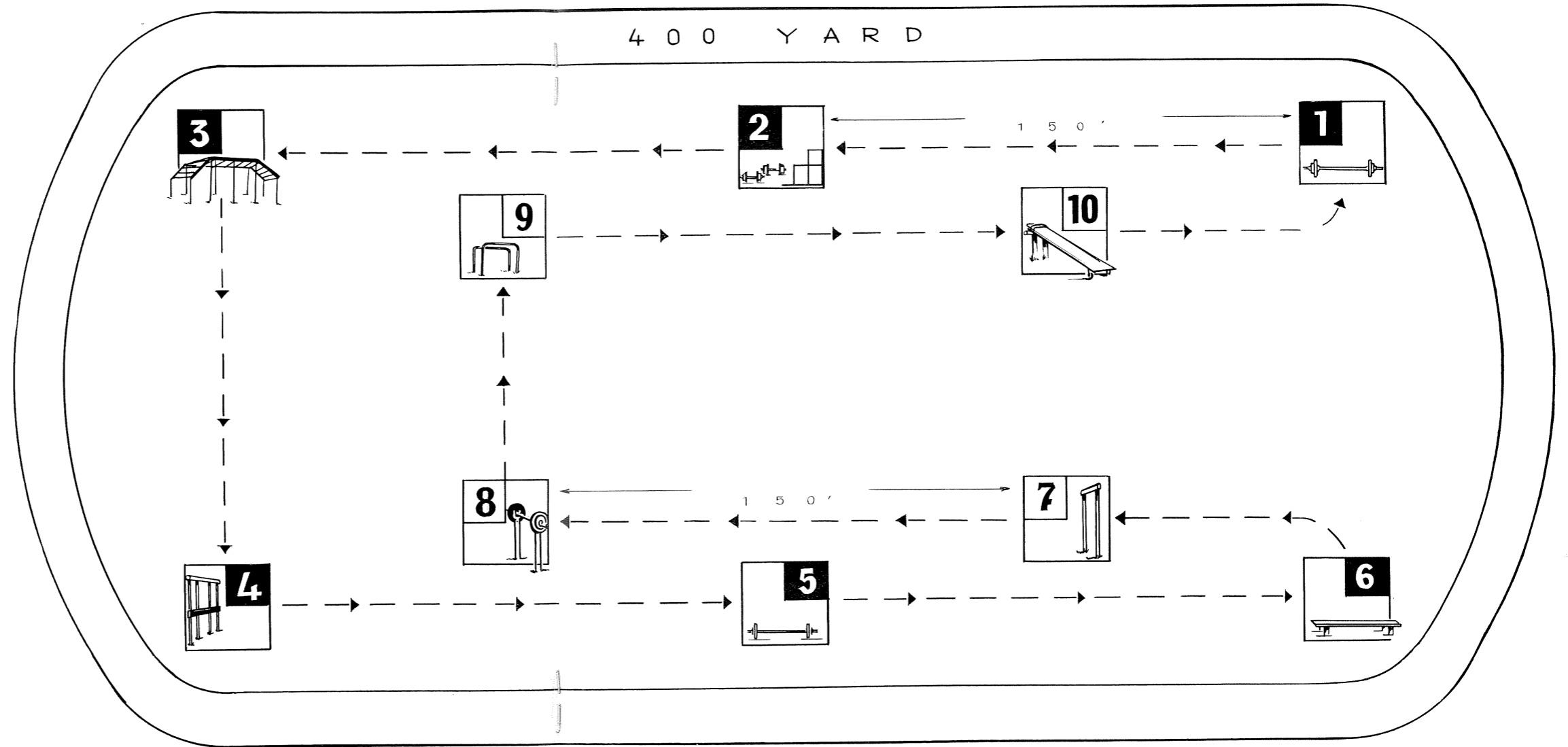
1. Divide training group in half, designate Group no. 1 and Group no. 2.
2. Conduct four minutes of warm-up and flexibility exercises for both groups.
3. Start Group no. 1 on the Circuit Program in accordance with the instructions contained in part II.



**TOTAL TRAINING**



**Circuit (Power) Training**



Start Group no. 2 on Interval Run in accordance with the instruction contained in part III.

4. As soon as group no. 1 has completed the Circuit Program (12 minutes) have them start the Interval Run and start Group no. 2 on the Circuit Course. At the end of 30 minutes both groups should have completed the Circuit Course and the Interval run.

### IMPORTANT

The effectiveness of this program is directly proportional to the degree to which the following principals are observed :

*Regularity* : The program should be conducted three times a week at a minimum.

*For Strength improvement* : Individuals must extend themselves at each station by working at the highest possible stress level for the one minute period.

*For Muscular Endurance* : On station, exercise repetitions must be executed at a continuous pace with no rest or pause between repetitions. Adhere as closely as possible to the « Cadence Count » given for each exercise.

*For Cardio-vascular Improvement* : Cardio-vascular improvement depends on a minimum of 20-30 minutes of continuous exercise activity, which may include alternating the pace between vigorous and moderate exertion. The exercise pace on this course must be continuous with no rest pauses except when the individual may reach his limit on a particular station. Both circuit and interval portions are designed to include an alternating pace of vigorous and moderate exertion.

*For Flexibility* : The execution of all circuit exercises, particularly those with weights, must be performed in such manner as to insure full extension and contraction of the muscle groups involved. With one exception, the barbell squat, movements must always be complete, never halfway.

## PART II

### Circuit-Training

#### Section 1 — Purpose and Definition

*Purpose.* To develop muscular fitness, to include strength, muscular endurance, coordination and flexibility, through the utilization of progressive resistance exercises selected and programmed for maximum effectiveness.

*Definition.* Circuit training is the scientific arrangement of known and proven exercises designed to elicit

maximum overall training effectiveness. It is based on sound physiological principles and aims at the kind of varied activity and continuous challenge which are attractive to large numbers of men and boys. This form of training has three characteristics :

- It improves both muscular and circulo-respiratory fitness.
- It applies the principle of progressive resistance.
- It enables large numbers of individuals to train at the same time, each according to his individual capacity, and each acquiring a maximum workout in a relatively short period of time.

#### Section 2 — Administration

- Assemble Group no. 1 for physical exercise in 10 exercise units. A unit leader will be designated within each exercise unit.
- Each exercise unit will assemble at one of the 10 exercise stations.
- Available instructors will place themselves in position to best observe all circuit stations. The chief instructor will be centrally located and have a whistle.
- At the first long blast of the whistle by the Chief Instructor, all exercise units will begin performing those exercises required at their particular station as described in Part IV. At the end of one minute the Chief Instructor will blow a second long blast on the whistle. At this signal all individuals will immediately cease exercising. Within five seconds a single short blast will signal all units to move at a slow jog to the next adjacent station in counter clockwise fashion. As soon as all units reach their next station they will begin immediately to perform the exercise at the station. The Chief Instructor will continue to signal after one minute intervals on station with one long blast followed within 5 seconds by one short blast until all exercise units have completed the 10 station circuit.

