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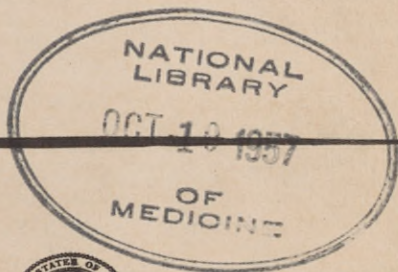
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# PHYSICAL CONDITIONING



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For explanation of symbols, see FM 21-6.

**NOTE**

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Field Manual 21-20, "Physical Training," dated 6 March 1941, is now under revision. The revised edition will supersede War Department Pamphlet 21-9. This pamphlet is distributed on the basis of C and H (1) in zone of interior, and upon request of commanding generals, theaters of operations.



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## CHAPTER I

### INTRODUCTION

**IMPORTANCE OF PHYSICAL FITNESS.**—Throughout the centuries military leaders have recognized that the effectiveness of fighting men depended to a large degree upon their physical condition. No army in all history has achieved notable success without superbly conditioned soldiers. The remarkable military achievements of the ancient Persians, Greeks, and Romans were due in no small part to the rugged, tough, well-conditioned fighting men these nations produced. In all of these countries the development of strong, tough bodies was begun early in youth and was continued until the men reached middle age. It is a significant fact that when a soft luxurious living undermined the physical prowess of the people of these nations, they were soon overthrown by a tougher people.

Today, the military effectiveness of soldiers is just as dependent upon physical fitness as it has ever been. To march long distances with full pack through desert and jungle and over mountains, to drive fast-moving tanks and motor vehicles over rough terrain, to make assaults and to engage in bayonet and hand-to-hand fighting, to jump into and out of fox-holes and trenches and over obstacles, to carry heavy objects, to keep going for many hours without sleep or rest—all these activities of modern warfare and many others require superbly conditioned troops. Even though this is a mechanized war, physical fitness is no less essential. Our machines are no better than the men who are operating them. The qualities of strength, speed, power and endurance are just as important in our fighting men as in our implements of war. Every new advance in the speed, maneuverability, striking power, durability and destructiveness of our machines must be accompanied by a corresponding improvement in the quality and fitness of our manpower.

**NECESSITY FOR PHYSICAL TRAINING.**—The problem of conditioning troops is more important and crucial today than it has ever been. This is due to the fact that men coming into the Army today are inferior physically to any previous group. Despite all advances in medical care, public health and the like, our male population has become less fit. The situation has developed because the modern machine has emancipated man from vigorous muscular activity, and

reduced the amount of physical labor required in everyday work. Physical fitness testing records in colleges and universities have shown clearly the declining strength, endurance, agility, and coordination of the past two or three generations.

The weakening influence of our modern machine civilization makes essential a revision of the traditional method of conditioning troops. Physical conditioning programs must therefore be intensified and expanded if our men are to be conditioned properly for combat service.

**TOTAL MILITARY FITNESS.**—Total military fitness is a composite of:

1. Technical fitness, evidenced by tactical training and a knowledge and skill in the use of arms and equipment.
2. Mental and emotional fitness (more commonly known as morale), characterized by:
  - a. Habits of thinking and feeling which will permit alertness with an economy of energy and rapid relaxation when opportunity is afforded to do so;
  - b. A sense of mission, or identification with a cause of great significance shared with others; and
  - c. A will to fight.
3. Physical fitness, evidenced by a body which can retain normal responses to stimuli in the face of fatigue and exhaustion, and continue to function effectively under the physical stresses placed upon it by the routine and emergency tasks of war.

**CONSTITUENTS OF PHYSICAL FITNESS.**—The constituents of physical fitness are:

1. **Freedom from disease and physical defects.** (The discovery and treatment of disease and handicapping defects are a function of medical officers.)
2. **Strength**—Every soldier should have enough strength for the heaviest tasks that may be encountered in routine and emergency activities. The most important aspects of strength are:
  - a. **Leg strength**—Marching long distances with full pack over rough terrain demands great power in the legs. Of all aspects of physical fitness, adequate leg strength is most important.



- b. Arm and shoulder girdle strength—Many situations arise which call for arm flexor (pulling) and arm extensor (pushing) strength. Lifting and carrying heavy objects; bayonet and hand-to-hand fighting; lifting one's weight up a rope, over a wall, out of a tank or fox-hole all require considerable arm and shoulder girdle strength. These muscles are particularly under developed in our troops.
- c. Abdominal strength—This reflects the general physical condition of the entire body and promotes circulation. There is considerable reason to believe that a well-developed abdominal wall retards the onset of blackouts in fighter and dive-bomber pilots.

Strength is dependent upon the cross-section diameter of muscle cells and the glandular make-up of the individual. A *ny* muscle will increase in size and thus in strength with regular exercise. By the same token, any muscle atrophies and grows weaker when it is not used. Strength is developed in muscles when their power of contracting is challenged by maximum loads; the closer a muscle works to its capacity, the more the development. Strenuous conditioning exercises, heavy gymnastics, weight lifting, wrestling and sprint running are all good strength-developing activities.

3. **Endurance**—Every soldier needs enough endurance to perform the longest continued exertion he is likely to face. There are two types of endurance:

- a. Muscular endurance—This is the type of endurance which permits an individual to continue for many hours without undue fatigue at a strenuous activity such as pitching hay or marching for many hours with a full pack. It is characterized by (1) a greater than average amount of muscular strength and, (2) by an enriched capillary network within the muscles. The number of capillaries per cubic m.m. of muscular mass is 50% greater in a trained, well-conditioned muscle. These extra blood vessels bring increased amounts of both oxygen and nutrition to the muscle mass and carry away waste products. If an individual ceases to train for 8 to 10 weeks these extra capillaries depart. Strength is an important factor in muscular endurance. When a muscle is loaded to its limit, all of its cells must contract at once. This squeezes the blood out of its blood vessels and allows no fresh blood to enter. In a short time the blood-starved muscles begin to ache. The muscular strength to lift 100 pounds works

very ineffectively with a load of 100 pounds. If 100 pounds must be manipulated, the muscle should have the strength developed to handle 150 to 200 pounds. Thus, only two-thirds or one-half of the muscle cells would need to contract for the 100-pound load. This enables part of the muscle mass to rest while the remainder works. It also permits the blood to bring the needed oxygen and glucose to the muscle cells and to remove the waste products.

- b. Cardio-respiratory endurance is the type required for long-distance running. It is composed partly of (1) muscular endurance, (see above), and (2) an increased efficiency in the function of the heart and lungs. The heart is a muscle and when greatly increased demands are made upon it in training for such activities as distance running, it develops in size and strength and receives an increase in the capillary bed within the heart muscle itself. In addition, men in training develop a greater number of partitions within the lung cells or alveola, which have an increased capillary network, thus giving a greater surface area within the lungs from which to absorb oxygen and to give off carbon dioxide. More red blood cells and a greater percentage of hemoglobin per cell are developed. All of these factors lead to increased endurance.

Both muscular and cardio-respiratory endurance are needed by fighting men. The soldier needs muscular endurance to do the long marches, to keep going for hours on end, and to perform the fatiguing duties of battle. He needs the cardio-respiratory endurance when he may have to cover advantageously a considerable distance at great speed. Emergency situations which necessitate the running of a distance anywhere from a half mile to several miles arise frequently in combat. The kinds of exercise needed to build up muscular endurance are the same as those indicated under strength. The only way cardio-respiratory endurance can be developed is by running.

4. **Agility.**—Agility is characterized by an ability to change direction and the position of the body in space with great rapidity. Agility is of great importance to the soldier because it enables him to fall to the ground and leap to his feet with much greater rapidity; it makes him a fraction of a second faster at ducking into a fox-hole or into a trench under a sudden machine-gun burst or at the approach of a bomb; it is of great value in hand-to-hand fighting. This important constituent of physical fitness is best developed by forms of calisthenics which require extensive and rapid changes of position, and by such activities as tumbling, sports and games, and combative activities.



5. **Coordination.**—Coordination, or the ability to integrate all parts of the body toward a single end, is an essential factor in physical fitness. In the coordinated individual superfluous movements are eliminated, and precision and endurance are increased thereby. For example, Dill of the Harvard Fatigue Laboratory found that the smoothest runner consumed 26 units of oxygen while the clumsy, unpracticed one used 40 units for the same task. Building large muscles is insufficient, for although the size appears impressive, muscles are improved in quality or skill only by the establishment of good coordination.

#### **IMPORTANCE OF PROPER CONCEPT OF PHYSICAL FITNESS.—**

If the proper concept of physical fitness is held, the physical training program will be directed toward the total conditioning of all the men. All too often it has been assumed that marching (or—in the cavalry—riding) is sufficient for conditioning of troops. Since physical fitness is composed of strength, endurance, agility and coordination, it is apparent that no one activity can fully develop it. Marching is a splendid conditioning activity, but it does not adequately develop abdominal, arm and shoulder girdle strength, agility, coordination, or the type of endurance which is called for in running. It must be supplemented by other exercises which will develop the other parts of the body.

#### **HISTORICAL BACKGROUND OF PRESENT PHYSICAL TRAINING PROGRAM.—**

The recommended physical training program in the Army is outlined in Training Circular 87. This program was developed in response to the need of more strenuous conditioning activities. During the summer of 1942 a comprehensive physical efficiency test was administered to more than 5,000 troops in eleven different Army camps. All men tested were carefully sampled, and represented a true cross-section of the Army insofar as their age, weight, nationality, and section of the country from which they came were concerned. This testing program revealed the physical fitness needs of the troops in the Ground Forces. The program in Training Circular 87 was designed to meet these needs.

Before the program now incorporated in Training Circular 87. was officially adopted, a carefully controlled study was undertaken to determine its effectiveness. In each of two different camps, two groups of troops were paired according to their age, height, weight and physical condition. One of the groups—the control group—was subjected to the traditional physical training activities. The other group—the experimental—was given the recommended program. The company officers were trained in the new activities. The entire study was carefully controlled, and the results proved conclusively that the new program was far superior to the traditional physical training activities.

COMPARATIVE VALUE OF TRADITIONAL  
AND T. C. 87 PHYSICAL TRAINING PROGRAMS

	EXPERIMENTAL GROUP			CONTROL GROUP		
	Test	Retest	Change	Test	Retest	Change
STRENGTH						
Pullups (arm flexor).....	8.3	10.8	2.5	8.8	9.5	.7
Pushups (arm extensor).....	20.4	32.2	11.8	21.6	23.7	2.1
Situps (abdominal).....	28.0	43.9	15.9	32.0	32.6	.6
Broad Jumps (3) (leg).....	21.4	21.8ft.	.4ft.	21.6	21.3	-.3
AGILITY						
20 Sec. Burpee.....	8.2	12.6	4.4	8.0	11.8	3.8
ENDURANCE						
75 Yd. Pick-a-back (muscular).....	21.1	18.5 sec.	2.6 sec.	20.6	20.7	-.1
300 Yd. Run (Cardio-respiratory).	51.2	47.5 sec.	3.7 sec.	51.9	49.1	2.8
COORDINATION						
Dodging Run.....	39.5	40.2	.7	40.1	38.2	-1.9

With some modifications the new physical training program was officially adopted and published as Training Circular 87, on November 17, 1942. Since that time, additional evidence of its value has been established. In California, four infantry companies were equated according to their physical fitness test-scores into two experimental and two control groups. The control companies spent one hour per day, six days per week, doing the traditional calisthenics, jogging and obstacle-course running. The experimental companies followed T. C. 87 under careful supervision. After six weeks, a retest showed that whereas the control companies had increased only 3½% in total physical fitness, the experimental groups had increased 23¼%. The program in T. C. 87 had proved to be nearly **seven** times more effective than the traditional physical training program.

In addition to its efficacy in developing physical fitness, the Training Circular program has other advantages. (1) The activities are simple, easily learned, and require no equipment. (2) They can be carried on either indoors or outdoors under practically any circumstances. (3) They are so arranged that the amount of exercise can be easily and accurately controlled. This makes possible the adaptation of the activities to any age group or level of physical condition. (4) Only 15 to 20 hours of instruction are required to train competent leaders. (5) Wherever the Training Circular program has been introduced by trained competent leaders, it has been markedly successful.

### CONSTITUENTS OF TRAINING CIRCULAR 87.

1. **Marching.**—Standards for marching with full field pack are set up. It is not intended that the physical training period be employed to develop marching ability and stamina. However, the physical training period might be utilized to test the troops to determine how they



measure up to recommended standards. The ability to march effectively is of vital importance, but is not considered advisable to devote much physical training time to it.

2. **Calisthenics.**—The core of the Training Circular program is calisthenics. Calisthenics have a number of advantages: (1) they are readily adapted to large groups; (2) they can be conducted anywhere; (3) they require no equipment; and (4) if properly selected, they will reach and develop any desired muscle group in the body.

From the vast number of calisthenic exercises which are available, only one set of twelve exercises was selected. Every effort was made to select the exercises which would best meet the needs of our soldiers. The exercises were carefully arranged in a sequence which provides rests for various muscle groups from time to time. It is essential that the set of exercises always be done in the prescribed order.

Each exercise has been given a name. After the men have repeated the names several times, they are able to go through the entire series, pausing only long enough between exercises for the instructor to indicate the name of the next exercise. One of the serious defects of traditional calisthenics has been the time wasted with men standing "at rest" or "at ease" between exercises. The continuous method of conducting calisthenics has many values. Time is saved; the exercises are intensified; the time expended in explaining new exercises is also saved.

By repeating the same exercises over a long period of time, it is possible to achieve greater perfection and accuracy in execution. Calisthenics are almost valueless unless they are properly performed. It might appear that the same exercises would become monotonous if they were repeated over a long period of time. However, the calisthenics in Training Circular 87 have been used for over a year by organizations which report no loss of interest on the part of the men.

It has been found desirable to supplement the original set of calisthenics with 4 additional exercises. Three of the 12 calisthenic exercises require the men to assume a supine position. When ground conditions make this undesirable, substitute exercises are needed. One additional supplementary exercise is recommended for the arm flexor muscles which no exercise in the original set reaches.

3. **Guerrilla Exercises.**—These movements are designed to prepare and train soldiers for guerrilla warfare. At the same time they provide vigorous exercise. Because of the large number suggested, a selection of exercises will be necessary when they are employed.

4. **Grass Drills.**—Grass drills have been used for years by football coaches to condition their squads. These exercises develop muscular

endurance and agility. In addition, they teach such practical skills to the soldier as dodging, getting down to the ground and up again quickly, etc. The name "Grass Drills" does not imply that grass is an essential for the exercises.

5. **Combatives.**—These activities have a number of values. In addition to developing agility, endurance, and strength, they provide enjoyment and competition. They contribute to the development of such character qualities as aggressiveness, initiative and resourcefulness. Emphasis is also placed upon certain activities which will develop skills the soldier may employ in hand-to-hand combat.

6. **Running Exercises.**—All men may be required to run when in combat service. Running is also the best single conditioning activity and should be included in each day's physical training period. It serves to develop muscular and cardio-respiratory endurance. Running may be performed in three ways:

- a. Road or drill-field running.
- b. Cross country running.
- c. Steeple chase and obstacle course running.

7. **Swimming, Life-Saving, and Water-Safety.**—To the extent of available facilities, instruction should be given in these fields.

8. **Relays.**—Relays are not included in the Training Circular program. However, their use as supplementary exercises are strongly recommended.

**ATHLETICS IN THE PHYSICAL TRAINING PROGRAM.**—The inclusion of athletics in the physical training program is strongly advocated. Rigorous sports and games which the men enjoy possess great value from a conditioning standpoint, in addition to their other merits. Men will gladly engage in calisthenics, guerrilla exercises, or grass drills if they know they will be able to play speedball, soccer, touch football, or push ball afterward.

Teamwork in sports develops the principles of coordination that are invaluable on the battle-field. Athletics develop an aggressive, fighting spirit, confidence, the will to win, and the ability to think and act quickly and effectively under fire. Many skills of direct value to the soldier are acquired from various sports. In soccer a man must be ready at all times to kick the ball with either foot. He naturally acquires a short gait, a change of pace, and a sense of balance which will be of immense advantage in dodging shell holes and obstacles on the battle-field. Football, which is in the same category, also develops the elements of correct body contact in combat work. Nearly every blow and position



in boxing has its counterpart in bayonet fighting. General Douglas MacArthur had all these values of athletics in mind, when, as superintendent at West Point, he had these words inscribed on the entrance hall of the Cadet Gymnasium:

"On these fields of friendly strife are sown the seeds which in other years on other fields will bear the fruits of victory."

Because practically all personnel are scheduled for physical training at the same hour, it is necessary to make adaptations and modifications when athletics are employed as part of the conditioning program. Many of the sports require such extensive facilities and equipment that few organizations would have them available to the extent necessary for the large number of men involved. This problem can be solved by selecting sports which involve large numbers of participants, by increasing the number of players in certain sports, and by modifying the size of playing areas.

