



CISM
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SPORT *international*

The Fontainebleau Interservice Sports School

General Fourquet, Chief of Staff of the french Army honored the CISM symposium with his presence. He is shown here with Colonel Le Borgne and Colonel Grandjean.



In guise of summary

In this year commemorating its twentieth anniversary, CISM's official news medium « Sport International » will attempt to assess the status of our activities.

The first 1968 issue constituted an up-to-date presentation of our organization. It is a reference document which aptly answers the often asked question : What is CISM ?

This second issue is devoted to an important topic : « **The military methods of Physical Fitness and Sports Training** ».

The latter were presented and disseminated by representatives of 28 member countries at the recent symposium sponsored by the French Delegation at the Fontainebleau Interservice Sports School.

It is obviously impossible to include in this magazine a full transcription of the multiple lectures and reports. A selection therefore had to be made.

Hence, the table of contents lists :

- **The presentation and orientation of the symposium** by Colonel G. Le Borgne, chief of the French Interservice Physical Fitness and Sports Section and Member of the CISM Executive Committee.
- **The description of the Interservice Sports School** which was a magnificent setting for the Symposium.

It is the landlord, at it were, of this impressive estate, Colonel P. Grandjean, who, in his capacity as Commander, acquaints us with the multiple facets of the School, a great French achievement to be set as an example and inspiration to all Armed Forces.

We have selected Lt. Col. R. Gueguen's « **New French Orientation** » as most descriptive of the current trends. Col. Gueguen, former CISM Military Pentathlon champion, is Chief Instructor at the Interservice Sports School. Among the presentation relating to various organizations, our choice unhesitatingly went to « **Physical Fitness Training in the Italian Armed Forces** ».

This document struck us as being of great interest, in that it outlines an all-encompassing system based on the deep-rooted and harmonious integration of sports activities at all levels, i.e. Armed Forces, National Olympic Committee, Sports Federations, and Youth Circles.

Let us now broach the subject of training procedures.

Major Kenneth Cooper (MC) of the United States Air Force contributed a « best seller » in which he describes the facilities, tests, and training methods leading to « **the development of a physical conditioning program** ».

While Commandant M. Vrillac (MC), France, member of the CISM Academy, proposes an article entitled « **Musculature and Physical Training in the Armed Forces** », Colonel G. Le Borgne offers a worthwhile closing item which features the **first conclusions** of this excellent symposium.

Dear Readers,

We wish, as of now, to draw your attention to the next issue of « Sport International ». It is our intention to make it a logical follow-up on the current edition. You will find therein reports on the Nordic Systems, the highly scientific German doctrine, and the concepts adopted by several nations in full sports evolution, Iraq, Tunisia, Ivory Coast, etc.

The publication will include three important articles :

- the Sports Units;
- Dietetics;
- Control Tests.

The year marking our organization's Twentieth Anniversary will end with a special Magazine issue — the 1968 Military Sports Parade — which will include the results of all our championships, action pictures of such events and, in short, a vivid reflection of the rich and busy life of our CISM.

R. MOLLET,
Permanent Secretary General.

PRESENTATION OF THE SYMPOSIUM

**Address by Colonel G. LE BORGNE,
Chief of the Interservice Sports Section,
Member of the CISM Executive Committee**

Admiral, Mr. Secretary General, My good friends,

France welcomes your visit to Fontainebleau on the occasion of the CISM Symposium which, as you know, is convening with a view to studying the various physical training methods within our respective Armed Forces.

The goal of this symposium is to analyze, and I repeat analyze, the various physical training procedures in different Armies. It is therefore to be considered as an informative reunion with no intent to advance concepts toward the creation of an « ideal training method ». We do not claim — either within CISM, or much less in France — to have mastered this problem. On the other hand, it might be interesting to learn what is done outside one's borders, and retain such information as can be adapted to the training requirements and means at home.

I deliberately dwell on the spirit which is to prevail over this endeavour — one of purely analytical nature. No conclusions will be voiced upon completion of the conference. They will be left for you to draw from the documentation which you will bring back with you.

The presentations will deal with the methods in use, tests, and control procedures, for I believe this is of interest to all of us, just as we are unanimously curious to know the trends in our respective training concepts. In addition to these presentations, which will shortly be identified by Colonel P. Gueguen, I have requested several speakers to comment on other sports topics, which might be termed general, were it not for the fact that they have now become an indispensable part of modern training. Raoul Mollet, who, as you know, is one of the staunchest promoters of fractional training has kindly accepted to give us an hour's briefing on this method. Commandant M. Vrillac (MC) will tell us of Musculation. I have asked him to study this aspect of training on the basis of methods reserved for outstanding athletes and attempt to isolate such data as may be applicable to the layman, or, in other words, the majority of recruits. It was, I must admit, a delicate task, which he treated as such: we will rely on the Jury's leniency. Commandant Leger (MC), dietician and pupil of Doctor Creffi, will make an expose on dietetics and the importance of nutrition in the context of training effectiveness.

We believe, in CISM, that all of us — all of you — who are sports leaders must not only orient others toward sports, but also practice what we preach. It is, in my opinion, an important factor of equilibrium. The Sports School will place both its facilities and equipment at our disposal, so that we can relax for one hour each day.

General Fourquet, Chief of Staff of the French Army will personally greet you tomorrow morning and preside at a luncheon.

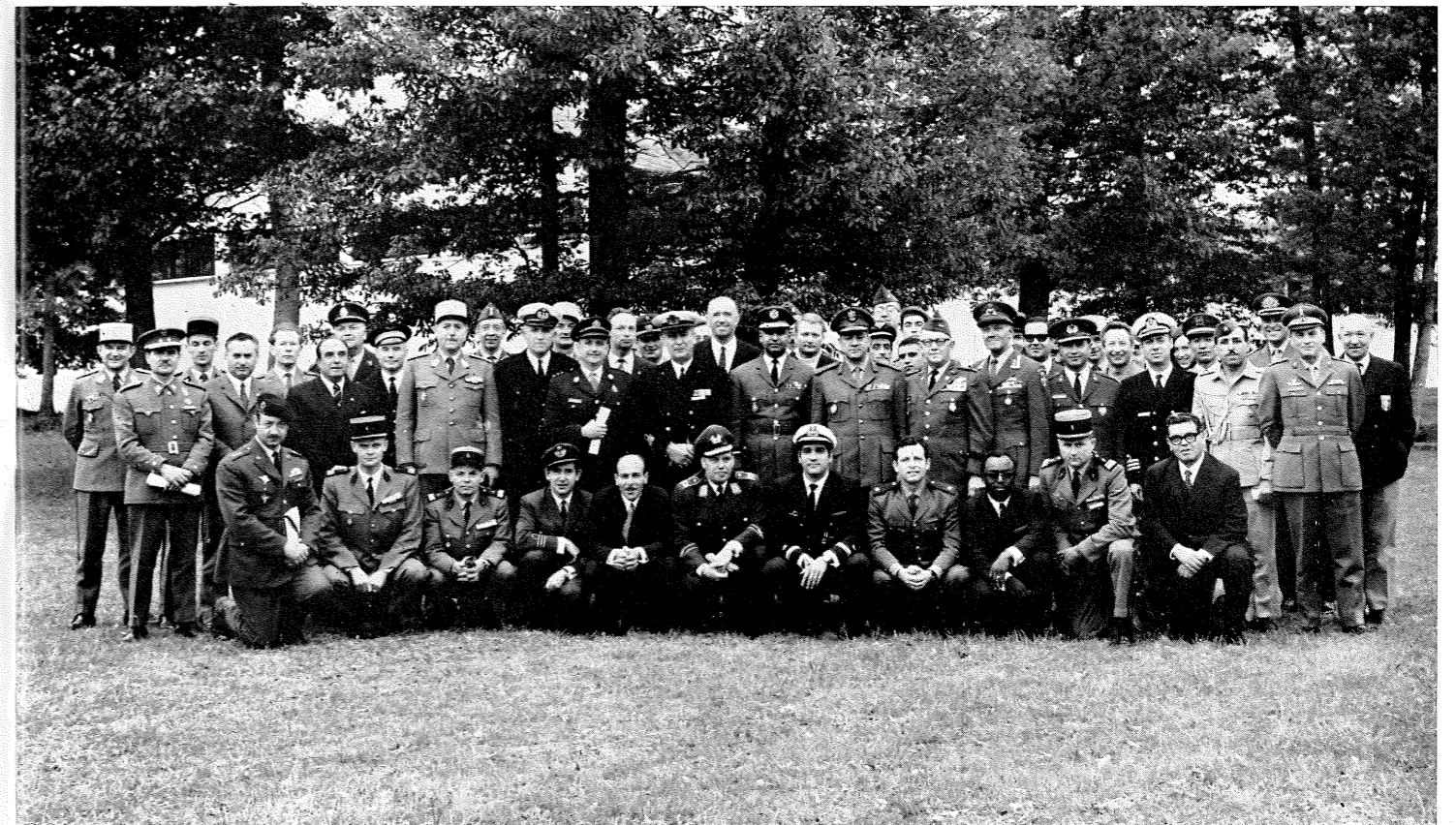
And once more: Welcome!

**Address by Rear Admiral F. CASARI (Italy),
CISM's 1st Vice President**

Colonel Le Borgne, Colonel Grandjean, Gentlemen,

On behalf of our President, who deeply regrets his absence from our midst, it is my privilege to express CISM's pride and gratification with today's added success. The participation of numerous delegates (representing 28 nations, to be exact) is a vivid proof of the interest our activities arouse at headquarters level. The teachings emanating from this gathering will prove valuable to all CISM members. A comparative study of various training concepts is a prerequisite to the proper orientation and evolution of physical fitness and sports instruction in the Armed forces.

May I convey our heartfelt appreciation to the French Delegation and to the Interservice Sports School for its kind hospitality. I wish you a pleasant and fruitful meeting.



THE SITE

The Interservice Sports School at Fontainebleau

Endowed with a wealth of traditions — the legacy of such institutions as the Antibes School, the Joinville Battalion, and the Naval Sports Center, the Interservice Sports School must be more than a mere merging point for its components. It aspires to be an entity, « **A School** » with its own traditions reaped from day to day experience.

The Interservice Sports School was inaugurated on 1 september 1967 on the premises of Fontainebleau's Camp Guynemer, a facility heretofore occupied by the Headquarters for Central Europe.

The following agencies were deactivated upon creation of the New school and integrated into a single institution bearing the name of « Interservice Sports School » :

- The Interservice Sports Section of Joinville (G. S. I. A.) reinforced by the shooting Modern Pentathlon, and Parachuting elements whose parent units had been the Montauban C. I. S. T. C. N., the Bordeaux 4th Military Region, and the Pau School for Airborne personnel, respectively;
- The School for Military Fitness Training at Antibes which heretofore graduated the Ground and Air Force coaching personnel;
- The Naval Physical Fitness Center in Toulon, which ensured training of coaches for Navy Personnel.

* * *

The primary **MISSION** of the Interservice Sports School is to instruct, train, and inform the Cadre, specialized personnel and athletes in the Armed Forces and State Police Forces.

This fundamental mission is threefold :

— **Training of Specialized Personnel :**

- Sports officers;
- NCO's having voluntarily enlisted in the Ground Forces in the capacity of assistant-coach, coach, or head coach;
- Trainers, project officers, and instructors;
- Referees;
- As well as initiation and information for the benefit of the cadre.

