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Contents

Current tendencies of Modern Training	2
R. Mollet (Belgium)	
Sports Units	
Contribution of the Armed Forces to the Representative Sports of the Country	9
Lt Col. K. Römpötti (Finland)	
The Organization and the Aim of Sports in the German Armed Forces	14
R. Döring (Germany)	
Body Weight & Physical Fitness	21
Captain E. Van Win (Holland)	
General Bases of Sports Dietetics	22
Major Leger, M. D. (France)	
The U. S. Marine Corps Physical Fitness Academy	27
Major G. E. Otott (U. S. A.)	
Taekwon-Do	28
Major Kim, Seung Kyu (Korea)	

*Cover photo : Running is fun! Even beginners enjoy after a short
time their increasing physical fitness.*

Current Tendencies Of Modern Training

by Raoul MOLLET

*Permanent Secretary General CISM,
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The Olympics and World Championships constitute advanced stages for the exhibition of various training methods. They provide opportunities for comparison and analysis. The result is a general progress. The frontiers of training recede and new horizons open up. It is desirable at this time to examine the novel and interesting orientations which have come about since the Melbourne Olympic Games, the new methods and working procedures which have been tried out and which have contributed to the improvement of general physical condition, and resulted in a direct improvement in training procedures.

During the last decade, a proliferation of competition has been witnessed. In soccer, for example, it is no longer an exception for a professional or semi-professional player to play 80 games in a 10-month sports year, which amounts to a match every three days. As a result, it has become necessary to interview the annual training plan in order to adapt it to the new exigencies. Simultaneously, the stress and repetition of effort required of athletes has led to increased protective measures in sports medical supervision as well as in sports diet and recuperation.

The variety and abundance of information media, especially television, familiarizes the public with the sports stars and induces inevitable psychical crises, caused by either staleness of the overworked athlete, or a disproportionate exaggeration of a disagreement or minor disturbance. Suddenly, the psychical aspect of total training has become important.

Finally, the growing importance of the «time» factor, needed to cover the enormous training requirements, has set off a continuous and diversified research. Solutions which would make it possible to furnish the finest talents with adequate total training conditions have been proposed and adopted.

New, marked tendencies have risen and the borders are defined in which sport moves and grows as a universal social reality. Though clearly before us, these borders are still fluid and rather indistinct at their extremities and call for exploration, for recognition of the pattern, and for stepping beyond them in already familiar places, so that new horizons may be viewed.

Training

Medicine physiology and general research are in a state of evolution. Training for top competition has not yet become a science. It remains empirical. Even in its most advanced phases it still is an art which is based on individual judgment and enthusiasm and sometimes the premonitory glimpse of an improved training medium. This explains the existence of the famous track and field couples, Harbig and Gerschler, Meyer and Hansenne, continuing through Jazy, Haegg and Holmer, Stampfl and Bannister, Cerutti and Elliot, Snell and Lydiard, Roelants and van den Eynde, Ryun and Timmons. Their successes highlight the history of training. From their relentless efforts is derived new knowledge, transformed into a flood of ideas which in turn inspire scientific research and engender improvement.

We had to wait for the studies of Reindell and Roskamm of Freiburg, which were prompted by Selye's adaptation syndrome, for the very important but less known research of the Russian school, and the high-quality of the school of Leipzig. It must be repeated that all this work is of but recent origin. It is understandable that the neophyte trainer or coach who could avail himself of medical counsel or precise directives from national sports institutions, must still find his main guide in the experience of champions and their trainers.

The great majority of training aids comes to us through track and field and swimming. Because of the conditioning methods these sports have initiated, the frequency of training, for instance, has increased from twice-a-week to twice-a-day. Only in

recent years have team sports begun to make use of these methods, followed by individual sports like judo, boxing and tennis. However, it was often done in a fragmentary fashion.

The essential point is that these methods are transferable. Principles, training procedures, and means of physical exercise which have been used, tested and perfected by top champions under less pressure and less intensity may be applied easily and correctly by the great mass of those who practice sport. These rules and procedures can be applied even by the individual who simply desires to keep himself in good health.

Trends

It is possible to identify the current trends which are influencing and modifying the structure of the sports movement.

1. *The universality of sport, which touches upon hitherto unexplored areas:*

a) The political aspect. A victory in sports is regarded as a victory of the country. Athletes are used as ambassadors.

b) The material aspect. Sport attracts the masses and furnishes large revenues. Soon nations may have « sports factories » which regularly select and « buy » acknowledged champions.

2. *Sport is more and more centered upon youth.* This observation is linked to the phenomenon of acceleration, which has become manifest simultaneously in the area of knowledge as well as that of psychological capacity. It appears to be accompanied by a certain psychical acceleration.

3. *The improvement of training factors is related to the level of competition.* At the highest level, world championship or Olympics, any athlete lacking superior technique and condition does not have a chance of winning. For a long time coaches in Europe, at least, were preoccupied exclusively with skills and techniques (forgetting or neglecting conditioning). They had to revise their opinions and training programs when the multiplication of high-level competition (Pan-American games, extensive tours, European championship, etc.) forced them to search for conditioning and protective measures. Due to the repetition of effort required, coupled with quality of performance owing to a more-and-more demanding and expert public, enterprising coaches and athletes searched for the means with which they could detect very refined methods.

4. *The contribution of sports medicine.* Since the magnitude of great competitions has generated a qualitative and quantitative increase in training, it was only natural that athlete and coach should turn to the medical doctor for protection, help and advice. The result has been great cooperation, and closer working relationship between the physiologist, the team physician, the coach and the athlete.

5. *Demand on psychical power.* On the group, as well as on the individual level, periods of high tension and danger gave rise to great exploits and required man to overextend himself. It was inevitable that efforts would be made to utilize psychical powers in the service of a better and more specific preparation. It is no longer possible for the athlete competing on the highest level to evade the study of what happens in the depth of his being, his temperament, his mental status, the competition, winning or losing. These factors, plus the combined reaction of people and things which constitute his family sphere, the social make-up of the environment in which he develops himself — work, superiors, friends, amusements — all contribute to the success or failure of the competitor.

Consequently, we have witnessed the introduction of methods to acquire psychical power to make use of mental factors. This development was very slow, very gradual, because it was a matter affecting every-day life. Even the athletes' diet has changed.

Research into cardiovascular training and endurance

The following classification of cardiovascular stress has been developed and confirmed:

I. Sports categories of maximum or sub-maximum intensity which are characterized by a high level of oxygen debt. These require great physiological capacity and resistance to fatigue. Biochemical restitution is more intense and quicker in comparison with other efforts.

II. Sports categories of medium and moderate intensity. Here the oxygen debt is relatively lower because a constant absorption of oxygen exists. Draining of the energy sources is high. Such activities are characterized by long duration, with a subsequent long recuperation period.

No matter what forms of training are practiced to gain endurance or stamina, the following principles are involved:

A. Adaption must come over a prolonged period of time and be progressive. The same is true for the psychological adjustment to the increasing stress.

B. Adaption is strictly individual.

C. Economy of effort. Proper technique facilitates performance.

D. Facilitation of acquisition of techniques.

The key words are capillarization and oxygen supply for the muscles.

The principal training methods in use are: Continuous work and interval training.

1. *Continuous Work*

This is mainly found in:

a) Long distance runs (track and field, cross country — 5 000 and 10 000 m, swimming, bicycling).

b) Rowing regattas over the standard distance of 2 000 m.

c) Basic skiing.

This type of training leads to an excellent utilization of the oxygen when improvement of technique and economy of motion are attempted systematically. It scarcely improves the tolerance towards oxygen debt except in the final sprint. The principal result is an improvement of organic function. It becomes apparent immediately that this form of work can be recommended for the formative years of athletic life and for the beginning of the athletic season (swimmers, runners, rowers, fencers, etc.). It is equally clear that in each training session the organism brings its adaptation mechanisms into play only once: at the beginning of the work. Afterwards, except for the final sprint, it remains in the steady state. Inevitably, due to constant training intensification, the working formula confronts the athlete with a great number of these adaption situations during the same session.

In practice, continuous running (or other physical work) over a long period at a relatively slow pace is not always possible. The remoteness or absence of training grounds favorable to continuous work, difficulty in the supervision of training, and other factors adversely affect the desired result. Additionally, there are many other qualities to be developed: endurance, technique, power, speed, coordination, etc. Variants of continuous work which alternate different paces (fast, slow, for

example) are utilized. These belong to the concept of interval training. The Scandinavian «Fartlek» employs this form of continuous work. So does Cerutti. Van Aaken of Germany, a great advocate of endurance training, utilizes, besides pure endurance running (long distance at a slow pace), repetition training. Here 1 000 m is the basic distance, and the pauses are sufficiently long to insure the return to a relatively calm respiratory and heart activity.

From the Fartlek principle and Cerutti's method of alternating between fast and slow phases to repetition work over relatively long distances (1 000 to 2 000 m), we arrive at interval training. This is very much the case in team sports, where the time factor is preponderant, where the very form of the game creates this alternation between effort and pause and where the material contingencies often hold the team to given grounds.

2. Interval Training

The words «interval training» must be totally disconnected with the much-too-narrow conception of a running training. Interval training is rather a principle which implies physical work or activity of a given intensity, interspersed with pauses. It is a conception of physical work applicable to all sports, either for technical apprenticeship, or for endurance or resistance training. Interval training does not reject continuous work, but integrates it, as in Fartlek or Cross Promenade. It becomes precise and measurable in endurance work with short intervals, or resistance work with long intervals.

Training is divided into a certain number of efforts, which are repeated within a time frame. As soon as training is analyzed, whether in running, swimming, or team sports, five constituent factors must inevitably be considered:

a) Running (or training work) is divided into phases of a certain distance or *duration*. (Factor D, Figure 1).

b) Once the distance or work has been divided into phases, the phases will follow one another after longer or shorter *intervals*. (Factor I).

c) Each running distance or part of a training activity will be run, swum, or otherwise executed at a given tempo (slow, medium, fast), i.e., in a predetermined time. (Factor T).

d) The fractions of a run or work must be repeated continuously in order to be sufficiently effective and to constitute a stress great enough to determine the adaption effects. Hence the number of *repetitions* which most favors the achievement of the sought-for goal must be established. (Factor R).

e) During the intervals and between the successive efforts, the athlete can choose among several possible *actions*: lie down, walk, trot, do relaxing exercises, etc. Under given circumstances certain actions are more beneficial to the organism than are others. (Factor A). Thus D. I. T. R. A. are the factors which, combined, determine the different forms of interval training.

Factor T is the most important. It determines whether the effort will bring about: (1) a high oxygen debt with a raised production of lactic acid, or (2) an adaption of organic functions with a consequent need for interval and repetition.

In over-simplification, one may say that «interval training» has two fundamentally different aspects depending on the tempo of the work: (1) high intensity work, limited by the lack of oxygen, which requires relatively long intervals before a new effort can be undertaken. The effect it produces is what we call the Speed-Resistance. This notion corresponds with such terms in usage as *Templolauf*, *Wiederholungsarbeit*, and *Stehvermogen* (German) and endurance (English). (2) work of medium intensity, characterized by the establishment of an equilibrium of functions which is more or less stable and lasting, and which requires only short intervals before the person may proceed to a renewed effort. Repetitions must obviously be numerous. The end result is endurance.

The problem becomes more complicated for team sports, where the game requires a combination of efforts, i.e., sprint endurance and resistance. These athletes cannot possess all three qualities in their absolute form, nor can they content themselves with just one of them. The solution can lie only in a mixture of these three working forms. The coach is responsible for the correct dosage. Several interesting applications of interval training in coaching have been observed. A soccer coach from England, Mr. Wyllie, has developed a system in which the players control the ball while running at full speed for 45 seconds then slowly for 45 seconds. Others are seen in the combination of interval training and skills development employed by Janos Palfai of Hungary, training with irregular intervals, the games of two against two, of four against four, under pressure, and all other solutions striving to introduce interval training in technique itself.

For each sport, at each training period, prior to determining the allotted amount of the various types of training, the specific requirements of the sport in question must be examined carefully.

Research in speed

Speed is a gift. It is characterized by: (1) the natural speed of contraction, (2) natural neuromuscular coordination and (3) explosive power which can be developed. Development of speed is an instance where the organism has to adapt itself to the steadily growing force of nervous impulses per unit of time.

Training for speed is based on the following propositions:

1. One is born fast.
2. Speed improves through speed.
3. Relaxation is a source of speed.
4. Variegated general training precedes specialized training.
5. Mental concentration creates automatic reaction.
6. Speed training provokes a special fatigue.