Another factor which must be recognized is that no sport reaches and develops all the important aspects of physical fitness. For example, such activities as soccer, speedball, and touch football do not exercise the arm and shoulder girdle muscles. For this reason, it is recommended that calisthenics be used in conjunction with athletics. In addition to exercising all the muscle groups, calisthenics serve as a warm-up activity for the sports. It must also be remembered that troops should be well-conditioned **before** they participate in vigorous sports. The competition will cause men to go beyond their limitations if they are not prepared physically for such activities.

**TIME ALLOTMENT FOR PHYSICAL TRAINING.**—The softening influence of our mechanized civilization has made absolutely necessary an adequate time allotment for physical training. Much more time is required to condition recruits for combat service than ever before. The time allotted to physical training for recruits should, when the training schedule permits, consist of 1½ hours each day. A daily period of one hour should be considered essential for all troops. It is the task of the commander concerned to utilize to maximum advantage the time available for physical training.

The practice of substituting other training activities for physical training should not be tolerated. The complexities of modern warfare require so much technical training for the soldier that all too frequently no time is allotted for physical training; yet the soldier who possesses great technical skill but is unable to withstand the rigorous life demanded is of questionable value. There is no more justification for failure to allow time in the training program for physical training on the grounds that



the soldier will attain satisfactory physical development through performing his daily duties, than there is for failure to allow time for training in marksmanship on the grounds that the soldier will learn to shoot by being taken to the range, issued a weapon and ammunition, and left to his own devices.

### HYGIENIC CONSIDERATIONS.

1. **Mental Health.** Physical health cannot be dissociated from mental health. Ill health is quite often due to conditions of the mind resulting in bodily ailment as well as due to purely physical causes. Therefore, some consideration must be given to mental as well as physical hygiene.

A healthy state of mind is characterized by cheerfulness, confidence, and interest. An unhealthy state of mind is characterized by indifference, discouragement, worry, and a feeling of inferiority due to lack of success or progress. Physical training can help to develop a healthy mental state. This may be accomplished by:

- a. The instructor being a worthy example to his men.
- b. An understanding, fair, sympathetic attitude upon the part of the instructor.
- c. Work being interesting and varied.
- d. Work being arranged to result in progressive development.
- e. Consideration being given to providing for individual physiological differences.

The importance of proper personal habits, such as cleanliness, proper eating, rest, and elimination should be stressed during instruction in physical training. The matter of a well-balanced diet is of particular importance. Many men increase their weight to such an extent that their physical condition is impaired. Frequently as great a contribution can be made to an individual's physical fitness by reducing his weight through proper diet as by increasing his strength and endurance through exercise.

2. **Scheduling the Program.** Physical training periods should not be scheduled until at least 2 hours have elapsed after the men have eaten. Likewise, at least 30 minutes should intervene between the cessation of the exercise and the beginning of mess. There is ample reason to believe that moderate exercise before breakfast is not harmful. However, the men should not begin with extremely vigorous running or strenuous calisthenics immediately after rising. By beginning the exercises in a gradual manner, a vigorous activity period can be engaged in before breakfast without harmful results. In fact, in very hot climates, the best time to exercise is before breakfast. However, at least 30 minutes should elapse after exercising before the men eat breakfast.



According to a report from the Surgeon General,\* strenuous physical activity can be performed in extremely hot temperatures if men are given an opportunity to become acclimated to the heat and if they consume a sufficient quantity of salt and water.

The question is often raised as to the best time of the day for the physical training period. Since muscle cells do not recognize time, it is immaterial from the physiological standpoint when exercise is taken so long as it does not interfere with digestion. However, whenever possible, physical training should be conducted in the last period of the afternoon, since it will enable the men to bathe immediately after the exercise. This makes the exercise more appealing to the men and should be arranged whenever possible. This does not imply that programs cannot be successfully carried out in the morning when it is not possible to bathe immediately after the exercise period.

Objection is raised to this later afternoon physical training period on the ground that the men will be fatigued from their duties of the day and will be in no condition to put forth their best efforts. It has been found, however, that a change of activity serves to invigorate them. It has been repeatedly demonstrated that the troops begin exercising in a fatigued condition and finish an hour later feeling considerably refreshed.

3. **"Warm-Up."** It is a fundamental physiological principle that the men should be "warmed up" gradually before engaging in strenuous exercise. The calisthenics in Training Circular 87 are arranged to provide a "warm-up." It is also recommended that the men double-time to the exercise area whenever possible.

4. **Clothing.** Muscular action produces an unusual amount of bodily heat which should be lost gradually to prevent chill. Hence, after exercise, clothing should not be removed to permit the men to cool off. On the contrary, additional clothing should be worn. If no additional clothing is available, men should be kept mildly active, allowing their bodies to cool gradually.

5. **Drinking.** The men should not drink water, particularly cold water, during or immediately after exercising. If it is necessary for a man to have water, he should take a small quantity, but continue exercising, especially if he is perspiring.

**POSTURE.** The Army has always stressed good posture, for proper military bearing is impossible without it. In addition to the physiological values of correct posture, a well-poised soldier gives the impression of strength, control, confidence and vitality.

\*S. G. O. Circular Letter No. 119, 3 July 1943, "Acclimatization, Including Water and Salt Requirements in Hot Climates."



The attainment of good posture depends upon 3 different factors: (1) setting up an ideal of good posture in the mind of the soldier; (2) developing and maintaining an all-around muscular tone; (3) stretching the muscles involved in bad posture. Of these factors, the most important is the creation of an ideal of good posture. It depends upon the soldier's desire, pride, attitude, and his constant thinking of his own bearing. A well balanced physical training program will develop an all-round muscular tone. Specifically selected calisthenic exercises are needed to stretch the shortened or over-developed muscles and to shorten the stretched or under-developed muscles. The individual with poor posture should be expected to employ such exercises on his own time.

### **MAINTAINING PHYSICAL FITNESS ABOARD SHIP.**

It is essential that some provision be made to keep troops in proper physical condition when they are enroute overseas. Many troops are required to spend more than 30 days aboard ship and if they are given no exercise during this period, they will lose much of the good physical condition which they had upon embarkation. Many successful physical training programs have been carried out on transports. The principal problem is that of space. Usually a small space may be cleared for calisthenics. By scheduling the available facilities for half hour intervals throughout the period of daylight, it is possible to provide an activity period for most men. Some transport programs have even included crude obstacle courses.

### **RESPONSIBILITY FOR PHYSICAL TRAINING.**

It is Army policy that unit commanders be responsible for the physical condition of their men just as they are responsible for all other aspects of their training. For this reason, it is essential that these commanding officers be cognizant of the importance of physical fitness and the activities and methods by which it may be attained. Each unit commander should have well-trained junior officers and non-commissioned officers to whom he can delegate the conduct of the physical training activities when necessary.

The commander needs to know the physical capacities and limitations of his troops, because the success or failure of a mission may be dependent upon such knowledge. With the welfare of his organization and all of his men dependent upon him, no commander can afford to be lacking in physical fitness. Therefore, the commander should participate in the activities himself because the physical condition of no one in his organization is more important than his own.



## CHAPTER II

## CONDUCT OF THE PHYSICAL TRAINING PROGRAM

## LEADERSHIP

**THE LEADER.**—The success or failure of the physical training program depends upon the leadership. The best results in a conditioning program can be obtained only if men are motivated to extend and to punish themselves physically and to make every effort to perform all exercises in the prescribed form. Only the best leadership can inspire men to cooperate to this extent.

**ESSENTIAL LEADERSHIP QUALITIES.**

1. Enthusiasm is undoubtedly the most essential quality of the physical training instructor. He must be inspired by the thought that what he does every minute of every day may mean the difference between victory and defeat on the battle-field, and between life and death of some of the men with whom he is working.

2. The possession of a considerable endowment of physical and nervous energy is another essential quality of good physical training leadership. The leader's energy begets energy in his followers. Sluggishness, apathy, and fatigue are foes of good leadership which only abounding energy can keep at bay.

3. The instructor must have complete mastery of his subject matter. He must be able to explain and demonstrate all activities. The confident, well-prepared instructor gains the respect and cooperation of the men at the outset while the unprepared, hesitant instructor loses the respect of his men almost immediately.

4. The personal appearance of the instructor is related to his effectiveness as a leader. He should exemplify the things he is seeking to teach. He must be physically fit. Physical training leadership is so strenuous that considerable strength, stamina, coordination and agility are prerequisites for successful work.

**MOTIVATION.**—If a physical training program is to be successful, it is essential to enlist the full cooperation of all the men. Physical training activities must be done accurately and intensively if they are to be of value. It is a simple matter to mangle if an individual chooses to do so. Since it is impossible to force the troops to perform the exercises with precision and accuracy and to extend themselves fully, they must be sold upon the necessity of doing so. The leader must convince the

men that these activities will enable them to have a much better opportunity to survive in combat situations. When they realize that their efforts are an investment in their own personal welfare, it is not difficult to secure wholehearted cooperation.

This cooperation may be lost by an over-zealous instructor who fails to recognize the importance of conditioning men gradually. If poorly conditioned men are exercised violently, they become so stiff and sore that they look upon the next physical training period with apprehension. The men develop an antagonistic attitude toward the instructor and the program, and instead of cooperating, they will mangle at every opportunity.

Physical training can and must be made interesting. The most effective method of doing this is to introduce activities which the men will enjoy. Calisthenics, guerrilla exercises, grass drills and running are activities about which soldiers do not particularly enthuse, but they will engage in them conscientiously and vigorously if they are followed by stimulating competitive sports and games. Even though men realize the value of the purely conditioning activities they need the additional incentive to continue to put forth their full efforts over a long period of time.

Commanding officers themselves may provide one of the best incentives by participating in the physical training program. When troops feel that their commanders believe in physical conditioning to the extent that they will actually engage in the activities, they are motivated to greater effort. In addition, troops invariably develop a greater esprit and respect for their officers.

Another method of motivation is physical efficiency testing. When physical liabilities are revealed by the testing program many men are powerfully motivated to improve their condition. Others feel challenged by the tests and strive to improve their score on the next one. Men compete against each other to show the greatest improvement. Some commanding officers offer incentives to those men with the best records. Others deny certain privileges to those men who have test scores considerably below the average. All of these devices serve to stimulate interest and participation in the physical training program.

**LEADERSHIP TECHNIQUES.**—If the instructor has not experienced all the exercises himself, he cannot appreciate how arduous the exercises are, what movements are most strenuous and difficult, where the errors in performing the exercises are likely to occur, and what the proper cadence should be.

The instructor should commend good performance as quickly as he censures bad. He must be able to distinguish between poor performance



caused by lack of ability or aptitude on the part of the soldier and poor performance caused by lack of effort. He should treat the first with patience and understanding, and the latter with firmness; he must **never** apply sarcasm or ridicule.

In order to carry on an effective daily program, leaders will find it necessary to prepare a detailed outline of the activities of the day. Even the most experienced leaders find it helpful each day to review the materials to be covered. Selections must be made from guerrilla exercises, grass drills, combative events and relays. It is helpful for the instructor to have a reference card containing a list of the activities to be covered. This card should **never** be consulted when the men are at attention or when they are performing an exercise.

Men should never be kept too long in one position, especially a constrained one. No exercise should ever be performed a greater number of times than can be accomplished without loss of proper form. The instructor must be uncompromising in regard to the form in which all calisthenics are executed. Even slight deviations from the proper form will greatly reduce the value of the exercise.

Long explanations should be avoided. As a rule, it should be necessary to give a full explanation of **new** exercises only. The most essential features of an exercise should be explained first; details may be added later. Too many details at one time are more likely to confuse the men than to assist them. All minor corrections should be made to the entire class while the exercise is in progress, (for example, "heads up," "knees straight," etc.), following this if necessary by mentioning the name of the man who is particularly at fault. If a man requires special attention, in order to avoid wasting the time of the remainder of the group, he should be given separate instruction by one of the assistant leaders.

**FORMALITY vs. INFORMALITY.**—When extreme formalism is insisted upon in physical training, the chief objective is discipline rather than physical fitness. The best results are obtained in physical training when the men participate in the activities with vigor, enthusiasm and satisfaction. When the period is conducted in a rigidly formal manner, however, the spirit and enthusiasm of the men are suppressed.

Conditioning exercises should be conducted so that they impart the utmost physiological benefit. Accuracy and precision of performance should be required unconditionally whenever their attainment is possible. But this insistence upon accuracy and precision of performance should be aimed at giving the men the maximum physical benefit from the exercises and should not be employed for purely disciplinary purposes. Some instructors emphasize the disciplinary aim to the extent that they give only those exercises which lend themselves readily to a

snappy military performance, thereby neglecting the more complex and more beneficial exercises in favor of the simpler and less beneficial ones.

**SIZE OF THE CLASS.**—For most efficient instruction, the class should be limited in size to one platoon. This size also permits maximum control by the instructor. The practice of one instructor leading an entire battalion or regiment in physical training is not conducive to effective results. Constant supervision is necessary and it is inevitable that the accuracy and perfection of the exercises is diminished when the number of men exceeds one platoon. Much better results will be attained by 4 platoons exercising separately than together.

**ASSISTANT LEADERS.**—Even though the size of the group is limited to one platoon, assistant leaders are needed to give additional supervision and to assume charge of the groups in the leader's absence. These assistants should be the most capable leaders in the platoon. It is important that they participate in the exercises, but as they do so, they should supervise the men in their vicinity. In the circle formation, each assistant leader assumes responsibility for a segment of from 8 to 10 men.

These assistant leaders can be of further help by counting cadence for the instructor. The assistants constantly set the pattern for the proper form for the men to follow. In addition, the instructor should usually use one or several of his assistants to demonstrate exercises.

The assistant instructors should perform all lateral movements to the same side as the group. If the men are bending to the left, the assistants bend to the right, in order that their movements be in the same direction as those of the men.

**IN-SERVICE TRAINING.**—One of the difficulties of exercising in smaller groups is that more leadership is required. Each platoon should contain 4 or 5 men who are competent to conduct the physical training program. These men should participate in an in-service training program, which should be instituted before the Training Circular program is introduced. Great care should be exercised in the selection of these leaders. A time should be arranged when men selected as leaders can meet with the officer in charge for instruction and practice in the Training Circular activities. The training should include, in addition to the mastery of all the exercises, actual practice in leading. Very effective leadership can be developed in 15 to 20 hours of such in-service training.

**CONDUCTING CALISTHENICS.**—After the men know how to execute the exercises properly, calisthenics are always given in cadence, counted either by the instructor, one of his assistants, or the entire group.



It should be noted that the cadence for the different calisthenics varies. The exercises should be done to the accompaniment of music whenever possible.

The leader should participate in some of the exercises himself if he can do so. If he has well-trained assistants he can alternate with them in leading the exercises and supervising the men. However, supervision of the men is **always** necessary and the leader himself must do it if capable assistants are not available.

The Pushups, Squat Jumps, and Straddle Pullups may be executed at will on occasions. The men respond well to performing these exercises in this manner. The instructor merely indicates the number of repetitions which are to be done and as soon as the men have completed this number, they stand at ease.

An interlude of guerrilla exercises interposed in the middle of the calisthenics is a successful variation. Coming between the sixth and seventh exercises, a 5 or 10 minute period of guerrillas provides a change of activity which appears to make the men more receptive for the last half of the calisthenics.

In some organizations, chinning bars have been erected near the quarters and every man is required daily to perform as many pullups as he can and record the number on a company roster. Where this practice is in operation, it is recommended that the Straddle Pullup exercise be eliminated from the calisthenics. Pullups on the bar is a superior exercise to the Straddle Pullups for developing the arm flexor muscles.

## PHYSICAL TRAINING COMMANDS

**THE IMPORTANCE OF COMMANDS.**—The importance of proper commands in conducting the physical training program cannot be over-estimated. Invariably, the performance is the direct reflection of the command calling for it. When the command is given distinctly, concisely, with energy and snap, and with proper regard to rhythm, the performance will be found to fit the command; whereas a lifeless, slovenly and disorganized performance will result from a careless and indifferent command.

### TYPE AND DEVELOPMENT OF VOICE FOR GIVING COMMANDS.

—Instructors should practice developing their vocal powers until they develop a commanding voice, with the requisite amount of "carry," quality and proper pitch.

Commands should be delivered in what is commonly known as a "chest voice" in contradistinction to what is known as a "head" or "nasal" voice. The former is usually a low-pitched voice that will carry further, be more distinct, and require less effort than the latter.

All the words of a command, particularly of the preparatory or explanatory command, must be articulated distinctly. The enunciation must be clear, have the proper intonation, possess the proper inflection and power, and be convincing. The diction must be pure; the substitution of sounds, which in many cases have no relation whatever to the sounds of the words for which they are substituted, should be avoided.

**KINDS OF COMMANDS.**—There are two kinds of military commands.

1. The preparatory command which describes and specifies what is required and,
2. The command of execution which calls into action what has been prescribed. All preparatory commands must be given with a rising inflection. The interval between commands should be long enough to permit the average man to understand the first command before the second command is given.