*Instructions for Unit Leaders.* The unit leader will be responsible for conducting the pre-designated cadence count at all stations. This cadence count is based on the number of repetitions per minute (RPM) considered to stimulate maximum muscular response and insure correct execution.

#### Section 3 — Execution

- All exercises, with the exception of stations no. 8 (Ladder Climb) and no. 7 (Pull-Ups) will be executed in cadence as called by the unit leader. This cadence will vary slightly between stations but will remain constant within each station at a tempo that insures adequate time for correct execution of that particular exercise.
- The distance between stations will be covered by the exercises units at a slow jog. This pace should

never increase. As it provides for moderate relaxation between exercise stations.

● All individuals will begin all exercises at the lowest stress level at each station (i.e., the lightest barbell on barbell stations). When an individual is able to exercise continuously for the full exercise period of one minute at any particular stress level, he will begin at the next higher stress level for that particular exercise at his next circuit-training work-out. Cadence count for exercises will remain the same for all individuals at all stress levels.

● Resistance will be progressively increased at all stations by a combination of two methods:

— Modifying exercise to increase the amount of resistance. This is done at the individual's own pace by increasing the stress level.

— Increasing the number of repetitions within the same timeperiod.

● With one exception, the «step-up», cadence tempo on station will not be increased since this would result in sloppy and incorrect performance of the exercise. Where no cadence count is indicated, individuals proceed at their own pace.

● *The first 2-3 workouts on this course should be utilized solely for teaching proper execution of the circuit exercises. The next 3-4 workouts should consist of only 30-45 seconds on each station, with the full minute on station beginning in the third week.*

## PART III

### Interval Run

#### Section 1 — Purpose and Definition

*Purpose:* To achieve a high level of endurance and stamina through the improvement of cardio-vascular and circulo-respiratory fitness.

*Definition:* Interval training involves the continuous performance of physical exercise over a pre-determined distance or time with alternating periods of increased stress and light activity. This procedure is repeated and intensity increased gradually as exercise tolerance permits, but always with adequate recovery. As condition improves, periods of stress are increased, with less and less time needed for recovery as the body builds itself to offset the increased stress. Stress may be increased by (1) increasing the paces, (2) decreasing the interval, and (3) both. Interval training makes it possible to increase endurance and stamina by greatly increasing the amount of given activity in a given period of time.

#### Section 2 — Administration

● Assemble Group no. 2 in starting area on track.

● At the same time Group no. 1 (Circuit-training group) begins its exercises, Groupe no. 2 will begin its 12 minutes interval run. This group will move around the track continuously for the full 12 minutes period alternating between varying periods of walking, jogging and running. They will move as a group in time to a pre-designated cadence count.

● Conduct interval run as described in Section 3 below.

● As soon as Group no. 1 completes the circuit, Group no. 2 will terminate their run and immediately assemble in 10 exercises units to begin circuit-training as described in Part IV.

#### Section 3 — Execution

● The Interval Run will be executed in group formation to the cadence of the Group Leader. During this run the group never stops to rest but moves constantly at varying rates of speed throughout the 12 minutes period.

● The sequence of exercise activity will be jogging, running (or sprinting) and walking. As physical condition improves, running, will be increased with walking decreased proportionally, jogging will continue to be alternated with running throughout the program.

● Recommended conduct of pacing interval run:

— Jog 100 yards;

— Run 100 yards;

— Walk 100 yards.

Each workout eliminates one walking distance (100 yards) and increases the following run this distance. When all walking has been eliminated increase running and jogging distances by 100 yards every two weeks.

## PART IV

### Circuit Training Program Exercises

#### Section 1 — WARM-UP EXERCISES (4 minutes)

##### Straddle hops

Position: Stand at position of attention.

Execution: (1) Jump up spreading feet three feet apart and rotate arms to the side and overhead clapping hands together.

(2) Return to starting position.

Breathing: Normal.



### Squat bender

Position : Feet on line, 18 inches apart, hands on hips.

Execution : (1) Squat to low position, keeping trunk erect, and thrusting arms forward to shoulder level, palms down. *Do not bend back.*

(2) Return to starting position.

Breathing : Inhale going down. Exhale coming up.

### Side Bender.

Position : Feet on line, 24 inches apart. Arms directly overhead with hands clasped together.

Execution : (1) Bend forward and to the right then to the left, back, and up forming a large circle with arms. Repeat. *Do not bend knees.* Execute equal number of repetitions in both directions.

Breathing : Inhale on the upward motion. Exhale on the downward motion.

## Section 2 — Circuit Exercises (12 minutes)

### 1. Barbell Press

Position : Feet on line, 18 inches apart. Space hands on bar, palms down shoulder width apart. Raise bar to position across front of shoulders.

Execution : (1) Press bar to arms length overhead. (2) Lower bar to front shoulder rest. *Do not let bar drop to shoulders.*

Breathing : Exhale as bar is raised overhead. Inhale as bar is lowered to shoulders.

Progression : Use next heavier bar when able to continue exercise throughout period.

Cadence Count : 20 RPM (repetitions per minute).  
Equipment : Barbells : 6 at 50 lb.; 12 at 75 lb.; 6 at 100 lb.

### 2. Step-ups

Position : Stand in front of bench with a dumbbell in each hand.

Execution : Step up on bench, stand erect with both feet on bench, then step down to starting position.

Breathing : Normal.

Progression : Increase tempo as frequently as possible. Attempt to reach 40 repetitions per period.

### 3. Ladder Climb

Position : Hang at full arms length from lowest rung of ladder.

Execution : Traverse ladder as far as possible with overhead grip. *Do not swing at arms length.*

Breathing : Normal.

Progression : When able to traverse entire ladder begin doing Push-Ups for remainder of period on station.

### 4. Leg lifts

Position : Hang from high bar with back and heels against board support.

Execution : (1) Keeping legs together, raise knees up as high as possible. *Keep back against board.*

(2) Lower legs to starting position.

Breathing : Inhale as knees are raised. Exhale as legs are lowered.

Progression : When able to continue for full period, execute by holding legs straight and rotating them upwards as high as possible.

Cadence Count : 20 RPM (Repetitions per minute).

### 5. Barbell curl

Position : Stand erect, feet on line and spread inches apart. Let bar hang at arms length across thighs grasping bar with palms up, hands spaced 18 inches apart.