— **Competitive Events.** In coordination with the Ministry of Youth and Sports and the various Federations :

- Individual and group training of selected athletes;
- Establishment of French Military teams;
- Scheduling and implementation of international military events (such as, in 1968 : April — International Modern Pentathlon championship; May — CISM Technical Symposium, then week-long visit by 50 Soviet Union Military athletes in the framework of Franco-Soviet Exchanges; July — International Championship for Reserve officers; and in september — CISM Shooting Championship).



Colonel Grandjean
Commander of the Fontainebleau
Interservice Sports School

- **Research and Development effort** carried out at the request of the E. M. A. and the Services :
- Formulation of training methods and procedures for general application or adapted to the requirements of each branch of service;
- Study, preparation, and dissemination of technical notices and regulations;
- Sports for all — Tests — Control;
- Medical aspects of sports.

* * *

An Interservice agency placed under the command of the Army chief of staff in charge of Sports, the Fontainebleau School is attached to the Interservice Sports and Physical Fitness Section. The latter assumes responsibility for meeting the School's operational requirements, providing proper control, establishing both its objectives and overall programs, and ensuring liaison with the Ministry of Youth and Sports.

The threefold mission of the School, as defined above, is reflected in its organizational structure. Its constituent elements (exception made for those inherent in any functional outfit) are listed below :

- **The Instruction Battalion** subdivided into 3 companies, is tasked to :
 - provide basic military training for specialized ground forces enlistees as well as for recruits assigned to the Joinville Battalion;
 - ensure training of officer and NCO specialists for all three branches of Service; State Police Personnel, and Masters of Arms, whose training spans over a period of 2 years.The facilities can accommodate 400 to 500 trainees concurrently (to include a few foreign participants).

— **The Joinville Battalion** is comprised of two Brigades and tasked with the individual and collective training of 350 athletes of national and international level, specializing in 22 different sports. Among the personnel involved, the ratio of career servicemen is steadily rising, as compared to that of recruits proposed by their respective Federations.

— **Instruction Leadership** is assumed by the « Research and Development » Section in conjunction with other Instruction Missions. It includes four Offices :

- 1 office of Research;
- 1 office of Means and Programs;
- 1 office of Course Coordination;
- 1 office of the Counseling Officer-General Instruction. English language courses have been organized for the benefit of the Joinville Battalion athletes.

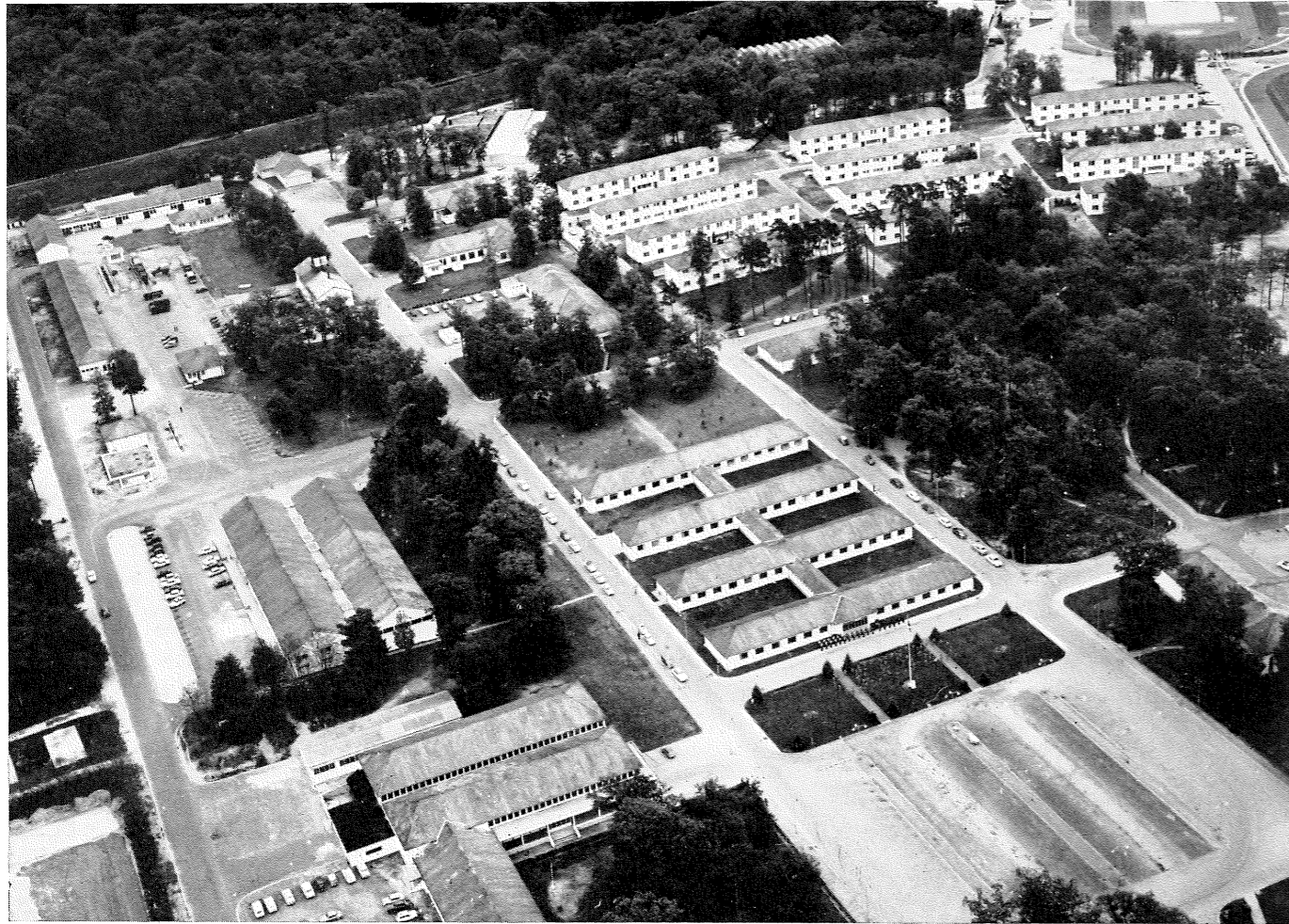
The activities of the Instruction Leadership Branch have so far been centered on the revision of the NCO Coach Programs, with the dual purpose of :

- standardizing the programs in the three branches of service;
- reviewing these programs in light of the new concept of « Sports Motivation ».

The Leadership body operates in close cooperation with the School's Health Department whose basic mission is complemented by all the sports facets of medical care :

- Sports-medical control of athletes and trainees;
- Preventive and curative sports-medical care;
- Dietetics — Statistics — Various research;
- Educational goals : Anatomy — Physiology.

* * *



The Interservice Sports School

— **The School's Cadre** is comprised of :

- officers and NCO's appointed by the 3 Services and the State Police;
- Physical Education Professors and Technical Counselors made available by the Ministry of National Education or contracted by the Ministry of the Armies;
- Civilian coaches (for each of the sports practiced at Joinville), such personnel being supplied by the Ministry of Youth and Sports.

The staff is completed by civilian administrative personnel and some forty maintenance men.

* * *

The stage for school activities is Camp Guynemer, a 50-hectar estate located in the Fontainebleau Forest.

The **School's infrastructure** provides for the full accommodation of 1 200 individuals. Facilities include :

- 1 « PC » Building;
- 2 buildings to house trainees, athletes, and other logistic support personnel, each building providing shelter for 100 to 110 men;
- 1 Officers Billets (capacity of 60);
- 2 kitchens manned and equipped to serve 600 to 800 rations, and corresponding messhalls;
- 1 very spacious dayroom;
- 3 classrooms;
- 1 movie theater sitting 400;
- 1 modern dispensary, possibly the best of its kind;
- 2 post exchanges;
- and one heating plant (central heating and hot water for the whole installation).

In essence, the facilities in existence at the time they were taken over by the school have adequately filled the needs, exception made for the dispensary, day-room, and kitchens, which were completely renovated.

The problem of **sports facilities** was a far more challenging one. The only existing facilities were an indoor swimming pool (25 m × 12 m) and a gymnasium. All other installations were the result of major transformation of some areas or outright additions.

The work undertaken in this context is nearing completion; several months hence, the school will feature the following facilities.

— **At the Guynemer Camp :**

- 1 Honor stadium, with a 400 m, 6 lane track;
- 1 Training stadium, with a 250 m track;
- 3 Rugby and soccer training fields, with 1 soccer wall.
- 1 indoor area for javelin, shot put, hammer, and discus throwing;
- 1 international 3-lane combat course;
- 8 basketball, volleyball, and handball courts;
- 3 tennis courts;
- 1 swimming pool;
- 2 indoor gymnasiums;
- 3 gymnastics halls;
- 2 musculation halls, and 1 sauna;
- 1 weightlifting hall;
- 3 judo halls;

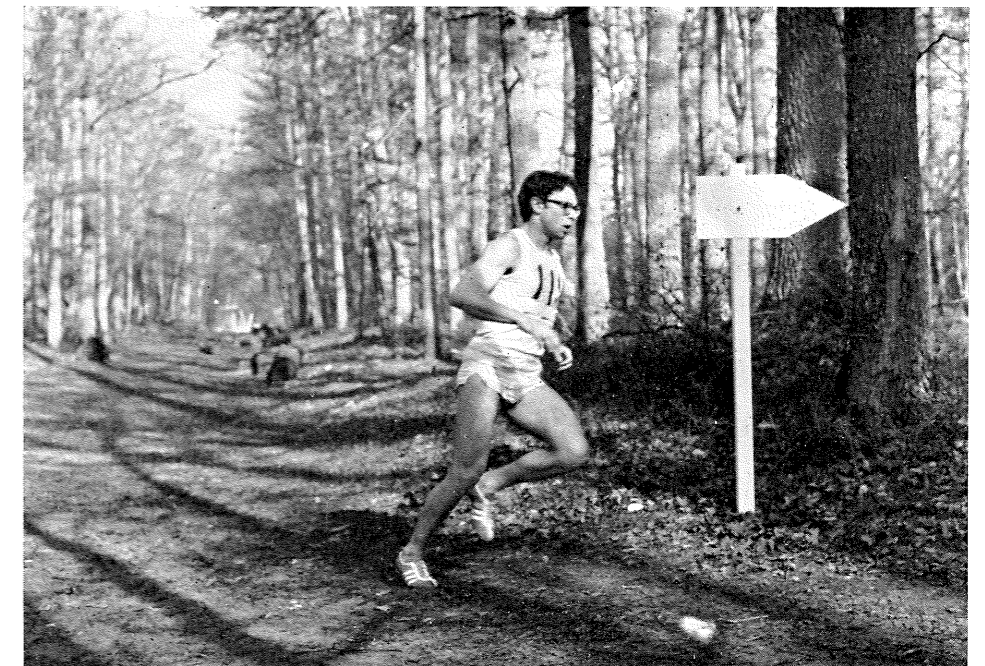
- 2 boxing halls;
- 2 wrestling halls;
- 3 fencing halls;
- 1 olympic shooting range (50 m and 25 m for rifles and revolvers);
- 1 « Ball Plast » shooting range;
- 1 National combat course;
- 1 Risk course.

— **In the immediate vicinity of the camp :**

- 1 indoor gymnasium;
- 1 indoor track and field stadium, with a 333 m track (accommodated within a 180 m × 30 m hangar);
- 1 300 m olympic shooting range optionally convertible into a 200 m range;
- 6 soccer and rugby fields;
- 1 naval facility on the banks of the Seine for rowing, canoeing or kayak sailing and motor-boating activities.