**TRAINING CIRCULAR 87 COMMANDS.**—In order to save time and to expedite actual participation, every effort has been made to simplify and reduce to the minimum the commands for the training circular exercises.

**Calisthenic Commands.**—When calisthenics are given to a new group it is advisable to take the men through the exercises step by step during the first few periods. If the proper habits of performing the exercises are developed at the outset, time and effort need not be expended later in eliminating bad habits. There are 4 different steps involved in introducing the Training Circular Calisthenics.

1. Explanation and demonstration by the instructor or a member of the class "by the numbers."
2. Participation by the group "by the numbers." The men hold the positions on each count while corrections are made by the instructor and assistants.
3. Demonstration of the exercises at regular cadence by the instructor, an assistant instructor, or a member of the class.
4. Group participation in the exercises at regular cadence.

Following is an example of these 4 steps with the first calisthenic exercise, the **High Jumper**:

1. "At Ease."
2. "The first exercise is the **High Jumper**. It is a four-count exercise. In the starting position, the feet are 12 inches apart (demonstrate), the



arms are extended toward the rear (demonstrate), the knees are bent (demonstrate). On the count of **One**, swing the arms forward shoulder high and jump upward several inches (demonstrate). On the count of **Two**, jump upwards and return the arms to the original position (demonstrate). On the count of **Three**, leap into the air about 12 inches, swinging the arms forward and overhead vigorously (demonstrate). On the count of **Four**, jump into the air, swinging the arms to the rear to the starting position (demonstrate).

3. "In the starting position, the feet are one foot apart, the knees are bent, the arms are extended to the rear. Starting position, **MOVE**." (Instructor and assistants check individuals in the group and make necessary corrections.)

4. "On the count of **One**, swing the arms forward shoulder high and jump upward several inches. **ONE**." (Instructor and assistants check all men in the group and correct them if necessary.)

5. "On the count of **Two**, jump upward and return the arms to the original position. **TWO**." (Instructor and assistants again check.)

6. "On the count of **Three**, leap into the air about 12 inches, swinging the arms vigorously forward and overhead. **THREE**." (Instructor and assistants again check all men.)

7. "On the count of **Four**, jump upward and return the arms to the original position, **FOUR**." (Instructor and assistants again check.)

8. "At Ease."

9. "In Cadence this exercise is performed as follows: 1. In Cadence, 2. **ONE, TWO, THREE, FOUR, ONE, TWO, THREE, FOUR**, etc., etc. (instructor or assistant demonstrates).

10. "Starting Position, **MOVE**."

11. "In cadence, **ONE, TWO, THREE, FOUR**," etc., etc.

For the exercises in which the men must assume at the starting position either the front leaning rest position or a supine position, demonstration of the exercise in regular cadence should be done as the second step. In other words, on these particular exercises, the second and third steps are reversed. If the steps are not reversed, time is lost while the men assume the standing position to watch the demonstration.

It should be re-emphasized that the above procedure is to be used **only** when the calisthenics are introduced to men who are unfamiliar with them or when the men are performing the movements poorly and require corrections. After the men have had several days' experience with the exercises, the instructor needs merely to indicate what the exercise is, command the men to assume the starting position, and start them exercising in cadence.

The leader's commands are as follows:

"The first exercise is the HIGH JUMPER.

"Starting Position, MOVE.

In cadence—ONE, TWO, THREE, FOUR," etc., etc.

The numbers must not only be used to indicate rhythm or cadence but they must also be indicative of the manner in which each movement of an exercise is performed. Through proper use of these commands, long explanations are avoided and instructors are able to place themselves in absolute accord with the men. When a movement needs to be done slowly, the instructor draws out the count. If any particular movement is to be performed with more energy than the others, the numerals corresponding to that movement should be emphasized by a louder count.

To discontinue an exercise performed rhythmically or in cadence, the command HALT is given in place of the last numeral (for example: ONE, TWO, THREE, HALT). In order to prepare the men for this command, all numerals spoken in the final repetition should be spoken with a rising inflection. In exercising with large groups, it is helpful if the instructor raises his right hand just prior to the last repetition. Some instructors believe they can bring the group to a halt more uniformly by giving the command AND HALT on the third and fourth counts of the last repetition.

After the men are halted they are put at ease. When they are in the early stages of the training program they may be given a rest at this point or they may listen to the instructor. After about a week, however, they remain at ease between exercises only long enough for the instructor to indicate the next exercise and to give the command "Starting Position, MOVE."

In the late stages of training, to intensify the calisthenics, the practice of having the men assume the "At Ease" position momentarily may be discontinued. By going immediately from the position in which the men have been halted to the starting position of the next exercise, the command "At Ease" can be eliminated.

**Mass Commands.**—The use of mass commands under appropriate circumstances is strongly recommended.

1. Mass Commands assist greatly in overcoming individual diffidence and timidity and in developing confidence, self-reliance, assertiveness, enthusiasm and proficiency.

2. It is possible to give large masses the benefits accruing from individual instruction by virtually making each individual his own instructor. The principle advantage is the fact that each man is made



to rely upon his own initiative and intelligence. He must learn not only to give the commands properly but also how to perform correctly the movement required by the command.

3. Since each individual is required to give the commands as if he alone were giving them to the entire unit, the volume and "smash" of the combined voices literally impel every man to extend himself to the limit in performing the movements with snap and precision. Coordination and a sense of cadence are also developed by giving commands in unison.

4. Mass commands teach the proper cadence of an exercise, when to accentuate, emphasize or drawl a count, and, by proper intonation, to convey how a movement is to be performed.

5. Mass commands develop the voice.

6. Mass commands may serve the valuable function of developing group exercise leaders.

The following example will indicate the recommended method of employing mass commands for Training Circular 87 calisthenics:

**Instructor:** 1. Call the Platoon to the Starting Position of the Burpee.  
2. COMMAND.

**Mass:** 1. Starting Position. 2. MOVE.

**Instructor:** 1. Execute the Exercise, AT YOUR COMMAND.  
2. COMMAND.

**Mass:** 1. In Cadence. 2. ONE, TWO, THREE, FOUR, etc., etc.

An exercise done with mass commands is discontinued on a signal from the instructor, who raises his right arm just prior to the beginning of the last repetition. On this signal, the mass will count, with a rising inflection: ONE, TWO, THREE, HALT. If a definite number of repetitions of each exercise is established in advance, no signal from the instructor will be necessary to terminate the exercise.

Mass commands are not recommended until the men have participated in the calisthenics several times. After that, their use will be very beneficial.

**Cumulative Count.**—A cumulative count is a method of indicating the number of repetitions of an exercise on the fourth numeral of a four-count exercise, or the second numeral of a two-count exercise. Thus:

1-2-3-1; 1-2-3-2; 1-2-3-3; 1-2-3-4; 1-2-3-5, etc. In the case of a two-count exercise the cadence would be: 1-1; 1-2; 1-3; 1-4; 1-5; etc.

The use of the cumulative count is strongly recommended:

1. It provides the instructor with an excellent method of counting the number of repetitions which have been performed.
2. It enables the leader to make the exercises progressive from day to day and week to week.
3. It serves as a self-testing and motivating device. Men like to know how much they are expected to perform. They want to continue to show improvement.
4. It provides a means of prescribing an exact dosage of exercise for any group, even when conducted by untrained personnel.

**Guerrilla Exercise Commands.**—The men usually perform the guerrilla exercises in a circle formation. As they march at route step about the circle, the instructor indicates the name of the exercise and follows it with the command of execution. Thus: 1. Bear Walk, 2. MARCH. After the group has performed this activity for an appropriate distance, the instructor returns them to their original position with the command: 1. Quick Time, 2. MARCH. If the instructor desires to intensify the guerrilla exercise he may go immediately to another guerrilla exercise without returning the men to the erect position. Thus, when the men are executing the bear walk he might give the command: 1. Frog Jump, 2. MARCH.

**Grass Drill Commands.**—Grass exercises have no preparatory command. Most of these are described with one word which serves as the command of execution. Thus, when the command FRONT is given, all the men immediately flop down to the ground on their stomachs. On the command UP they spring to their feet and do a stationary run.

## PHYSICAL TRAINING FORMATIONS

**SQUARE OR RECTANGULAR FORMATION.**—The traditional formation for carrying on physical training activities is the square or rectangular formation. This formation has the advantage in that it is compact and requires less space than any other formation. It is the best type of formation to employ for large numbers of men. It is simple, easy to assume, and may be applied with equal facility and promptness to



any unit. Its chief disadvantage is that it does not lend itself well to other activities such as guerrilla exercises, grass drills and combative events. It has a further disadvantage in that proper supervision of all men is difficult.

The square or rectangular formation is assumed from a column of threes or fours, at close intervals between squads, facing the instructor who commands:

(1) 1. Extend to the Left, 2. MARCH. At this command the men in the right flank column stand fast, with arms extended sideward; all other men turn to the left and taking up the double time, run forward to the original left; men in the center column of a 3 squad unit or men in the right center of a 4 squad unit take two paces, men in the left column of a 3-squad unit or men in the left center column of a 4-squad unit take four paces, men in the left column of a 4-squad unit take six paces. After taking the required number of steps, all men face the front with arms extended sideward. The distance between finger tips is about 12 inches.

(2) 1. Arms 2. DOWN. At this command the arms are lowered smartly to the side.

(3) 1. From Front to Rear, 2. COUNT OFF. At this command the leading man in each column turns his head to the right rear, calls off one and faces the front. Successive men in each column call off in turn, two, three, four, five, etc., in the same manner.

(4) 1. Even Numbers to the Left, 2. UNCOVER. At the command Uncover, each even numbered man stride-jumps sideward to the left, squarely in the center of the interval. In doing this, he swings his left leg sideward and jumps from his right foot and lights on his left foot, smartly bringing the right into position against the left.

(5) To assemble the unit, the instructor commands:

1. Assemble to the Right. 2. MARCH. At this command, MARCH, all return to their original position in the column on the double.

A modification of this exercise formation is strongly recommended if more space is available. It is executed in a similar manner to the above formation with the inclusion of an additional extension of the men. This has the effect of spacing the men in depth as well as laterally. More space is provided between the men, which makes this formation adaptable for guerrilla exercises, grass drills, and combative events. The

commands for this elongated square or rectangular formation are as follows:

- (1) 1. Extend To The Left, 2. MARCH.
- (2) 1. Arms, 2. DOWN.
- (3) 1. Right, 2. FACE.
- (4) 1. Extend To The Right, 2. MARCH.
- (5) 1. Arms, 2. DOWN.
- (6) 1. Left, 2. FACE.
- (7) 1. From Front To Rear, 2. COUNT OFF.
- (8) 1. Even Numbers To The Left, 2. UNCOVER.

To assemble the unit, the instructor commands:

1. Assemble To The Right, 2. MARCH.

At the command MARCH, all return to their original positions in the column on the double.

An additional method of extending the men is to select a middle file and command:

1. Extend To The Right And Left From The Center File, 2. MARCH.

This center file might be clearly designated by having each man raise his right arm. This method of extending the men will assist in getting them all evenly distributed before an exercise platform.

Guerrilla exercises may be conducted in several ways from the square or rectangular formation. If adequate space is available, the guerrillas can be executed by the men moving straight ahead. If the space is restricted, the men may shuttle back and forth. For example, they might perform two guerrilla exercises and then be halted and faced in the opposite direction. This is repeated until all the guerrillas have been executed.

An additional method of performing guerrilla exercises involves the use of a movement similar to the countermarch of a band. In reality the exercises are done in an elongated circle. In order to provide sufficient space between the files for the men to come back, the even-numbered men must be recovered to their original positions. The space between the men must be increased. This can be done by extending the men twice as indicated in the elongated square formation described above.

The square or rectangular formation should be elongated if men are to perform grass drills and combatives. For combatives the first and second, and third and fourth files should face each other.



**CIRCLE FORMATION.**—Conditioning exercises may also be conducted in a circle formation.

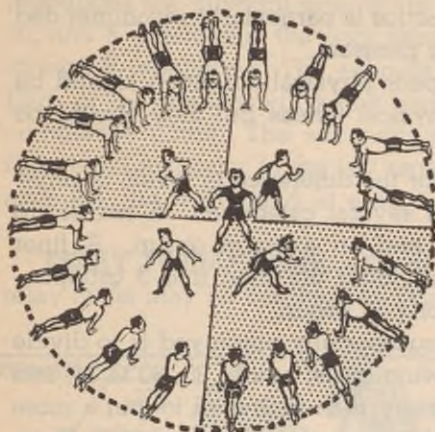


Fig. 1

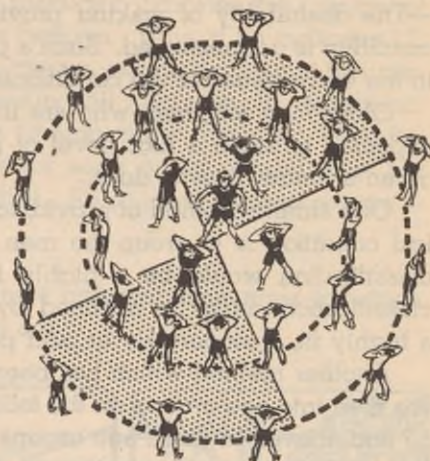


Fig. 2

It is easier to conduct guerrilla exercises, grass drills, and combatives in this formation. It also facilitates supervision of the men, particularly if the sub-leaders are used inside the circle. It is their function to observe the men in a segment of the circle to see that they perform all the exercises properly. The sub-leaders participate in all the exercises except when they are correcting or assisting one of the men (Fig. 1).

The disadvantage of the circle formation is that it is not as compact as the square or rectangular formation. Difficulty is encountered in handling large numbers of men in a restricted space.

It is not advisable to have more than 75 men in a single circle. If more men must be accommodated, separate circles or concentric circles may be used (see Fig. 2). As many as 400 to 500 men may be formed in 6 or 7 concentric circles. Better results will be obtained, however, if 6 or 7 **separate** circles are utilized.

If a platoon is to form a circle, the simplest and quickest method is to command the men to "join hands and form a circle." A more formal command is: 1. Circle Formation, 2. MARCH. Upon this command, the right flank column moves forward at double time with the leader gradually describing a circle. Each succeeding file falls in behind that on the right.

When the rough outline of the circle has been formed, the intervals between the men may be made uniform by having everyone grasp hands after he has been halted and faced toward the center.

If concentric circles are to be formed, the different circles are made by certain designated platoons and squads. Each additional circle requires more men than the one inside it. For example, 3 squads may form the inner circle, a platoon the next circle, 5 squads the next, and 6 or 7 squads the outer circle.



**PROVISION FOR DIFFERENT LEVELS OF PHYSICAL CONDITION.**

—The desirability of making provision for different levels of physical condition is unquestioned. Such a practice is particularly recommended in the early stages of the conditioning program.

Older men and men who are in poor physical condition should be expected to attain a high level of physical fitness but they should be given a longer time to do it.

One simple method of providing for the difference in levels of physical condition is to group the men in several categories. A two-group classification would be a highly fit and an average group. A finer classification could be obtained by dividing the men into 3 groups—a highly fit, a moderately fit, and poorly fit group.

Another method which has been successfully employed is to divide the men into age groups on the following basis: under 30, 30 to 34, and 35 and above. In these age groups every man is invited to join a more fit or less fit group, depending upon his own physical condition. Thus, a man in the 30 to 34 age group who is in excellent condition may desire to join the under 30 group which will exercise more strenuously; likewise, a man in the 30 to 34 age group who is in very poor condition might join the older group which will exercise less strenuously than either of the other groups.

Another method of segregating the men may be employed in the square or rectangular formation. The men may be classified into 3 groups on the basis of their physical condition—excellent, average, and poor. As the men assemble for their exercises the highly fit group should be nearest to the instructor, the average group next, and the least fit group last. They should be so arranged that a double interval separates each of the 3 groups as in the illustration below.

## INSTRUCTOR

X

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X X X X X X X X X X X X X X
X X X X X X X X X X X X X X
X X X X X X X X X X X X X X
X X X X X X X X X X X X X X

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EXCELLENT

X SUB-INSTRUCTOR

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X X X X X X X X X X X X X X
X X X X X X X X X X X X X X
X X X X X X X X X X X X X X
X X X X X X X X X X X X X X

```

AVERAGE

X SUB-INSTRUCTOR

```

X X X X X X X X X X X X X X
X X X X X X X X X X X X X X
X X X X X X X X X X X X X X
X X X X X X X X X X X X X X

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POOR



Before starting each exercise, the instructor indicates the number of repetitions the different groups are to perform. Thus, if he indicates 12, 10, and 8 repetitions, the poor group ceases exercising after it has performed 8 repetitions. The average group will stop after 10 repetitions. Each of the groups will know when to stop if the instructor uses the cumulative count. The sub-instructor for each group should raise his right hand just prior to the last repetition. As soon as a group ceases to exercise, the men stand at ease.