Execution : (1) Rotate bar upwards to chest while holding elbows immobile close to sides.

(2) Rotate bar downwards to starting position while holding elbows immobile close to sides. *Do not let bar drop to starting position.*

Breathing : Inhale as bar is rotated upwards. Exhale as bar is rotated downwards.

Progression : Use next heavier bar when able to continue exercise for full period.

Cadence count : 15 RPM (repetitions per minute).

Equipment : Barbells : 6 at 25 lb.; 6 at 50 lb.; 6 at 75 lb.; 6 at 100 lb.

### 6. Back lift

Position : Lie on board in prone position with feet secured under brace and upper body hanging vertically off end of board. Hold hands behind head.

Execution : Raise upper body as high as possible then lower to starting position.

Breathing : Inhale going up. Exhale going down.

Progression : Attempt to raise body higher at each repetition.

Cadence Count 20 RPM (Repetitions per minute).

### 7. Variable pull-ups

Position : Kneel directly below bar with feet crossed. Place bar at position where arms must be fully extended to grasp bar.

Execution : Execute as many pull-ups as possible, chin must go over bar for each repetition. When unable to continue at starting height lower bar one notch and continue. Continue to lower bar one notch at a time in order to execute pull-ups for full period on station. If unable to execute one pull-up initially, start exercise at highest notch at which a pull-up can be executed.

Breathing : Inhale and pull-up. Exhale as body is lowered.

Progression : Progress until capable of executing extended pull-ups for entire period. This would be approximately 20 pull-ups from a position with arms fully extended.

### 8. Barbell Squat

Position : Balance bar across back of shoulders. Stand erect, back straight, with feet on line and spaced 18 inches apart.

Execution : (1) Squat down to position where *thigs are parallel* to the ground. *Do not bend the back.*

(2) Raise erect.

Breathing : Inhale going down. Exhale coming up.

Progression : Use next heavier bar when able to continue exercise throughout period.

Cadence Count : 15 RPM (Repetitions per minute).

Equipment : Barbells 12 at 100 lb.; 6 at 125 lb; 6 at 150 lb.

### 9. Dips

Position : Support body in upright erect position between bars with arms extended down to full length and hands grasping dip rails.

Execution(1) Bend arms and lower body as far as possible.

(2) Press body to upright position.

Breathing : Inhale as body is lowered. Exhale as body is raised.

Progression : For those not able to continue for full period, body will remain supported in the upright position when dips can no longer be performed. When able to continue dips for full period begin performing dips with legs held straight out in a right angle to the body.

### 10. Sit-up

Position : Lie on incline board in the supine incline position with hands clasped behind head and feet secured under foot bar.

Execution : Holding legs slightly bent and feet together, curl body forward and touch right elbow to left knee. Return to starting position. Alternate elbows to opposite knees on each repetition.

Breathing : Inhale as body is lowered. Exhale as body is raised.

Progression : When able to continue for full period use board at next higher level.

Cadence Count : 25 RPM (Repetitions per minute).



# CISM under the Libanese Cedars

## WELCOME

General,

Colonel representing the CISM,

Ladies, Gentlemen,

For the fifth time, the colours of the International Council of Military Sports rise in the sky of our country since 1952 when the Libanese Army adhered to the CISM.

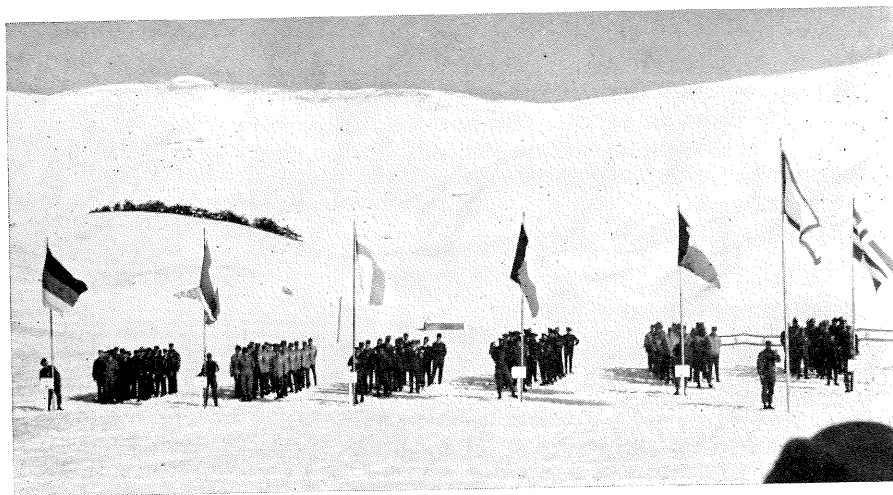
Since it was born in 1948, the Council had in view the consolidation of friendly ties and military cooperation between the armies of members-countries, doing its best to raise the level of sport-spirit among soldiers, in order to make them ready for their mission.

Our young army does its best to be present at all activities and general assemblies of the CISM. It is responsible to-day and for the second time within a few years, to organize a CISM championship, the XIIth International Military Championship of Skiing. This is due to the esteem and to the great interest that the Chiefs of the Libanese Army afford to sport as they know that military sport settles the bases of a strong preparation for the youth.

These XIIth International Skiing Championships take place for the first time out of Europe. It is a joy and an honour for Lebanon to be the first non European country to welcome those championships on their eternal mountains. And our greatest hope is that those events will prove that our choice has been judicious. It is the first time too that the Military Skiing Championships take place quite close to the desert instead of North-Pole or Central Europe. That means that Lebanon is the only country in Middle East which possesses, as European Nations, the facilities for the development and improvement of Skiing.

Its mountains «the Eternal Cedars», have moreover their natural importance, an historical, spiritual and national signification that all of you know.  
You are most welcome.

Capt. ABOU DARGHAM  
(Lebanon)



Opening Ceremony. In the rear, the famous Libanese Cedars.



Opening ceremony.

Col. H. Sandvik, technical Director,  
Mrs. Sandvik and Cap. Abou Dargham  
(Organisator of the Ski week)  
are shown with Lt. General Odd Bull (Norway).



# GRATITUDE...

Ferewell at the Official dinner.

A successfull international competition is always ended in a sympathetic euphory. It is well the case to-day, for this XIIth Championship of Skiing has, in all regards, been perfect.

The organization was successfull. We know how Libanese hospitality has always been praised. The warmth of your welcome has however exceeded all we could imagine.

You have even succeeded in ordering fine weather, after a storm, that allowed us to measure the obstacles you had to overcome. On behalf of the CISM, the chiefs of delegations, the chiefs of teams and competitors, please accept our hearty and friendly congratulations.