In addition to the impressive array of facilities permanently available to it, the school may also use the stadia and fields of neighboring clubs and municipalities. Paratroopers, for instance, are allowed to train at Ferté Gaucher and at Moret-Episy.

While the responsibility for instruction of the Joinville Battalion athletes is now vested in the School Commander, the ties with the National Sports Institute remain nevertheless very strong, with athletes specializing in given sports periodically training at INS facilities.



Cross in the Fontainebleau Forest, in the vicinity of Camp Guynemer

Towards a new sports method



The attendees practiced sports regularly. One recognizes Lt Colonel Gueguen, author of this article (standing in the center) and Lt Colonel Le Borgne (kneeling, first row, left)

At the beginning of the century, there were, in France, two outstanding authorities in the realm of Physical Education and Sports — namely Navy Lieutenant Georges Hebert and Baron Pierre de Coubertin. They advocated divergent methods and, therefore, a choice had to be made. Our support, at the time, went to G. Hebert, but we now believe that this was a mistake. In an effort to correct the latter, we are now in the process of reassessing the prevailing concept and will, as of 1968, reorient the methods in use along the lines envisaged by P. de Coubertin. As the saying goes, better late than never.

On 1 March 1968, the Army Chief of Staff issued a directive clearly spelling out the prime importance of sports and thus rescinding its status of leisure activity, with training focused on general conditioning and the more specialized combat drilling (obstacle course, hand to hand combat, bayonet combat, etc.). Inasmuch as this presentation is designed for an audience of sports specialists, it could well be ended here, for the most important has been said. May I, however, point out the reasons which prompted our move, as well as define the new doctrine and the means of its implementation within our Forces.

As noted above, since 1909 Military Physical Education was based on the « natural method » devised by George Hebert. In 1946, a short-lived effort was initiated with a view to enhancing it with a « corrective and maintenance » method.

The results, however, fell short of expectations. We must face the fact that our Military Physical Education, which stresses General Conditioning and Combat Training while overlooking Sports, was accepted without enthusiasm and fostered neither motivation nor interest on the part of the personnel.

This stems from the fact that methods lacking the sports aspect are restrictive and incomplete in the sense that they cater to the body alone. Sports, however, promote both physical and mental development.

It develops a taste for loyal struggle. Its action therefore is not confined to strengthening the muscles, heart, and lungs, but actually constitutes an essential part of Education.

It is a source of enthusiasm and zest for life. It also serves to cement the links between the cadre and the young soldiers, thus consolidating the human relationship, which when no longer fostered by the dangers of war, tends to slacken in peacetime.

It must be understood that « Sports Method » is not to be interpreted as merely running with or after a ball, attacking sword in hand, or exercising on a judo mat. Sports Training involves conditioning in terms of natural methods, circuit training, muscular development, study of tactics, psychological preparedness, etc.

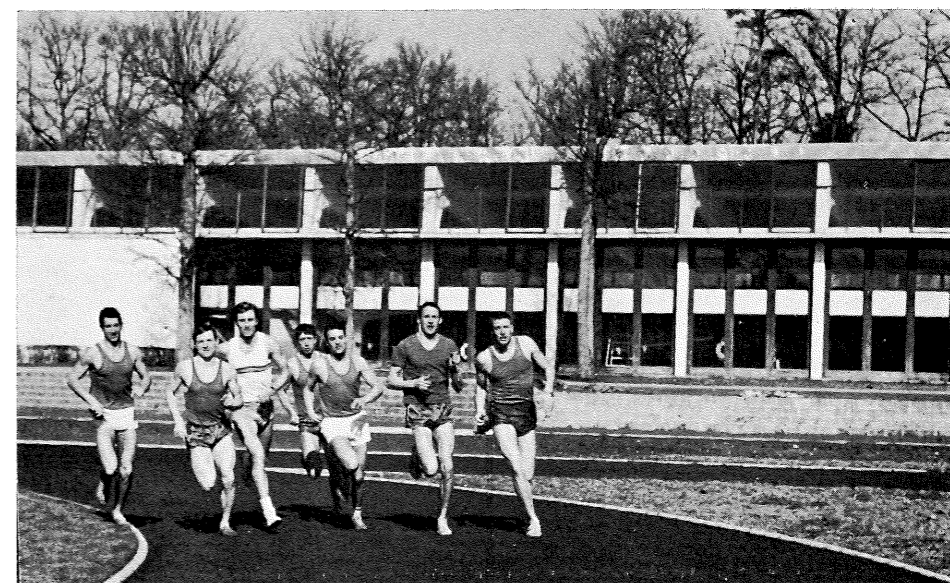
And so, the concepts elaborated by Pierre de Coubertin at the end of the last century, brought back into focus by Maurice Baquet in his 1947 publication « Sports Education », and more recently aptly codified in Major Mollet's « Total Training », will at long last receive the consecration they deserve.

A sports doctrine geared to military personnel must clearly demonstrate that sports are a requisite for sound combat training. The goals, role and place of sports training must therefore be specified and well understood by the Cadre.

The practice of sports within the Armed Forces is designed to provide all personnel with the degree of fitness ensuring optimum benefit from professional training, its maintenance, and eventual improvement. It represents a prerequisite on which much remains to be built, but without which results will fall short of the target. What we used to call « combat training » must not be considered as a substitute for sports education. The latter is a distinct component of professional military training based on sports and sports alone.

In other words such drills as the combat course, risk course, hand-to-hand combat, etc., while remaining a must in military training do not fall under the heading of sports education and should be carried out separately without infringing on the time reserved for the Sports Program.

Modern sports training is no longer a mere body builder; it is a multi-faceted and rational program, in which the technical, psychological, and medical elements are given precedence in function of the various





In Fontainebleau, the background is on a par with the outstanding quality of the facilities. A random snapshot : French shotput champion Colnard training for the Olympic Games

categories of personnel, their occupation, characteristics, and age bracket. Dietetics are taken into consideration and all factors must be closely controlled, which requires a working relationship between the physician, the coach, and the leader.

Having thus become the basic element of the personnel's physical conditioning, sports training has its rightful place in the overall educational program. As an integral part thereof, its scope and requirements in terms of time must be carefully and judiciously calculated. Half an hour daily and half a day each week constitute a wholly adequate schedule, but one, however, which must be faithfully adhered to.

Sports are unquestionably a Service activity inasmuch as they are a requisite to its proper functioning.

In order to obtain the results one is entitled to expect therefrom, sports training must be conducted rationally and in a favorable environment. It must reach all the personnel.

This implies :

- Training as Sports Instructors of the officer and NCO cadre which will graduate from all our military schools, as well as refresher courses for the older personnel. It stands to reason that if our officers are not sports-minded, whatever we may do — from the creation of a sports infrastructure to the training of experts — will bring but ungratifying results. On the other hand, let but one sports-minded colonel take over a neglected regiment and changes suddenly occur while he finds adept solutions to so-called insurmountable problems, to include that of infrastructure. It is therefore necessary to inject all our officers and NCOs with the sports virus at the time of their training in school so that they remain « contagious » throughout their career.

- The training of specialists, and military instructors in the field of Physical Education and Sports. This is, among others, the mission of the Fontainebleau Interservice Sports School which was inaugurated on 1 september 1967. Benefitting from a well rounded infrastructure, this school measures up to the requirements of a modern military system. It will ensure doctrinal and instructional cohesion and provide the

means to train a large number of qualified sports specialists.

- Scheduling numerous competitive events within the basic units and keeping in mind that the new doctrine rests on the concept of « sports motivation ».

Each subject must choose two sports, respectively requiring individual and collective performance. His input is initially that of mere participation in anonymous teams; experience has shown that he quickly becomes interested, particularly if at all gifted. With a view to improving his performance, he is then subjected to training sessions and reaps all the benefits of total training. Thus the system applied to proven athletes is placed within the reach of the layman.

The fact that such procedures feature no immediate military application is unimportant, the primary goal being to promote physical and mental fitness of the personnel.

A closer relationship with civilian sports, a much needed factor were it only for the sake of the national effort for the benefit of youth, shows evidence of progress. The possibility of interchangeably using each other's infrastructure and facilities, to equate civilian and military diplomas, etc., will soon become a reality and some directives have already been issued to this effect.

Lastly, the already important military participation in civilian events will become more prevalent yet.

* * *

No sooner outlined within the Armed Forces, the new sports method is already rich in supporters and followers. Interest is evidenced at all levels of the three services.

Later on, new methods and doctrines will undoubtedly emerge, better suited to their times and we welcome the prospect for, to quote P. de Coubertin himself :

« Neither the law nor customs must become intangible, the premise being that man was not created for them, but rather they for him ».

Lt. Col. GUEGUEN

*Director of Instruction
at the Fontainebleau Interservice Sports School*



Physical Conditioning of the Italian Armed Forces Personnel

by colonel R. CAROLI

Concept

The physical fitness program conceived by the Italian Staff for career and drafted personnel is based on the following facts and ideas :

1. The short duration of military service — in the context of increasingly complex training requirements — and the availability of new military means demand a most discriminating selection of military geared psycho-physical objectives.

2. Such objectives must be defined in light of operational requirements stemming from day or night time combat situations.

The soldier's psycho-physical training must be conceived so as to cover potential action within a tactical zone radius of 300 to 400 m in the daytime versus 200 m or less at night.

Another factor to be considered is the eventuality of isolation, in which case the soldier may be faced one or all of the following challenges : quickly cover a long distance, clear natural and man-made obstacles without undue prejudice to his mental alertness and muscular resiliency, and react with or without weapons, to sudden or unforeseen threats.

3. A line must therefore be drawn between the military aspect of physical training and the conventional approach to physical fitness and sport, which nevertheless will serve to enhance the military objective. In short, while physical fitness may be achieved through exercising and sports, military training must remain flexible enough to follow the changes in operational concepts.

4. The unpredictable situations arising from wartime activities necessitate that the chiefs of staff follow and encourage all scientific research in the realm of sports. This interest is justified by the fact that

implementation of any new concept in that area will serve to raise the mean physical effectiveness level of all military personnel. It follows that, to this end, the first step is for the military authorities to learn the training and behavior of high caliber athletes with a view to devising a modified program for the benefit of the layman.

5. Moreover, notwithstanding the scientific implications involved, it is the staff's duty to assist in the formation of champions in such predominantly military disciplines as Modern Pentathlon, shooting and long distance skiing.

6. A military physical fitness program must be both educational and recreational; hence the necessity for conceiving it on the basis of sports competition.

7. The characteristics of modern warfare emphasize the need for all military personnel, regardless of rank, to maintain an adequate degree of physical fitness. However, the military leader, for one, is almost inevitably subjected to periods of sedentary life. This brings up an important question : how to preserve physical fitness of personnel over 30 ?

8. The multifaced problems involved in the establishment of plans and programs, coupled with the need for program supervision and control, require the services of a much greater number of specialized personnel than in times past :

- physical fitness instructors;
- specialists in military fitness training;
- sports officers (leadership and programming);
- physiologists and medical specialists.

9. For the sake of productivity and effectiveness (relationship with trainees), all cadre officers and NCO's should receive a basis training in the field of physical fitness instruction.

10. Military physical and sports activities fall into distinct categories, namely :

- military physical instruction of the masses;
- recreational sports, as mass activity;
- sports at the championship level;
- training of leaders and instructors;
- scientific research.