In order to improve speed, the organism must become accustomed to reacting to this high frequency of excitation. The only solution is exercise at the greatest speed. This speed can be achieved only for a brief time because the strength it requires cannot be maintained long. Hence, the following are important:

1. The exercise distance must be short.
2. The *speed training* must be short. These are exercises in which one develops a maximum speed for a short period. For instance, he may run downhill, gaining momentum, and then, when on the flat, run «above his speed» for 10 meters or so.
3. The intervals between speed efforts must be long.

Zatsiorskii and Filin propose for youths a generalized preparation on a power basis — strength and speed — before they begin a specialized speed training. To state an example in track and field, serious speed training should not start until times of 11 to 11.5 seconds in the 100 meters have been achieved as logical consequences of a generalized training over several years. They cite as example, Dave Sime, the American 200 m runner (second in the Rome Olympic Games) whose varied and complete preparation in American football enabled him to achieve, fully clothed, 10.7 seconds over 100 m at his first official try. Turning towards sprinting (after only one year of specialized training), he became a world record holder.

Special exercises now constitute a considerable part of training. These are combinations of fast and completely relaxed short

runs, running uphill, power exercises, and coordination exercises (see Figure 1). We must emphasize that they do not require any major output of will and are still physically less fatiguing than the speed exercises for running where a very high degree of will power is needed.

The great emphasis placed on the development of speed through increased strength and relaxation during major running exercises over distances of 100 to 600 m aims at resistance-speed. Sprinters in training run very little at maximum speed. Some go as far as to devote only one training session per week to pure speed exercises. After several months of progressively intensive preparation, 70% at the beginning to 85% nearing competition, over distances from 100 to 600 m across lawns and soft tracks, with a short distance sprint once a week, a definite improvement of speed in French sprinters could be noticed.

The intensity of speed exercises is above all, mental. To develop speed, the athlete must impose upon himself during speed training a high concentration of will power in order to produce vigorous and rapid impulses. This is primarily mental ... and tiring. Professor Mateev (Bulgaria) feels that in order to supplement this internal stimulant, i.e., will, an external aid of sound or light should be used in speed training, thereby setting the pace the athlete will follow during any given training. Such an aid exists for instance in rowing, where the voice of the coxswain indicates the cadence.

Training methods which use research on "resistance"

Training with weights is one of the components of the general preparation by means of which and for the purpose of improved performance the athlete tries to achieve greater strength, increased power, or better muscular resistance.

After World War II, athletes and coaches remembered the weightlifting methods used in the past. They began to study and transfer them into their training. During the war, many coaches were employed in hospitals and rehabilitation centers for wounded fighter pilots and paratroopers. They soon discovered that resistance exercises quickly re-established good physical condition and diminished convalescence time. When they returned to their schools, these coaches converted their athletes. Results were immediate, surprising and absolutely convincing. For the first time, devotees of weightlifting proved themselves to be best at the Olympics in Melbourne in 1956.

Training with weights was first practiced during the pre-season; it was soon continued in modified form during the full season, and was finally employed as a main reliance between seasons.

The current exercise forms are :

1. *Weight Training* : Inspired by American methods in which the exercises are either locally or generally applied. They are executed in any of the three following ways :

- a) In a single series consisting of 6 to 12 repetitions.
- b) In several series, each consisting of a limited number of repetitions — 3 to 5, for example.
- c) Several series, using progressively lighter weights.

The athletes, however, have quickly oriented themselves towards special exercises which correspond to the motions of their sports. Soon other and more highly developed forms of exercise than weight-training evolved. They were the result of experiments conducted principally in America, Great Britain, and Russia.

Up the hill ! Power can be excellently developed by running short and steep hills



2. Circuit Training

The remarkable and very practical circuit training method proposed by the Englishmen R. E. Morgan and G. T. Adamson in 1957, provides for individual needs by means of another approach — « stations » training. This method has been practiced since 1943 in England at Aldershot, the military school for physical education. The basic principle is that students move from one specific exercise location to another. During the last 16 minutes of a physical training lesson at Aldershot, four stations were established. Students rotated from station to station. This was the start of circuit training.

Circuit training aims at the progressive development of muscular and circulo-respiratory condition. Circuit training promotes essentially the development of good overall condition, rather than the particular condition required for a specific game or activity. For the purpose of practical training application, circuit training has been studied by numerous groups of practicing athletes with very different degrees of intensity.

3. Power Training

Organic power, muscular power, and all-around fitness are the basic qualities which enable skills to be utilized to the maximum. Of what use is perfect technique if one lacks strength?

We find the following principles in power training:

a) The basic exercises are often weightlifting exercises. Thanks to the plate-loading barbell, it is possible to intensify the stimulus at the rate at which power increases. They permit a quick and easy increase or decrease of weights. Progress is measurable and therefore a constant source of interest and personal incentive. The athlete is attracted by this form of exercise which has been glorified by famous performances.

b) *Exercises with the medicine ball.* The medicine ball offers good progress possibilities:

1. The weight may be increased. There are medicine balls of 2, 4, 5 and 7 kg.
2. The throwing distance is easily altered, enabling practice within limited space.
3. Exercise speed can be easily regulated.

c) *Elementary Acrobatic Exercises:* Listed below are the factors governing such programs:

1. The weight, depending on whether the entire body or only a part of it is moved.
2. The speed of the exercise.
3. The difficulty of the exercise.

The following conclusions may be drawn about power training:

a) All power training exercises permit a progressive increase in weight at the rate at which strength develops, and an increase in speed according to progress made.

b) The principle of diversity is well observed.

c) The training method corresponds with the current data as recognized and deemed valid by physiologists, coaches and athletes.

4. *Isometric Exercises:* In 1961 Bob Hoffman launched a new form of exercise which he called « functional isometric contraction ». This method strives to develop power by a static contraction of the muscles when they are in position of use. Discussion must be preceded by definition of certain terms:

a) *Dynamic Contraction:* Contraction from which a movement results. A concentric movement occurs when the muscular insertions come together. An eccentric movement occurs when the muscular insertions draw apart.

b) *Static Contraction:* Contraction from which no movement results; there is equilibrium between the muscular power employed and the weight used.

c) *Isometric Contraction:* Maximum effort against an immovable weight or object. This effort may be sustained over varied lengths of time. Steinhaus, of the United States, has stated that isometric contractions may be achieved in several ways. There are three main systems:

1. An attempt to lift a weight which is too heavy to be moved.
2. Pushing against an immovable object.
3. The contraction of one group of muscles against their counterparts.

Isometric contractions may be practiced when the muscle is fully stretched, not stretched, or in an in-between position. Physiological contraction always contains a static phase. Before the athlete can lift a weight of 100 kg in a dynamic fashion, he must first build up a tension equivalent to 100 kg. This tension is isometric.

The foregoing training programs are summarized in Table 1.

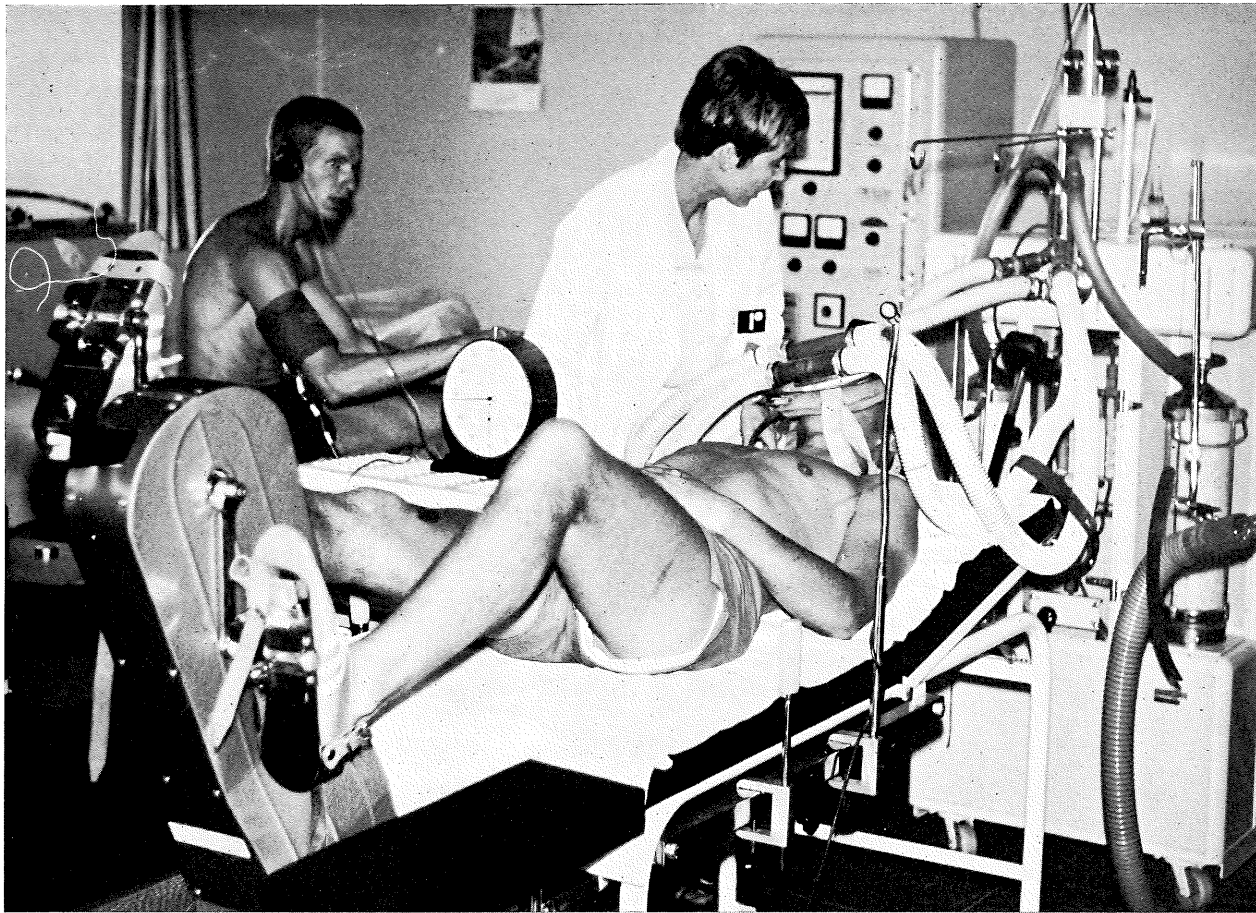
TABLE I
Training Programs for Strength, Power, Resistance

Qualities	Forms of Exercise	Media
Strength,	Exercise in static contraction	Isometric exercises
	Dynamic exercises with very heavy weights from 95 % to 100 % of the current potential	Weightlifting Weight training Mixed exercises
	Dynamic-static exercises	1. Double or triple contraction
Power, Strength and Speed	Few repetitions for the exercise (1 to 5)	2. Limited, dynamic exercise, followed by static exercise (I, C — Fig. 1)
	Dynamic contraction exercise; weights permitting top speed of execution — 75 % of the potential	Simplified power training. Power training for a specific sport
	Limited number of repetitions (6 to 12)	Exercise over short distances and uphill (I, T — Fig. 1)
Muscular	Dynamic contraction exercise with light or very light weights	Technical exercise at full speed
Resistance	Numerous repetitions — series	Circuit training
		Power training for a specific sport

Current trends

It remains to mention several important orientations in the handling of training programs which make use of, spell out, and adapt methods of developing the principal qualities required of the modern athlete.

During recent years, a trend has started towards reducing the amount of specialized training in favor of a considerable increase in overall training exercises. The greater part of the training of the great Soviet jumpers consists of power training exercises (heavy weights, light weights, body resistance) and of various jumps.



Medical research has given useful hints on practical training, certain data as, blood pressure, oxygen uptake, frequency of breathing, heart volume, ECG, oxygen pulse and breathing volume/min have to be checked up before starting training. But, caution! Charming medical assistants can cause a sudden increase of blood pressure and heart rate

It appears that a dual training system must be considered: first, a general program, then a specific one. The former develops the general qualities of speed from which stem the optimal execution of the three phases of voluntary movement: conception, transmission, and execution. The second improves the speed with which movements peculiar to a given sport are executed under various conditions. Certain principles underlie all such systems.

1. *The Principle of Generality*

Organic power, muscular power, and physical development sustain and maintain technique. They furnish the best possibilities of expressing one's self fully. Frequently they are the decisive factor in victory or defeat. The principle of the generality of training is based upon the physiological character, on the interaction of all organs and systems, and on their relationship to the central nervous system. We touch here upon one of the most marked aspects of training evaluation. Many coaches have not yet fully recognized and accepted this principle, especially in team sports.

The great lesson of modern sport requires a complete overhaul of human faculty where the specialist gives way before the complete, athletically accomplished man.