I cannot name all those who have built this success, as they are numerous and as it has been a team-work. Allow me to center my thanks on Captain Abou-Dargham and his collaborators. Every one has been able to appreciate their efficiency and self-sacrifice. My dear friend, you have been wonderful.

Technical success too, in spite of initial difficulties. Time tables, running of the trials, chronometry, results, information, etc... everything went on without any incident. This, most uncommon in a competition grouping 10 nations, shows that everything had been planned in the least detail.

I address my thanks particularly to Lt. Col. Sandvik, technical Director of this Championship. Handling his Jurys tactfully and efficiently, keeping the rules respected, he gave us the benefit of his great experience.

I thank you at last and especially you the competitors. In all events you have displaid the best qualities. Some have won, others have had less luck, but all of you have metted in the best spirit and you have tied a strong friendship.

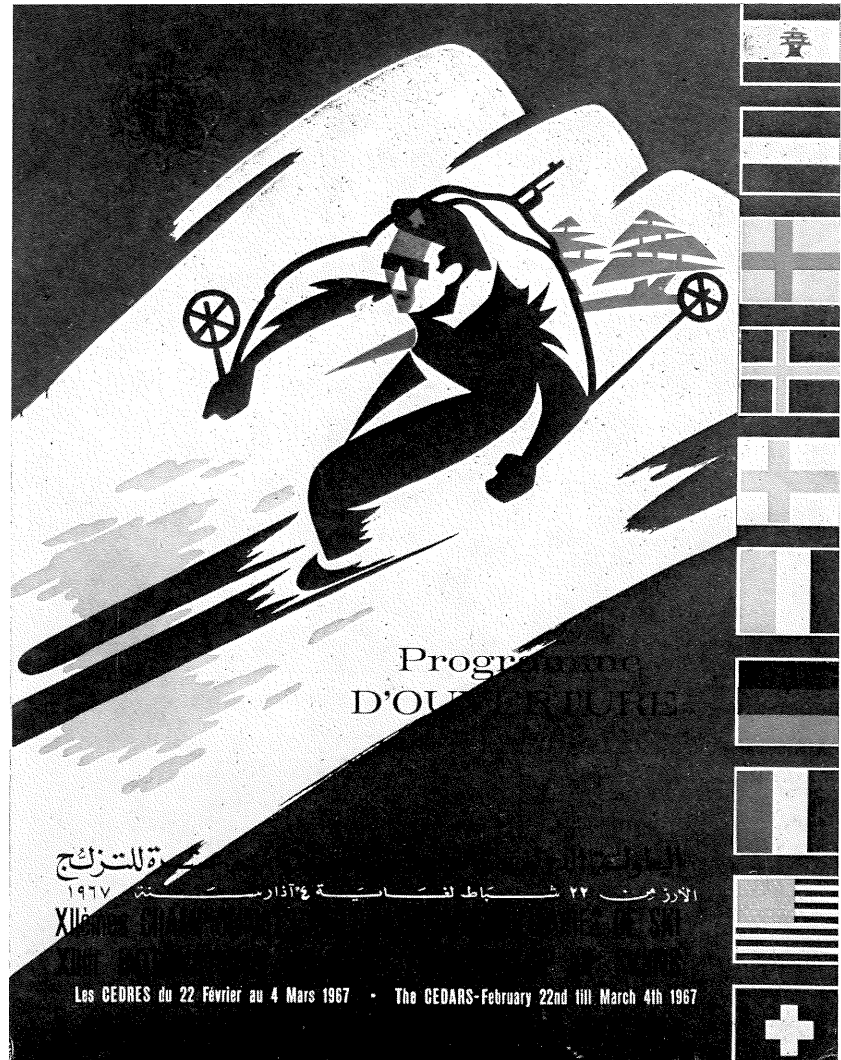
Thanks to your brilliant results, the CISM will be able to propose to the F. I. S. that in the future those CISM championships, real championships of the snow, would take place amongst the great world trials and would be reconned for the obtainment of the F. I. S. points.

Nordic people have had the opportunity to notice that Alpine nations begin seriously to practice long distance skiing. Alpine countries have noticed too that some Nordic down-hill runners have brilliantly succeeded in Slalom trials.

I believe, gentlemen, that the interest of such a competition lies in the fact that everyone benefits of the experience of the others. It is indeed the aim of CISM to give birth to these contacts and these friendly competitions.

Here in Lebanon and thanks to Lebanon, CISM has plainly reached the aim it is pursuing since 15 years : To bring together all Armies of the world thanks to SPORT.

Col. LE BORGNE  
(France)







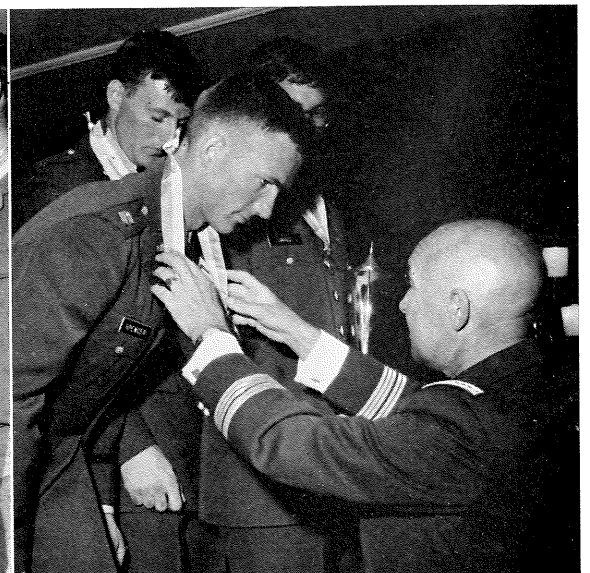
The Norwegian patrol, once more victorious of the « Top Race ».



1st Stuffer, individual winner of the « Combiné ».



The winners of the alpine « combiné ».



Col. Le Borgne, representing the CISM, giving the prices.

# *Psychosomatic preparation of the sportsman*

At Paris on the 6th. and 7th. May was held the II<sup>nd</sup>. International Symposium for the Psychosomatic Preparation of the athlete. The National Institute of Sport and the Cultural Center of Royaumont were the sites for the meeting. 21 Countries were represented as well as several International Sports Organizations.

The theme of that International Symposium for the psychosomatic preparation of the sportsman was to consider and to study the methods of modification of the psychic tonus of the sportsman.

Up to now, one has cared only for the physical condition of the athlete. This, in many circumstances, has proved insufficient to obtain the final success in competition. This was often due to the lack of psychic preparation. Even when the athlete was physically well prepared. Athletes need a complete preparation (physical and psychic), and an extraordinary preparation of the psychic tonus.