Goals and objectives of the various ramifications

● Military fitness Instruction

In this area the psycho-physical objective is to promote combat readiness in a battlefield environment without significant detriment to mental alertness and physical capabilities.

Physical readiness is a tactical objective.

Training to this end is conceived to condition the soldier to the following requirements :

- walk 15 to 20 km at a rate of 7 of 7 to 8 km per hour;
- run over variable terrain covering a distance of 2 to 3 km;
- clear natural obstacles such as walls, ditches, hedges, and ruts, etc... scattered over a distance of 500 to 600 m;
- remain motionless, lying on the ground, for at least one hour, without impairment to either mental or physical reflexes;
- react instinctively and with accuracy, in day or night hours, whatever the weapon at hand;
- whether by night or day, unarmed, attack and neutralize the adversary while simultaneously repulsing any armed or unarmed assault;
- cover short distances over variable terrain at top speed (to be repeated several times);
- haul heavy objects and full equipment over a distance of 200 to 300 m (to be performed individually and in groups);

Concept

Goals and Objectives

Realisation

- display adequate precision in throwing grenades and other explosives;
- clear waterways, ditches, and other obstructions.

● Recreational Sports

They represent an indirect asset to the military objective. The following activities are particularly recommended :

- combat sports;
- shooting (sports weapons);
- team games.

● Sports at the championship level

Objectives : Contribute to the national effort, stimulate and cooperate.

● Training of leaders and sports specialists

It is of utmost importance that the Armed Forces be provided with specialized personnel to carry out the following missions :

- maintain the physical fitness program on a par with that of more advanced nations;
- contribute to the expansion of leisure sports among the population;
- select and train high caliber athletes;
- establish programs and control physical activities on a scientific rather than empiric basis.

● Scientific Research

Provide the leaders, sports specialists, and scientific agencies with statistical and factual data gleaned in military circles.

And more specifically :

- define the partial goals of each category of military fitness activities;
- establish psycho-physical performance criteria to met by individuals or groups;

— isolate and define the most pedagogically beneficial elements to be drawn from competition level training.

Implementation

● Military Physical Fitness Program

The Italian Armed Forces Physical Fitness program includes :

1. Increase of physical effectiveness by means of generalized activities during the initial phase of military service;
2. Military Pentathlon - Ground Forces;
3. Naval Pentathlon - Navy;
4. Pentathlon - Air Forces;
5. Track-field : racing, jumping, shot put, walking;
6. Self defense;
7. Instinctive shooting;
8. Exercises of application synthesis;
9. Orientation as adapted to the services requirements.

● Recreational sports program

It features participation by all in Italy's most popular collective games, i.e. :

- Soccer;
- Basketball;
- Volleyball;
- Waterpolo;

It furthermore provides for officers and NCOs to practice :

- Fencing (highly recommended);
- Judo;
- Boxing;
- Rifle and Pistol Shooting.

● High level Competition

- The program is that established by national sports federations;
- Military personnel participation takes place under the aegis

of either :

- The interservice sports centers;
- the Ground Forces Center;

or of the clubs they originally belonged to, in the case of :

- Soccer events;
- Cycling events;
- Waterpolo events;
- Basketball events;
- in the sports center, the technical aspect of training is generally entrusted to military coaches;
- in the special sports units, to which are assigned recruits representing the « national elite » and

who compete under the sponsorship of their own club; coaching is the responsibility of federal instructors.

This applies to the following sports :

- Soccer;
- Cycling;
- Basketball.

● Training of sports leaders and masters.

Such training is ensured by the Central Sports School of The Italian National Olympic Committee (CONI) which gives the students a legal certificate upon completion of a three-year course. High ranking officers are appointed by the General Staff.

● Cadre of Military Coaches

1. This type personnel is trained at the Orvieto Military School of Physical Education.

The curriculum is similar to that established for Sports Masters.

Graduates are qualified to :

- elaborate activities at the Battalion level;
- organize and supervise competitive events;
- coach the Shooting and Pentathlon teams of large Units;
- program and organize recreational sports activities at the garrison and unit levels;
- ensure maintenance and improvement of sports equipment and facilities;
- participate in surveys of sports installations and draft projects for improvement;
- control training procedures;
- assume responsibility for training of the cadre (over 30 years of age);
- maintain contact with local CONI agencies and garrison schools;
- Enhance sports and social relationships between the military agencies and local civilian circles;
- organize sports activities for student, youths, and career personnel dependents.

2. The Orvieto School schedules 2 to 6 months training courses, for qualified coaches in Pentathlon, Judo, Self-Defense, Shooting, Fencing, Boxing and military Swimming.

3. The same school features 2-month courses for physical fitness instructors.

4. The civilian federations centers graduate coaches in the various sports after training courses of 1 to 12 months.

● Scientific research

- Programs of a military nature are established at headquarters level by working parties specializing in the medical aspects of sports;
- Programs of a sports nature are established at Headquarters level in cooperation with representatives of the relevant federations.

SPORTING ORGANIZATION OF ITALIAN ARMED FORCES

1. Chief of Staff.

2. Armed Forces Headquarters (Army, Navy, Aeronautics) General Commands of Special Forces.

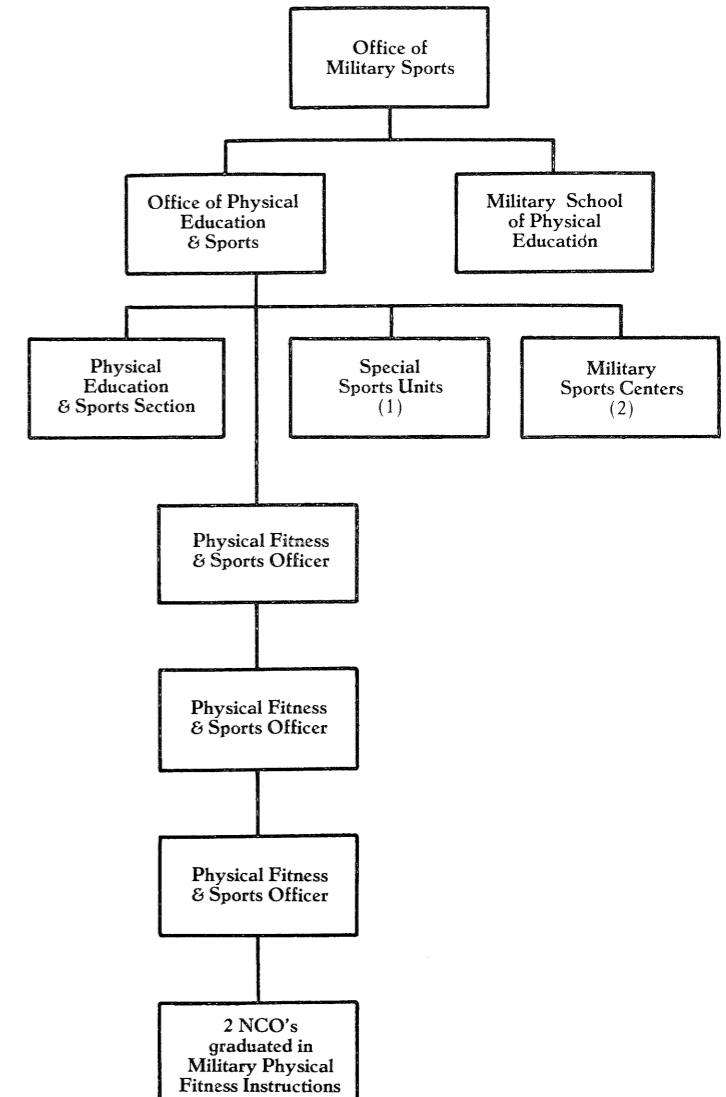
3. Military Regions, Army, Corps, Territorial Jurisdictions of Special Forces.

4. Divisions, Brigades.

5. Regiments, Corps, Schools.

6. Battalions, and similar units.

7. Companies, and similar units.



(1) Draftees participating in federal sports activities under the aegis of their civilian clubs (soccer, cycling, swimming, basketball, hockey, weightlifting).

(2) Military personnel, whether or not on active duty, participating in federal sports activities as members of Military Center Teams (rugby, track & field, volleyball, tennis, rowing, judo, horseback riding, fencing, modern pentathlon, shooting, skiing, bobsleighbing, boxing, wrestling).



Performance of Circuit Training as adapted to the requirements of hand-to-hand-combat.

1 Warm-up; 2-3-4 falls; 5 arms and pectoral muscles; 6 entries; 7-8 static and dynamic-static isometrics.

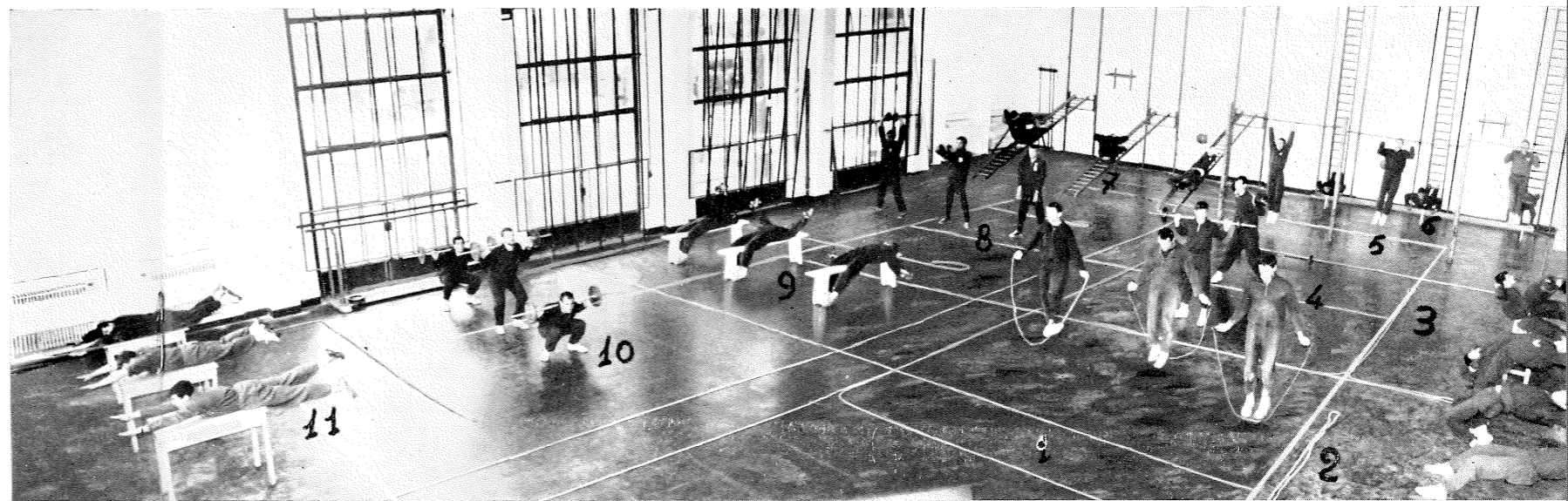


1 Warm-up; 2-3-4 falls; 5 arms and pectoral muscles; 6 entries; 7-8 static and dynamic-static isometrics.



Performance of Circuit Training in open air. This series is geared to the requirements of compulsory sports.

1 legs and dorsals; 2 arms, dorsals, lumbar; 3 arms and dorsals; 4 abdominals and dorsals; 5 mobility of the joints; 6 arms, dorsals; 7 abdominals, dorsals and legs; 8 mobility of the joints; 9 thighs, legs, foot.