**RELAY FORMATIONS.**—There are 4 different formations in which relay races may be conducted. These are:



Fig. 3A

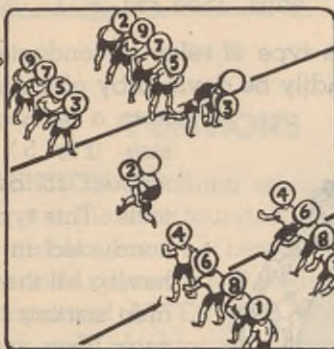


Fig. 3B



Fig. 3C

1. **Lane Method.**—Teams of the same number of men are arranged in parallel columns behind a common starting line. These columns should be about 10 feet apart.

A turning point should be established for each team directly to its front, the distance from the starting line to the turning point varying with each race. The race is conducted by having each performer travel from the starting line to and around the turning point and back to the starting line, where each touches off the next one of his teammates. This continues until all have run. (See Fig. 3A.)

2. **Shuttle Method.**—Two starting lines are used. These should be parallel and the desired distance apart. Teams are divided in half with each half facing the other across the distance to be run. The race is run by having the number one man run to the opposite line and touch off the number two man of his team, who runs back and touches off the number three man, etc. This continues until all the men have run or until all have returned to their original positions. In this last situation, all men run twice. (See Fig. 3B.)

For throwing or jumping events, the shuttle method is conducted differently. The two competing teams line up on opposite sides of a base line. The leading man of team "A" toes the base line. The leading man of team "B" is some distance in front of the base line, the distance depending on the event. The leading man of team "A" makes his jump (or throw) from the base line. No. 1 of team "B" executes a return jump (or throw) using as his starting line the rear heel mark of the first jumper or the spot where the first throw landed.

No. 2 of team "A" then jumps back (or throws) from the mark made by No. 1 of team "B." Teams alternate jumping (or throwing) in this way until every man has participated. If the last man of team "B" jumps (or throws) beyond the original base line, team "B" wins; if his jump (or throw) falls short, team "A" wins. (See Fig. 3C.)

3. **Circle Method.**—This type of relay is conducted around a track. (Fig. 4.) This track may readily be devised by placing 4 objects so they

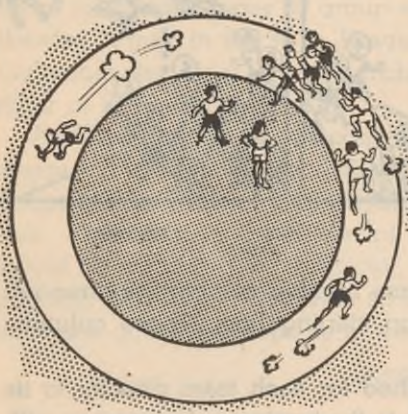


Fig. 4

form a rectangle of the desired size. (Fig. 5.) The track is considered to be outside the objects. This type of relay may be conducted in two ways: (1) by having all the teams use a common starting line; (2) by having each team use a separate starting line, these being evenly distributed about the track. To run the race, the first player of each group travels about the track, and at his starting line he touches off the next player of his team, who circles the track and touches off the next player of his team, who circles the

track and touches off the next runner. This continues until all have run.

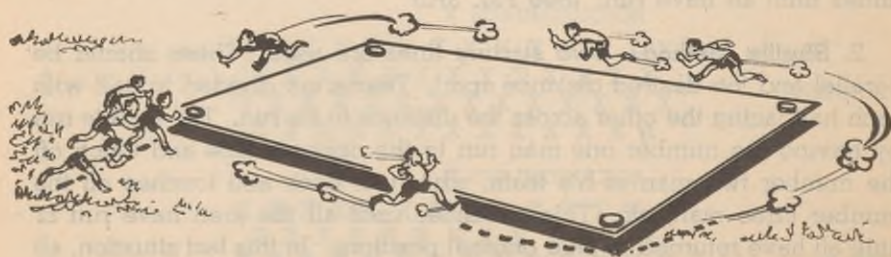


Fig. 5



4. **Cumulative Method.**—The cumulative method is most effectively employed with running and jumping contests. The competing teams form in parallel columns. No. 1 of each team broad jumps or throws, No. 2 jumps or throws from No. 1's mark, and so on. The team jumping or throwing farthest from the base line wins. (See Fig. 6.)



Fig. 6

## POSITIONS

**Position of ATTENTION.**—Nothing equals the importance of proper and correct posture; it is the very foundation upon which any successful course in physical training must be based. The position of attention is the position an unarmed, dismounted soldier assumes when in ranks or whenever the command ATTENTION is given. This position must be one of mental as well as physical alertness, and for that reason it must be free from all mental and physical constraint. Any tendency toward rigidity should be avoided, as the position is one that depends upon coordination and not necessarily upon muscular effort. Instructors are cautioned to describe, illustrate, and explain the position of the various parts of the body in this position, as well as carefully call attention to common errors.

The instructor commands: 1. Platoon, 2. ATTENTION. At this command the men spring into the position described below, bringing the heels together with a click. For the purpose of precise and simultaneous performance, the men should be cautioned not to move until the last syllable of the command **A-T-T-E-N-SHUN** is spoken.

1. Heels on the same line and as near each other as the conformity of the body permits.
2. Feet turned out equally and forming an angle of  $45^{\circ}$ .
3. Knees straight without stiffness.
4. Hips level and drawn back slightly; body erect and resting equally on hips; chest lifted and arched; shoulders square and falling equally.

5. Arms hanging straight down without stiffness, so that the thumbs are along the seams of the trousers; back of the hands out, fingers held naturally.

6. Head erect and squarely to the front; chin drawn in so that the axis of the head and neck is vertical; eyes straight to the front.

7. Weight of the body resting equally on the heels and the balls of the feet.

8. In assuming the position of the soldier, or of attention, the heels are brought together smartly and audibly.

**RESTS.**—Being at a halt, the commands are: FALL OUT; REST; AT EASE; and 1. Parade, 2. REST.

1. At the command FALL OUT, the men leave the ranks but are required to remain in the immediate vicinity. The men resume their former places at attention at the command FALL IN.

2. At the command REST, one foot is kept in place. Silence and immobility are not required.

3. At the command AT EASE, the right foot is kept in place. Silence but not immobility is required.

4. At the command of execution, REST, of 1. Parade, 2. REST, move the left foot smartly 12 inches to the left of the right foot; keep the legs straight so that the weight of the body rests equally on both feet. At the same time, clasp the hands behind the back, palms to the rear, thumb and fingers of the right hand clasping the left thumb without constraint; preserve silence and immobility.

5. Being at any of the rests except FALL OUT, to resume the position of attention the commands are: 1. Platoon, 2. ATTENTION.



## CHAPTER III

## TRAINING CIRCULAR 87

## ● CALISTHENICS

To be most effective and to attain the objectives for which they are designed, it is imperative that the calisthenics be done in good form, that is, exactly as described, and with energy in each movement. The exercises are to be done in the order given. As the endurance of the soldier develops, the number of times each exercise is performed should be increased. As soon as practicable the calisthenics should be done in a continuous fashion.

## 1. THE HIGH JUMPER

- a. Starting Position — Feet separated about 12 inches, knees slightly bent, arms raised backwards, body bent slightly forward at the waist.
- b. Cadence—Moderate.
- c. Movement:
  - (1) Swing arms forward and jump upward.
  - (2) Swing arms backward and jump upward.
  - (3) Swing arms forward and over head vigorously and leap upward at least 12 inches.
  - (4) Swing arms backward and jump upward.



Fig. 7

*The HIGH JUMPER is essentially a warm-up exercise. It is a total body movement involving the legs, arms, and trunk. This exercise also develops coordination.*

## 2. BURPEE

- a. Starting Position—Attention.
- b. Cadence—Moderate.
- c. Movement:
  - (1) Bend slightly at the knees and sharply at the hips; place hands on the ground in front of the feet in a squat position with the elbows inside the knees.
  - (2) Thrust feet and legs backward to a front leaning rest position with body straight from shoulders to feet, weight supported on hands and toes.
  - (3) Return to the squat position.
  - (4) Resume standing position.

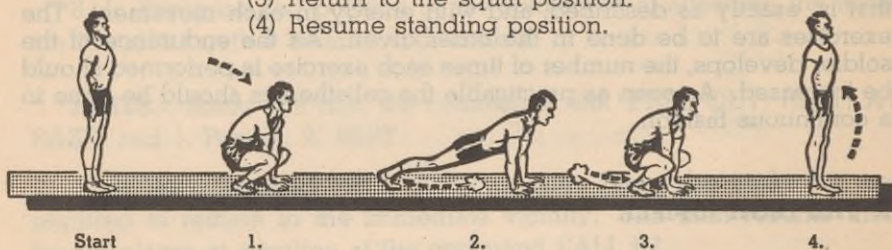


Fig. 8

*The BURPEE is one of the best exercises to develop agility. It reaches and strengthens primarily the muscles of the trunk, thighs and hips. It also serves as an additional warm-up exercise.*

## 3. SQUAT BENDER

- a. Starting Position—Standing with feet slightly separated and arms in a loose thrust position.
- b. Cadence—Moderate.
- c. Movement:
  - (1) Full squat, thrust arms forward, fingers extended, palms down, keep trunk erect.
  - (2) Return to original position.
  - (3) Bend forward sharply, thrusting downward with fingers touching toes if possible, knees straight.
  - (4) Return to starting position.

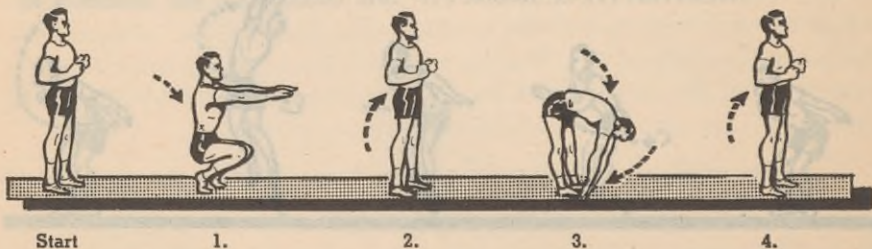


Fig. 9

*The SQUAT BENDER strengthens the heavy muscles of the legs and thighs as well as the trunk forward-bending musculature. It has excellent postural benefits. When the knees are kept straight in the forward bend the exercise has a limbering and loosening effect upon the hamstring muscles.*



**4. ROWING EXERCISES**

- a. Starting Position—Flat on back, arms extended over head, feet together.
- b. Cadence—Slow to moderate.
- c. Movement:
  - (1) Sit up and at the same time bend knees sharply; lean forward, thrusting or swinging arms forward to a rowing position with the knees together and against the chest, feet flat on the ground and heels close to buttocks; arms extended forward.
  - (2) Return to starting position.



Fig. 10

*The ROWING EXERCISE strengthens the abdominal muscles. In addition, it is one of the best exercises to reduce the waist line. The leg extensor and flexor muscles are also exercised.*

**5. PUSHUPS**

- a. Starting Position—Front leaning rest. The body is straight from head to heels.
- b. Cadence—Moderate or at will.
- c. Movement:
  - (1) Bend elbows and touch chest to ground, keeping body straight.
  - (2) Straighten elbows raising body in straight line.

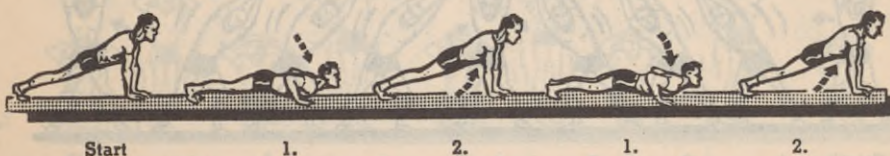


Fig. 11

*The purpose of this exercise is to strengthen the arm and shoulder extensor muscles.*

## 6. SITUPS

- a. Starting Position—Flat on back, feet apart sideward about two feet, arms extended overhead.
- b. Cadence—Slow.
- c. Movement:
  - (1) Sit up, thrust arms forward and touch toes, knees straight.
  - (2) Lie back to original position.
  - (3) Raise legs, swinging them over head, keep knees straight, touch toes to ground behind head.
  - (4) Lower legs to starting position, slowly.



Fig. 12

*This exercise strengthens the muscles of the abdomen, thighs and hips. It also stretches the hamstring muscles which aid in the development of suppleness and flexibility. The massaging effect on the abdominal viscera is very beneficial.*

## 7. SIDE BENDER

- a. Starting Position—Standing with feet apart about 2½ feet, hands clasped overhead, arms straight.
- b. Cadence—Slow.
- c. Movement:
  - (1) Bend sideward sharply to the left, bending the left knee. Bend straight to the side, do not twist the torso or shoulders.
  - (2) Recover slightly and repeat.
  - (3) Recover and repeat.
  - (4) Return to starting position. Same exercise on right side on counts of 5, 6, 7 and 8.



Fig. 13

*The SIDE BENDER has the effect of exercising the lateral musculature of the trunk. This exercise also develops suppleness and coordination.*



### 8. BANK TWIST

- a. Starting Position—Flat on back, arms extended side-ward, palms down, legs raised to a right angle with feet together, knees straight.
- b. Cadence—Slow.
- c. Movement:
  - (1) Lower legs to the left, twisting the torso, touching ground on left side in vicinity of left hand. Keep knees straight.
  - (2) Return to the starting position.
  - (3) Lower legs to right, twisting torso, touching ground on right side in vicinity of right hand. Keep knees straight.
  - (4) Return to starting position.

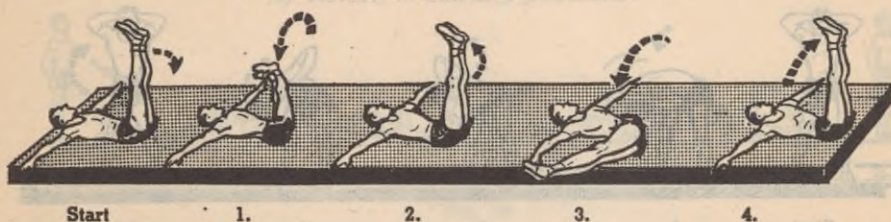


Fig. 14

The **BANK TWIST** strengthens the oblique abdominal muscles which no other exercise in the series reaches. It also has a very beneficial effect upon the abdominal viscera.

### 9. SQUAT JUMP

- a. Starting Position—Full squat with left foot forward about 8 inches. Hands clasped on top of head.
- b. Cadence—Moderate.
- c. Movement:
  - (1) Spring upward from this squat until knees are straight and both feet have left the ground. Change the position of the feet, the right foot becoming the forward foot and the left the rear. Drop to squat on the left heel.
  - (2), (3), (4) Jump and alternate feet.



Fig. 15

The **SQUAT JUMP** strengthens the heavy muscles of the legs and limbers up the joints of the hips, knees and ankles. It brings about a greater flexibility and agility in the legs.

## 10. TRUNK TWISTER

- a. Starting Position—Standing with feet about 2 feet apart sideward, with hands clasped behind head, elbows held backward, chin in.
- b. Cadence—Slow.
- c. Movement:
  - (1) Bend and bounce downward, knees straight. Recover slightly. Do this vigorously.
  - (2) Bounce downward, but simultaneously rotate trunk sharply to left.
  - (3) Same to the right.
  - (4) Return to original position, pulling head back and chin in strongly.



Fig. 16

The TRUNK TWISTER reaches and strengthens all muscles of the trunk. It has excellent postural benefits. It results in greater flexibility of the lower back region.

## 11. STATIONARY RUN

- a. Starting Position—Standing with arms in loose thrust position.
- b. Cadence—Slow fast, slow.
- c. Movement—Stationary run. Begin slowly (counting only on left foot). Speed up somewhat, raising knees to height of hips, then run at full speed, raising knees hard, then slow down.

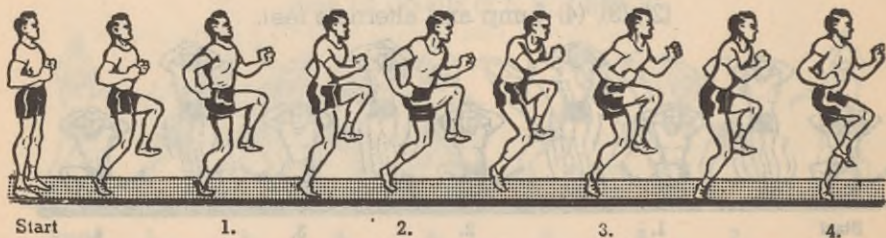


Fig. 17

The STATIONARY RUN develops cardio-respiratory endurance. While it reaches most of the body except the arms its primary effects are upon the heart and legs.



**12. EIGHT COUNT PUSHUPS**

- a. Starting Position—Attention.
- b. Cadence—Moderate.
- c. Movement:
  - (1) Bend slightly at the knees and sharply at the hips and place hands in front of feet in squat position.
  - (2) Thrust feet and legs backward to a front leaning rest position with the body straight from shoulders to feet, weight supported on hands and toes.
  - (3) Touch chest to ground.
  - (4) Return to front leaning rest position.
  - (5) Touch chest to ground.
  - (6) Return to front leaning rest position.
  - (7) Return to squatting position.
  - (8) Return to starting position.