The new method of psychosomatic preparation must assist the athlete, before the competition, to eliminate anguishes, fear, trembling of the muscles and incapacity of keeping a high concentration and the necessary calm during the competition. The athlete has therefore to go through a special preparation composed of two stages of training. The first phase consists in complete relaxation before the competition (at least two hours). The second phase aims to an activation just before the start of the event.

The first stage helps to the voluntary muscular relaxation through an effort of mental concentration. It brings calm to the muscles and total quietness to the mind. This stage must be taught and conducted by a specialized doctor, by a psychologist or by a trainer. For a good trainer must nowadays also be a good psychologist. The necessary time for that initiation is estimated to three months. When the sportsman will have learned to control his muscles, the technical exploitation of that result will be entrusted to the trainer who, himself, ought to have acquired the necessary knowledge and who will have to adopt it to each person and to each competition.

Prof. Dr. M. Andrejevic (Yougoslavia)

(Extract of FIFA NEWS)

XVIIIth INTERNATIONAL  
FENCING  
CHAMPIONSHIP  
OF THE CISM



PALERMO

15-21st April 1967

The Fencing Championship, organized by the Italian Armed Forces has taken place at Palermo from the 15th to the 21st April 1967.

10 countries have taken part to these events : Austria, Belgium, Brazil, France, Lebanon, Netherland, United States, Sweden, Tunis, Italy.

Five countries have sent a complete team and according to this, have taken part to the three specialities (foil, sword, sabre) : Austria, Belgium, France, Italy, Netherland.

General Lagerwerff, Chief of the Dutch delegation, officially represented the CISM.

Palermo has been selected as the site of the Championship, first of all, because one would « present » the CISM in Sicilia where never, until now, a military competition had been organized and also because the Italian Fencing Federation has decided to develop a particular propaganda in Sicilia for this noble sport.

Owing to the nearness of the approaching Olympic Games, the days of study organized on the theme « Diet of fencers » have taken a particular importance.

All participant countries have given their share to the study in exposing their respective theories.

The organization has been perfect in all respect both from a technical as sporting point of view.

Competitions have been followed with a keen interest by a numerous and competent public and have largely been commented in newspapers.

The opening ceremony has been presided over by the commanding officer of the 3rd Aerial Region, General S. A. Molinari, the closure by the Defense Under-Secretary M. Guadalupi.

Many champions were present. Among them the frenchman Jacques Brodin, world champion « Junior », the Jacobsson from Sweden, the olympic champion Engdal, the Austrians Trost and Polzhuber, previous winners. The Italians Bimbi and Maffei, who may be proud of the titles they did obtain, have caused a pleasant surprise.

Classifications have confirmed previsions. Brodin, who had no rival, has made a great impression. His fencing has always been sustained by a perfect athletic form.

The results of this championship, in the whole, are the most valuable confirmation of a continuous progress, issued mostly from the impulsion given by CISM : to the military sport and also from a severe and strict preparation of the participants.

The vitality which characterizes CISM is particularly vivid in Fencing, which suits so well officers and non commissioned officers of the Armed Forces.

RESULTS

INDIVIDUAL CLASSIFICATION

*Sabre*

- 1 BIMBI, Italy
- 2 HENRIET, Belgium
- 3 WANETCHEK, Austria

*Sword*

- 1 BRODIN, France
- 2 POLZHUBER, Austria
- 3 JACOBSON, Sweden

*Foil*

- 1 MAFFEI, Italy
- 2 TALVARD, France
- 3 ENGELBRACHT, Holland.

TEAM CLASSIFICATION

*Sabre*

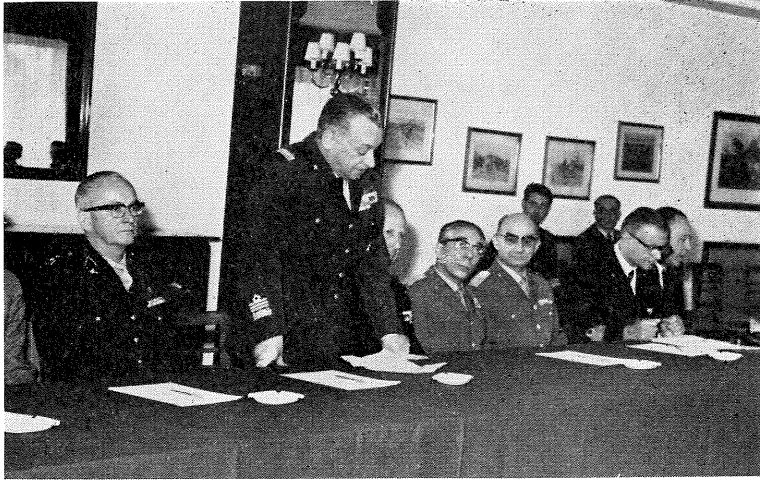
- |   |  |         |
|---|--|---------|
| 1 |  | BELGIUM |
| 2 |  | ITALY   |
| 3 |  | FRANCE  |

*Sword*

- |   |  |         |
|---|--|---------|
| 1 |  | AUSTRIA |
| 2 |  | FRANCE  |
| 3 |  | BELGIUM |

*Foil*

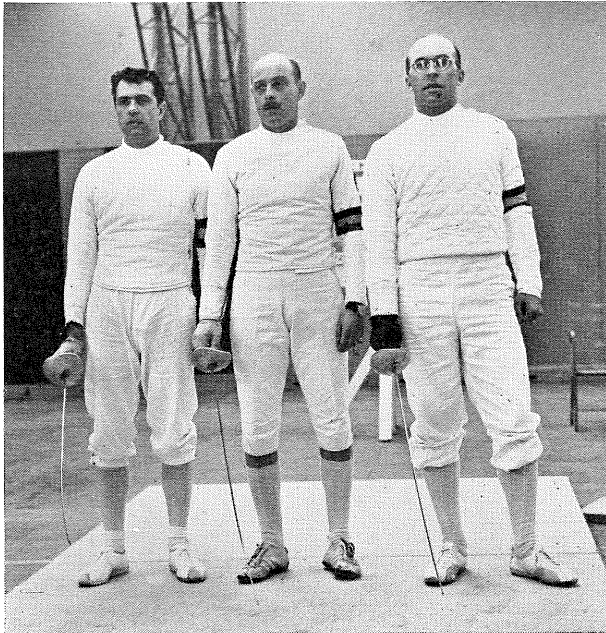
- |   |  |         |
|---|--|---------|
| 1 |  | FRANCE  |
| 2 |  | ITALY   |
| 3 |  | AUSTRIA |



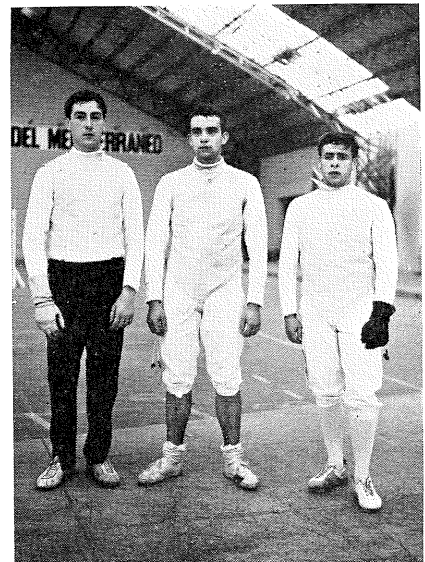
Air Force General Molinari, during the inaugural speech.