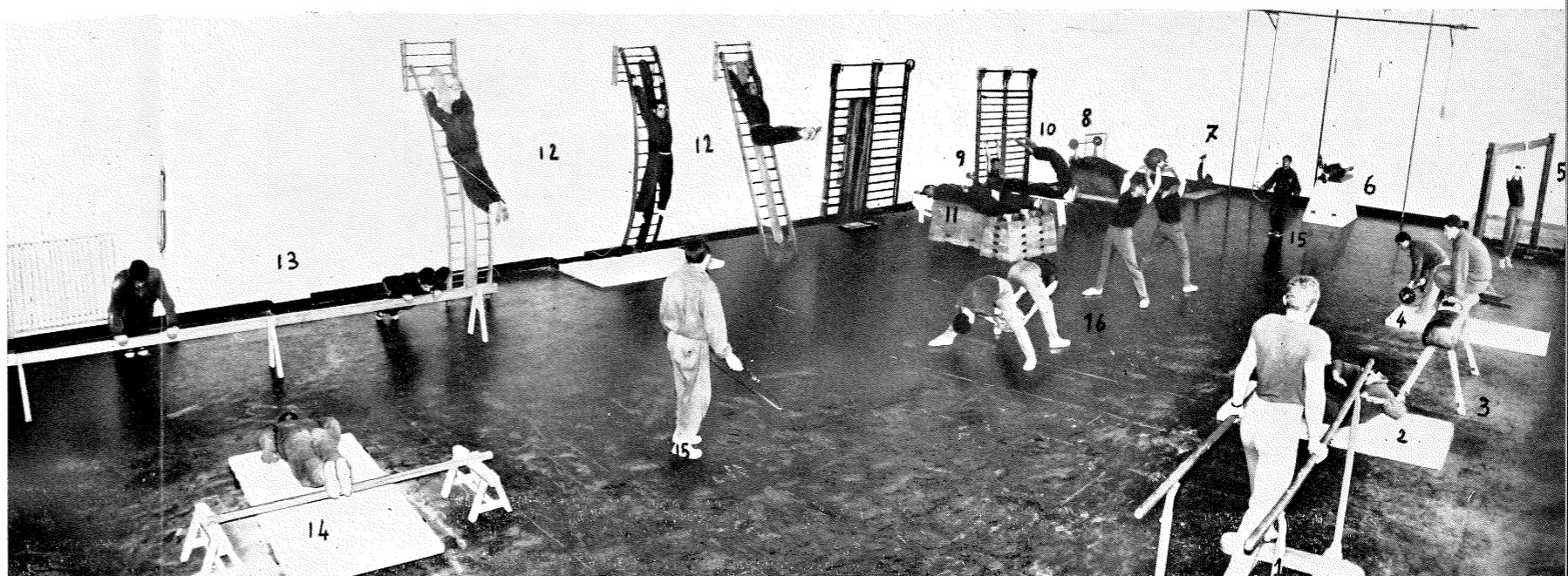
« Circuit Training » performance as adapted to the requirements of Military Pentathlon.

1 Pulse and ankles; 2 dorsal muscles; 3 abdominal muscles; 4 lumbar muscles; 5-6 arms; 7 abdominal muscles; 8-9 arms; 10 legs; 11 dorsal muscles action in swimming.

TRAINING CIRCUITS

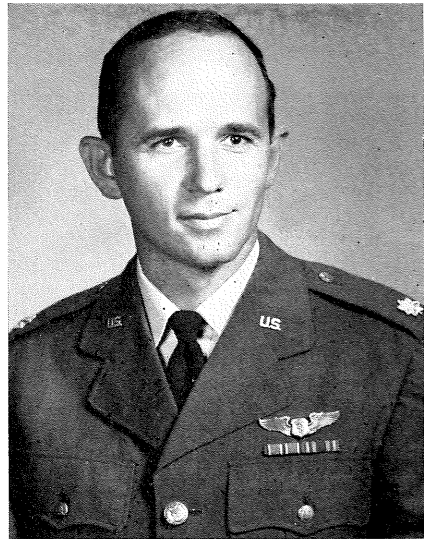
Circuit Training performance as adapted to the requirements of compulsory sports, such as soccer, basketball, and volleyball.

1 arms and dorsal muscles; 2 abdominal muscles; 3) legs and abdominals; 4 arms and abdominals; 5 arms and dorsals; 6 legs and abdominals; 7 mobility of the joints; 8 arms and dorsals; 9 mobility of the joints; 11 dorsal and lumbar muscles; 12 dorsals and abdominals; 13 arms; 14 arms, dorsals and lumbar; 15-16 mobility of the joints.



The development of a physical conditioning program

by Major K. H. COOPER, USAF, M. C.



The author, Major Kenneth H. Cooper, USAF, MC, is director of the Airspace Medical Laboratory, Wilford Hall, USAF Hospital, Laskland AFB.

His current endeavor in the field of research includes a study of the role played by physical fitness in the performance of Air Force crews in operational and outer space flights.

Physical fitness may be defined in many ways because physical exercise can be used for relaxation, increasing the strength and size of muscles, or improving the condition of the cardiopulmonary system. To some people, physical fitness merely implies « feeling good », or, perhaps, freedom from disease. To others, it is synonymous with muscular strength. However, the more professionally accepted definition implies adequate cardiopulmonary reserves. This latter type of fitness is of major importance to personnel in the United States Air Force, since cardiovascular-pulmonary problems frequently

result in the grounding of flying personnel, separation from the service, or premature retirement. Therefore, in developing a new physical conditioning program, the primary objective was to improve the function of the cardiovascular-pulmonary system.

Many types of physical conditioning programs will allegedly improve the cardiovascular-pulmonary system, including the strict muscle conditioning programs. However, Roskamm questioned the effectiveness of this type of conditioning when he demonstrated that in comparison with the untrained



The method used for determining the « oxygen cost » for cycling measured distance at variable speeds.

normal persons of the same age, well-trained weight-lifters and gymnasts had no advantage in their cardiovascular reserve. From his studies, he concluded that weight-lifting and gymnastic training should not be used in the prevention or rehabilitation of cardiovascular diseases since this type of training has no significant beneficial influence on the cardiovascular system.

In contrast, endurance conditioning programs readily produce significant changes in both the cardiovascular and pulmonary systems. When Roskamm (1) expanded his study to include boxers, cyclists, wrestlers, pentathletes, and skiers, he noted that all showed a significant improvement in their cardiovascular system when compared with untrained normal controls. Similar results on endurance trained athletes have been reported from exercise physiology laboratories throughout the world, including studies performed at the Aerospace Medical Laboratory (Clinical) at Wilford Hall USAF Hospital.

Endurance training of the type necessary to develop competitive athletes is not the objective of a standard physical conditioning program. However, from a medical viewpoint, it is highly desirable to have adequate cardiovascular reserves. Adequate reserves make it possible to tolerate unexpected emergencies requiring unusual physical stamina without danger to the cardiovascular system (2). To obtain adequate cardiopulmonary reserves, an exercise program that includes some type of regular, vigorous effort is required. Unless the training stresses the cardiopulmonary system and is of sufficient duration, minimal benefits will be observed. Karvonen (3) found that in training experiments on the treadmill, a run of half an hour daily four to five times a week for four weeks did not improve circulatory performances if the heart rate during the run was 135 per minute or lower. However, if the heart rate exceeded 150 per minute during the run, a significant increase in performance was seen. Hollmann and Venrath (4) obtained similar results in subjects exercising daily on a bicycle ergometer. Other investigators have shown that 8 to 10 minutes of daily sustained exercise performed for several weeks will produce a significant change in cardiopulmonary function. Interrupted exercises, such as basketball, handball and squash, have required considerably longer periods to achieve the same training effect.

As these prerequisites for optimum cardiovascular conditioning became apparent, it was evident that

before a training program should be developed, a reliable method of comparing various types and patterns of exercise had to be identified. In searching for a method to equate different exercises, the oxygen cost proved to be the ideal « common denominator ». It could be obtained readily by collecting the expired air during a standard performance, i.e., walking, running or cycling a known distance in a specified time. It has been necessary to study a cross-section of highly-conditioned athletes and deconditioned subjects because oxygen cost changes with conditioning. In this manner, the average energy expenditure was determined, and a simple point system was established. The points represent, in multiples of 7, the average oxygen cost in ml/km/min. A sample of the point values assigned to walking and running is given in Table 1.

Table 1: Oxygen cost for walking and running

Mile time (minutes)	Average oxygen cost (ml/kg/min.)	Point value
Over 20'	Less than 7	0
14'30 - 19'59	14 - 7	1
12'00 - 14'29	25 - 14	2
10'00 - 11'59	31 - 25	3
8'00 - 9'59	35 - 31	4
6'30 - 7'59	42 - 35	5
Under 6'30	> 42	6

Now that a method was available to equate various exercises, a fitness goal had to be established. Studies were initiated to evaluate well-conditioned men, and in other studies deconditioned subjects were placed in a variety of progressive exercise programs. Adequate cardiopulmonary fitness was believed to be achieved when a subject's maximal oxygen consumption reached a minimum of 42 ml/kg/min (5-6). From the results of these studies, it was apparent that exercises totaling 30 points per week would produce the desired level of cardiopulmonary fitness if achieved progressively over a 10-16 week period. An example of such a program is presented in Table 2.

Table 2: A sample 30 point exercise program

Day	Exercise	Distance	Duration	Points	Cumulative points
Monday	Run	1,5 miles	11 - 30 min.	7 1/2	7 1/2
Tuesday	Basketball	—	35 - 00 min.	5	12 1/2
Wednesday	Swimming	600 yards	16 - 00 min.	5	17 1/2
Thursday	Cycle	5,0 miles	16 - 00 min.	5	22 1/2
Friday	Walk	2,5 miles	35 - 00 min.	5	27 1/2
Saturday	Golf	18 holes	18 holes	3	30 1/2

Table 3: The 12 minute walk/run fitness test

12 minute performance Miles	Maximal oxygen consumption (ml/kg/min.)	Fitness category
Less than 1,0	Less than 25,0	Very poor
1,0 - 1,24	25,1 - 33,0	Poor
1,25 - 1,49	33,1 - 42,0	Fair
1,50 - 1,74	42,1 - 51,0	Good
1,75 or more	Over 51,0	Excellent

The final step was to develop a test of cardiovascular fitness that could be administered easily in the field yet would correlate well with the more accurate and sophisticated laboratory techniques for measuring maximal oxygen consumption. By using the model established by Blake, it was shown that a runwalk test of 12 minutes requiring near maximal performance correlated well with laboratory tests. A correlation coefficient of 0.9 was determined between treadmill-measured maximal oxygen consumptions and the 12 minute field test of fitness (7). This high correlation made it possible to estimate accurately the maximal oxygen consumption by field testing and to classify large groups into various physical fitness categories rapidly. The 12-minute walk-run category classification is presented in Table 3, and the test results for a large group of Air Force personnel are presented in Table 4.