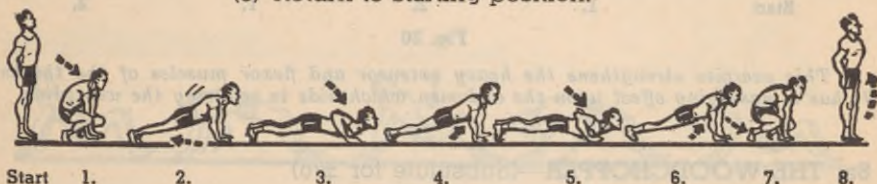


Fig. 18

*The EIGHT COUNT PUSHUPS strengthens the arm and shoulder extensor, trunk bending and leg muscles.*

**13. STRADDLE PULLUPS** (Recommended supplementary exercise)

- a. Starting Position—Men working in pairs. One lies flat on his back with arms stretched upward (palms facing away from him). His partner stands astride his shoulders grasping hands of the supine individual.
- b. Cadence—Moderate.
- c. Movement:
  - (1) Keeping body straight from shoulders to heels and supporting weight on heels, the body is pulled up as high as possible. Fingers should be hooked into palms and fingers of the upright individual.
  - (2) Keeping the same position the body is then lowered to the ground.



Fig. 19

*The STRADDLE PULLUPS strengthens the arm and shoulder flexor muscles.*

#### 4a. MOUNTAIN CLIMBER—(Substitute for #4)

- a. Starting Position—Squatting position with right leg extended to the rear, knee straight, and left leg drawn up against the chest.
- b. Cadence—Fast.
- c. Movement:
  - (1) Extend left foot backward and bring the right leg under the chest.
  - (2) Return to the starting position.



Fig. 20

*This exercise strengthens the heavy extensor and flexor muscles of the thighs. It has a massaging effect upon the abdomen which aids in reducing the waist-line.*

#### 6a. THE WOODCHOPPER—(Substitute for #6)

- a. Starting Position—Feet about two feet apart, trunk turned left, hands clasped together, arms thrust over left shoulder, head facing front.
- b. Cadence—Moderate.
- c. Movement:
  - (1) In a chopping movement, bend the trunk forward, bringing arms down vigorously between legs. Bend knees. Extend arms as far behind legs as possible.
  - (2) Raise the trunk and assume the same position as in the starting position but with the trunk turned right and hands over the right shoulder.
  - (3) Repeat the first movement.
  - (4) Resume the starting position.

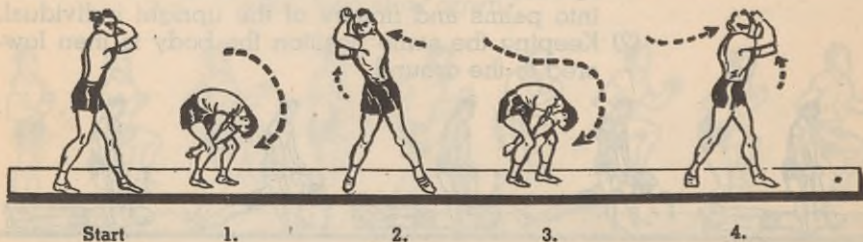


Fig. 21

*The WOODCHOPPER strengthens the muscles of the trunk and abdomen. It also stretches the hamstring muscles and has a stretching and massaging effect on the abdominal viscera.*



**8a. THE BRIDGE**—(Substitute for #8)

- a. Starting Position—From a sitting position with arms extended backward and legs extended forward with feet flat on the ground, the body is raised upward until the full weight is borne on hands and feet.
- b. Cadence—Slow.
- c. Movement:
  - (1) Arch the back by thrusting the waist upward and the head backward.
  - (2) Return to the starting position.



Fig. 22

*The BRIDGE strengthens the arms and shoulder muscles primarily. It also reaches the muscles of the lower back, thighs, and legs.*

## ● GUERRILLA EXERCISES

Guerrilla exercises are best conducted in a circle formation. The circle should be larger for guerrilla exercises than for calisthenics. An interval of about 8 feet should separate the men. The instructor must constantly remind the men to retain the proper interval. Each guerrilla exercise is normally done for a period of 20 to 30 seconds. Such activities as the broad jump and rolls should be done a definite number of times. To provide an interesting variation, many of the guerrillas can be done to the right, left, rear, or at double time. (For the guerrilla exercise commands see page 22.)

For some of the guerrillas it is better to have the men execute an about face and perform the activity 4 or 5 times away from the center of the circle. Then they execute an about face and repeat, this time coming toward the center of the circle. Such guerrillas as the broad jump, rolls, and crawls are better done in this fashion.

## 1. GROUND EXERCISES



Fig. 23

- a. **All fours.**—Face down on hands and feet, walk forward.



Fig. 24

- b. **Bear Walk.**—Face down on hands and feet. Travel forward by moving the right arm and right leg simultaneously and then the left arm and leg simultaneously. Keep knees straight.



Fig. 25

- c. **Leap Frog.**—Count off by twos. At start, odd leap over even numbers. At next start, even numbers leap over odd. The men go clear around circle until they return to original position. Men bending should face forward.



Fig. 26

- d. **Bouncing Ball.**—Support body on hands at shoulder width, feet apart, back and legs in line, knees straight. Travel forward by means of series of short upward springs of hands and feet simultaneously. (Bounce hips up and down.)



2. SQUAT BEND EXERCISES



Fig. 27

- a. **Duck Waddle.**— Assume squat position. Walk forward with hands on hips.



Fig. 28

- b. **Squat Jump.**— Assume squat position. Jump forward with hands on hips.



Fig. 29

- c. **Indian Walk.**— Bend knees slightly, bend trunk forward, arms hanging down until the fingers touch the ground. Retain this position, and walk forward.



Fig. 30

- d. **Crouch Run.**— Lean forward at the waist until trunk is parallel with the ground. Retaining this position, run forward at a jogging pace.



Fig. 31

- e. **Steam Engine.**— Clasp hands behind the neck, walk forward in the following manner: As the left leg is brought forward, raise the knee, bend the trunk forward, and touch the right elbow to the left knee, then step forward onto the left foot, and raise the trunk. Repeat with the right leg, and left elbow. Continue in this fashion.

## 3. ERECT EXERCISES



Fig. 32

- a. **Walk on Toes.**—Walk forward on the toes.



Fig. 33

- b. **Fast Walk.**—Walk forward at fast pace, swinging arms vigorously. (Avoid running.)



Fig. 34

- c. **Straddle run.**—Run forward, leaping to the right as right foot advances, leaping to the left as left foot advances.



Fig. 35

- d. **Knee-raise run.**—Run forward, raising the knee of the advancing leg high as possible on each step.



Fig. 36

- e. **Hop.**—Travel forward by hopping on the left foot. Take long hops. Change to right foot and repeat.



4. DOUBLE EXERCISES

Pair off group according to the height and weight, and have the group count off by twos. Have Ones carry Twos to start and at the Command "Change," reverse procedure.



Fig. 37

- a. **Arm Carry.**—One, standing, facing Two's side, bends his knees and leans forward, placing one arm behind Two's back and one arm under Two's knees. One straightens up, lifting Two from the ground. Two places near arm around One's shoulder and clasps his other hand. Retaining this position, One runs forward 30 to 60 paces.



Fig. 38

- b. **Fireman's Carry.**—One, standing sideways in front of Two, bends his knees and leans forward, placing one arm through Two's crotch. Two leans forward until he lies across One's shoulders. One straightens up, lifting Two off the ground. One, using the hand of the arm through Two's crotch, grasps the wrist of Two's arm that is hanging over his shoulder. Retaining this position, One runs forward 30 to 60 paces.



Fig. 39

- c. **Cross Carry.**—One, standing sideways in front of Two, leans forward. Two bends forward until he is lying across the middle of One's back. One then places one arm around Two's knees and one arm around Two's shoulders, and straightens up lifting Two from the ground. Retaining this position, One runs forward 30 to 60 paces.



Fig. 40

- d. **Single Shoulder Carry.**—One, standing in front of and facing Two, assumes a semi-squatting position. Two leans forward until he lies across One's left shoulder. One clasps his arms around Two's legs and straightens up, lifting Two from the ground. Retaining this position, One runs forward 30 to 60 paces.

### ● SUPPLEMENTARY GUERRILLA EXERCISES

To supplement the above guerrilla exercises, all of which are included in Training Circular 87, the following additional exercises are suggested:



Fig. 41

- a. **Lame Dog.**—(on either leg) Face down on two hands and one foot, travel forward, moving both hands, and the foot. After walking forward in this manner for the proper distance, the feet are alternated.



Fig. 42

- b. **Frog Jump.**—From squat position with hands on floor between legs, leap forward catching weight on hands, bringing up legs to squat position.



Fig. 43

- c. **Crab Walk.**—forward. Back down on hands and feet (with feet forward), walk in direction of hands. (May go backwards and sideways as well.)



Fig. 44

- d. **Mule Kick.**—Move forward by springing forward catching weight on hands and kicking feet backward and upward in the air; when feet return to ground, straighten body and continue exercise.



e. **Crawls.**—Face down.

- (1) Crawl, using hands and feet (keep stomach in contact with ground).
- (2) Crawl, using hands only.
- (3) Crawl, using feet only.
- (4) Wiggle, using neither hands nor feet.

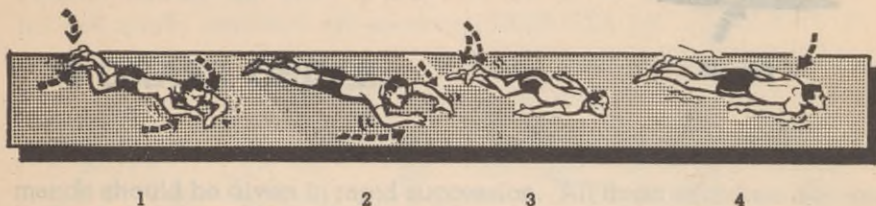


Fig. 45

f. **Crawls.**—Face up.

- (1) Crawl, hands and feet.
- (2) Crawl, using hands only.
- (3) Crawl, using feet only.
- (4) Wiggle, using neither hands nor feet.

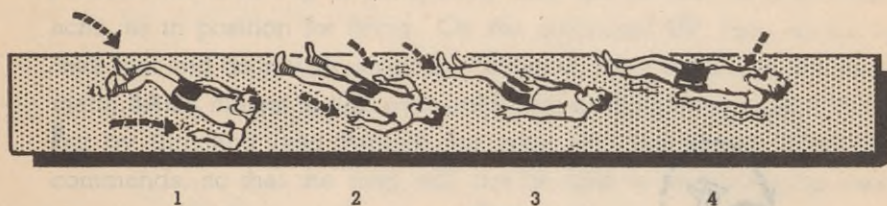


Fig. 46

g. **Inch Worm.**—From the front leaning rest position, walk up toward the hands with short steps. Every effort should be made to get the heels on the ground and to keep the palms touching as long as possible. When feet are as close to hands as possible, walk forward on hands to front leaning rest position. The knees must not be bent in this exercise.



Fig. 47

## h. Rolls.—



Fig. 48

(1) Front roll over right shoulder.



Fig. 49

(2) Front roll over left shoulder.



Fig. 50

(3) Forward roll.



Fig. 51

(4) Backward roll.



## CHAPTER 4

## TRAINING CIRCULAR 87—Continued

## ● GRASS DRILLS

These drills should be executed vigorously and quickly. The commands should be given in rapid succession. All these exercises demand a considerable degree of endurance and men should be required to continue to "drive" into them, even after they are very tired. All grass exercises should be continued until there is real respiratory distress.

1. **Front-up—back-up.**—From a standing position at the command **FRONT**, the men flop down quickly onto the ground on their stomachs, as in position for firing. On the command **UP**, they spring to their feet and do a stationary run. When on their stomachs, the command **BACK** means to flop over onto their backs (not by rolling over, but by thrusting legs through the arms and vice-versa). Vary the commands, so that the men will not be able to anticipate the next movement.



Fig. 52

2. **Go—stop.**—At the command **GO**, the men spring forward as a football team would do in running signals. At the command **STOP** they stop and drop to the lineman's crouch. At **GO**, they again sprint forward. This may be varied by the command **FRONT** which means to go to the ground on the stomach. If the command is **RIGHT**, they turn and spring to the right at an angle of about  $45^\circ$ . **LEFT**, in like manner, means to go to the left. **GO** in each case means straight forward again. **TO THE REAR** reverses the direction. Keep this up for at least 5 minutes.



Fig. 53

3. **Zig-zag run and flop.**—The men, upon the signal to go, run fast about  $45^\circ$  to the right, and when the whistle sounds again, zig-zag  $45^\circ$  to the left, and on a second, or two blasts of the whistle, flop to the ground. Upon hearing the next whistle, they spring to their feet and run rapidly to the right, continuing as above until commanded to halt. This may be by a long blast on the whistle. Continue for 5 minutes.



Fig. 54



Fig. 55

4. **Zig-zag and squat.**—Same as (3) above, except on the whistle, instead of flopping to the ground, the men come to a full squat with hands on the ground. Continue for 5 minutes.





Fig. 56



Fig. 57



Fig. 58



Fig. 59



Fig. 60

5. **Situp.**—Lying on back on ground with arms over head, sit up, knees straight, and reach forward, touching toes with hands. Return to ground. Execute in slow cadence.

6. **Legs over head.**—Lying on ground, arms above head, swing legs up and back over head, touching toes to ground behind head. Keep knees straight. Execute in slow cadence.

7. **Bicycle.**—On back, legs above trunk, elbows by the side, with hands on hips, holding the hips up, make vigorous bicycling movements. Continue the exercises from 3 to 5 minutes.

8. **Head and feet up.**—Lie on ground, arms by sides, palms on ground. At the command **EXERCISE**, place the hands near the sides of the hips. With the knees straight, raise both legs and trunk from the ground, sitting up vigorously on the buttocks. Repeat 10 to 20 times.

9. **Legs right and left.**—Lying on the back, arms stretched out to the side, palms on the ground, legs vertical, knees straight, swing the legs vigorously sideward right and left, until the legs almost touch the ground on either side. Do this vigorously and rapidly. The faster it is done, the more vigorous is the movement.

Fig. 61



Fig. 62

10. **Run zig-zag.**—This can be done two ways—

- a. Step very far to the right with the right foot, and then far to the left with the left foot, as though striding through a set of automobile tires, staggered, and about 3 or 4 feet apart. Also make speed forward.
- b. Step across the right foot with the left foot, and run 3 steps diagonally to the right. Then step over the left foot with the right foot and run 3 steps diagonally to the left, etc. This can be done for 5 or 6 steps.

### 11. Burpee Exercise

- a. From the position of attention, place the hands on the ground in front of the feet, bending the knees somewhat. Then thrust the feet backward to a front leaning rest position on the ground. Return in reverse order to position of attention. Do this slowly at first, then gradually speed it up. Execute from 15 to 30 times. (See Fig. 8 above.)



Fig. 63

- b. Same as (a) above, except that the legs are thrust alternately to the right and to the left diagonally.

## ● COMBATIVES

The instructor should have all lines marked in advance and the needed equipment on hand. He must get the men organized quickly and ready for action with a minimum loss of time. In dual combatives, care should be exercised that the men are paired off with partners of approximately the same height and weight. Strict adherence to the rules of the contests should be required. Team competition will be found more interesting than dual competition. Some suitable recognition should be given to the winner in order to stimulate interest and effort.



**I. DUAL COMBATIVES**



Fig. 64

a. **Hand wrestle.**—Opponents grasp (right or left) hands with little fingers interlocked. One foot is forward, beside the opponent's forward foot; each attempts by pulling, pushing, sideward movement or other maneuver to force opponent to move one or both feet from original position. Change hands after each bout. Three bouts constitute a match; the contestant successful in two, wins.



Fig. 65

b. **Pull hands.**—Establish a line 10 feet in back of each contestant. With contestants matched in pairs, instruct them to grasp hands and attempt to pull their opponents over to one's own goal. In grasping hands, each individual should grasp the wrist of the opponent so that there is a double grasp, heels of hands in contact, with each hand grasping the other's wrist. Three bouts constitute a match; the contestant successful in two, wins.



Fig. 66

c. **Wrist bending.**—(make them beg).—Opponents pair off and face each other, raise arms forward palms up and lock fingers. At the starting signal both men attempt to bend wrist of opponent. The hands are brought downward between contestants. The man gaining 3 matches first, wins.



Fig. 67

d. **Back to back push.**—Place two contestants standing back to back with elbows locked. Establish a line 10 feet in front of each contestant. At signal, each, by pushing backward attempts to push the other over his (the opponent's) baseline. The contestants are not allowed to lift and carry their opponents. Pushing only is permitted. A contestant pushed over his own baseline loses the bout. Three bouts constitute a match. The contestant successful in two, wins.