General Lagerwerff, officially representing CISM, presenting awards.



The Belgian team, classed first in the sabre competition.



The french team classed first in the foil competition.

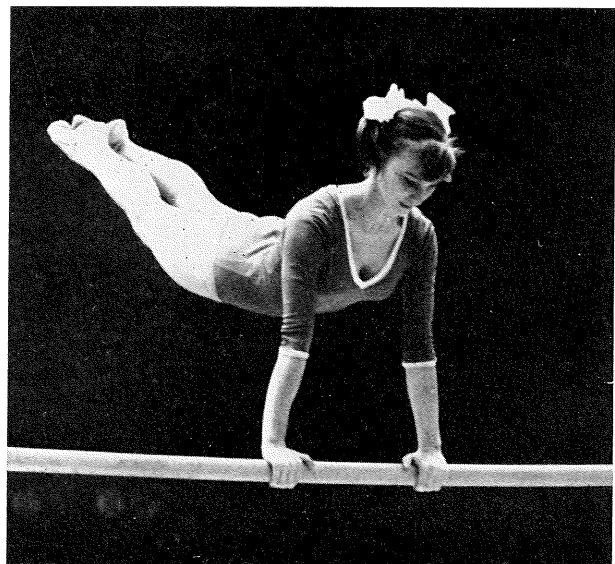
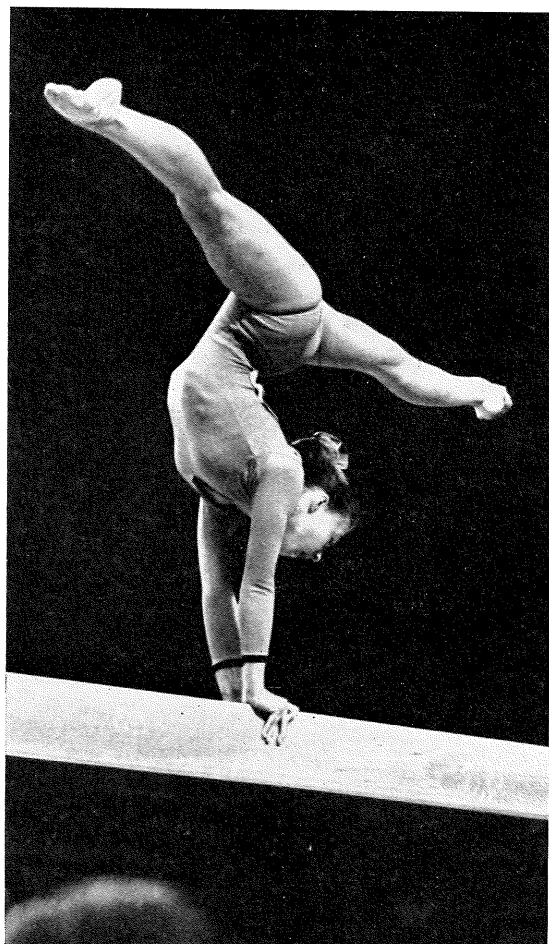
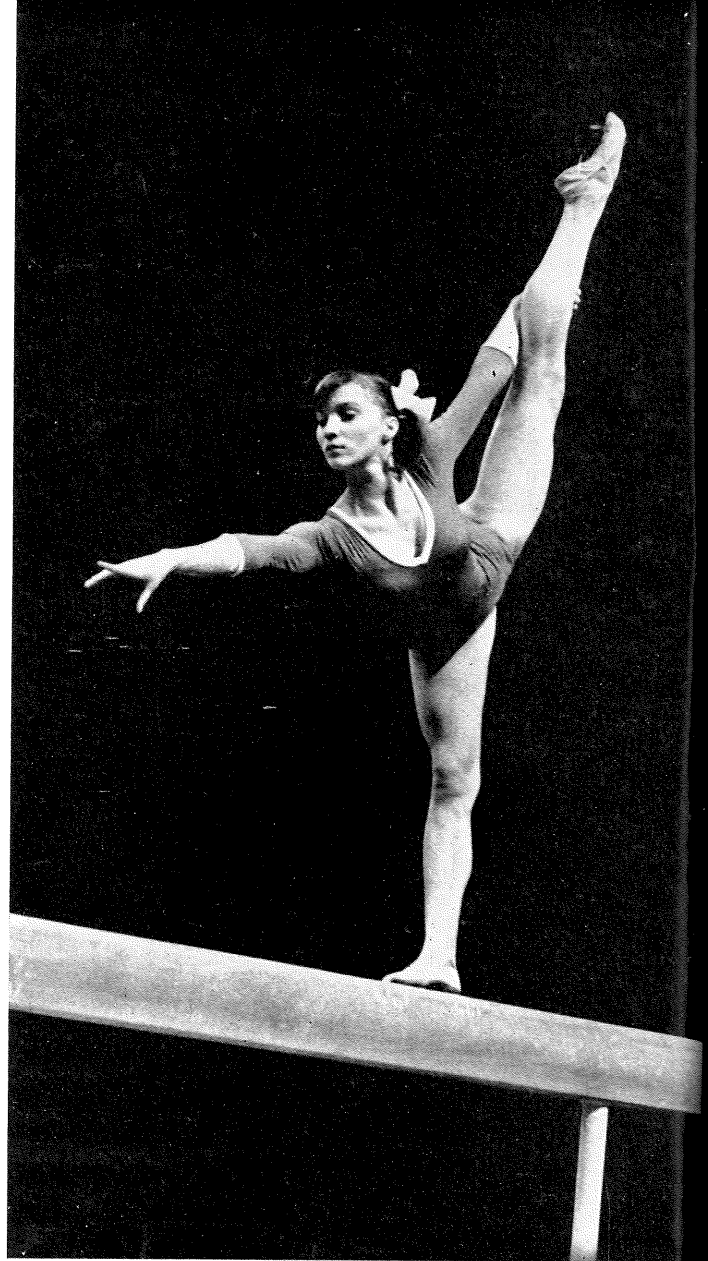


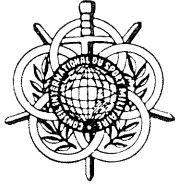
Closure ceremony and price-giving.