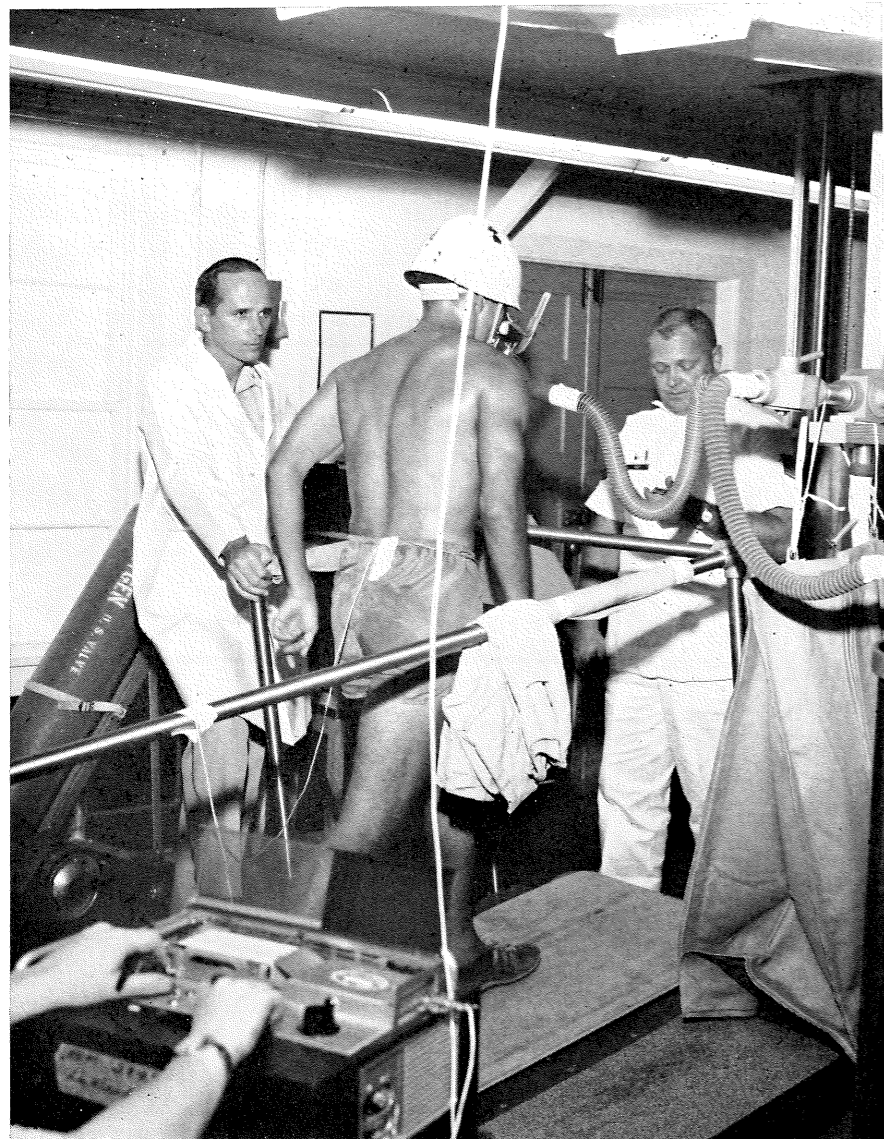
Table 4: Performance of 1 706 Air Force officers and airmen, age 17-40 years (prior to training)

12-minute performance (miles)	Percentage	Category
Less than 1,0	10,0	Very poor
1,0 - 1,24	20,2	Poor
1,25 - 1,49	49,8	Fair
1,50 - 1,74	18,1	Good
1,75 or more	1,9	Excellent

This research in exercise physiology has been extended to apply to preventive and rehabilitative medicine. Currently many patients with various types of cardiopulmonary problems are training in supervised progressive exercise programs (8-11). The initial results of these studies have been very promising and indicate that this is a legitimate type of therapy that previously has been overlooked.

Summary

A program that will improve cardiopulmonary reserves was developed. It is scientifically sound and its effects have been extensively documented. If properly accepted and practiced, multiple benefits can be expected, including a healthier and more productive work force.



The method used for determining the « oxygen cost » for walking and running.

MUSCULAR DEVELOPMENT AND PHYSICAL TRAINING IN THE ARMED FORCES

A large part of the athlete's training program is devoted to muscular development. In the light of the available — if incomplete — data on this subject, it seemed worthwhile to define the basic characteristics of this form of training and use them as a guideline in the establishment of a training program hinging on muscular development and tailored to the majority of recruits.

On the basis of the information at hand, we propose to elaborate on the following points :

- effects and results to be expected from muscular development;
- recommended methods in a military environment.

* * *

The term « musculation » is currently defined as a systematic development by a given demand placed on the muscles. This requirement for effort is induced by the repetition of appropriate exercises and training with additional charges, both concepts being geared to enhance the athlete's most important physical qualities.

Our colleague Andrivet, of the INS, quipped to this effect : « Time was when one practiced sports in order to achieve muscular development, now it is the other way around ».

If muscular development has been in the limelight during the past few years, it can by no means be called a recent discovery. To bear this out, let us revert to the past : In the 6th Century B. C., Milon of Croton, a man endowed with above average strength, used to train for combat by lifting daily a young bull, which naturally grew heavier as it aged. Rabelais' famed Gargantua was handling « impressively heavy objects which he called weights ». And, closer to our times, Amoros, inspired by Jahn in Prussia, may be considered the real pioneer of musculation : He created a Sports School for Officers at Joinville, where instruction was based on a gymnastic method drawing no line between musculation and use of sports gear.

If the term « musculation » had not yet been coined at the time, as far back as 1910, the training of marksmen in France included « educational movements » with charge, the charge in this case being the rifle itself. These « movements » were part of the musculation program of those days.

The effects of musculation

The development of physical capabilities obviously results in improved sports performance. We all know that the physical capabilities to be developed are : power and stamina, which is the ability to perform a given task within a predetermined period of time; resistance, which is the faculty of sustaining an effort requiring a large amount of oxygen intake; endurance, which provides for a slight effort over a long period of time and which consists in striking a balance between the intake and output of oxygen; speed; and, lastly, muscular flexibility.

Certain qualities readily respond to training, as, for instance, power and resistance. Others, however, are harder to improve on, as is the case for speed (and relaxation).

Pichon, a specialist in the matter since 1928 and currently instructor at the Paris INS, advocates that power development be promoted through use of very heavy charges (80 to 90 % of the maximum) with slow motions, low rate of repetition (1 to 3) and long breaks (3 to 5 minutes). Stamina is heightened with charges varying between 70 and 80 % of the maximum, a fast tempo, repetitions ranging from 4 to 6, and 2 to 3-minute breaks. A similar approach for speed, although charges fall off to 60-70 % of the maximums and repetitions rise to 6-8; for resistance (a must for the medium distance runner), charges fluctuate between 40 and 60 % of the maximum, the tempo is lively, repetitions go from 8 to 20, and breaks are not to exceed one minute; endurance calls for light charges (20 to 30 %) slow execution, emphasis on repetitions (20 to 30), and very short breaks.

The beneficial impact of musculation on physical capabilities is explained by the fact that it is conducive to changes at the muscular level.

Muscular training results in an overall modification of the muscle structure; it alters both the muscle's shape and its volume. Certain authorities claim that the number of specialized fibers increases in function of the effort produced, which is known as a process of neof ormation; others contend that the phenomenon is confined to the development and specialization of existing fibers (histologists, for instance, have been unable to uncover any sign of cellular division).

At the 1964 International Colloquy in Vichy, Doctor Dumas stated « depending on the type and distribution of effort, there occurs a disparity between the development undergone by slow contracting and rapidly contracting fibers. The shape and importance of the muscles are believed to alter in function of changes in the clinical and histological constitution of the muscular fiber. These changes are in turn governed by the type of exercise performed, the addition of charges leading to an increase in sarcoplasm ».

Thus, while a change in contraction tempo is primarily traceable to various enzymatic reactions triggered by the type of effort produced, the excessive augmentation of sarcoplasm entailed by intensive effort serves to decrease this quantity. During the process of contraction and relaxation, the sarcoplasm infiltrates through the maze of smaller fibres and, flowing alternately from the center to the extremities, provokes a breaking action on the muscular contraction.

This phenomenon of increased visco-elasticity in turn brings about a decrease in speed.

In a publication entitled « Modern Training », Louis Fauconnier argues that the body adapts to various demands :

- an increase in power translates itself by an overall expansion of the muscle (the power potential per square centimeter remaining unchanged);
 - greater endurance is a by-product of a general improvement in the blood circulation, a slower heartbeat both in action and at rest, and a better oxygen supply.
- A combination of the above provokes increased performance in the « steady state ».
- This process of body adaptation is characterized by a significant increase in cardiac capacity (systolic output rising from 120 to 200-230 cm³) which may bring it up to a ratio of 35 L/minute in the course of average effort in training (NOCKER);
- Improved resistance implies a higher tolerance to the oxygen debt, which is achieved through an increase in the readily available reserve of energy.

The proper selection of exercises and an apt programming of execution will therefore be determinant in achieving coordination between the motive system and the vegetative functions.

Musculature and muscular chains

The research carried out by Benassy analyzed the radicular distribution and nervous motive impetus of the limbs. In so doing, he stressed the important function of muscular chains which, in Dumas' opinion, warrants the classification of muscular development into :

- **Phase I:** period of development of the muscular mass and improvement in muscle quality.
- **Phase II:** Chain action of the muscular structure.

Certain muscles (deltoid — frontal tibial) appear to be monoradicular; others (as for instance the pectoral) are pluriradicular, but, in that case, one root predominates : « a same root innervates only synergic muscles » (Paul Bert). Although the frontal tibial acts as dorsal flexor of the foot and the rear tibial as

extensor and dependent on L4, they are in fact synergic in the foot adduction.

Dumas, for instance, demonstrates that six muscles are dependent on the C5 root — i.e. deltoid, upper spinal, biceps, frontal brachial, long and short supinator. They constitute a long chain of muscles spanning from the shoulder blade — collar bone to the radial styloid. Their respective actions are : outward rotation of the shoulder, arm adduction, forearm flexion, supination. The combination of such distinct moves results in a global action, the concrete version of which may be a handball throw.

Place of isometric musculature in physical training

Most musculature methods rest on motion (dynamic isotonic contractions). However, isometric musculature (contractions without movement of the osseous levers) may find its place in training and the method be considered as a useful complement to dynamic musculature; it allows an economy of time and equipment. Some specialists believe that it should represent 10 to 15 % of the musculature effort. This type of effort consists in exerting a more or less strong tension on an immovable resistance over a given period of time.

Huttinger and Muller (Germany) contend that optimum results are obtained by a single daily contraction of 6 seconds, at $\frac{2}{3}$ of maximal power. According to Battista, six to eight exercises should suffice to put the main muscular groups into play and the same exercise must be performed in three different positions from three different angles varying according to the specific body area under consideration.

Observing the results of isometric musculature on a soccer team, Frank noted that, in addition to the benefit of muscular development per se, the players became immune to muscular accidents.

The school features a most functional judo hall



Medico-physiological control and musculature

Musculature having become an integral part of the « Joinville Battalion » training programs, regular medico-physiological control brought to light, as far back as 1963, the overall beneficial effect of musculature (Biometry, tests of cardiac capacity for effort — Flack-Martinet) and, more specifically, two types of phenomena :

- changes in neuro-muscular excitability;
- changes in the cardiac condition as reflected by cardiograms.

I. Neuro-muscular Excitability

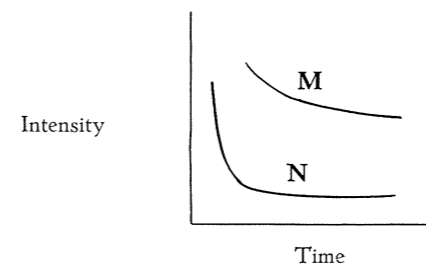
The first observations were made on a Basketball team in their twenties, of above average height, and who had been playing Basketball for several years without any definite musculature training.