Fig. 68



Fig. 69



Fig. 70



Fig. 71



Fig. 72

- e. **Back to back tug.**—Place two contestants so they stand back to back with both arms linked at the elbows. Establish a line 10 feet in front of each opponent. At signal, each contestant attempts to drag the opponent over his baseline. Lifting and carrying are permitted. Contestants must maintain original positions with arms linked. Either contestant carried across his opponent's baseline loses. Three bouts constitute a match; the contestant successful in two, wins.
- f. **Back to back, arm between legs.**—Contestants are paired off back to back. Instruct them to bend over until posteriors only are touching. Then place right arm between legs and clasp hands. At signal both attempt to pull opponent across line. Repeat with left hand and then both hands.
- g. **Rooster fight.**—Hop on left foot with arms behind back. Use right shoulder and right side of chest to butt opponent. The object is to make the opponent lose his balance and fall, to unfold his arms, or to touch his free foot to the ground. Engage in this form of rooster fight by sides. They may engage in individual combat, or two or more may attack one opponent.
- h. **Knock them down (any method).**—At starting signal each man will attempt to knock opponent off feet in any manner he chooses. He may tackle, push, pull, lift, or wrestle. First man who has any part of body except feet touching ground loses.
- i. **Step on toes.**—At starting signal soldiers will attempt to step on toes of opponent. Activity continues until stop signal.



2. MASS COMBATIVES



Fig. 73

a. **Bull in ring.**—No equipment needed. Group forms in a circle holding hands. One man, termed the "Bull" is placed in the center. If there are more than 20 men in the ring, have two "Bulls." The "Bull" tries to break out by charging the ring so the clasped hands are forced apart. If the "Bull" gets out, he immediately tags another player who becomes "Bull."



Fig. 74

b. **Ring push.**—Players are divided into two clearly designated teams both of which enter a large circle. At a starting signal players of each team attempt to push all opponents out of circle. Players forced from the circle are eliminated. All players must keep arms folded across their chest throughout. The contest continues until all of one team are eliminated.



Fig. 75

c. **Line charging.**—Two teams form lines opposite each other, about 1 foot apart laterally. At the whistle, team "A" attempts to break through the line of team "B." Team "A" may use its hands; team "B" may not. After from 3 to 5 seconds (usually 3 seconds at first, 5 seconds later), the physical training officer blows his whistle and the number of men who have broken through

the opponents' line is counted. Indoor competition may be conducted on a string of mats.



Fig. 76

d. **Catch and pull tug-of-war.**—Two teams line up on either side of a line on the ground. Contestants attempt to grasp the hand or wrist of an opponent and pull him across the line. Two or more of one team may gang up on one opponent. When an individual touches the ground on the other side of the line, he retires to the rear of his captor's territory as a prisoner. Continue until all of one team have been pulled across the line or when left on their own side, they refuse to approach closely enough to engage the opponent; then director should declare them defeated. However, discourage such practices. (As a

variation, those pulled across the line may join with the opponent in attacking former comrades, continuing until no one is left on one side.)



Fig. 77



Fig. 78



Fig. 79



Fig. 80

e. **Horse and rider fights.**—Players are divided into two teams and paired off. Have one player of each pair sit astride the hips of the other player and lock his feet in front. At signal, the "horses" move forward so that the "riders" can reach each other. Each "rider" attempts to overthrow his opponent. The "horses" are not allowed to help the "riders." The "riders" are allowed to use all fair wrestling tactics; they are not allowed to interfere with the "horses." Either "rider" forced to touch the floor in any way, either forced down from his "horse" or overthrown with his "horse," loses. If two "riders" go down together, the one touching the floor first loses. Last team up is the winner.

f. **Sitting push out of circle.**—This activity is performed in the same manner as (b) above, except that all men are seated on the ground.

g. **Goal line wrestling.**—This activity is performed in the same manner as in (d) above except that a single line is drawn 15 feet behind each team and when a player is carried or pulled across line behind opponent's side, he is declared "dead" and out of competition.

h. **Human tug-of-war.**—Formation: Column of files facing each other. Players stand close together, arms placed about waists of men in front (grasping left wrist with right hand is the strongest grip.) Leading men of each team grasp opponent about neck and shoulders. Team breaking first or having one or more men pulled over the line separating the two teams after 30 seconds is the loser.



## ● RUNNING EXERCISES

Some running should be included in the physical training program every day. This should be done in the form of road or drill field, cross country, or obstacle course running. All three types are important.



Because many soldiers do not know how to run, it is advisable to teach them the proper form at the outset. In running, the body should lean slightly forward, without bending at the waist. The head is up. The knees should be lifted well out in front and the toes pointed straight ahead. Strides should be made on the balls of the feet and not on the heels. The arms are swung from the shoulders, with the elbows bent at an angle of 45 degrees. The range of the arm movement should be short, not passing the median line of the body in the forward swing nor passing the hip in the backward swing. Arm action should be free and smooth at all times. The runner must keep relaxed.

Cross country running should not be confined to level areas but should include running over rough terrain. The group may range in size from a single platoon to a company. Leaders should be stationed at the head and rear of the column and every effort should be made to keep the men together. In the beginning, the running is largely slow jogging alternated with periods of walking. As the endurance of the men improves, the running should be increased and the time for walking decreased. Gradually, the speed of the run is increased with occasional sprints introduced from time to time. During the preliminary stages the cross country running should be short (1 or 2 miles) and should be gradually increased to the point where it is about 20 to 30 minutes in duration. On completing the run, men should be required to walk slowly for 3 or 4 minutes before stopping.

Several important considerations are involved in obstacle course running. The first is the obstacle course itself. Some courses are so short and easy that they are of little value in developing endurance. Others are so long and punishing that it is almost impossible to get men to extend themselves completely. Many obstacle courses are lacking in events which require the use of the arm and shoulder girdle muscles.

Men should not be required to run the obstacle course too often, but when they do, they should be expected to run at full speed. Jogging over an obstacle course is of doubtful value. When they are timed, most men are motivated to extend themselves as they compete against their previous record. Before they run an obstacle course, the instructor should take the men to each obstacle and explain and demonstrate the proper technique of surmounting it. The men should then practice these techniques until they have mastered them. It is only after this procedure has been followed for each obstacle that the men should run the entire course at full speed.



## ● RELAYS

Although Training Circular 87 does not include relays, the following list is suggested as supplementary activities. These events are excellent conditioning activities and are interesting to the men. To increase the conditioning values of relays the teams should be limited in numbers or the men will spend too much time waiting their turn and too little time in actual participation. Teams should consist of from 8 to 10 men although somewhat larger numbers may be used when men are paired off, as in the horse and rider relay. It is also important that the distance traversed be of sufficient length to provide adequate exercise.

On the days when relays are to be used during the physical training period, the instructor should plan the relays, procure the needed equipment and see that the lines are clearly marked well in advance of class time. The leader should get every man into the activities. When the teams have unequal numbers the competition may often be equalized by having some individuals participate twice in a relay. Whenever it is impossible to avoid extra men, they should be utilized as officials.

Competition may be maintained at a high level throughout a number of relays by determining the winning team for the entire competition. This can be done by awarding points to the various teams on the basis of their position in each relay. The winner of an 8 team race receives 8 points and so on until the last team which scores one point. The team with the greatest number of points for all the relays is the winner.

Certain difficulties which are commonly encountered in conducting relays may be obviated by the following techniques:

(a) The last player in a relay race should be conspicuously identified by tying a handkerchief around his head or arm, taking off his shirt, putting on his hat or taking it off, or some similar method. (b) Another practice which is helpful in determining the progress of the race and eventually the winners, consists in having each player sit on the ground or assume a squatting position upon finishing. (c) Difficulty is frequently experienced in runners starting too soon. By having judges at the starting line this problem will be solved. When the Lane method is used, at times players do not continue all the way to the distance line and return before reaching it. To eliminate this situation the player should be required to run **around** a stick, other object, or player. Batons should be used when the circle method is employed. Handkerchiefs, short sticks, or other objects may be useful as batons. (d) In conducting relay races, it is very helpful to appoint a non-commissioned officer or some leader for each team. Make each leader responsible for his group. In addition to his duty he should coach and stimulate his team in any way he desires. (For formations in which relays may be conducted, see page 27.)





Fig. 82

knee high. The players must jump as the bar approaches in order to avoid being hit. When they reach the end of the line, number one assumes his position at the end of the line. Number two races to the distance line. Upon returning to the head of his column he hands the other end of the stick to number three. The game continues until the first player returns to the front of the line.

The game can also be played by having the bar carried waist high and having players in line squat to keep from being hit. As a precaution, glasses should not be worn when this variation is used.



Fig. 83

picks up number three in the column and carries him to the distance line where the number one player has remained. Number three rushes back, picks up number four, and so on. When the last man is carried across the distance line, the race is finished.



Fig. 84

- a. **Jump Stick Relay.**—The players are in line formation. The first player has a light stick, softball bat, rope or belt. At the starting signal all the number one men run to the distance line which is 40 feet away. As they return to the starting line they hand the other end of the stick to the number two players. Each pair then race to the end of the line holding the stick about

- b. **Horse and Rider.**—No equipment is needed. Players stand in a column formation. At the signal to start, number two in the column leaps upon the back of number one, who carries him across the distance line in pick-a-back fashion. The distance line is 50 feet from the starting line. At the distance line, number one drops the number two man who rushes back and

- c. **Izzy Dizzy.**—Formation: Column of files. First man in each column runs to a given point, 45 feet from the starting line, places his right hand on the ground and circles to the right or left 5 times keeping his hand on the ground. He then returns to his column touching the next man, who when touched, repeats the procedure. Relay is ended when last man in column returns to the starting position. The column finishing first wins.





Fig. 85



Fig. 86



Fig. 87



Fig. 88

d. **Three legged.**—Formation: Teams in columns of twos. Men on teams pair off and stand together with inside arms about the other's waist. Inside legs are tied together at the ankle with a belt, rope or like object. At starting signal the first pair of each team will run to a point 20 yards distant, and return, at which time the next pair will run. Repeat until all men have run. First team to finish wins (Fig. 85).

e. **Two legged.**—Formation: Teams in columns of twos. Men on each team will pair off and stand together with inside arms about waists of partner. Inside legs are lifted off ground and held together. At starting signal, first pair in each team will run to a point 60 feet away using outside legs only and return in same fashion, at which time the next pair will run. First team having all men finish, wins (Fig. 86).

f. **Wheelbarrow.**—First man walks on hands; second carries the feet of the first man. Advance to given point (about 50 feet in front), where men change positions (second man walking on hands, first man carrying feet of second man), and return to starting line. After first two men cross starting line the next two men proceed and so on (Fig. 87).

g. **Three man wheelbarrow.**—Teams in single file. First man in each line goes down to hands and feet position. Second man places hands on hips of first man assuming a semi-leaning rest position. The third man picks up legs of second man as in two man wheelbarrow. Relay is then run in regular manner to the distance line 40 feet away. Here the men change positions in any way they desire and return to the starting line (Fig. 88).





Fig. 90

h. **Chariot Race.**—Any number of teams with approximately 15 men per team. Team holds hands to form circle with all men facing out except one man who faces in and acts as the "driver." At the starting signal all teams race to distant point keeping circle intact. The one man facing in, gives directions and orders. First team back wins. All the men must cross the distance line and the starting line.



Fig. 91

i. **Caterpillar Race.**—Any number of teams in single file. All members of teams sit on the ground with legs apart, close behind and with arms around waist of the man in front of him. At starting signal teams move forward by moving posteriors and by jerks of the body. No hands may be used. First team to get all men across the line 15 feet to the front wins.

j. **Over and Under.**—Formation: Column of files. Crouching position hands on knees. Last man in each column begins relay by going over man in front of him, under the next man, and so on until he has gone over or under the first man in the column. He then sprints to a given point, 20 yards from the head of the column, and returns to the head of the column where he crouches, hands on knees. When the first man returns, the man who is now last repeats the procedure. This continues until all the men have completed the run and returned. Column finishing the first is the winner.

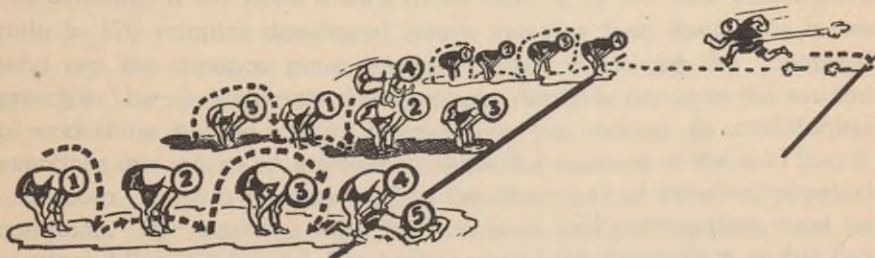


Fig. 92

For additional combatives and relays see Technical Manual 21-221.

## ● MARCHING

The following standards are to be met by marching with full field equipment:

1. March 4 miles in 45 minutes.
2. March 5 miles in 1 hour.
3. March 9 miles in 2 hours.
4. March 16 miles in 4 hours.
5. March 25 miles in 8 hours.
6. March and double time for 7 miles without a halt.



## CHAPTER V

**PROGRAM PLANNING AND CONSTRUCTION**

**IMPORTANCE OF PROGRAM PLANNING.**—A physical training program is as good as the planning behind it. Too many such programs are of the hit-or-miss type in which no thought has been given to what has gone on before or what is intended in the future. Physical training must be planned to achieve a certain goal and the activities of every period must be selected with this end in mind. It is in this way only that progression is possible and a balanced program assured.

**ATTAINING PHYSICAL FITNESS.**—There are two basic principles which should be constantly kept in mind in any conditioning program:

1. Any physical fitness program should begin with moderate amount of exercise and increase gradually and steadily. The average man can be put into good physical condition in about 12 weeks. In the first week or 10 days of the conditioning program nothing is gained by giving so much activity that the men suffer from marked muscular soreness, stiffness or exhaustion. Such a practice will cause the men to develop an unfavorable attitude toward the activities. In addition, they tend to perform the exercises improperly when they are stiff and sore. Because such habits are so difficult to eradicate when they become fixed, every effort should be made to avoid their development.

2. Physiologists have discovered that the nearer exercise approaches the limits of one's present ability, the greater the development. For example, it has been shown in the laboratory that rats which ran a mile in 120 minutes developed larger muscles than their litter mates who ran the distance more leisurely. This is termed the "overload principle" by physiologists. Development depends not upon the amount of work done, but the amount of work done per second. In conditioning exercises this means an increase in either the cadence or the load borne, or in both. There is no easy road to the attainment of excellent physical condition. The exercises must be strenuous and participation must be continued "until it hurts." The leader must take cognizance of this fact and not be diverted from his task because of the minor muscular aches and pains which the men will inevitably experience. However, it must

be remembered that in the early stages of training a moderate amount of exercise is usually enough to "overload" the existing performance ability.

These principles appear to be the antithesis of each other but in reality they are not in conflict. The men must be given a reasonable amount of activity during the first few weeks. The instructor should be careful not to overload the men but he should provide sufficient activity to give the men a moderate workout. After this period the program should be gradually intensified.

**STAGES IN THE CONDITIONING PROGRAM.**—There appear to be 3 different stages in the conditioning program. These are:

1. **The Toughening Phase.**—During this stage, which lasts from one to two weeks, the men go through a period of muscular stiffness and soreness and recover from it. At this time, considerable emphasis should be placed upon mastering good form in executing the exercises. During the first few days the entire period should be devoted to calisthenic exercises and running. As explanations and demonstrations are given, the men are resting. Liberal rest periods between movements are recommended also. On the first day each exercise should be repeated from 6 to 8 times.

2. **The Slow Improvement Phase.**—This period lasts from 6 weeks to 2 months, depending upon the physical condition and age of the men. The improvement is fairly rapid at first but progress becomes slower in the later part of this stage.

3. **The Sustaining Phase.**—Beyond this point the men appear to show little improvement. They have reached a peak of physical condition and the problem is to maintain them at this high level.

**MAINTAINING PHYSICAL FITNESS.**—Training Circular 87 should be closely followed until the third phase has been reached, and then it should be modified. A very successful daily program is one which calls for 15 minutes of calisthenics and 35 to 45 minutes of athletics and games. The calisthenics will provide a warm-up for the sport and games and in addition will reach certain important muscle groups which might not be exercised by the play activities. The 15 minutes should be spent upon either the first or last 6 calisthenic exercises and either guerrilla exercises and grass drills. For example, 12 minutes might be devoted to the first 6 calisthenics and 3 minutes to guerrilla exercises on Monday. On Tuesday the same time could be devoted to the last 6 calisthenics



and the 3 minutes could be devoted to grass drills. By alternating the calisthenics in the above manner, no important muscle group would be neglected.

The athletic activities used should be of the most vigorous type. Such sports as American ball, soccer, speedball, keep-away, cage ball, basketball, box basketball, goal-hi, and push ball are recommended. The men enjoy these activities and participate in them with much vigor and enthusiasm. This is why they are of such value in the maintenance program. Games such as volley ball, shower ball, and soft ball should not be used in the physical training program because they are not sufficiently strenuous.