A high jumper like Valeri Brummel devoted only one-fourth of his physical training to his speciality, while the rest was given to muscle building and running. The weight lifter, Youri Vlasov, runs the 100 m in 11.8 seconds. The Australian and New Zealand medium-distance runners base their preparation on strength developed either through weights or springs, and

through basic running on varied terrain. The motivating idea of general preparation has decisively affected Russian and German training doctrines. Therefore, it is possible to differentiate the following training stages:

- a) Fundamental development of movement qualities.
- b) Application of a general and variformed training.
- c) Specialized training.
- d) Development of particular qualities.

2. *Training Intensity*

From a physiological point of view, we have in the past been too prudent in the dosage of training. Two to three sessions per week do not mobilize the reserves which increase performance. Training twice a day poses the question of where to find adequate time. There is also a possibility of over-training. Current experience proves that only application of the last body reserves brings top results. Have we by now reached the limit? «I doubt it.» (*Grundries der Biologie der Körperübungen*. J. Nöcker).

3. *The Training Plan*

The rapid decrease of functional capacity as soon as organic training stops creates a strong argument for off-season training. The notion of active rest is extremely important. Absolute rest cannot exist. For team sports as well as individual sports, an organic off-season program should be planned. There should be

gradual decrease in activity for 2 or 3 weeks followed by an ascending curve until it resumes the initial level. The coach works with three factors : quantity, duration, and intensity of training. At any rate, it is no longer necessary that the athlete start the sports year from practically the zero point. There is no doubt that he needs physical and mental rest; yet he must integrate this period of relative rest into the annual training plan and give it serious attention.

4. *Invisible Training*

To complete this too brief analyses, an intangible must be included, which we call «invisible training». The modern athlete at the most advanced level trains daily, participates in numerous competitions, and yet rarely exceeds 20 hours of physical activity per week. What does he do during the remaining 148 hours? How does he sleep? What does he eat? What inner tensions are created from his work? From his home life? What is the status of his emotional life? The answers to such questions constitute «invisible training». These answers are found in the social environment which is the athlete's own or which is created for him.

The questions of sports diet has dawn attention to a better «prescription» for meals with definite emphasis on breakfast. It is focused equally on the absolute necessity of a post-game recuperation period and the adoption of a diet designed to facilitate the elimination of waste products. The importance of supplementary diets is such that they should be planned only by the sports doctor and the dietician.

Conclusion

The World Congress of Track and Field Coaches, held in Duizberg (Germany) in March 1964, arrived at the conclusion that a careful balance of the various methods is needed. The discussion centered on «*Die Richtige Mischung*» (to obtain the desired mixture). The problem of organizing the specialized training remains to be solved. The major points to be dealt with are :

1. The psychical laws of training.
2. The question of diet and rest.
3. The cooperative work of sports doctors, coaches and athletes.
4. The legal status and administration of the sports-medical centers.

In conclusion, we ask two questions :

1. *Is it possible to stop or to slow down the enormous increase of training?*

The lively competition which has developed between the United States and Russia on the one hand, China's and the African continent's entry into world competition on the other hand, requires a *NO* to this question.

2. *Are we going to have the medically or the physiologically trained coach?*

My answer is definitely *YES*.



SPORTS UNITS



Contribution of the Armed Forces to the representative sports of the country

by Lt Col. K. RÖMPÖTTI (Finland)
ACISM

Background of the development

In the past few decades competitive sports have developed into the largest and most powerful international youth movement in the world. While statesmen, after World War II, were still disputing about the destiny of the conquered at their congress desks, the magic power of sports had managed to build bridges and concord between the divided nations. As a reminder of this, the European track and field championship in Oslo, 1946, will remain not only in the history of sports but also in the history of nations. The role of top-level sportsmen as international PR men and real ambassadors of peace for their country can hardly be overestimated.

The democratic nature of sports and its ever-increasing popularity have greatly enhanced the importance of international sports achievements. As competition for gold medals and world championships grew keener, civilian sports organizations

all over the world were compelled to seek more and more assistance from the governments in trying to find more efficient and appropriate means to promote the country's representative sports.

After World War II an increasing number of governments realized the undeniable advertising value of large competitions and of the victories won on those occasions. In fact, it is often considered that high-level sports reflect the general vitality of the people and the social power of a political system. Thus, modern competitive sports have also gained a certain political significance. This rather realistic concept originated in the Soviet Union from where it has spread to the other Eastern Bloc countries and has now reached even the West. From the purely ideological standpoint of sports, this development can hardly be considered fortunate but, on the other hand, in many countries the increased interest of the state has ensured much better economic and organizational possibilities to promote competitive sports.

It is quite natural that such governmental institutions as the Armed Forces, the Border Guard and the Police were given priority when it came to studying new possibilities of intensified coaching. Undoubtedly, the fully established organization and functional nature of these institutions offered the most favorable grounds for testing such new concepts.

Current trend of development

Some time ago in Fontainebleau, in connection with the Symposium of the Academy of CISM, I asked the representatives of the 28 participating countries how many armies already had sports units and how many planned the establishment of such units. The answers were interesting.

At present there are sports units in France, Italy, Finland, Sweden, Norway, Switzerland, Tunisia, Morocco and the United Arab Republic. The armies of the Eastern Bloc are to be added. In addition, special arrangements exist in some armies. For example, in the Austrian Army the representative sportsmen are assembled in a Military Sports School to train for important competitions. In the US Army the skiers are assembled in the Military Skiing Centre in Alaska. Similarly the representatives of modern pentathlon are assembled in their own training centre. All the Olympic candidates of the US Armed Forces all over the world are presently assembled in Fort Mac Arthur, San Pedro, California, etc.

The following countries plan to establish sports units in their army : Algeria, Argentina, Brazil, Germany, Spain, Turkey, Korea and Congo .

The sports units were created after World War II, in 1950-1960. The trend of the development is clear. The advantages of the sports unit system have been understood by an increasing number of nations.

Are sports units and sports training contrary to the principles of military training ?

The establishment of sports units consisting of top athletes in different armies was not an easy task. I believe that, as was the case in the Finnish Armed Forces many other armies had to put up

many a hard «fight» against various prejudices before attitudes mellowed and the idea of the sports unit was accepted.

In the armies where the establishment of sports units is being planned, it is worthwhile to take into consideration the reasons and ideas which prompted their acceptance elsewhere.

These reasons have been discussed, among other things, in the symposium of the CISM Academy in La Spezia, Italy, 1967.

The modern armed forces are not an end in themselves but a powerful national institution. One of its main tasks is to protect the whole national property. Every special talent represents a part of the nation's most precious property. The task of the armed forces cannot be to destroy this special talent, but to protect, maintain and, if possible enhance it, considering that both the society and the persons concerned have earlier sacrificed much time, money and training for the sake of this special talent. The sportsmen capable of representing their country belong to that «group of national property».

Top-level sport is a phenomenon no army can avoid. Because of the faster physiological development of man resulting from the ever-rising standards of living, and increasingly effective training methods, the age of the top-level sportsmen is falling off. Because of this, an increasing number of young top athletes will enter the military service in the future. Therefore, the question is to be solved with the interest of the country, the armed forces, and that of the individual sportsmen foremost in mind. For the benefit of all parties concerned, the possibility of developing the sportsman's special talents during the service must be guaranteed. Lastly, there ought to be no hindrance to this in any army because **sports training with competitions and military training are not conflicting.** Both have the same basic elements and share the same goal — hard exercise — fight — victory.

The Commander-in-Chief of the Finnish Defence Forces, General of Infantry Yrjö Keinonen, who was awarded the highest Finnish military decoration, the Mannerheim Cross, during the war, and who still competes in skiing championships in the senior class (!), stated in his famous order of sports and physical training : « Training for top-level sports develops the best qualities of the soldier, such as promptness, self-confidence and

willpower and the capability to outdo oneself when necessary. We must see to it that the training and development of the most talented sportsmen is not hindered in the conscript service».

We realize that sports is an essential and most effective part of the soldier's physical and mental combat training. It is also the most pleasant and inexpensive part of this training.

For many practical reasons, it is most advantageous to assemble the best sportsmen in the same unit.

Just as the selection of the best soldiers for NCOs and officers schools cannot be contrary to the military training principle, neither is that of good sportsmen — the best material for soldiers — into the same units. For example, even in the Winter War guerrilla, battalions were formed with the best Finnish skiers; the best men of these battalions then formed bigger and smaller long range patrols.

The advantages gained from sports units

Many practical and psychological advantages will be gained by assembling the best sportsmen in the same units. On the basis of the experience gained in Finland, I should like to present the following points :

1. Competent coaching cannot be provided to all sportsmen serving in different units throughout the country. However, sportsmen assembled in the same unit can easily be given competent and effective coaching.

2. Scattered in different units, the top-level sportsmen, by virtue of their superiority, only suppress the incentive of the less talented men. (The example of a top-level sportsman, so often referred to, does not so much impress his fellow servicemen or those of the same age as it impresses small boys.) In the absence of good training their enthusiasm for it easily lessens and may even totally disappear. If, instead, the specialists in different sports are assembled in the same unit, they form homogeneous training groups, in which they encourage and inspire each other. At the same time they have an excellent opportunity to continuously exchange

ideas and experiences about the training, technique and tactics of their form of sport. Thus they both teach and learn from each other.

3. Dispersed in different units, the top-level sportsmen with their constant applications for leave and their competition trips only arouse envy on the part of their companions and are a source of trouble to their superiors. In the sports units the said leaves are arranged for with understanding and without any difficulty.

4. It is often within the sports units that young sportsmen learn the proper rhythm and discipline of training. Even in this regard, the military organization presents a considerable training advantage over the activities of sports clubs.

5. Only in the sports units is it possible to control the sportsmen by regular fitness tests and medical examinations. This is of prime importance from the standpoint of coaching.

6. As a « by-product » of training in the sports units, the sportsmen may receive basic training in coaching sports, which they may later use for the benefit of the sports clubs and the population of their home localities. This training is most important for those who, for some reason or other, never develop into top-level sportsmen and who therefore withdraw from the competition fields before long. Thanks to the training received by them, they tend to remain active in the area of physical fitness training which concerns wider circles of population. In this capacity they are working to improve the physical fitness of the reserves.

7. The sports units may also serve as military training centres for the sports officers and NCOs of the units. A military sports school can conveniently be attached to such a centre.

8. In the sports units it is possible to carry out many studies and experiments of physical education in co-operation with the Olympic Committee, the physical training academies, sports colleges, sports federations, etc.

9. In the sports units there exists a selection system and certain grades are required. This motivates those willing to enter the sports units to train continually even before they join the service.

10. Top sportsmen are influential individuals. When properly trained in the sports units, they learn to be excellent PR-men for the armed forces and later promote a favorable attitude towards the military service among the young people who most often make the best soldiers.

The significance of the sports units

The significance of the sports units for the representative sports of the country is proven, among others, by the percentage of military sportsmen on the Olympic teams of different countries.

It may be mentioned, for instance, that in the Olympic Games of Tokyo, as much as 60 % of the Olympic team of Tunisia, 35 % of the team of the Soviet Union (for 43 % of all the medals of the Soviet Union), and 25 % of the team of Morocco were military sportsmen. In the Olympic Games of Rome, on which more data is available, 56 % of the team of the UAR, 33 % of the French team, 27 % of the Italian team and 25 % of the US team were military personnel.

Such percentages also apply to other major competitions. For example the Soviet Union team which won the world championship in ice-hockey at Tampere, Finland, 1967, was almost fully military, the only civilian being the reserve goal-keeper. A more accurate picture of the significance of the sports units could be given by statistics showing how many of the civilian sportsmen who have belonged to the representative teams, had also served in the sports units in the past. However, such statistics, which would significantly raise the above mentioned percentages are not available to date. It may be mentioned as an example in this connection that Finland's Pertti Pousi, who recently hop, step, and jumped 17 metres and long-jumped 804 cm, as well as Mustakari who recently vaulted 519 cm, were members of the sports companies a couple of years ago. Similar examples can surely be found in every country whose army has sports units. Nowhere has it been necessary to disband any sports unit on grounds of ineffectiveness ! On the contrary, many new plans for the establishment of sports units in different countries are the best proof of the positive results obtained by the sports units.

At present two different sports unit systems are in use : a purely **coaching system** (e.g. France, Italy, Tunisia), in which only 1 hour a day is used for military training, and a **military training — coaching system**, in which at least 50 % of the service time is used for military training (e.g. Finland, Sweden, Norway).

The results achieved in Finland with regard to military training are quite astonishing.

In alert exercises, the sports companies had to wait for others for about one hour ! In the first evening leave test, 35 % of the men passed, in an ordinary company — 75 % in the sports company. In so called « Jaeger test » the average in ordinary companies is 7 — in the sports companies 9. The highest-ranking students in NCO' Schools are often men of the sports companies, etc. A combat exercise once had to be repeated because of the too rapid and efficient reconnaissance carried out by the men of the sports company, etc.