Subjected to a musculature program geared to power development, a monthly check-up of the players revealed a significant narrowing of the curve of muscular and nervous excitability. There was even, in certain cases, a full inversion of these curves. It is to be recalled, in this context, that these curves are drawn by means of an electronic rheotome : one muscle and one nerve (in this instance the frontal tibial muscle and the external popliteal sciatic nerve) are excited by a current of the order of 1/1000 amperes and responses to the stimulation are recorded in thousandths of seconds; as a rule in periods of physical fitness, the muscle is hypo-excitabile and the nerve hyperexcitable.

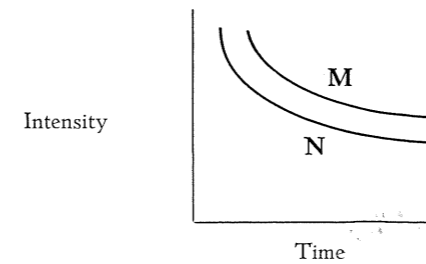
It was only at the end of the third month that the curves showed signs of stabilization.

This indicated that a form of fatigue particular to musculature had taken place. During the same period, the coach noted that his athletes displayed poor coordination and obvious awkwardness.

On the fourth month, everything was back to normal and the athletes showed an average ponderal pick up of 2 kgs.



Typical curve before and after 3 months of musculature.



Typical curve on the 1st and 2nd month of musculature.

Thus, these national caliber athletes did in the end derive a benefit from musculature — that of increased muscular power at the end of three months. In the interim period, however, their performance was definitely affected. If tests on other type sportsmen revealed lesser reactions to musculature, some signs of disturbance were nevertheless present.

II. Musculature and Cardiac Condition

A special technique — balisto-cardiography — provides data on the subjects' cardiac condition; this is done by means of an accelerometer, the subject being stretched on a floating table held aloft by pressurized air. It thus becomes possible to record body motions prompted by the ballistic forces (backup and impact) generated by cardiac contraction. A calculation based on the body volume and the rate of acceleration gives a result in terms of force, which is in turn translated into the evaluation of the subject's cardiac condition. In this context, it was noted that physically fit subjects produce high figures, while cardiovascular deficiency is evidenced by correspondingly lower digits.

Further research carried out in cooperation with Dr. Chignon, head of the National Sports Institute Research Department, revealed that musculature improved the cardiac condition and that the general condition as related to ballistic force showed definite signs of improvement as the subject underwent regular and supervised musculature training.

Dangers of Unsupervised Musculature

Musculature by means of heavy charges may, in the absence of qualified leadership and medical surveillance, lead to severe disturbances :

- development of agonistic muscles without corresponding gain by antagonistic muscles, which not only disrupts muscular harmony, but may well provoke disequilibrium;
- muscle development without parallel strengthening of the tendons which might for instance explain the higher incidence of tendinitis and teno-synovitis or even ruptures among athletes;
- overexertion while training with charges may entail changes at the level of the tendon's periosteal insertions : appearance of calcification (at the olecranium level for throwers, and that of adductors for soccer players, etc.);
- work with charges may, in the case of young individuals, cause a deformation of the fusion cartilages, and abnormal development at the level of ossification points. Thus, a series of X-Rays revealed that the Joinville weightlifters were afflicted with noticeable malformations of the spine (of the weightlifters in question, aged 20, and having practiced their sport over a period of 6 or 7 years, 7 out of 10 were afflicted);
- improper performance of certain exercises (for instance squats) may provoke lumbar afflictions, and lesions in the intervertebral discs. Heavy charges may accentuate the physiological vertebral curvatures (squatting places the lumbar column in cyphose, weightlifting in an erect position accentuates lordosis);
- experiments carried out by Govaertz showed that isometric contractions not only induced a greater consumption of oxygen, but that the oxygen debt after effort was also larger, which proves that static action requires a long period of recovery.

According to Professors Plas and G. Sallardy: « In violent static effort with suspended breathing and blocked expiration after forced inspiration, there often occurs an arterial hypertension to the tune of 20-14, which opposes ventricular evacuation. One concurrently notes a definite increase in systolic volume, accompanied by a slight augmentation in diastolic volume.

When improperly controlled, isometric musculation also entails a secondary blocking of the thoracic frame and may provoke pulmonary diseases (such as tuberculosis, for instance).

Pursued over protracted periods of time, isometric musculation may result in an accentuation of nervous disorders which should have no place in the rational training of a true sportsman.

Lastly, musculation with charges provokes an intense fatigue which requires more rest and a diet richer in calories.

Methods of musculation

Several methods have been devised on the basis of the fundamental principles of musculation:

- Weightlifting method;
- The U. S. Body Building System;
- The Circuit Training;
- The Power Training, a component of the Total Training as advocated by CISM's Secretary General: Mr. Mollet.

a) The Weightlifting Method

- based on weightlifting motions:

- raising with both arms;
- lifting with both arms;
- shoulder-level action with both arms;
- lifting and shoulder-level action with one arm.

The charges are high and the number of repetitions varies between 1 and 4.

Each exercise is executed in series of two or three; the tempo is slow; pauses of 2 to 5 minutes are allowed between series.

b) The U. S. Body Building System

- includes a large number of exercises broken down in circuits of ten.

These circuits provide for either general muscular development, or else for that of given muscular groups of special importance in certain sports.

This method permits personal adaptation, each individual being in a position to execute several series in the course of one session. Breaks between exercises range from 2 to 5 minutes.

c) Circuit Training, as per Morgan and Adamson

- is designed to be both effective and attractive. Circuit training is essentially geared to overall development; however, this method also lends itself to emphasis on the perfectioning of basic « musts »: strength and power, resistance and endurance (with possibility of precedence).

- for strength exercises with heavy charges are executed in series of 8 to 10 repetitions;
- for power, single exercises with heavy charges, executed at a fast tempo, in series of 10 to 15 repetitions;
- for muscular resistance, light charges and series of 20 to 30 repetitions.

Endurance is generated by the sum of continuous effort required by the three circuits.

d) Power Training

Putting an end to empiricism, Raoul Mollet consolidated the many modern training concepts and methods and brought forth what he termed « total training » in four publications respectively titled:

- Cross promenade;
- Interval Training;
- Power Training;
- Training Log Book.

The purpose of Power Training is primarily to develop muscular power. Three categories of exercises are proposed to this end:

- exercises with heavy charges (bar with bells);
- exercises with medium charges (medicine ball);
- exercises with body weight (acrobatics or tumbling).

Here again, circuits may be geared to either general or local action.

Other methods were conceived with a view to improving physical training in the Armed Forces:

- The gymnastics program of Capt Garret (U. S. A.) which is not based on circuit training and overemphasizes isometry (50%);
- The Canadian Air Force 5 BX program, which respects age brackets, and includes 5 exercises:
 - 1st exercise: based on stretching and relaxation;
 - 2nd exercise: for the development of abdominal muscles;
 - 3rd exercise: for the development of dorsal muscles;
 - 4th exercise: for the development of shoulders and arms;
 - 5th exercise: for leg development and improvement of the cardiopulmonary and cardiovascular systems.

It is nevertheless advisable to complement this program with one or two sports left at the discretion of each individual. Moreover, the exercises themselves appear to be void of attractiveness.

Practical application of circuit training methods

- Implementing the concepts of Morgan and Adamson, training circuits were successfully tested at the Ostend College, and at the Swedish Military School of Physical Education.
- After two years of research and tests on the Morgan and Adamson « Circuit Training » and Major Mollet's « Power Training », the U. S. Marine Corps has recently adopted a version of Power Training.
- In France, testing of a training circuit was carried out within a mechanized infantry regiment. The results were such as to warrant consideration of this training program, the technical premises of which were presented by Capt Gellion during an E. E. P. M. Clinic held in Antibes, in 1966.

Circuit Training proved itself effective in the context of physical training, inexpensive on the national level, and practical from the standpoints of organization and implementation. Furthermore, Gellion points out, it has been most favorably received by both the cadre and the recruits.

Training circuit exercises: Gellion saw fit to establish 3 circuits of progressive intensity, to be themselves subdivided into three phases of progress.

Whereas, for instance, one weekly session may suffice for Units in training, their sedentary counterparts will, of course, require three times as much.

Gellion's method provides for warming up activities prior to execution of the circuit exercises: running, skipping and calisthenics.

1st exercise - « step test » in four phases, with possibility of added charge.

2nd exercise - consists in:

- a) jumping up, arms propped on parallel bars;
- b) progressing on parallel bars;
- c) flexing and extending arms on the bars.

3rd exercise - squats with heavy placed across shoulders.

4th exercise - with horizontal bar:

- a) traction on horizontal bar
- b) traction followed by a flip.

5th exercise - clearing of 4 hurdles (height 0.60 to 0.80 m, distance 1 m).

6th exercise - abdominals with twisting of the torso:

- a) stretched on back, hands folded under the head legs slightly bent;
- b) stretched on inclined board (30%) with head downward and hands behind the head.

7th exercise - forward and backward rolling.

8th exercise - dorsal exercises, reclining on board, face down, hands in back of head - with or without charges.

9th exercise - Rope climbing:

- a) with leg support
- b) without leg support;
- c) climbing on double rope without leg support.

10th exercise - squatting followed by vertical jump:

- a) arms along sides;
- b) hands folded behind the head.

11th exercise - abdominals:

- a) prone position, with arms along sides, raise stretched legs to a 90° angle;
- b) on a 30° inclined board (head up) raise stretched legs to a 90° angle.

12th exercise - push ups:

- a) standard position;
- b) with feet propped on a 50 cm high bench.

13th exercise - bend backward until hands touch ground.

14th exercise - lifting and raising heavy bar.

15th exercise - Russian dance.

Gellion thus established three distinct circuits (identified by the colors blue, white, and red).

Each circuit is comprised of several phases and a given number of repetitions is allotted each phase. Thus a program can be established for each individual as dictated by his age and capabilities. Exercises for unwinding and muscle relaxation consist in jogging and rest with deep expiration. Exercises are followed by a shower.

Gellion has also compiled a series of additional exercises which allow for the circuits to be modified. We consider this a wise decision for two reasons:

- 1) it has been noted that endless repetition of the very same exercises gradually becomes ineffective;
- 2) the obsession of musculation, as could be provoked by this repetition of always identical motions, is to be avoided.

Thus, he proposes exercises with a Medicine Ball (in various positions), exercises with short dumbbells,

Fencing, of course, has a choice place in the Fontainebleau School



exercises with weightlifting bar, and, lastly, a group of miscellaneous exercises (« Ukemi » squats, jumps, etc.). Each exercise, as codified by Gellion, is given an anatomic classification and is included on a diagram indicating the muscle group it activates.

The advantages of these circuits lie in :

- short duration: the shortest circuit takes 24 minutes, the longest approximately 32 minutes;
- control is possible at the end of the session: pulse reading by the individual himself immediately upon cessation of activity, after a 5-minute rest.

Any abnormalcy must receive medical attention.

Circuits of the type described above are based on modern training methods and geared to the mass of Army personnel who, by virtue of their respective assignments have neither the time nor the possibility to devote much effort to physical training. The above exercises are therefore meant to make up for such shortcomings.

However, while modern training methods are effective in the development of basic physical assets and muscular power, the element of motivation must be instilled by the cadre in charge of such programs.

Anatomic classification of exercises

The effects of a given exercise are often multifaceted, for one cannot overlook the functional unity of the human body.