# Pretty Persuaders

... seen  
at the recent  
*Gymnastic World  
Championship.*





# LIFE AT CISM

## XIIth International Military Championship of Skiing

The XIIth CISM'Skiing Championships took place in Lebanon, the Cedars from february 22nd till march 4th 1967 (see PP. 22 to 24).

Organized by the Lebanese Armed Forces and specially by Captain Tay Abou Dargham, Chief of Delegation of Lebanon, he is perfectly successful in all domains. This event is a brilliant success for CISM.

### PARTICIPATING COUNTRIES

Germany	Italy
Austria	Lebanon
U. S. A.	Norway
Finland	Sweden
France	Switzerland

### EVENTS

#### Alpine events

Giant Slalom  
Special Slalom  
Alpine combined

#### Nordics events

Military 15 km Cross-Country  
Nordic combination  
Cross-Country & Giant Slalom  
Patrol race

The results were of a very great technical valour.

### RESULTS

#### Disciplines Alpines

1 PRINZING (Germany)	1'32''48
2 AUGERT (France)	1'32''65
3 HECKELMILLER (Germany)	1'35''44

#### Giant Slalom (for Nordic Combined)

1 DIBVIK (Norway)	1'44''24
2 FJOSNE (Norway)	1'45''43
3 Arnesen (Norway)	1'47''08

#### Special Slalom

1 AUGERT (France)	1'51''56
2 DUVILLARD (France)	1'52''39
3 MUSSNER (Italy)	1'53''12

#### Alpine Combined

##### Individual

1 AUGERT (France)	1.56	points FIS
2 PRINZING (Germany)	19.30	» »
3 HECKELMILLER (Germany)	35.50	» »

##### Per country

1 GERMANY (Prinzing-Heckelmiller-Lerch)	100.91	» »
2 FRANCE (Augert-Duvillard-Brechu)	123.63	» »
3 ITALY (Mussner-Mahlknecht-Casse)	266.41	» »

#### Nordic events

##### Military Cross-Country 15 km Cross-Country

##### Individual (and for Nordic Combined)

1 STUFFER (Italy)	1 h 20'15''63
2 STELLA (Italy)	1 h 21'06''17
3 HATUNEN (Finland)	1 h 21'13''56

#### Per country

1 ITALY (Stuffer-Stella-Gabrielli)	46.41	points FIS
2 NORWAY (Waerhaug-Talledas-Lund)	53.36	» »
3 FINLAND (Hatunen-Luukanen-Pursainen)	59'81	» »

#### Nordic combined

##### Individual

1 ARNESEN (Norway)	125.95	» »
2 DIBVIK (Norway)	131.26	» »
3 EHRENSBECK (U. S. A.)	145.55	» »

#### Per country

1 Norway (Arnesen-Dibvik-Fjosne)	145.55	» »
2 FRANCE (Bozon-Ferreyrolle-Schmit)	591.71	» »
3 U. S. A. (Ehrenbeck-Spencer-Small)	682.82	» »

#### Patrol race

1 NORWAY (Waerhaug-Ragnar-Talleras-Gjleten)	1 h 30'09''24
2 FRANCE (Chassagne-Grespellier-Pires-Legnard)	1 h 35'38''27
3 NORWAY (Berntsen-Andreassen-Lund-Lonaas)	1 h 35'40''60

## MEXICO

### Cooperation of the Mexican Army to sport events

The Ministry of National Defense, through the General Direction of Physical Education has offered to the Mexican Sports Confederation to fully collaborate to the development of the Games of the Youth which, every year, take place in different towns of the Republic of Mexico.

All services of superintendance, transmissions, hygiene and transports will be supervised and directed by members of the National Army, and will join in a common effort to give an impulse to Mexican sport.

Reciprocally, the CDM has adressed itself to the National Sports Federation and to the State Governors to ask them to cooperate to the promotion of the sport events in the various bodies of the Army.

### Role in the preparation of the games of the XIXth « Olympiad »

The specialization of its troops will allow the Mexican Army to play an important part in the control and coordination of sports events in 1968 through radio, phone, telex etc...

Its collaboration will be similar to that of the Italian Army during the games of the XVIIth Olympiad which has taken place at Roma in 1960. 417 officers, 2 430 non commissioned officers and 6 167 soldiers have taken part, as auxiliaries, to the organization and running of the trials of rowing, modern pentathlon, riding, marathon, 20 and 25 km walking contest, cycling and shooting, as well as to the opening and closure ceremonies and to the Olympic Torch relay.

To achieve that task, the Army has used 12 telephonic and telegraphic stations, 170 portable telephones, 30 teletypes, 498 km telephonic cables, 88 radio stations, 24 relay posts, 48 frequency modulators and 20 mobile radio units.

# Results of XVth Basketball Championship of CISM from april 26th till may 7th 1967 Bagdad (Iraq)

## PARTICIPATING COUNTRIES

U. S. A.	ITALY
FRANCE	KUWEIT
GREECE	U. A. R.
IRAQ	VIETNAM

### PRELIMINARY TOUR

1	U. A. R. - Greece	86-56
2	U. S. A. - Kuwait	111-34
3	France - Vietnam	79-50
4	Italy - Iraq	69-49
5	Italy - Kuwait	106-47
6	U. A. R. - Vietnam	103-75
7	U. S. A. - Iraq	78-54
8	Greece - France	50-52
9	Italy - U. S. A.	62-67
10	U. A. R. - France	53-44
11	Greece - Vietnam	92-77
12	Iraq - Kuwait	84-42

### FINAL TOUR

1	Italy - U. A. R.	60-54
2	U. S. A. - France	93-42
3	U. S. A. - Italy	80-56
4	U. A. R. - France	50-49
5	Italy - France	73-67
6	U. S. A. - U. A. R.	87-47

### CONSOLATION

1	Iraq - Vietnam	76- 54
2	Kuwait - Greece	48-111
3	Greece-Vietnam	78- 48
4	Iraq - Kuwait	75- 38
5	Kuwait - Vietnam	78- 98
6	Iraq - Greece	56- 78

### FINAL CLASSEMENT

	Matches	Averages	Points
1	U. S. A. 6 6 0 0	516-295	(6 + 6) 12
2	Italy 6 4 2 0	417-364	(4 + 4) 8
3	U. A. R. 6 4 2 0	393-371	(6 + 2) 8
4	France 6 2 4 0	333-369	(4 + 0) 4

### CONSOLATION CLASSEMENT

5	Greece 6 4 2 0	467-377	(2 + 6) 8
6	Iraq 6 3 3 0	394-350	(2 + 4) 6
7	Vietnam 6 1 5 0	412-506	(0 + 2) 2
8	Kuwait 6 0 6 0	287-585	— 0

Greece-Vietnam. — For the first time Vietnam has taken part in a competition of CISM.