Already in the Finnish Winter War, it was noted that the best sportsmen were also the best soldiers. An example of this is the Finnish military skiing team which successfully competed in Zakopane, Poland, in 1939. Four of the seven men on the team were later made knights of the Mannerheim Cross ! In this context, the best Military Academy or War College courses were far from being as good.

The results we have achieved in the sports companies are so good that they are almost a military secret ! However it may be mentioned that General Keinonen has already approved the experimental establishment of a sports platoon in a brigade of the brigade's own best sportsmen. If this experiment is successful, every brigade in the Finnish Army may soon have its own « shock platoon » !

In conclusion I would like to call the attention of those who are planning the establishment of sports units, to an important point brought out by experience. It is advisable, at the very beginning, to **concentrate** representatives of the various branches of sport in the same unit or units; these should be located as centrally as possible within a same area to facilitate travel to the sites of competition. The following advantages, among others, result from the concentration of the sports units in the same locality :

1. The use of trainers and coaches will be much more effective and centralized.

2. The use of training aids and facilities will better serve the purpose.

3. The purchase of all special equipment (for example the expensive instruments needed for medical control of the sportsmen, a factor of ever growing importance) for a single locality is much less expensive.

Conclusion

The sports unit system is the best and simplest solution to the problem created by the presence of top-level sportsmen in the armed forces. This solution serves the country, the armed forces and the sportsmen in the best way. Nevertheless, when expanding the activities of the already existing sports units, or planning to establish new ones, we should not forget the ordinary « unknown soldier », who belongs to the great majority of the people. His physical condition will determine that of the whole nation.





The Organization and the Aim of Sports in the German Armed-Forces

by R. DÖRING

Sports in the Armed Forces — like in civilian life — essentially has to fulfill three functions :

- 1) it is one of the best aids for education;
- 2) it gives the possibility to keep, increase and restore physical vitality;
- 3) it gives the possibility to raise physical fitness up to the extreme individual limits.

So far, sports are a medium for physical development as well as for the formation of personality.

The development of social attitudes as fair-play, readiness to help, companionship, team-spirit, dedication to a common ideal, subordination to existing rules, appreciation of the performances of others, — moreover the development and strengthening of willpower, of self-control, the wish to learn one's own limits and possibilities — in short, all the qualities which are necessary for life in our present society, seem to us as important as the increase of vitality and physical fitness.

Not to take advantage of these possibilities, would take away the mental background of sports and degrade it to a mere provision to regain one's health. On the other hand — as Ortega y Gasset once said — our modern industrial society is threatened to lose its vitality. This means that sport has more and more importance in creating and recreating mental and physical power. The mental value of sports — especially the occurrence of joy — contributes to relax and harmonize the personality. These principles are of utmost importance in a highly technical Army. For this reason sport in our Armed Forces is more or less separated from hard military everyday life. This means that sport is practiced in the same way as in civilian life. There is for example, no sport in uniform or battle dress, as was the case in the past. Nor is there any military training in attack sports.

We do not look at sports as a direct preparation for military training, nor do we impose military traditions and regulations on them. We believe that increased physical capacity can be attained more easily by sports in its original form than by a mixture of sports and military forms. And we are sure that in doing so, it is possible to better focus our attention on the educational background. At all times, physical capacity

was very important for all Armies. Even in a technical Army one cannot renounce a high physical capacity. This however does not mean that physical education should be viewed as a stepping-stone for the preparation and completion of military training. Of course, we too aim at a high physical capacity, and we too believe that the increase of physical capacity means a step forward to self-accomplishment. Good performances, even in sports, leave in most cases positive marks in the structure of a person's personality. The result of this occurrence is an increase of self-esteem, and a higher opinion of one's own value.

Lastly one can say on this subject that physical education — based on its effect on the mental personality, the greater vitality, and increase of the physical capacity — produces independently thinking and acting men with a high sense of responsibility. These are just the qualities we want the modern soldier to have.

According to this, one more fact is very interesting. We have had some large-scale tests at the military academies. In these tests we have compared the points gained in the mental disciplines with the points gained in sports. The result has shown, that there is a definite correlation between physical ability and mental alertness. Those who were good in sports generally were also good in the mental disciplines. Similar tests have been made in German Public Schools and Universities with nearly the same results. One more reason to place physical education on a higher level, than it is — unfortunately — now.

So, sports is really the basis of the military education and it is in accordance with the most important principle of our so-called «Intern Leadership», which says that the achievement of a real personality is the most important task of our military educational program.

These principles of modern human leadership, on which the concept of «Intern Leadership» is based, govern the whole style of education and training in the German Armed Forces.

We are convinced that this concept of sports represents an important contribution on the way to the ideal of the German soldier, the so-called «citizen in uniform». The organization of all the sports in the German Army is geared to this concept.

No doubt, the German Armed Forces have a defense-responsibility, but as we see it, a definite educational task too in the sports sector. The German Armed Forces see their responsibility first in a furtherance of the common sports. For this reason physical education is an official duty for each soldier up to the age of fifty.

Since the recruits have not enough sports preparation during their school time, the Armed Forces additionally have to assume this educational task, which should be the realm of schools. It happens that a young man is introduced to sports or special kinds of sports only during his military service. This educational task must be taken very seriously — this means that the concept I have mentioned should be faithfully observed. It is necessary that the young soldiers become acquainted with sports in such a form, that they like to practice them and do not have the feeling of being subjected to a burdensome duty or drill. They should be convinced of the necessity of physical education, so that they develop a positive attitude toward sports and make a habit of it in their future life.

Education for and by sports is exercised in Germany to a great part by our Armed Forces. Surely, there is also a great number of civilian sportsclubs, but unfortunately only a small part of the population belong to these clubs.

The most important places for the training of military sport-instructors are the military schools. At these schools there is generally a team of several civilian sport-instructors. These professionals, being graduates of the well-known German Sports Academy in Cologne, are responsible for the training of the military sport-instructors. They have to train the participants of the courses according to the concept and directions of the sports department of the Ministry of Defense. The training of sport-instructors is comprised of three parts: First the instructor third class: he should be able to train the smallest sporting-group (about fifteen men) in the most important kinds of sports supervised by a sport-instructor first class.

The instructor third class attends a sport-training course of fourty hours, during his NCO-instruction. His qualifications as instructor third class will be established by an examination. After this and some years of practice, follows a course

of higher ranking NCO, including the instruction to become an instructor second class, who should be able to lead all the training in an independent unit (for example and independently operating company). The qualification therefor must also be determined by an examination. At the military academies, all officers get an education involving one hundred-sixty to two hundred hours of sports and physical education, ending with an examination to become an instructor first class.

Beyond this, there are courses at the PT-School of the Armed Forces in Sonthofen, where qualified soldiers are trained to be instructors first class. Here I must mention that the occupation as a sport-instructor is only a secondary activity. We have for example no chief occupation as sport-instructor, and this, I must say, is unfortunate — this is my personal opinion.

Of course, only a small part of the NCO's and officers are able to pass these courses with success.

The centre of gravity of the instruction lies in the fields of methodology and didactics. Instruction exercises and well prepared instruction tests take an important place in these courses. As an example I would like to give you a short sketch of the program of such a course. It is comprised of one hundred-sixty hours altogether. This means thirty hours of theoretical instruction, one hundred and four hours of practical instruction, and twenty-six hours of other affiliated courses.

The plan of the theoretical lessons is as follows:

- 1 hour : Sports as a medium of education and instruction;
- 11 hours : introduction to our central regulation «sports in the Armed Forces»;
- 7 hours : Sports-medicine;
- 1 hour : Safety measures;
- 4 hours : Umpire-instruction;
- 1 hour : Practical preparation of a sport lesson;
- 1 hour : Organization and procedures of sports examinations;
- 1 hour : Organization and tasks of the life-saving societies;
- 1 hour : Common instruction;



- 1 hour : Behavior in the mountains;
- 1 hour : Written examination.

The practical instruction is comprised of :

- 6 hours : Callisthenics;
- 12 hours : Weight-training and power-training;
- 8 hours : Boxing;
- 5 hours : Ground work (tumbling);
- 11 hours : Gymnastics;
- 12 hours : Track and field;
- 4 hours : Games;
- 5 hours : Basketball;
- 5 hours : Volleyball;
- 16 hours : Swimming;
- 3 hours : Achievement tests;
- 4 hours : Instruction films.

The final examination consists of a written task, an instructing test, and a practical test.

The examination assessing the physical capacity in the most important sports activities — such as track and field, gymnastics, swimming and boxing — demands a condition on a par with that required for the German National Sport Badge. This is a decoration which is awarded by the German Sports League for overall physical efficiency.

We hope that the physical level of youth will be increased further by all the measures taken by the Ministries of Culture, the German Sports League and the municipalities to promote public sports.

In this case we could place heavier demands on military instructors, and thus get a real elite.

Beside the courses for the common instructors, there are also courses at the PT-school of the Armed Forces for special instructors — as for track and field, swimming, gymnastics, soccer, hand-ball, volleyball, basketball, boxing and skiing.

For these courses — lasting from three to four weeks — qualified soldiers are being chosen, who have already passed a course required for instructors first class and who are specially trained in one of these special sport branches. After having passed their examination, they will be employed in this special branch within their units. Of course, the level in these courses is very much

higher than in the common ones. The best participants of these courses further may acquire a license as instructor in their special civilian sport federations. This is an example of the good cooperation between the Armed Forces and the civilian sports Federations.

Our center of physical education is the already mentioned PT-School, located in one of the most beautiful landscapes of Germany equipped with all necessary modern training facilities, including a beautiful indoor swimming-pool, and all imaginable modern sports-equipment: this PT-school fully meets its all-around functions.

The principal functions are :

- training of sport-instructors for the units;
- training of special sport-instructors for the units (as already mentioned);
- instruction and assignment of company commanders, field grade officers, battalion leaders and medical corps officers, and finally the preparation of top athletes for national and international championships.

The most important and most extensive task, however, is the training of sport-instructors for the units.

A staff of now 12, later 16 civilian sport-instructors is responsible for the instruction of these particular courses. The total number of participants at the courses per year is between 3 000 and 3 500 soldiers. Beyond this, the PT-school is the mental center of sports and physical education in the German Armed Forces.

This is where the plans for instruction, training-schedules, regulations and instructions concerning sports in the Armed Forces, are elaborated.

These regulations are made in co-operation with the civilian sports federations and the representatives of the Army, Navy and Air Force. Also our central regulation for sports in the German Armed Forces, which is currently in effect, has been elaborated the PT-school. A new one, based on the recent researches in sports Medicine and methods of modern physical training, is being prepared at this moment.

To guarantee a consistent level of instruction, the PT-School compiled uniform programs of instruction. It became apparent that most of the young recruits do not achieve the performances deman-

ded in the military service. They often are exhausted by the slightest tests. For this reason, in the years 1965 and 1966 a task of research was given by the Ministry of Defense to the institutes of sports medicine at the Universities of Muenster, Cologne and Freiburg.

The purpose was to find the most efficient methods to increase physical capacity. At these Universities recruits were differently trained in large-scale tests. The program of these tests was coordinated in such a way, that it was possible to compare the results of all these institutes after the final tests.

The most recent methods of research in sport-medicine were employed, as for example Ergospirographie and ECG, electric measurement of power to evaluate the adaptation of heart and circulation, of respiration and muscle-power. In each of these institutes there were four test-groups of twenty to twenty-five recruits, who were slated to train for four weeks (monday to friday) for half an hour a day.

One of these four groups had to practice the normal sport, according to the central regulation during the same period.

Here is the program.

- Training in long-distance running on terrain or track;
- Interval-training on track;
- Circuit-training in a covered court;
- Endurance-training and interval-training with a bicycle-ergometer.

At these large-scale sport medicine tests the following physiological facts were scientifically proven :

- With long distance training a significant increase of the aerobic capacity is possible. That means, long jogs develop basic stamina under conditions when the needed oxygen is available, say under steady state conditions.
- In long distance training a regulation of the activity of the vegetative nervous system had also been tested.

Hence we can say that this training is especially appropriate as physical training during the basic military training period.

- In interval training we see a significant increase of the anaerobic capa-

city, which means stamina under oxygen debt, depending on the intensity of the training.

It must be noted that interval training does not have the same effect as long distance training as pertains to the vegetative regulations.

- The circuit training has significant impact on the performance of the cardio-pulmonary system and on muscular power.

To reach a permanent increase of aerobic capacity, we recommend a combination of long-distance and interval-training. This corresponds to the modern methods of training now practiced all over the world.

Circuit training as a means of increasing local muscular endurance and power can efficiently support long distance and interval-training. Based on these results of research, the following training schedule was elaborated for the basic military training period of three months. The aim of this plan is to increase the organic and muscular endurance, muscular power and coordination. This training takes place during the first twelve weeks, from monday to friday half an hour per day, during the basic military training period.