The following chart therefore indicates but the primary effects of given exercises on the main muscular groups.

Circuit training exercises

Exercises	Rear Torso musculature		Frontal Torso musculature		Upper limb musculature	Lower limb musculature	Organic impact	Neuro-muscular coordination
	Nape	Dorsals	Pectorals	Abdominals				
1						×	×	×
2	a)				×	×		
	b)	×	×		×			
	c)	×	×		×			
3		×		×		×	×	
4	a)		×		×			
	b)		×	×	×			
5						×	×	×
6	a)			×				
	b)			×				
7	×	×			×	×		×
8	×	×						
	with charge							
9	a)	×	×		×	×		
	b) & c)	×	×		×			
10		×	×		×	×	×	
11	a) b)			×				
12	a) b)		×		×			
13	×	×				×		
14		×			×	×		
15						×	×	×

While an athlete will readily understand what can be expected of musculation, the recruit might be harder to convince; and yet the success of this type training hinges on his wholehearted participation. In an era where psychomotive education is particularly stressed, it will be necessary to clarify the meaning of this « education through motion » and to focus the individual's attention on body sensations (without creating a tendency to narcissism).

We have herein attempted to describe the qualities which musculation can develop in an athlete. We must insist that this musculation process must be controlled so as to avoid certain risks and accidents, as mentioned above.

On the premise of these concepts, which are now well established in generalized sports training, it has thus been feasible to consider possibilities of applying the most modern methods to all of our Armed Forces personnel.

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WHITE CIRCUIT

N°	Designation of exercises	RS 1	RS 2	RS 3
1	Step-Test (15 kg charge, 50 cm high bench) ...	6	9	12
2	Parallel bars: jump with arm prop followed by flexion and extension of arms ...	3	4	5
3	Squat (with 50 kg charge across shoulders) ...	6	9	12
4	Horizontal Bar: Traction ...	4	5	6
5	Hurdle Clearing (4 hurdles, 0,70 m high and at one meter intervals. Each jump counts as a repetition ...)	4	8	12
6	Abdominals on 30° inclined board (head down, hands behind the head) ...	6	8	10
7	Rolling backward ...	3	4	5
8	Dorsals (with 5 kg charge on the back of the neck) ...	6	9	12
9	Rope climbing (without leg support) ...	3 m	4 m	5 m
10	Squatting followed by vertical jump (arms along sides) ...	4	6	8
11	Abdominals (on ground, arms along sides) ...	6	8	10
12	Push ups ...	6	8	10

BLUE CIRCUIT

N°	Designation of exercises	RS 1	RS 2	RS 3
1	Step-Test (without charge — on 50 cm high bench ...)	6	9	12
2	Parallel bars: jump with support ...	6	9	12
3	Squat (with 30 kg charge across shoulders) ...	6	9	12
4	Horizontal Bar: traction ...	3	4	5
5	Hurdle clearing (4 hurdles 0,60 m high at 1 meter intervals). Each jump counts as a repetition ...	4	8	12
6	Abdominals (on ground, with feet maintained in place and knees half bent) ...	6	8	10
7	Rolling (forward) ...	3	4	5
8	Dorsals (hands in back of head) ...	6	9	12
9	Climbing the rope (with leg support) ...	3 m	4 m	5 m

RED CIRCUIT

N°	Designation of exercises	RS 1	RS 2	RS 3
1	Step-Test (30 kg charge, 50 cm high bench) ...	6	9	12
2	Parallel Bars: arm flexion and extension ...	4	5	6
3	Squat (with 60 kg charge across the shoulders) ...	6	9	12
4	Horizontal Bar: traction followed by FLIP ...	4	5	6
5	Hurdle Clearing (4 hurdles 0,80 m high and at 1 m intervals. Each jump counts as a repetition ...)	4	8	12
6	Abdominals with board inclined at 30° angle (head down with 5 kg charge on back of the neck) ...	6	8	10
7	Rolling (forward and backward) ...	3 fwd 3 bwd	4 fwd 4 bwd	5 fwd 5 bwd
8	Dorsals (With 10 kg charge on back of neck) ...	6	9	12
9	Double rope climbing (without leg support) ...	3 m	4 m	5 m
10	Squatting followed by vertical jump (hands behind the head) ...	4	6	8
11	Abdominals, with board inclined at 30° angle (head up-raise stretched legs to 90°) ...	6	8	10
12	Push ups (with feet resting on 50 cm high bench) ...	6	8	10
13	Bend backward until hands touch ground ...	4	5	6
14	Raise a 35 kg bar (initial position with bar at chest level) ...	6	9	12
15	Russian Dance (each hop counting as a repetition) ...	9	12	15

RS 1: Repetitions in 1st stage of Progression.
RS 2: Repetitions in 2nd stage of Progression.
RS 3: Repetitions in 3rd stage of Progression.

First Conclusions

Gentlemen,

Representatives of 28 International Military Sports Council Member Nations presented the physical training concepts, achievements and prevailing trends adopted or under consideration in their respective Armed Forces.

At the conclusion of these interesting deliberations, it seems appropriate to consolidate and compare the various concepts advanced. As an initial step to this end, I have segregated the data on hand into two main categories, i.e., those ideas representing a consensus and which do not readily lend themselves to controversy, and, as a separate group, problems which generated divergent or even conflicting solutions.

I. — Under the heading of **unanimously accepted concepts** :

1) **Modern training** presents three closely related aspects : technical, psychological, and medical.

In our day and age, sport is becoming an actual way of life which is rendered all the more necessary by the characteristics of modern life and their adverse effect on both body and mind.

2) **Modern training techniques** produce not only faster, but also more evident results.

Through its impact on the cardiovascular system, fractional training results in increased endurance and a speedier process of recovery after exertion. Guided muscular development brings power, while collective games and certain exercises improve reflexes.

A program in which the various procedures are rationally distributed brings about predetermined results. Today's training is no longer left to chance, but rather calls for controlled, almost scientific supervision.

3) Notwithstanding the value of these new methods and their direct or indirect application to the soldier's physical training, Representatives of the various Armed Forces — for the most part in charge of Physical Training at the policy making level — all frankly admitted that giving physical training the place it deserves was not an easy task. This was traced to inadequate infrastructure, lack of specialized personnel, financial considerations, and, last but not least, the indifference of commanders, often unaware of the new aspects of the problem.

4) Training must be attractive; it requires pedagogical qualities on the part of the instructors. Too often considered a duty, an inescapable nuisance or even a punishment, it can and should be based on free acceptance. « Sports motivation » is the pre-requisite to promote such willingness in the participants.

5) The low physical fitness level of young recruits and their lack of interest in sports are stressed by many an observer. Men in the 20th century seem to fall into two categories : the increasingly skilled athletes, and the others... the majority, which, at the age of military service, leaves much to be desired in the area of physical fitness. It is evident that this latter element deserves first priority.

6) The medical aspect of sports is particularly important in the case of older personnel. The training programs are seldom conceived in terms of age and category of participants. However, all agree that the principle is well worthy of consideration.

II. — **Divergences**

1) The most important hinges on the definition of **the role of sports and physical training in the conditioning of the soldier.**

a) A certain faction contends that physical training must be **directly** linked to combat readiness, and be geared to strictly practical and concrete results. To the defenders of this approach, Physical Training should consist in such activities as grenade throwing, bayonet fencing, hand to hand combat, etc., while sports as such represent but a means of relaxation.

b) Another standpoint, supported by the majority, is that beyond its relaxation aspect, sports is a vehicle to promote physical, mental, and medical fitness which, in turn, pave the way for faster and more effective professional training. The latter is undeniably based on a great deal of physical activity, but is not primarily designed to strengthen the body.

In this context, for instance, it is considered more rational and effective to strengthen the arm and shoulder muscles of the future grenade thrower by purely technical procedures, rather than have him toss the projectile without preliminary conditioning.

c) In essence — and this will very likely be one of the most interesting revelations at this symposium — it seems that two types of training could be envisaged, geared to the time available for the program, i.e. whether applicable to peace or war-time, or in the event of crisis.

— If there is no urgency and a full year can be devoted to form a soldier, the second method appears preferable inasmuch as it produces « true sportmen », reservists-to-be, who will enjoy a higher degree of physical fitness over a longer period of time. Being more thorough, this method generates more lasting effects.

— However, when it becomes necessary to train a soldier in several months, if not weeks, it appears advisable to settle for less attractive and more superficial methods, with the sole purpose of enuring the trainee to the basic requirements of his profession.

2) A long time subject of controversy is **whether or not a selective sports unit** has its place within the Armed Forces.

In the eyes of some people, such task does not fall within the combat training mission and is the realm of civilian concern.

Supporters of this concept consider that this is a national goal which, in fact, extends beyond military responsibilities and contributions, above all, to the training of a country's sports elite. They do,

however, note — and this bears no denial — that experiments carried out on this elite benefit the masses, whether in the context of dietetics or training methods.

* * *

In order to draw a conclusion, I shall endeavor to reason from a Staff Officer's or, better yet, a serviceman's standpoint. Such point of vantage seems the most appropriate since sports in the Armed Forces must necessarily have a practical application in the physical conditioning of our personnel.

A soldier — I mean a good soldier — is a young and cheerful individual; he does not worry without reasons. Enjoying good health, a high degree of physical endurance and a quick process recovery, he must have an excellent morale and the utmost confidence in his leaders, and more particularly in his immediate superior.

A troop leader is also young and cheerful, and also should not be weighted with problems, for his trade — despite the tyranny of technique — is basically simple. He instills his enthusiasm and faith in the men under his command. He knows his men well and is capable to do himself what he asks of them, from the humblest of chores to the sacrifice of his life.

On the basis of these human traits — physical and mental — the leader and the subordinate must acquire a technique, reflexes, and movements of an essentially physical nature in the case of the combat element, more complex and intellectual within headquarters, and specialized units.

However, in the absence of basic human qualities, professional training would prove futile in difficult circumstances. Establishing such training without having provided this indispensable foundation would be but building on sand.

Conversely, the three characteristics of modern training — technical, psychological, and medical — provide an easy means of developing the human qualities required of a warrior :

Dynamism, endurance, reflexes, the will to win, a taste for effort, but also relaxation, equilibrium and good health... are these not the rewards one may expect from today's sports if those practising it are motivated by sportmanship ?

It is this « sportsmanship » — so hard to achieve, but perhaps not quite as unattainable when training assumes a more inviting aspect — which determines the success of a unit and its cadre. Once this spirit exists, it no longer matters — or very little — if infrastructure is inadequate or specialists scarce. It is common knowledge that a basic unit is the reflection of its direct supervisor : if he happens to be a sportsman, his subordinates will follow suit before long. Example, in this area, is contagious.

It must be added that modern physical training for the soldier — who lays no claim to high level performance — requires but a limited amount of time. Half an hour of intensified daily training coupled with a weekly two-hour session will serve to reach the proposed goal.

This simple but pertinent analysis may carry weight with some superiors heretofore unreceptive to such problems : still thinking in terms of the old methods which admittedly were rather fruitless, they all too often are unaware of the new role sports may assume in military training.

In conclusion, I wish to thank all the participants on behalf of our President. Through their contribution, this symposium became a week of whole-hearted effort which will prove beneficial to all of us. They prepared their presentations with much care and displayed genuine talent. The International Military Sports Council has thus demonstrated that it is capable of dealing with general problems extending beyond those of mere technique.

Colonel G. LE BORGNE