**A MODEL SCHEDULE.**—In the model schedule which follows (see pp. 65-66) calisthenics are emphasized predominantly during the first half of the 12 week period. The reason for this is that calisthenics is the basic, fundamental conditioning activity which reaches and develops all parts of the body. It is recommended that from 40 to 45 minutes per day should be devoted to this type of activity during the first few days of the training program. A total of at least 350 minutes on this activity during the first two weeks is suggested. Large amounts of time are needed to teach the men the right way of performing the exercises. Calisthenics must be done with accuracy and perfection if their full value is to be realized. This calls for careful explanation, demonstration, and practice. The leader should check and recheck his men constantly in this early stage. All of these things are time-consuming but they will pay dividends later. In addition, the men will be provided with rests which some of them will undoubtedly need.

After the first heavy emphasis upon calisthenics, the time devoted to them is gradually reduced. Sixty minutes per week of calisthenics spread over at least 3 days has been found sufficient to maintain the condition of the men after they have reached a high level—providing, of course, that they are participating in other physical training activities such as sports and games. Calisthenics should never be eliminated entirely from the conditioning program. If athletic activities are supplemented by these calisthenics, no important muscle group will be neglected, regardless of the games played.

Guerrilla exercises are excellent supplementary activities to calisthenics. They are exceedingly rigorous, and 10 minutes devoted to them provide a vigorous workout. A time allotment of 5 or 10 minutes per day is the recommended dosage when these activities are scheduled.

Grass drills are additional conditioning exercises. If executed properly, they are extremely strenuous and even well-conditioned men cannot continue them very long. Five minutes is the recommended time to devote to grass drills.

Running is the best single conditioning activity and should be used every day. It is urged that the men run to and from the exercise area. In addition, a definite allotment of time should be included in the physical training period each day. Five minutes of sprint running is a recommended time allotment, particularly in the early stages of the conditioning program. As the men become better conditioned this time can be increased. When it is desired to engage in obstacle course or cross country running, a much longer period of time is necessary. It may be desired to spend the entire period at times in such running. The time devoted to running may be modified if sports and games and relays which require large amounts of running are employed.

Combative events are vigorous, strenuous activities in which the element of competition is present. Because of this competition, men will exert themselves harder than they ordinarily might in calisthenics. Ten to 20 minutes is desirable time to devote to combatives, depending upon the type used. A 5-minute time allotment is not recommended because most of the time would be consumed in organizing the men and getting them started. One 10-minute period is better than two 5-minute periods. This same situation applies to relays.

Men usually lose interest in relays after 15 to 20 minutes of participation. Ten to 15 minutes is considered the best time allotment for this type of activity. Relays should not be given every day. Two or 3 times per week is recommended.

Games should be emphasized chiefly in the third or maintenance stage. From 50 to 60% of the total time allotment can well be devoted to sports and games at this time. These activities should not be introduced too early. Because of the competitive spirit which is aroused, physiological damage may result from participation in vigorous sports unless the men are conditioned first.

Too many activities of a 5-minute duration should not be scheduled. The practice of having 5 or 6 activities, each with a time allotment of 5 minutes, is not recommended because the men get the feeling that they change activities before they have a chance to get started. There is always some loss of time, too, in changing from one activity to another.



A RECOMMENDED TWELVE WEEK SCHEDULE

	Monday		Tuesday		Wednesday		Thursday		Friday	
1st Week	Cal.	45	Cal.	45	Cal.	45	Cal.	45	Cal.	45
	Running	5	Running	5	Running	5	Running	5	Running	5
2nd Week	Cal.	35	Cal.	35	Cal.	35	Cal.	35	Cal.	35
	Guerr.	10	Guerr.	10	Guerr.	10	Guerr.	10	Guerr.	10
	Running	5	Running	5	Running	5	Running	5	Running	5
3rd Week	Cal.	30	Cal.	30	Cal.	25	Cal.	25	Cal.	25
	Guerr.	10	Guerr.	10	Guerr.	10	Guerr.	10	Guerr.	10
	Grass D.	5	Grass D.	5	Grass D.	5	Grass D.	5	Grass D.	5
	Running	5	Running	5	Running	10	Running	10	Running	10
4th Week	Cal.	25	Cal.	25	Cal.	25	Cal.	25	Cal.	25
	Guerr.	5	Guerr.	5	Guerr.	5	Guerr.	5	Comb.	15
	Comb.	15	Grass D.	5	Comb.	10	Grass D.	5	Running	10
	Running	5	Comb.	10	Running	10	Relays	15		
			Running	5						
5th Week	Cal.	25	Cal.	25	Cal.	25	Cal.	25	Cal.	25
	Guerr.	5	Guerr.	5	Guerr.	5	Guerr.	5	Guerr.	5
	Grass D.	5	Comb.	15	Grass D.	5	Comb.	15	Grass D.	5
	Relays	10	Running	5	Relays	10	Running	5	Relays	10
	Running	5			Running	5			Running	5
6th Week	Cal.	20	Cal.	20	Cal.	20	Cal.	20	Cal.	20
	Guerr.	5	Guerr.	5	Guerr.	5	Guerr.	5	Running	30
	Grass D.	5	Grass D.	5	Grass D.	5	Grass D.	5	(Obstacle	
	Comb.	15	Running	5	Comb.	15	Games	20	course)	
	Running	5	Relays	15	Running	5				
7th Week	Cal.	20	Cal.	20	Cal.	20	Cal.	20	Cal.	20
	Guerr.	5	Guerr.	5	Guerr.	5	Guerr.	5	Guerr.	5
	Grass D.	5	Grass D.	5	Grass D.	5	Grass D.	5	Grass D.	5
	Comb.	15	Running	5	Comb.	15	Running	10	Games	20
	Running	5	Relays	15	Running	5	(cc)			
							Relays	10		
8th Week	Cal.	15	Cal.	15	Cal.	15	Cal.	15	Cal.	15
	Guerr.	10	Guerr.	5	Guerr.	10	Guerr.	5	Games	15
	Grass D.	5	Comb.	10	Grass D.	5	Comb.	10	Running	20
	Running	5	Games	20	Running	5	Games	20	(cc)	
	Relays	15			Relays	15				
9th Week	Cal.	15	Cal.	15	Cal.	15	Cal.	15	Cal.	15
	Guerr.	5	Guerr.	5	Guerr.	5	Guerr.	5	Guerr.	5
	Comb.	10	Grass D.	5	Comb.	10	Grass D.	5	Running	30
	Games	15	Relays	15	Games	15	Relays	10	(Obstacle	
	Running	5	Games	10	Running	5	Games	15	course)	
10th Week	Cal.	20	Guerr.	5	Cal.	20	Guerr.	5	Cal.	20
	Guerr.	5	Grass D.	5	Guerr.	5	Grass D.	5	Guerr.	5
	Running	5	Relays	10	Grass D.	5	Comb.	10	Running	5
	Games	20	Games	20	Games	20	Games	20	Games	20
			Running	10			Running	10		
11th Week	Cal.	20	Guerr.	5	Cal.	20	Guerr.	5	Cal.	20
	Games	20	Grass D.	5	Games	20	Grass D.	5	Games	20
	Running	10	Relays	10	Running	10	Comb.	10	Running	10
			Games	30			Games	30		
12th Week	Cal.	20	Guerr.	5	Cal.	20	Guerr.	5	Cal.	20
	Games	20	Grass D.	5	Games	20	Grass D.	5	Games	20
	Running	10	Games	40	Running	10	Games	40	Running	10

## Recapitulation of Weekly Time Allotment

	1st Week	2nd Week	3rd Week	4th Week	5th Week	6th Week	7th Week	8th Week	9th Week	10th Week	11th Week	12th Week
Cal.	225 Min.	175 Min.	135	125	125	100	100	75	75	60	60	60
Guerr.	0	50	50	20	25	20	25	30	25	25	10	10
Grass D.	0	0	25	10	15	20	25	10	10	15	10	10
Runn'g	25	25	40	30	25	45	25	30	40	30	30	30
Comb.	0	0	0	50	30	30	30	20	20	10	10	0
Relays	0	0	0	15	30	15	25	30	25	10	10	0
Games	0	0	0	0	0	20	20	55	55	100	120	140

## Legend:

Cal.—Calisthenics

Guerr.—Guerrilla exercises

Grass D.—Grass Drills

Comb.—Combatives

cc—Cross Country Running

The above schedule is suggested as a guide. Circumstances vary from post to post and frequently the local situation is such that the recommended program could not possibly be carried out. However, if the principles of program construction employed in the above schedule are understood and utilized, satisfactory adjustments and adaptations can be made to any situation. Furthermore, with this model schedule as a guide, the preparation of a well-rounded and beneficial physical training program suitable for different circumstances, shorter periods or varied groups is a matter of judicious selection only.

**DAILY PROGRAM.**—The above program is a long range program. From it daily programs should be drawn. In the daily schedules consideration must be given to climatic conditions, available facilities and equipment, personnel and time available for physical training activities. Following is a sample of a daily program in the second week of the training program:

I	Calisthenics	8 repetitions of four-count and 16 of two-count exercises	35 min.
II	Guerrilla exercises	a. Duck waddle b. Frog jump c. Straddle run d. Hop e. Broad jump f. Inch worm	10 min.
III	Running	a. Sprint running—one lap around parade ground	5 min.

**PROGRESSION.**—In order to have progression in the physical training program, it is necessary to know how much exercise is given from day to day. It is particularly important to know how much calisthenics is being done because this type of activity predominates in the first few weeks of the conditioning program. The amount of calisthenics can be



accurately determined if the cumulative count (see p. 21) is used. If the men start by executing 6 repetitions of the four-count exercises (12 of the two-count) they can gradually increase until they have reached the recommended standard. The accompanying table indicates the recommended daily repetitions of each exercise for a 12 week period.

## RECOMMENDED PROGRESSION OF TRAINING CIRCULAR CALISTHENICS

Name and Number of Exercise	Number of Repetitions Each Day										After 12th Week
	1st Week	2nd Week	3rd Week	4th Week	5th Week	6th Week	8th Week	10th Week	12th Week	12th Week	
1. High Jumper	6	7	8	9	10	11	12	14	16	16	16
2. Burpee	6	7	8	9	10	11	12	14	16	16	16
3. Squat Bender	6	7	8	9	10	11	12	14	16	16	16
4. Rowing Exercise*	12	14	16	18	20	22	24	28	32	32	32
5. Pushups*	12	14	16	18	20	22	24	28	32	32	32
6. Situps	6	7	8	9	10	11	12	14	16	16	16
7. Side Bender	6	7	8	9	10	11	12	14	16	16	16
8. Bank Twist	6	7	8	9	10	11	12	14	16	16	16
9. Squat Jumps	12	14	16	18	20	22	24	28	32	32	32
10. Trunk Twister	6	7	8	9	10	11	12	14	16	16	16
11. Stationary Run	20sec.	30sec.	30sec.	30sec.	30sec.	30sec.	45sec.	45sec.	1 min.	1 min.	1 min.
12. Eight Count Pushups	6	6	7	7	8	8	9	9	10	10	10
13. Straddle Pullups*	12	12	14	14	16	16	18	18	20	20	20
4a. Mountain Climber*	12	14	16	18	20	22	24	28	32	32	32
6a. Woodchopper	6	7	8	9	10	11	12	14	16	16	16
8a. The Bridge*	12	14	16	18	20	22	24	28	32	32	32

Note\*—Two-count exercises.

The program is also intensified by reducing the rest periods between exercises. During the first week, brief rest periods should be provided between each exercise. The instructor usually utilizes these rest periods for explanations and demonstrations of the next exercise. After the first week, these rest periods should gradually be eliminated. The first step is to do the exercises in pairs with brief rests only after **every other exercise**. Thus, exercises No. 1 and No. 2 are done in a continuous fashion, after which a brief rest period is provided. Then exercises No. 3 and No. 4 are done continuously before the men are rested again.

After 3 days of performing the exercises in pairs, the rests are given after every third exercise. After several more days they are given after every fourth exercise. This practice continues until the men are able to go through the entire series of calisthenics in a continuous fashion.

Even though the time devoted to calisthenics becomes progressively less from week to week, the amount of exercise performed per minute actually increases. When the men are able to go through all 12 or 13

exercises in a continuous manner, it is possible for them to perform from 12 to 15 repetitions of each of the four-count exercises (24 to 30 of the two-count) in a 15 minute period.

Progression in the guerrilla exercises is achieved by having the men execute the movements for a greater distance or for a longer period of time. They may also be intensified by performing some of the exercises at double time, by double-timing between exercises or by going directly from one movement to the other without marching at quick time. Grass drills are intensified by performing them for a longer period of time or at a greater speed or both.

**EVALUATING PROGRESS.**—To keep a constant check on the physical condition of the troops and to evaluate the effectiveness of the physical training program, physical efficiency tests should be administered every 3 or 4 months. The physical training officer needs these tests to determine the progress of the troops in attaining physical fitness as well as to determine how they are maintaining it after they have achieved a high level of condition. It has frequently happened that the maintenance program has not been sufficiently strenuous or diversified and a reduction in certain aspects of physical fitness has resulted. In such cases a return to the more purely conditioning activities is necessary.



## CHAPTER VI

## PHYSICAL EFFICIENCY TESTING

**VALUE OF PHYSICAL EFFICIENCY TESTING.**—Physical efficiency testing is an integral part of any physical training program. It is an invaluable aid to those who are responsible for the physical conditioning of troops. Just as the physician diagnoses his patient before he prescribes a course of treatment, so should the physical director. By determining first what physical assets and liabilities the men have, the physical training program can be employed more intelligently and effectively to meet the needs indicated.

A well-conducted physical efficiency testing program has a number of values. These are:

1. Tests serve the instructor as a means to measure the progress of his men and to evaluate the efficiency of his instruction.

2. Tests serve to point out to the instructor specific needs or deficiencies of individual men which require special instruction or corrective work.

3. Tests motivate men to improve their physical condition. Quite often, men do not realize what poor condition they are in. When the test reveals their deficiencies, many men are shocked into a desire to remedy their condition. They are much more receptive to an intensive physical training program after they realize they are not in condition for combat service.

4. Tests often lead to an intensified physical training program by revealing to commanding officers the condition of their men. Many commanding officers do not realize that their men are in poor condition and proof is needed. Standards are available, and an officer can readily ascertain how his group measures up to other organizations.

5. It is possible to compare the effectiveness of two different physical training programs by employing tests. After an initial test, each group is given a different physical training program. It may be necessary to equate the groups on the basis of their first test scores, but this is not usually necessary. The time spent by each group in physical training should be identical. After an appropriate interval of time—8 to 10 weeks—the groups are retested. The effectiveness of the different programs will be represented by the difference between the first and second test scores. Before Training Circular 87 was adopted, it was evaluated in the manner outlined on page 5.

**CRITERIA FOR SELECTION OF TEST BATTERY.**—So many physical efficiency tests are available that a problem is presented when a test battery is to be selected. The following criteria for the selection of a test battery are recommended:

1. The tests should measure the various factors in physical fitness. Any test which does not measure strength, endurance, agility or co-ordination should not be selected.

2. As little equipment as possible should be demanded and the equipment should be easily procured and set up. For example, dynamometers for testing strength are exceedingly expensive, and are not available in sufficient numbers to test large groups of men.

3. The tests should be such as to be capable of being administered with a maximum economy of time. Time for testing is usually limited, and any test which can be quickly administered is desirable. The high jump and bar vault are examples of tests which must be excluded because they are too time-consuming.

4. Test elements which might be dangerous to unskilled or poorly conditioned men should be omitted. Such tests as dives, rolls, and long distance runs come in this category.

5. The tests should not be dependent upon previously learned skills. For example, the shotput and certain balancing tests give an advantage to individuals who have previously practiced them. The purpose of physical efficiency tests is to measure the various aspects of physical fitness and **not** skill.

6. The tests should be such as to distinguish clearly between fit and unfit individuals. When a test is given to 100 individuals chosen as fit and unfit, the results obtained should not greatly overlap.

7. The tests should not be so complicated as to demand a highly skilled technician for their administration. For example, tests which require the taking of pulse rates and blood pressures would not be feasible.

8. To the extent possible, each test should measure only one element of physical condition. When a test measures a number of different aspects of physical fitness, it is impossible to determine how much of each element is present. The time required to traverse an obstacle course is an excellent index of an individual's total condition but it does not indicate where his physical assets and liabilities are.

9. The tests selected should be such as can be scored with points. This criterion eliminates the pass or fail type of test. When tests are



scored with points, the men are more strongly motivated. In addition, it is possible to obtain a better index of an individual's total physical fitness.

**A RECOMMENDED PHYSICAL EFFICIENCY TEST BATTERY.**—A test battery which adequately meets the above criteria is indicated below. This test battery was developed after a tremendous amount of testing experience in the Army. It represents the 7 best tests out of an original group of 25. This test battery is probably the most widely employed in the United States today, and valid standards are available for it.

1. Pullups—measures arm and shoulder flexor strength.
2. Burpee, 20 seconds—measures agility.
3. Squat Jumps—measures leg strength and coordination.
4. Pushups—measures arm and shoulder extensor strength.
5. 100 Yard Pick-a-back—measures muscular endurance.
6. Situps—measures abdominal strength.
7. 300 Yard run—measures cardio-respiratory endurance.