The Methods of training are :

Long repetition run, training in distance running, interval training, circuit training.

The intensity of this training should be dosed individually. The whole training program is divided into three periods :

- During the first period the vegetative nervous system should be stabilized. One should come up to an adaptation of the cardio-pulmonary system to endurance performances of middle intensity. Training methods for this are long repetition runs ($3-4 \times 1000$ m) with complete relaxation intervals and long distance running, ascending from about 2000 to 7000 m.
- The aim of the second training period is the conservation of the aerobic capacity with a contemporaneous increase of the anaerobic capacity.

The methods of training for this are :

- Long-distance training, and, additionally, interval-training on the basis of 200 m, beginning with 5×200 m in about 40 sec., with an interval of $1 \frac{1}{2}$ min.

- The aim of the third period of training is a further increase of the aerobic and anaerobic capacity with contemporaneous increase of the muscular power, of the local muscle-stamina — and coordination.

The methods for this training are again the training of long-distance, an intensive interval-training and circuit-training.

This preparation training during the basic military training period is the basis of the training during the eighteen-months service.

The new central service-regulation for sports in the Armed Forces aspires to a total uniformity of instruction in all units.

The program of official sports in the central service-regulation includes : Calisthenics, track and field, gymnastics, ground tumbling, boxing, games, volleyball, basketball, swimming and life-saving. This program is consolidated on the basis of methodic concepts.

As you can see on this plan, the 18 months of service are divided in three periods of six months each.

- a) The first period includes the basic military training and three months of total military training.

During the basic military training, we work in accordance with the afore mentioned plan of training to achieve an increase of the organic and muscular stamina.

The methods of training for this are :

- Long distance run, interval-training, circuit-training and games. At the end of the basic military training — i.e. after three months — an examination takes place, consisting of a run of 2000 m. These 2000 m should be run in a maximum time of 7 min. 45 sec.

The three months following basic military training — i.e. the last three months of the first training-period — include long-distance running, interval-training, circuit-training, games and gymnastics. At the end of this training period the capacity of endurance is again tested by a 2000 m-run. Now the 2000 m should be covered in 7 min. 25 sec. Likewise some basic performances should be rated, at the horizontal bar,



the parallel bar, the box horse and so on...

b) The aim of the second training-period of six months is the conservation of the aerobic and anaerobic capacity. Furthermore an increase in speed and physical skills is expected as well.

The methods of training here are :

— Long distance running, interval-training, circuit-training, weight-training and power-training, weight lifting, the technical events of track and fields and games.

At the end of this training-period, the soldier should achieve the following performances :

5 000 m — 23 min;

100 m dash — 13,4 s.;

long jump — 4,75 m;

high jump — 1,35 m;

shot put — 8 m;

weight lifting;

in the two hands :

clean and jerk : 75 % of the own body weight.

c) The aim of the last training-period of 6 months is to maintain the aerobic and anaerobic capacity, foster a further increase of muscular strength, power and physical skills.

The methods of training for this are :

— Long distance running, interval-training, circuit-training, weight and power-training, weight lifting, gymnastics, boxing, basketball, volleyball.

At the end of this training period the soldier should be able to cover 5 000 m in 22 min. In weight lifting he has to perform with both hands a clean and jerk — 80 % of his own body-weight. In gymnastics simple basic skills are demanded.

You can see that long-distance running, interval-training and circuit-training appear throughout the entire year-round program. But we must mention that the three forms of training in the second and third period are kept more or less in the background in favor of other sports, such as gymnastics, boxing, games, weight lifting and technical events of track and field, and swimming.

The instruction in swimming parallels that of the training-program. In the first training-period the beginner should be prepared for the first swimming exam of the German Life Saving Organization. That means 15 min. of swimming without any help. The swimmers shall be instructed in life saving.

In the second training-period the former non-swimmers shall learn the different styles of swimming. The swimmers shall then pass the various exams of the German Life Saving Society.

In the third training-period a refinement of swimming for all participants is projected. For sports and physical education we have a total of 3×90 min. per week at our disposal; during the basic military training period 30 min. more per day.

The best scale to determine the degree of physical fitness is the soldier's championship, which takes place every year in all military units. All soldiers up to the age of 50 must participate. It consists in :

- 100 m dash;
- long jump;
- shot put;
- 5 000 m running.

All soldiers achieving a given score are to be distinguished with a diploma. The best soldiers of the different age-groups will be invited to a reception by the Minister of Defense. The purpose of these championships is to give an incentive for training throughout the year.

The following already belongs to the sector of non-official sports. During leisure time, non-official sports in the area of the barracks are very much promoted and supported by the Armed Forces. In nearly all military installations there are training-groups in the different kinds of sports under the guidance of experts. The official sport is military duty, and any hurt which appears here is a military-service injury, which the state is liable for. The same applies to non-official sports activities if they are approved by the company leader and carried out under the guidance of an expert. We very much approve of non-official sports, and there is a possibility of establishing military sports-clubs. At any rate, we must see to it that these clubs are not off-limits to the public.

The creation of such sports-clubs is only welcome in places where there are no civilian sports-clubs. In the other case, we recommend to our soldiers to become members of these civilian clubs. Non-official training often leads to the highest level of performance. This, too, is one more task for the German Armed Forces.

At any rate, public sport should never be second to the furtherance of some few top athletes. So, for example, at the PT-school in Sonthofen we always have courses for training and selection in all kind of sports in which we participate at national or international level or in championships within the CISM.

In the future, special training centers for top athletes will be established in various garrisons. This will be done in cooperation with the special sports associations and with the German Federal Committee for Sports advancement, consisting especially of sports physicians and coaches.

There would be the following situation for top sportsmen in the Armed Forces :

- After the basic military training they would be transferred to a special sports center, where they could practice their special sport under the leadership of experts, but only if they reach the performances required. For these top sportsmen there will be an official treatment. Each afternoon, from 3 o'clock on, they are free to practice their special training. The training centers should be established near civilian training centers, so that the soldiers involved can practice their training under the supervision of the coaches of these centers. There is no intent to create a sports battalion or a greater sports unit.

In some cases the instructors of our PT-school have supervision over these training centers. All our instructors are in permanent contact with the civilian sports associations, especially with the above-mentioned « German Federal Committee for Sports Advancement ».

Gentlemen :

At the end of my explanations I would like to once more summarize this plan : Sports within our Armed Forces correspond to the leading idea of sports as it is represented by the German Sports League.

A mixture of military and sports concepts does not exist.

The training of sports instructors at the military schools is the task of civilian experts.

The instruction program is divided into three parts :

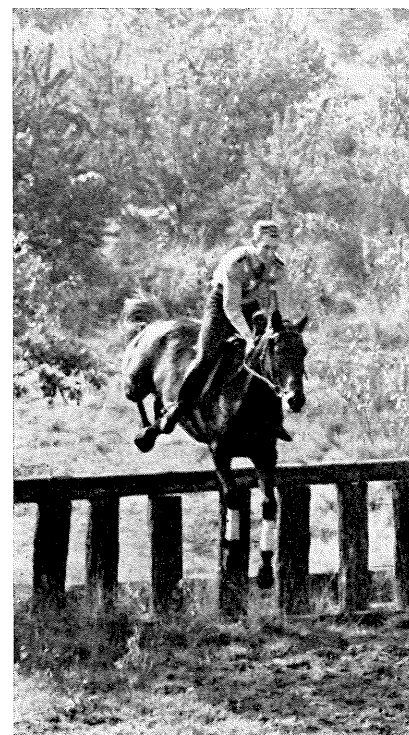
- Instructor third class.
- Instructor second class.
- Instructor first class.

Qualified instructors first class may participate in special training during a course at our PT-school. After that, they will be assigned in their special sports capacity within their unit.

The basis for sports and physical education in the Armed Forces is the central service regulation. Official sports are regulated by this prescription.

We have a plan of instruction throughout the year, divided in three periods : During the first period we aim primarily to increase the organic and muscular capacity.

During the last two periods, the program of the central service-regulation will be practiced according to strong methodical



The training of a German soldier is very varied. Modern Pentathlon holds a place of honor

concepts. For sports and physical education 3×90 min. per week are available.

Non-official sports are extensively protected by the Armed-Forces. Top athletes will be concentrated in sports centers, which are connected with the PT-school.

The training of the top sportsmen is supervised partly by the civilian instruc-

tors of the PT-school and partly by the civilian coaches of the special associations.

The aim of our sports instruction is to make the youth sports-minded, so that the young men like to do sports even after their service time.

So, one can say that physical education in the German Armed Forces is not an

isolated question. It is a matter in which the whole German population is deeply interested, and which is practiced under the same rules and conditions as public sports.

Seen in this context physical education in the Armed Forces is a contribution to the education of the entire Nation.



Sonthofen Military Sports School

Body Weight & Physical Fitness

by Captain M. D., E. E. van WIN (Holland)

Sports medicine in the Dutch Army belongs to the department of preventive medicine and has to deal with a lot of problems related to the promotion of physical well-being. We all know, since Darwin, the importance of fitness for the survival of the species, and I think that modern civilisation has more need for physical (as well as mental and spiritual) fitness than ever. I would like to refer to the magnificent address of professor Arthur Steinhaus to the annual meeting of the American College of Sports Medicine at Dallas, on March 18, 1968, when he was given the 1965 Honor Award of the College. He emphasized that as a species we must yet learn to combat the ills that beset mankind as a whole. Of these, disease and famine; malnutrition and overweight; physical, mental and moral decadence associated with plenty should be mentioned. The ideal of sports medicine has to be the cultivation of total fitness (physical, mental and spiritual) in as many human individuals as possible.

For the moment, we in Holland, especially in the Dutch Army, are most interested in the problems of nutrition, overweight, physical fitness and heart disease, since myocardial infarction in the age group of approximately 50 years is twice as large in the army personnel as in the civil area. We supposed that stress situations in the army were more pronounced, but we were also astonished by the poor physical fitness of many officers and non-commissioned officers, as proven by numerous data we gathered from fitness tests with ergometers, etc. The young soldiers of today are also lacking in physical fitness, in endurance, in coordination of motor ability. Nowadays many youngsters entering our army are too fat or too thin, e.g. have too much fat and too little muscle mass.

In the modern concepts of sports medicine it is not sufficient to measure body length and weight only. You have to take circumference measurements (thorax, abdomen, arm, leg, etc.) skin folds and skeleton measurements (e.i. condyl width) as well. Then you can estimate the proportions of body fat to lean body mass and total body weight.

We found in young untrained soldiers, fat percentages of about 20 % (range 15-25 %). The average in the military soccer team was about 16 % (range 13-19 %), in the military pentathlon team 14 ½ % (range 12-17), in the military boxing team

12 ½ % (range 10-15 %). Ceasing of training will inevitably produce a rising of (sub-cutaneous) fat percentages. This rising of fat percentages is perfectly correlated with a decline in physical fitness test scores.

We all know how difficult it is to lose weight and how easy to gain it, so it is our duty to prevent the development of overweight, by introducing as soon as possible an education — or training program consisting of a well-balanced food regime together with daily physical exercises. This will also be the best prevention of heart-diseases, as we can conclude from the publications of Morris, Stevenson, a.o.

Recent studies on military pentathlon athletes have given us the impression that the fat metabolism is very interesting for the study of physical fitness. Measurements of the levels of serum non-esterified fatty acids before, during and after exercises will give individual variations, which may have important consequences for our insight in the problems of food, physical fitness and heart diseases. I have the impression that a high standard of physical fitness goes along with low serum levels of free fatty acids (NEFA), before, during and after exercise, perhaps combined with high glucose levels during exercise.

The individual variations may depend on body constitution. Therefore we cannot overlook a well-established system of somatotyping, like that of Kretschmer or Sheldon. The more endomorphic mesomorphes seem to have higher levels of NEFA. Rechnitzer a.o. found serum levels of about 600 U.Eq/L NEFA in groups of patients with previous myocardial infarction as well as in control groups, but he didn't give data on their body composition. We found levels of about 800 U Eq/L in a heavy weight athlete, and only 200 U Eq/L in an ectomorphic (leptosomic) athlete. The latter value rose to about 350 U Ed/L after a 8-week holiday. This ectomorphic boy had always high pulse frequencies during and after standard ergomatic tests and a rather low maximum oxygen uptake of 3 L/min, but nevertheless was always in splendid form and achieved remarkable physical performances in the military pentathlon. As you see, it is very important to know a lot about the elements which contribute to the value of body-weight. This will greatly influence your evaluation of the findings in physical fitness tests.