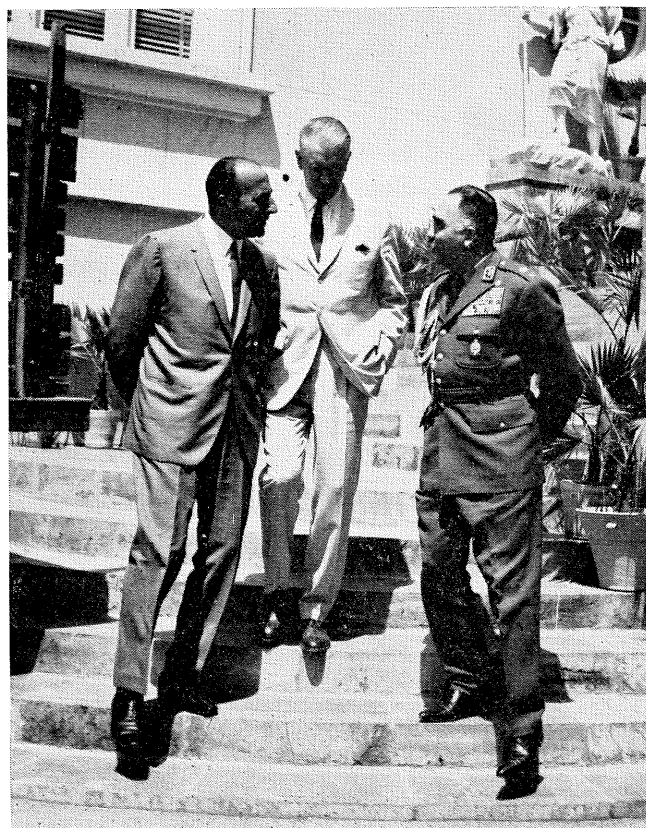


## TEHERAN

Taking advantage of his stay at Teheran, where he was present at the meeting of the National Olympic Committees, our General Secretary had the honour to be received in audience by His Imperial Highness Prince Gholam Reza Pahlavi, brother of His Imperial Majesty The Chahinchah.

He was accompanied by Brigadier-General Voshm-gir, Chief of the Delegation of Iran to the CISM, and by Colonel Massoumi, former member of the Executive Committee, actually Secretary of State for Agriculture.

The support of Iran to our organization as well as its development in that world's area have been the subject of many fruitful conversations.



## KUWEIT

Answering the kind invitation of the Armed Forces of Kuwait the Executive Committee held its first annual meeting in the State Capital from the 7th to the 13th of March 1967.

The representatives of the CISM have had the honour of being received by His Highness the Emir as well as by the highest personalities.

The opening ceremony was presided by His Excellency the Chief of the General Staff of the Army Mubarak Abdullah Al-Jabir Al-Sabah who has addressed to the Delegates the following speech :

« Mr. Vice-President, Members !

*I am very happy to welcome you in Kuwait at the occasion of the first meeting of your Committee for 1967. The principles and the superior aims which are*

*inserted in your statutes show clearly the depth of your judgment and the greatness of your aspirations. These aim to attain a better comprehension between the people of different countries, based on the love of each one for its country and the respect of the country of the others.*

*I am proud to have this occasion to meet the Governing body of the CISM and I beg you to transmit to all member-countries the best regards of our Country.*

*I wish your works to be fruitful and I pray the Lord to give you the strength to reach the aims you are pointing at.*

*Our country will do its best to share your work in order to achieve the purposes you have chosen.*

*We shall do our best to reach quickly the best level in physical training and military sport.*

Reception by His Excellency the Emir of Kuwait.





Moreover we wish keenly to stimulate the comradeship which helps to establish firmly through the world a mutual comprehension between all Armed Forces. We shall base that effort on the realization of frank and friendly sport competitions.

I have the pleasure to transmit you the greetings of His Highness the Emir and I wish you a very comfortable and pleasant stay at Kuwait.

I pray the Lord to help you in your works. I thank you. »



Presentation of the commemorative Medal of the CISM.

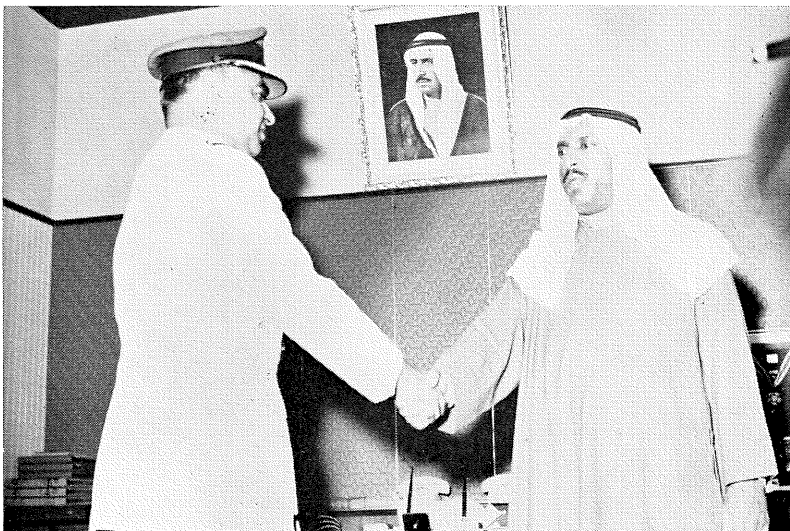


Opening ceremony : His Excellency the Chief of General Staff of the Armed Forces presides surrounded by Air Commodore M. M. Piracha, First Vice-President of the CISM and Lt. Colonel Al-Bader, Chief of the delegation of Kuwait.

Our first Vice-President replacing the President Royal Hatch who has resigned, has mentioned the very large contribution of Kuwait, which entering lately the CISM' family, has shown at once a great activity.

Kuwait has taken the excellent initiative of installing during all the meeting, an exhibition showing through pictures the activities of the CISM.

Moreover the General Secretary and the members of the Academy have given several technical lectures. The CISM has most appreciated the hospitality of the delegation of Kuwait, which has well deserved of the CISM.



Reception of His Excellency the Minister of National Defense.