GENERAL BASES OF SPORTS DIETETICS

by Major LEGER, M. D. (France)

The history of field and track teams with anecdotes about « Diata » a word of Greek root whose basic meaning was « life hygiene » before it became today a synonym for food hygiene. Thus, Lambis of Laconia, who was the first winner of ancient Pentathlon in 708 B. C. followed a vegetarian diet while training. Milon of Crotona who won the Olympic crown six times in the 6th century B. C. was a rabid meat-eater who could carry, fell and eat up a 4-year old bull all by himself. Thus, in those times, jumpers would eat goat-meat, runners bull-meat and wrestlers pork; Gallien, surgeon of the Gladiators Academy in Pergama and forefather to all sports physicians from the IInd century down to our times, fought against the abuse of meat that made his pupils rough wrestlers but indifferent legionaries in the IIIrd century. Philostratus of Lemmos, stigmatized both the professional status and the overly rich food of the athletes of his times. Thus, in the Field of the Cloth of Gold, François the First's wrestlers might have taken the better over those of Henry VIIIth, had the former selected his famous Breton wrestlers, who had won a reputation of being invincible owing to their balanced diet; thus, closer to this day, in the XIXth century we saw stern physiologists studying every nook and cranny of man resting, sometimes working, but never (definitely never) running; thus, during World War II,

we saw soldiers on both sides make up for a defective Commissariat by taking an adequate amount of amphetamines.

And this is how we had to wait for the third quarter of this century to see the first competent studies about sports physiology in general and dietetics in particular. From sometimes contradictory figures obtained while watching (chronometer in one hand, food diet in the other) an athlete running we shall try to bring out a few basic principles about sports ration before moving on to mention which types of rations have now apparently their value.

THE ATHLETE'S FOOD ALLOWANCE

After this survey of the basic principles of the food allowance, both from a quantitative and qualitative point of view, and some remarks about a few implications of the general data on the sports field, let us now come to the various types of food allowances relevant to the training of an athlete.

Let us emphasize from the outset, that there is no question of going into any dietetical details before

this international audience. Sports dietetics, indeed, are more often than not a rather awkward compromise between nutritional ideals and certain human factors, such as diet habits or psychological factors. Such factors are highly variable from one country to the next so that one dietetical detail important in one country will be entirely irrelevant to the next. We shall then consider only the general outline and focus on the types of food allowance proposed in France by Creff and Berard, dietetics experts of the Olympic Committee. They include three types :

- training ration;
- contest ration;
- recovery ration.

We shall also mention briefly the food allowance adapted to altitude.

I — Training ration

It is the most important of them all, for it conditions the metabolic functions of the body throughout the training period and makes it fit for competition. It respects strictly the basic principles of food hygiene as applied to sports.

1. For Creff and Berard, this food allowance includes 3 500 calories for a morphological type about 1.75 m tall and weighing 70 kg. One should allow for a margin of ± 5 to 10 % because of factors specific to each individual (habits, psychological setup) or the type of sports (activity requirement, environment). All energetic and plastic balance ratios must be scrupulously respected and the authors mentioned above give as optimum energetic ratios : 55 % for carbohydrates, 30 % for fats and 15 % for proteins.

2. American statistics published by Mays and Scoular admit for spontaneous alimentation of an athlete an overall caloric figure of 4 500 calories distributed as follows : 15 % proteins, 40 % fats and 45 % carbohydrates. Let us note, however, that the overall difference of 100 calories is not as large as it might first seem, the average American belonging to a larger morphological type than the Frenchman. Besides, American physicians are always fighting against the tendency in their country to eat too much fats. Once this error corrected, the food allowance type proposed by Mays and Scoular is roughly similar to the French food allowance with 18 % proteins, 32 % fats and 50 % carbohydrates.

3. In France, let us mention the tendency upheld by Dr Mandel (Marseille) who would readily accept

spontaneous food taking, under weight control and with a specific energy balance for each type of physical exertion : speed about 20 % proteins, long distance about 35 to 40 % fats, medium range effort about 55 to 60 % carbohydrates. Dr. Mandel distinguishes three major types of sports athletes as far as nutrition is concerned : the sprinter, thriving on meat, the medium-distance athlete thriving on sugars with still a small amount of meat and the long distance athlete who is fond of fats and sugars. While not following Dr Mandel so far, I would admit that dietetics practice often reveals theories reminiscent of the theory of the « humours » well known to homeopathy practitioners.

4. From those brief insights, one should draw the conclusion that the food allowance type suggested by Creff-Berard should be kept as a basis, while not forgetting that it is meant for a 70 kg athlete and is thus variable with the morphological type of the individual and also implies a tolerance margin of 5 to 10 % above the suggested level.

So that you can visualize the whole thing, this is what this 3 500 calory ration might look like for a day :

Milk	400 g;
cheese	60 g;
meat or fish	300 g;
egg	½;
green vegetables	500 g;
fruit	300 g;
cereals or flour	30 g;
potatoes	300 g;
paste or rice	300 g;
butter	30 g;
oil, margarine	35 g;
jam, honey	50 g;
sugar	50 g.

Those figures are the net weights as they come on the plate, ready to eat, cooked or raw as the case might be, but without any waste.

One should add 1 ½ liter water and emphasize once more that alcoholized drinks and tobacco are strictly prohibited. Tobacco increases muscular stress and fatiguability by breaking up Vitamine C. It also leads to breathing difficulties by diminishing lung elasticity. Alcohol disturbs neuromuscular coordination by soaking nervous cells and delays recovery by injuring the liver.

For psychological reasons, however, one might have to tolerate small amounts of slightly alcoholized drinks — but calories from alcohol should never exceed 5 % of the overall ration which is, for instance, about ¼ red wine, 10° or half a liter beer 5°, provided it is easily digested.

Finally, to space out nutritive materials throughout the day, the training ration should be split up into 3 or 4 meals — in practice, 3 meals roughly similar in value at 8.00, 1 pm and 8 pm a sugar meal around 4 pm. This method makes it possible to give, within natural limits, a maximum ratio without, owing to the spacing out of sugar doses, the athlete putting on weight.

In view of French food habits, this spacing-out could mean, for instance, a full breakfast (coffee or tea, tonimalt with milk, bread, butter, jam, honey) including, besides, an addition of proteins as meat (ham or grilled steak) or eggs (hard boiled, medium or soft boiled), little fermented cheeses (such as Gruyère, St-Paulin, Holland), or Malted Cereals (such as Nidine). For digestibility reasons, coffee or tea will be taken on waking up or just before breakfast, without milk.

5. My own experience, however, based on five years of dietetics control first at the Antibes School and then at Fontainebleau, makes me think that Greff and Berard's training ration might be slightly insufficient for most young adult athletes. Besides the strictly physiological requirements of the body, there is a psycho-physiological factor in the athlete which is very difficult not to take into account, in particular between 20 and 25, when growth is not yet completed.

As a result, I would suggest as a rule, for an athlete weighing the ideal 70 kg, an overall ration of 3 800 calories, i.e. 10 % more than Creff and Berard. This increased figure includes the basic 3 500 calories to which one must add about 5 % for specific dynamic expenditure and a growth corrective factor of about 5 %. This increase must be logically spread out over all food categories, but I would readily allow a relative increase in green vegetables (about 700 g) and fruit (400 g) so as to reach a « fulfillment » food allowance yielding a sensation of digestive fulfillment without undue increase in calories.

Scrutiny of the weight charts of the young adults athletes (from 20 to 25) who come under my control here, underlines the necessity of such an increase both to do away with any hunger sensation and to

better balance food nutriment and energetic expenditures due to training.

The « Ecole Interarmées des Sports » is run on the basis of this 3 800 calory ration, which can be increased up to 4 500 calories for certain types of voluntary training (swimming, modern pentathlon, muscular exercises for certain spacial sports). Experience, in general underlines the necessity of a flexible approach to dietetics, something Creff and Berard too rightly insist upon.

II — Contest ration

It would be obviously more accurate to talk about rations in the plural for the food allowance varies considerably with the particular sport and the very conditions of the contest (one test or several, continuous or not, short or spaced out over days or weeks).

With Creff, let us distinguish three broad types :

- a) *Short duration contests* which do not require any food during the contest, but merely a waiting ration before it.
- b) *Medium duration sports* (in particular team sports or short but repeated tests) requiring a waiting ration and occasionally a ration during the contest (at half time instance) — what I would call the « relaunching » ration quota.
- c) *Long duration sports* requiring food during the contest in special nations such as easliy split up small volumes of highly energetizing drinks.

As food taking during the contest involves technicalities particular to each sport, we shall talk here only of the waiting ration and the relaunching ration.

1. *Waiting Ration* (taken before the contest)

It is meant to be taken in the 4 hours between the last meal and the contest.

Despite some assertions, there is no need to enrich this ration, either at all times or on the eve of the contest. In particular, the addition of carbohydrates yields no metabolic return whatever, as studies in blood biology have shown. The energetic potential depends primarily on reserves slowly accumulated

throughout the training period and not on last day overfeeding.

The last normal meal will be taken 4 hours before the contest. One should try to make it a thoroughly normal meal, rich enough to pile up immediate reserves in sufficient amounts, but taken early enough in the day to prevent any digestive interference or a difficult start.

Creff and Berard, call this meal the « eleven o'clock » and advocate a liquid waiting ration with water and sugar. It could be, for instance, half a liter of natural fruit juice with addition of 50 g of honey to be taken each half hour up to 1 hour before the contest. The aim is to maintain the blood sugar rate at the level required for an immediate effort, for this rate usually tends to decrease as a result of emotional unease before the contest.

2. « *Relaunching* » ration (during the contest)

Its aim is to restart the energetic metabolism at half time in team sports, hence the name « half time ration » given by Creff and Berard. It applies equally to contests with intervals, such as Tennis, Athletics, Fencing and Judo. I would personally prefer to call it « relaunching » ration.

The aim of this ration is to recharge the body with water, sugar, salt and potassium. It may come as 200 g of bicarbonate mineral water (such as Vichy in France) plus or together with 20 g honey of Dextrose, 1 g salt and 1 d Potassium gluconate in the form of a syrup. It will be taken at surrounding temperature, immediately after the effort and will be split as necessary. In practice it will cover one hour of sustained competition.

III — Recovery ration

In contrast with the contest ration, it can be, just as the training ration, easily standardized. It covers the 48 hours following the contest and its aim is, in two stages, to make up for the losses incurred, while seeking a rapid elimination of weariness waste.

1. *First stage : desintoxication ration*

Covering the 24 hours after the contest, it is based on three essential principles :

- it contains a high amount of water — based on mineral water (Vittel, Volvic, Evian) skimmed milk, fruit juice, vegetable soup). This is to make up for water losses and speed up the elimination of waste;
- it contains a small amount of proteins : little meat, fish eggs and cheese. Since most of the waste due to weariness is from protidic origin (through muscular wear) there is no need to add to it;
- it contains a small amount of calories (2 500 calories to 3 000), for the metabolic work of desintoxication must have priority over the usual assimilating processes.

2. Second stage : compensation ration

This is the food allowance for the day, after the day of the contest and it must be enriched : 4 500 to 5 000 calories split between 4 rich meals.

Its aim is to answer the spontaneous appetite of the athlete after the desintoxicating day and to bring him in full quantity all the food elements required for recovery after muscular wear.

For this reason, it should contain a slightly larger than average amount of proteins (20 % instead of the usual 15 %) through meat and cheese, and a larger amount of water (through milk, fruit, juice, light mineral water split between breakfast, morning, afternoon and bedtime).

Soon after, however, good days come to an end and on the third day after the contest, the athlete should return to the usual training food allowance.

IV — Altitude Food Allowance

Since the climax of this year will be the Olympic Games in Mexico, a town 2 778 meters above sea level, I could not end without touching the subject of altitude ration.

Following the preolympic week, the French medical team has noted that altitude had an immediate impact on the athletes' appetite along the following lines :

1. Larger requirements in sugars and small needs in proteins and fats. This is explained by the fact that the relative lack of oxygen at high altitudes leads the body to seek the type of food which requires the least oxygen to be transformed into energy and carbohydrates meet the case.

2. Larger needs of water and minerals (mainly salt) which can be explained by the heat and dryness of the atmosphere further emphasised by transpiration losses.

3. Slightly larger needs in vitamins, following a voluntary decrease of green and raw vegetables for safety reasons.

4. Drastically reduced needs of alcohol, and not increased as it was first thought.

One should then plan a food allowance along the following lines :

- carbohydrates 60 %, fats 27 %, proteins 13 %;
- vegetable soup every night (mineral salts);
- polyvitaminated mixture each day (unless one is sure that vegetables are safe);
- water = 3 liters, kitchen salt as much as required;
- wine $\frac{1}{4}$ liter 10° maximum;
- tobacco : strictly prohibited for at high altitudes it further increases the discomfort resulting from the relative lack of oxygen.

Let us note that the teams going to Acapulco will find themselves in an utterly different climate, of oceanic tropical type with particular problems in adapting to moist heat.

CONCLUSION

Many problems in sports dietetics still remain unsolved but practical experience as well as scientific research are constantly opening up new vistas.

I did not mention here problems specific to so-called « Military Sports » since it is my belief that there is only one type of sports, even if practised in different contexts such as school, army, civilian life. Let us say simply this : the military basic food allowance should logically be a training food allowance roughly adapted to the actual activity. Of course, studies now being conducted in Mexico will have direct implications for the elaboration of the food ration for Mountain Forces. Well, to make a long story short, and since we are in France. I'll simply end this talk by saying « three cheers for sports dietetics in the hour of glory, but when comes the age of retirement, three cheers for good cuisine ».

THE U.S. MARINE CORPS PHYSICAL FITNESS ACADEMY

The present information is given as it exemplifies the close relationship of CISM with its member-countries and also because it perfectly fits the purposes of issues No 39 and 40 of our Magazine.

Informations are extracts from the presentation to the American college of Sports Medicine on 2 May 1968 by Major G. E. Otott, U. S. Marine Corps Director, Marine Corps Physical Fitness Academy.

The Marine Corps Physical Fitness Academy was established 1st April 1968 at the Marine Corps Development and Education Command, Quantico, Virginia.

It is the first institution of its kind in the United States. Its primary purpose is to improve the combat readiness of the individual marine by improving his physical condition. To this end the academy must undertake the education of a professional cadre of physical training instructors and specialists who will have the responsibility for establishing and conducting the physical training and combat survival program for the marine corps.

The Academy must also effect a broad educational program designed to acquaint every marine with the importance of physical fitness in relation to his professional duties and obligations as well as his personal health and well being.

These objectives cannot be fully accomplished in the absence of certain resources required for their development. These resources include the capability for obtaining the latest research material generated from domestic and foreign activities in the field of physical training; the capability for accurate analysis and subsequent evaluation of this material and the establishment of profes-

sional working relationships with other military and civilian institutions and authorities in the field of physical education and physical fitness in this country and in other nations. The foregoing objectives and resource requirements were used as a basis for developing the mission, functions and proposed organizational structure of the physical fitness academy. An on site survey of five of the leading european military physical training schools contributed additional valuable information for planning the development of the Academy. Subsequently, a group of this country's most distinguished authorities on physical fitness and training were called together to evaluate the proposed plans for the Academy and to make recommendations relating to its development.

MISSION

To provide professional instruction to selected Marine Officers and enlisted personnel and officers and enlisted personnel from other services and allied countries, in order to prepare them as instructors and specialists in close combat and physical training.

SCOPE

1. This course is based on comprehensive classroom instruction

in anatomy, physiology, kinesiology and principles of physical training to provide a working knowledge of the human body and how it performs.

2. Emphasis is placed on instruction in all systems, methods, and techniques of physical conditioning and the use of related apparatus and equipment. Situations requiring the students to plan unit and individual fitness programs for all Marines, regardless of age, rank, sex, job or geographical location are stressed in the course.

3. The course includes a very demanding progressive conditioning program aimed at increasing the strength and endurance and developing agility and coordination. It is designed to improve performance under severe physiological stress and through this experience incalculate an understanding of the capability of the human body to perform under stress.

4. The course includes instruction in a few select sport skills such as soccer, basket-ball and football. These activities are extremely vigorous and are taught in the context of a physical conditioning medium for improving physical fitness through aggressive team competition.

(continued p. 32)

TAEKWON-DO

by Major KIM SEUNG KYU (Korea)

Brief history

Taekwon-Do was created approximately 1300 years ago in the Silla-Dynasty by our Korean ancestors for the purpose of physical training, spiritual education and self-defense of youth. No doubt it had been constantly developed and revised over many centuries thereafter by various leaders of Taekwon-Do. However, this art of unarmed combat came to be perfected in its present form as a scientific and modernized art of self-defense by the Korean Armed Forces.

The meaning of Taekwon-Do

Translated from Korean «Tae» literally means to jump or kick or smash with the foot. «Kwon» denotes a fist chiefly to punch, strike or thrust with the hand or fist. «Do» means an art or way or method. Thus taken collectively, Taekwon-Do indicates the technique of unarmed combat for self-defense involving the skilled application of punches, kicks, blocks, dodges and interception with bare hands and feet for the rapid destruction of a moving opponent.

To the Korean people, Taekwon-Do represents more than the mere physical use of skilled movements. It also implies a way of thinking and life particularly in instilling a concept and spirit of strict self-imposed discipline and ideal of noble moral re-armament.

Its nearest description is almost a cult.

This is the reason why Taekwon-Do became a compulsory subject for the Korean Armed Forces and Police Forces. It is a proven fact that Taekwon-Do actually helps a great deal to promote not only the physical training and morale of the soldiers but also combat efficiency.

Structure of Taekwon-Do

1. *Spirit of Taekwon-Do*

Taekwon-Do is not bellicose nor provocative, in that it should never be used for street fight. It should only be a weapon of self-defense or to defend justice or the weak. Therefore every emphasis during the course of training is placed on creating a noble spirit and building good personality rather than technique itself. To put it simply, Taekwon-Do aims to achieve courtesy, modesty, perseverance, self-control and indomitable spirit.

2. *Striking and blocking points*

No matter how skillful one's technique is, the aimed achievement can hardly be expected unless the striking and blocking points are well hardened or toughened. In this case, one is unable to impart any pain or shock to the opponent during the attack or defense. The part or surface through which the shock is transmitted to the opponent's body is referred to as the striking point. Theoretically, all locations of the concentration of strength are considered as striking points, most

of which also serving as blocking points, but the 17 parts or positions where the strength can be easily concentrated and toughened or hardened are the most frequently used. Remember that unlike other weapons, they cannot be bought ready made, but can only be gained from the anvil of firm resolution of the individual.

3. *Vital spots*

Any part of the body which is sensitive or vulnerable to the attack or such portion as the eyes, philtrum, temple, armpits, etc... which are very difficult to toughen or harden are defined as a vital spot.

Although there are as many as 400 vulnerable spots in the human body, from the point of view of Taekwon-Do, 54 vital spots are the target of attack. The location of these vital spots generally coincides with the presence of nerves or blood vessels or important organs. These 54 vital spots are classified into major vital spots and minor vital spots. An attack on the former may result in fatal injury or impairment, while on the latter it provokes temporary functional disability due to severe pain. Therefore it is essential both for the attacker and defender to familiarize themselves with the various degrees of vulnerability of the vital spots; otherwise, the attacker cannot select the proper target to achieve the aimed injury, nor can the defender effectively defend against the seasoned blow.

Course of training

1. *Fundamental movements*

This can be compared with the individual soldier's training in the army. In other words, it is practised by the beginners mainly to repeat and acquire the basic posture and movements and to keep abreast of the exercise of pattern and sparring. Anyhow, as the fundamental movement is the nucleus of Taekwon-Do, a strong foundation and laudable technique can be developed only through correct, coherent and consistent training.

2. *Hardening*

It means to forge, develop or toughen the striking and blocking points, muscular contraction, and joints by various training aids. Since the aim of Taekwon-Do in action is to destroy the opponent, if necessary, with a single seasoned blow, hardening cannot be over emphasized.

3. *Pattern*

It is thus a sequence of movements of attack and defense in a logical order. Imaginary opponents are dealt with in sequences logically and systematically based on the assumption of various situations. Practice of the «pattern» enables the student to go through the fundamental exercise, develop sparring techniques, improve the flexibility of movements, familiarize himself with body shifting, build up the muscles properly, control breathing and acquire certain special techniques which cannot be obtained from the fundamental exercise alone.

4. Sparring

It is the physical application of attack and defense techniques gained from the patterns and fundamental exercise against the actual moving opponent or opponents under various situations; therefore, it is not only inseparable from the patterns and fundamental movements but also indispensable to promote fighting spirit and courage, train the eyes to read the opponent's tactics and maneuvers, forget the striking or blocking points, test his or her own skill and ability, and learn other movements hardly to be acquired from the patterns or fundamental exercise. Sparring is classified into pre-arranged, semi-free and free-sparring.

5. Self-defense Techniques

Are explained more in detail in Part 10.

Basic principles of techniques

1. Agility

Agility in Taekwon-Do is considered a very important part of technique, more than in any other combative sport or martial art because it serves to avoid the opponent's dangerous blow which might cause serious injury, prepare to give swift retaliation, or attack a fast moving aggressor.

2. Power

It is obvious that if one doesn't have enough power to overwhelm the opponent with one blow, both technique and agility might be in vain.

Power in Taekwon-Do doesn't necessarily mean the stamina to run miles nor to lift heavy weights, but rather that required to drive a nail with a hammer.

3. Accuracy

Needless to say that full power can be expected only from accurate movements. Therefore if the movements lack the accuracy, neither the attack nor the defense can be successful. Furthermore it might result in dealing a number of ineffective blows of brute strength, thus creating openings for the opponent.

4. Equilibrium

Balancing the body is of utmost importance in Taekwon-Do. In most cases your opponent will find himself off-balance. By always keeping the body in equilibrium, that is, well balanced, blows are more effective and deadly. Conversely, the unbalanced opponent is easily toppled. To maintain good balance, movements must be made to flow smoothly and remain flexible.

5. Conditioned reflex

A sudden attack could happen at any place in any situation and usually the attacker has the advantage because the defender has little time to think about counter-action. Nevertheless, this can be easily thwarted by those who make the conditioned reflex their own instinct through arduous and scientific exercise.

6. Four-direction attack

One of the advantages of Taekwon-Do is that an attack can be executed from and toward any direction without even facing the opponent. For example, knife-hand or side-kick are readily available for attacking an opponent on the side. By the same token, the back fist, back elbow or back kick are useful weapons for attacking an opponent from the rear; of course, there are many means of attacking an opponent to the front or side. This proves that Taekwon-Do is prepared for instant attack from and toward all directions with a minimum delay and exposure.

Rank and test

1. System of rank

In Taekwon-Do the individual level of capability, personality and leadership is evaluated and graded according to a scale divided into 19 ranks, that is, 10 grades and 9 degrees. The former begins with the 10th grade, the lowest, and ends with the 1st grade, from largest number to smaller, and the latter begins with 1st degree to 9th degree, the highest, from smaller number to larger.

2. Type of belt

There are 6 orders of belts, and their width is about 2 inches.

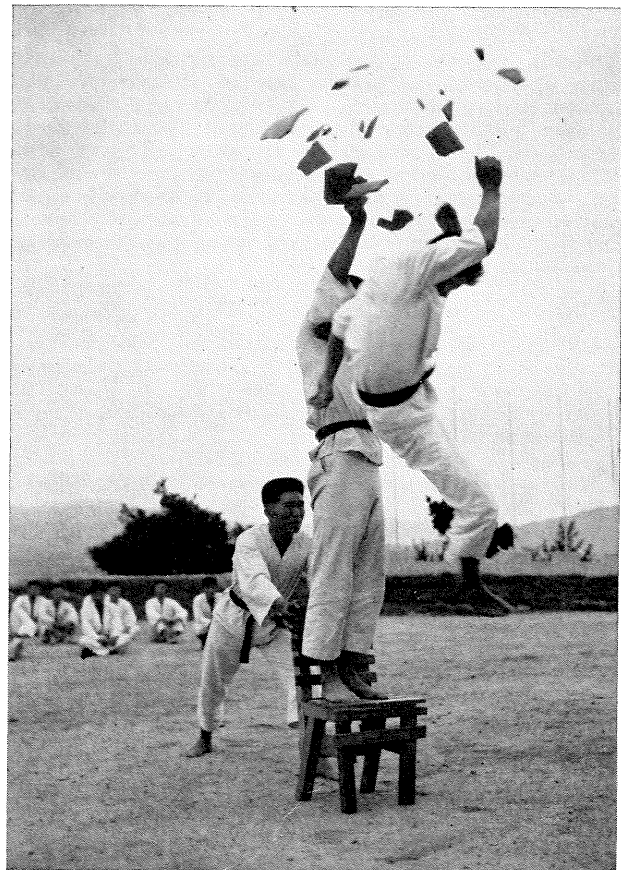
- Black belt : 1st to 9th degree.
- Brown belt : 2nd to 1st grade.
- Blue belt : 4th to 3rd grade.
- Green belt : 6th to 5th grade.
- Yellow belt : 8th to 7th grade.
- White belt : 10th to 9th grade.

3. System of test

There are two categories of tests : grade and degree. The former is conducted at an appropriate gym by a Board of Tests. On the other hand as far as the degree test is concerned, up to the 3rd degree, actual contests and demonstrations, including power tests and self-defense techniques, are tested by the Board of Tests of the Association in each country, and from the 4th degree and above throughout the world by the Board of Tests of the International Taekwon-Do Federation.

4. Index of training hours for each rank

The index below is based on experience gained by ROK Forces and on the physical level of average Korean soldiers (from 13 to 30 years old. See table page 30).



Hours required on a one-day training basis	By grade	30 mn	1 H	1 H 1/2	2 H	3 H	over 5 H
First-step course	10th	22 week	16 w	14 w	12 w	10 w	8 w
	9th						
	8th	55 Hrs	80 h	105 h	120 h	150 h	200 h
Second-step course	7th	»	»	»	»	»	»
	6th						
Third-step course	5th	»	»	»	»	»	»
	4th						
Fourth-step course	3rd	»	»	»	»	»	»
	2nd						
Fifth-step course	1st	»	»	»	»	»	»
Up to the black belt title degree (1st degree)		110 w 275 h 26 m	80 w 400 h 19 m	70 w 525 h 16 m	60 w 600 h 14 m	50 w 725 h 12 m	40 w 1 000 h 9 m
Lapse of time required for promotion to the next higher grade step by step		11 w 27 h	8 w 40 h	7 w 53 h	6 w 60 h	5 w 75 h	4 w 100 h

Advantage of the training

1. Popularity

This can be proved by the fact that everyone, young or old, male or female, can practice this art regardless of physical weight or strength, because not only does the technique play a more important role than force, but also direct hitting is prohibited. The pattern may be chosen according to individual wish, while the duration and regularity of practice and training can be modulated within one's capability. In fact, most of the Taekwon-Do masters are those who were not physically strong by nature but became skillful and strong through training and practice.

2. Easiness of mass training

Taekwon-Do is similar to gymnastics in some respects. The students only have to repeat what the instructor demonstrates. The instructor can also teach a large number of students at any place at one time. He can demonstrate and also correct the faults of the students on the spot.

3. Economical

Since the practice suit is not designed for grasping or protective purpose but mainly for the psychological aspect as well as appearance, one can even easily practice in ordinary clothes. And to harden the striking and blocking points, a rope wound round a tree and bag filled with sand can be improvised if a standard training aid is not available, while speedy tempo punching can be exercised with a piece of cloth or paper suspended by a string. Furthermore, if a standard gym is not available, the open air, as long as there is some vacant space, can serve as gym.

4. Easy to spread

Taekwon-Do can be practiced singly (in most cases) or in group. Therefore, one can exercise at any time, any place and for any length of time without a partner. And also any student can teach the newcomer as much as what he has learned.

5. Good for health

Health can be assured by this art through systematic training and exercise. For, under no circumstance, is one allowed to directly hit the human body during the exercise and he can continue up to his old age without injury to the brain or any other organ of the body; properly developing the muscles. Particularly, obesity is definitely cured through training of this art; this is the reason why Taekwon-Do is called the method of longevity.

6. Spiritual enjoyment

Both the body and spirit of a human being are interreacting upon each other; we can understand them as nearly one entry altogether. We can earn our health and spiritual delight by physical activities. Additionally, we can also feel a great pleasure instinctively, when we come to have at hand a certain degree of self-confidence in the ability to protect ourselves physically in the course of learning those skills little by little. When one is able to be confident in his own-dominated excessive power and techniques under his command, he can never be mean but always willing to make magnanimous concession to others. Such a mental posture will, without fail, enable one to keep his nervous mental storm under control, thus restoring a complete peace of mind.

Administrative channels

1. International Taekwon-Do Federation

It is composed of various countries all over the world including the Republic of Korea and, at present, member countries count 16. This organization sponsors or administers the international competitions and takes charge of the duty to direct and advise a unified dissemination of Taekwon-Do to the various parts of the world. It also introduces new theories and techniques and conducts international black-belt tests.

2. Korean Taekwon-Do Association

It is a consultative body composed of all the training institutes in Korea. Its duties include internal competition and black-belt test.

3. Korean Military Taekwon-Do Organization

It is currently spreading this art to the foreign Armed Forces by dispatching instructors to various countries. The main office is set up in the Defense Ministry for the purpose of maintaining a streamlining direction among the forces. They also develop new theories of techniques and conduct the black-belt test of Military Forces.

4. Mutual relations between organizations

Each organization is carrying out its pertinent responsibilities in close cooperation with the others, on the basis of administrative channel backed by a sense of mutual respect.

Theory of power

The power and feats of Taekwon-Do are great in number. To mention a few is perhaps pertinent: for example, breaking of roof-tiles placed at a height of about nine to ten feet by means of flying-kicks; splitting a pile of about 12 clay roof-tiles with a single blow of the fist; or cracking an inch thick wood slab with a poke of the fingertips.

To the layman in the street, such power feat may sound impossible but to the exponents of this art such power is quite ordinary. Therefore it is clear that equivalent demonstrations of such effective use of pure somatic force is not to be seen in other forms of physical combat techniques.

The power of Taekwon-Do is produced by such factors as reaction forces, concentration, speed, evolution, breath-control, equilibrium, etc...

In this context, I would like to give one example of punching for the study of the theory of power.

- 1) The fist is clenched completely at the moment of impact.
- 2) The fist is sent to the target at full speed taking the shortest distance.
- 3) Avoid undue tension of the arms and the shoulders.
- 4) Pull the other fist simultaneously to the hip as the punching fist moves out.
- 5) Relax the muscles soon after the fist has reached the target.
- 6) Keep the back straight.
- 7) Jerk the hip to concentrate the muscle of the waist and abdomen to the target at the moment of impact.
- 8) Evolve the fist completely at the moment of impact.

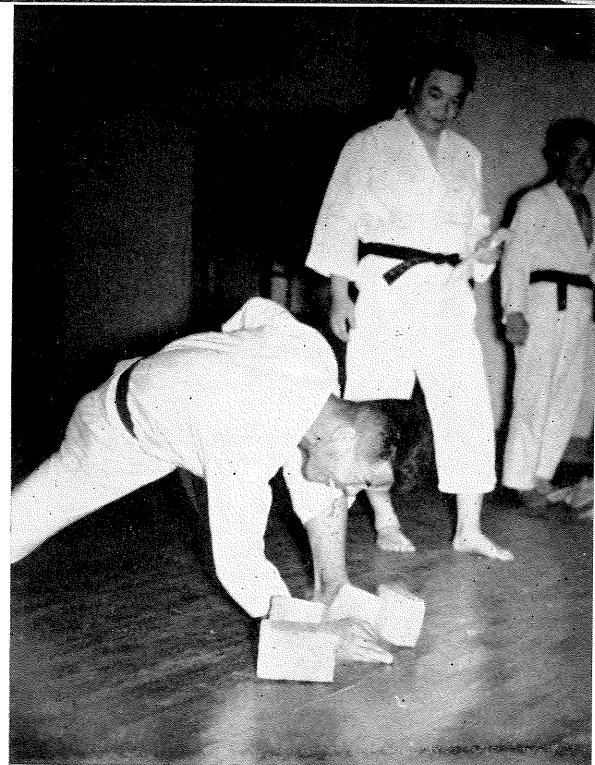
Military mass-training methods

As mentioned earlier Taekwon-Do is a very convenient martial art for training the students in mass. Mass training is divided into ordinary and special classes.

1. Ordinary Class

It is conducted for every officer and man in the unit and broken into successive courses as follows:

a) *First course*: provided for the beginner to learn the basic postures, fundamental movements, basic theory, hardening of the striking and blocking points, 3-step sparring and such patterns as Chon-ji and Tan-Kun. This course can be compared to teaching a child how to walk. Having passed this course the



students are qualified for the 7th grade through the 10th, 9th and 8th grades.

b) *Second course*: to teach 2-step and 1-step sparring, and such patterns as To-san and Won-hyo.

In this course, emphasis is placed on how to use the feet properly, repeating the training taken in the first course. The course can be compared to teaching a child how to walk freely and teaching the basic way of running. Upon completion of this course, students are entitled to enter the 5th, through 7th and 6th grades.

c) *Third course*: for those who completed the 1st and 2nd courses. In the first half of this course, students learn foot techniques, semi-free and free sparring, such patterns as Yul-kok and Chung-gun and some of the self-defense techniques. In the second half of the course, students learn not only Taekwon-Do-style bayonet drill based on the various movements of Taekwon-Do, but also practical methods of defense against armed opponents. Upon completion of this course, students are qualified to enter the 3rd, through 5th and 4th grades.

2. Special Class

For the purpose of training Instructors and assistant-Instructors.

a) *First, Second and Third Courses* are almost similar to the first and second courses of ordinary class. However, the terms of training are shorter, while the training hours per day are longer.

b) *Fourth Course*: preparatory process required for obtaining the black belt. In this phase of training, students must be able to have a confident command of all techniques, noble spiritual posture as an Instructor, and fine leadership as a soldier. It can be compared to a child who can triumphantly participate in any race. In this course, students practice the pattern of Hwa-rang and Chung-mu to get the first degree black-belt.

3. Training Place

It is roughly classified into indoor and outdoor.

a) Indoor, it is in most cases made of a wooden floor with some elasticity. Therefore, in this kind of training hall, students can practice barefoot which further helps activate the whole body more freely and efficiently.

b) Outdoor, it is suitable for mass training. Normally the students practice with shoes and underwear. The advantage of

outdoor training is to apply the self defense techniques and sparring techniques learned indoor to actual topographies and armed opponents.

4. Training Aids

A playground set up in the field for a mock war game beside regular training would be an excellent training aid or facility for the masses. All the other military facilities must be utilized properly for the purpose of developing every part of the human body evenly.

5. Terms of training

Individual soldiers will finish the required basic training in less than six months after they are enrolled in the army by undergoing one hour of training per day at the Recruit training center or at other training agencies. Instructor candidates, however, will perhaps acquire the black-belt title possibly within a short period of time, approximately one year, after receiving two hours of training per day on an average at various military schools and five hours of training per day at a Taekwon-Do training school.

Self-defense technique

It is a logical application of sparring techniques for the sake of self-defense in an adverse situation because of sudden or surprise attack by an armed or unarmed opponent. The defender must know how to make use of the opponent's force together with his own dynamic action simultaneously to find the exposure promptly so as to effect a counter-attack to put the opponent in an untenable position and out of action.

Match rules

The match rules are official rules used by the Korean Armed Forces. The purpose of these rules is to evaluate all the elements of Taekwon-Do and promote interest of the trainees by testing patterns, sparring, power tests and special techniques. However, except for special circumstances, some elements can be eliminated in the match.

The U. S. Marine Corps Physical Fitness Academy *(continued)*

5. Instructor training is also included in the course to help give the students with practical training experience under PFA staff supervision and to assist those organizations with their physical training programs.

OBJECTIVES

1. To qualify officers and enlisted personnel as physical training instructors.

2. To provide the Marine Corps and other activities as designated by the Commander with qualified and highly motivated physical training instructors.

In order to successfully accomplish its mission a high degree of rapport and liaison must be established between the Academy and organizations external to the Armed Forces. I can think of no better example than the American College of Sports Medicine. Such relationships are of great importance for the accomplishment of the mission of the Academy, especially in its formative years.

In addition, it is essential that the Academy maintain contact with all military commands in order to keep them abreast of the latest developments in the field of physical training and be responsive to requirements which may be

communicated by them to the Academy.

This responsiveness to requirements generated in the field in the essence of the Academy's mission and can be further strengthened by making contact teams available at the request of field commanders for visiting their organizations to assist in program development and the identification of problem areas. In the area of research and evaluation the academy would conduct empirical studies and research projects within its capability but without duplicating the functions of the naval medical field research laboratory. The availability of large numbers of students undergoing officer candidate and basic training at Quantico creates an ideal situation in regard to personnel resources for empirical research and field testing in the area of human performance.

Basic to the establishment of any educational and research institution is the availability of data and source material relevant to the conduct of operations and pursuit of new knowledge for the improvement of existing programs. To insure the immediate availability and continued receipt of such material a technical library with related capabilities for classification translation, documentation

and dissemination of such material is an absolute requirement. The Academy would operate such a library and would establish an archives and technical information enter which would service all requests for information relating to physical fitness and combat survival.

Internally, the Academy would collect, analyze and evaluate source material and conduct or coordinate research attendant thereto in order to develop improved physical training and combat survival programs, and train instructors in their application.

Externally, the Academy would seek to build a teaching and research institution which would become the military focal point for the dissemination of information relating to physical fitness, and maintain the Marine Corps reputation, and that of the Armed Forces, as a national leader in physical fitness. It would for the first time establish a close working relationship with leading civilian physical education schools and military physical training Academies, with the International Military Sports Council and its forty-two member nations, and through cross-training and staffing with selected foreign military physical training schools.