### REGULATIONS GOVERNING TESTS.

1. **Pullups.**—One score is recorded each time the individual pulls his weight up to a point where his chin is **above** the bar. If he pulls almost up to the bar, one-half point should be scored. The bar must be grasped with the palms facing away from the individual. (Fig. 93.) Following are the essential rules to be observed:

a. When the body is lowered, it should come all the way down to a position where the arms are completely extended. The elbows must be straight. If the body is not completely lowered, a half pullup should be recorded.

b. A slight bend of the knees does not constitute a violation of proper pullup form. However, when this bend becomes exaggerated or when the knees are jerked up in a kip fashion, only half a pullup should be recorded.

c. When the body begins to swing extensively, the scorer should prevent it. No penalty is attached to this, however. Swinging at the hips is permissible. When an individual has 4 consecutive half chins he should be halted. He may be given another opportunity when rested.

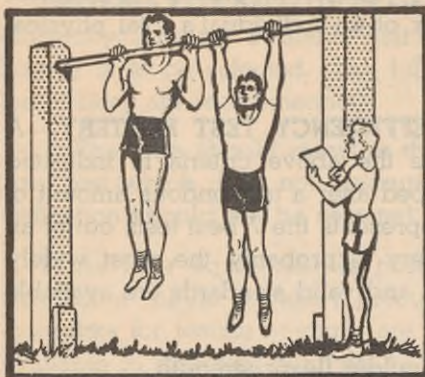


Fig. 93

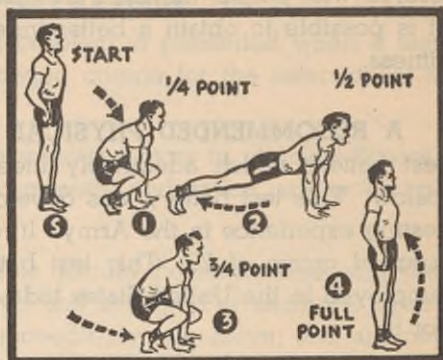


Fig. 94

2. **Burpee, 20 Seconds.**—The Burpee movement is started from the standing position. As the hands are placed in the vicinity of the feet, the legs are extended backward. They are immediately returned to the squatting position, after which the erect position is assumed again. This complete movement is repeated as often as possible in a 20 second interval of time. At the termination of the period, the individual is given an additional one-fourth if he is in the squatting position; if his legs are extended, he is scored an additional one-half; if he has returned to the squat position prior to standing, he is scored three-fourths of a movement. To make speed do not bend the knees too much; bend at the hips instead. The following are common violations of proper form which are penalized by deducting one-fourth of a movement for each infraction:

- a. The failure to place the hands in the vicinity of the feet. Some individuals merely fall forward on their hands. The hands must be placed within 12 inches of the toes.
- b. Frequently the legs are not properly extended to the rear. The body must be straight from head to heels. If the feet are extended too far, however, the man will have difficulty in returning to the squat position.
- c. The most frequent fault is the failure to return to the erect position. The chest should be thrust out in an exaggerated manner. The chest should be extended out farther than the chin. The knees must not be bent in this standing position.
- d. Occasionally an individual starts his feet backward as he begins to bring his body down. He is not permitted to extend his legs backward until his hands have hit the ground.

In the conduct of the Burpee test, each individual should practice 3 movements before the test. It is very important that the proper form of



the Burpee be demonstrated to all men before they do this event. If a man commits more than 4 infractions, he should perform the event again when rested.

**3. The Squat Jumps.**—In the starting position, the fingers are locked and placed on top of the head. The feet are placed with the rear toe opposite the heel of the forward foot. The feet should be separated several inches laterally. The individual jumps upward and comes down to a squatting position sitting momentarily on his rear heel. He jumps upward immediately into the air, and, reversing the position of his feet, comes down again to the squatting position. This continues until the individual chooses to stop. The event should continue without pause and the position of the feet reversed after each jump. The individual must return to a completely erect position on each upward jump. The total number of complete movements represents the individual's score. On the upward jump, the feet should come off the ground several inches.



Fig. 95

**4. Pushups.**—Pushups are executed from the front leaning rest position. One pushup should be scored each time the individual lowers his chest to the floor and pushes up to the original position. Only the chest must touch the floor. During the execution of this movement, the entire body should be kept in a straight line. Common violations of proper form include:

- a. The failure to touch the chest to the floor.
- b. Permitting the stomach, thigh, or legs to touch the floor.
- c. Bending the body at the waist. A common mistake is to push up the shoulders, leaving the hips down until the arms are straight.
- d. Failure to straighten the arms on the upward movement.

In order to ascertain whether the performer is touching his chest, the judge should place his hand on the ground directly under the performer's chest. No rests or pauses are permitted. Any deviation from the proper form should be halted after 4 consecutive half movements. After being rested he may try again if he chooses. It is helpful if the proper form is demonstrated.

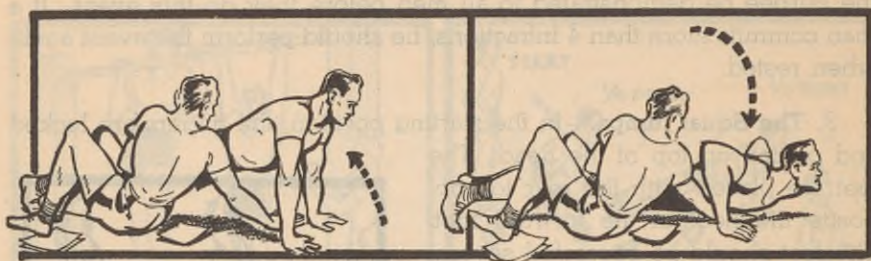


Fig. 96

5. **100 Yard Pick-A-Back.**—In this event, a person of approximately one's own height and weight is carried in pick-a-back fashion for a distance of 100 yards. A difference in weight of 10 pounds is permissible. After the men have been paired off, they line up with the one who is to ride immediately behind his partner. Upon the command "Get Set" or "Riders Mount," the rear man mounts astride his partner's back. The carrier **must** grasp and continue to hold his partner's legs with both arms from the outside. The rear man should keep his chest in close to his partner's back. He should avoid swaying to the side or leaning backward. If the pair should happen to fall during the first 75 yards of the race, they should not attempt to continue, but should run in a later heat. If they fall in the last 25 yards, the judge may estimate the time.

It is helpful to have the runners perform this event in lanes.

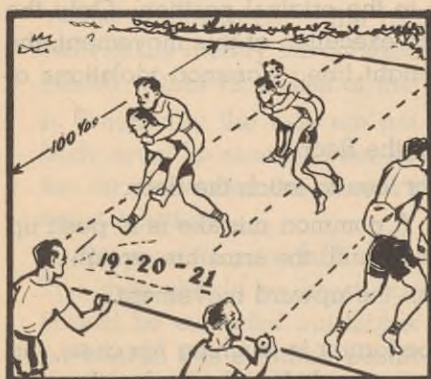


Fig. 97

Each runner must have a judge who records the time which is called out by the timer. Immediately upon finishing, the runner walks straight back to the finish line and gives his card to the judge for scoring. After the card is scored, the pair returns to the starting line (outside the running area) where they reverse their original positions. As soon as one heat crosses the finish line, the next should be started.

In timing this event, the timer calls the seconds aloud, emphasizing the syllable marking the second; for example, **eighteen**, **nineteen**, **twenty-one**, **twenty-two**. If the man crosses the line just as the second is called or immediately after-



ward, he is credited with that time. If he crosses it about halfway between any two counts, as between 24 and 25, he is credited with 24½ seconds. The runner should be sure **not** to carry his score card in his hip pocket in this event.

6. **Situps.**— In this event, the individual starts from a position in which he is lying on his back, his hands clasped under his head and his feet spread apart approximately two feet. The knees should be straight when the individual is lying flat on his back. While the judge or someone else holds his ankles, he touches his left elbow to his right knee. It is permissible to bend the knee to facilitate touching it with the elbow. Each individual should be encouraged to touch the knee each time, but he should not be penalized if he only approximates it. The event is continued in this manner until the individual chooses to stop. He alternates knees and elbows, i.e., he touches his left elbow to his right knee and the next time he touches his right elbow to his left knee.

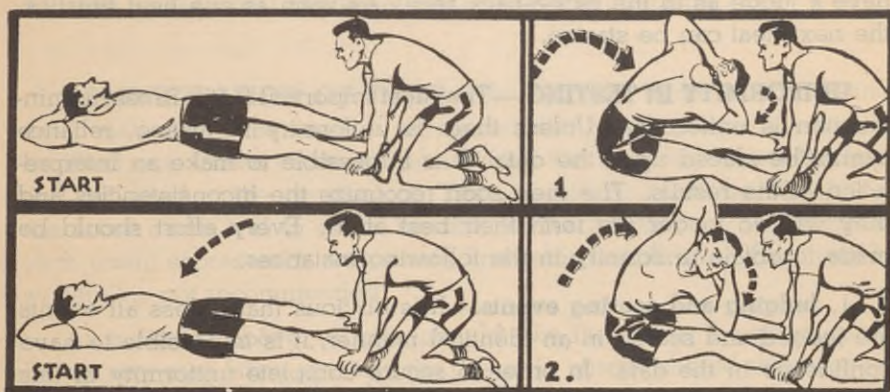


Fig. 98

No rest should be permitted between situps. Bouncing is not permitted. It is not permissible to roll over on the side or to assist the movement with the arm or elbow. For each violation, the individual is penalized one situp. He is also penalized one for each full second of rest lying on his back. If he rests more than once, he is disqualified and his count ceases.

It is suggested that one judge may supervise from 6 to 8 pairs on this event. By lining up the performers and keeping them close together, the judge may ascertain that the proper form is being followed by all performers. The person holding the performer's feet counts the number of situps. The official should record the score, however.

### 7. 300 Yard Run.—The 300 yard run is an excellent test of endurance.

Advise the men that they should run about 90% full speed and finish the last 100 yards with all they have left. Because some posts do not have a 300 yard straitaway, this event should be run 150 yards up and back. The runner should have a scorer who records the last second which the timer calls out as the final yard line is passed. The runners turn around a stake from right to left. A minimum of two hours after eating should elapse before this test is conducted. After running this event, no individual should be allowed to lie down for at least 5 minutes. It is usually well to emphasize that this event takes courage. Each runner must



Fig. 99

have a judge as in the pick-a-back race. As soon as one heat finishes, the next heat can be started.

**UNIFORMITY IN TESTING.**—The most important factor in test administration is uniformity. Unless there is uniformity in testing, reliance cannot be placed upon the data. It is impossible to make an interpretation of the results. The men soon recognize the inconsistencies and they will no longer put forth their best effort. Every effort should be made to obtain uniformity in the following instances:

1. **Judging and scoring events.**—It is obvious that unless all events are judged and scored in an identical manner, it is impossible to have confidence in the data. In order to secure complete uniformity in this regard, it is essential that all judges and officials be carefully trained. For this reason, it is recommended that participants do not judge each other. There are always certain violations of proper form that no one but a trained judge will recognize. The trained judge is also more impartial than the friends of the men taking the tests. The uniformity in judging and scoring will be in direct ratio to the time spent training assistant judges and scorers.

2. **Order in which tests are taken.**—A true indication of the performances of the men cannot be obtained unless they all take the tests in the same order. Certain tests will markedly reduce performance on other tests. For example, it would not be fair to compare the records on the pullups of two individuals one of whom ran the 300 yard run immediately before the event. It will take somewhat longer to conduct the



tests so that all men will take them in the same order, but the extra time will be well justified.

3. **Motivation.**—All the various groups should be uniformly motivated. Every effort should be made to obtain the best performance from each individual.

4. **The condition of the fields, areas, equipment and facilities.**—All of these factors should be similar for the various groups taking the test.

5. **Activity prior to hour of test.**—On the day of the test there should be some similarity in what the men have experienced. For example, if one company marched 4 miles to the test area and another company rode in trucks, the latter company would have an advantage. If some men stood guard during the night previous to the test they would be handicapped. If possible, all the testing should be done in the morning or all in the afternoon. Testing the day after pay day should be avoided.

6. **Wearing apparel.**—This is especially important in regard to shoes. All men should wear service shoes and fatigue uniforms.

**ADMINISTRATION OF TESTS.**—As the men come to the testing area, each should be given a score card, the heading of which should be filled out. These cards are retained by the men throughout the test, and collected at the conclusion. They should be cautioned to protect the score cards and to avoid bending or tearing them. The official at each event scores each man's card and returns it to him. The "buddy system" is not recommended.

As indicated above, all men should take the test in the same order. Before any man takes any test, the officer in charge should demonstrate and explain the proper form for the event. It is recommended that all 7 events be completed at one test period. Whatever plan is followed, it should be **consistent** for all groups of the same organization.

The officials should be well-trained in advance of the test. They should appear in khaki in order to contrast with the men being tested, who should be in fatigue clothes. Six commissioned officers and 20 non-coms or well-chosen privates can administer the above test to 300 men in 3 hours. For more or less men, the number of officials can be proportionately greater or smaller.

The equipment needed to administer the above test is as follows:

1. Score cards—should be of cardboard.
2. 2 stop-watches.

3. 8 stakes about 2 feet long for the 300 yard run.
4. Chinning bars—8 feet high. Two blocks should be nailed on the uprights 2 feet from the ground to facilitate short men reaching the bar. Smooth wooden bars are satisfactory.
5. Pencils—an adequate supply so men can fill out score card headings.
6. Line marker—for starting and finishing lines for 300 yard run and pick-a-back race. It is helpful but not essential to have lanes for these events.

**SCORING TABLES.**—Scoring tables have been devised for the above test battery. (See Fig. 100.) These scoring tables make possible the determination of each man's total score. It is obviously impossible to add the number of pullups, the number of burpee movements, squat jumps, pushups, etc., and obtain a total score. These scoring tables are derived statistically. The mean or average score is 50 points and the range is from 0 to 100 points. The data from which these scoring tables were derived was an average infantry division as judged by the scores on the physical fitness test. The score of 100 represents 3 standard deviations above the mean and the score of 0 represents 3 standard deviations below the mean. In a normal distribution, a range over 6 standard deviations will encompass 997 cases out of a 1000.

In addition to their value in making it possible to determine each man's total score, the scoring tables provide a powerful motivating device. By using these tables, the competitive spirit of the men is aroused because they want to make the highest total score and beat their friends. Further, it gives them an idea of how good their performance is in each event because 50 points represents the average score and anything above or below this approaches excellent or poor performance. When a man does 12 Burpee movements in 20 seconds, he has no idea whether this is a good or bad performance, but he can understand when he is told that his point score is 70 on a scale from 0 to 100.

**SCORE CARDS.**—A well-prepared score card also motivates the men to their best performance. (See Fig. 101.) The scoring table should be used in conjunction with the score card. As each man's raw score is recorded, the judge may also indicate the point score. Several scoring tables may be distributed among the men and they themselves may put down their own point scores.



The score card should provide space for the scoring for several different tests. After the first test, the men are motivated tremendously to exceed their previous score. By indicating the standards for the average soldier and the Paratroopers on the back of the score card, the men are further stimulated to give their best efforts.

PHYSICAL EFFICIENCY SCORING TABLES

	Pullups		Situps		20 Sec. Burpee		Pushups		100 Yd. Pick-a-back		300 Yd. Run		Squat Jumps			
	No.	Pts.	Inch	Pts.	No.	Pts.	No.	Pts.	Sec.	Pts.	Sec.	Pts.	No.	Pts.	No.	Pts.
Excellent			82	100	13.75	100	44	100					72	100	62	87
			80	98	13.5	97	43	98					68	95	61	86
	18	100	78	96	13.25	94	42	95			35	100	67	93		
	17	95	76	94	13.0	90	41	93	18	100	37	90	66	92		
	16	90	74	92	12.75	86	40	90	20	88	38	85	65	91		
			72	90			39	88					64	90		
			70	88									63	88		
Good			68	86	12.5	82	38	85					60	85	51	73
			66	84	12.25	78	37	82					59	83	50	72
	15	85	64	82	12.0	74	36	80					58	82	49	71
	14	80	62	80	11.75	70	35	77	21	82	39	80	57	81		
	13	75	60	78	11.5	66	34	75	22	76	40	75	56	80		
	12	70	58	76			33	72	23	70	41	70	55	78		
			56	74			32	70	24	64			54	77		
		54	72			31	67					53	76			
		52	70			30	65					52	75			
Average			50	68			29	62					48	70	36	55
			48	66			28	60					47	68	35	53
	11	65	46	64	11.25	62	27	57					46	67	34	52
	10	60	44	62	11.0	58	26	55			42	65	45	66	33	51
	9	55	42	60	10.75	54	25	52	25	58	43	60	44	65	32	50
	8	50	40	58	10.5	50	24	50	26	52	44	55	44	65	32	50
	7	44	38	56	10.25	46	23	47	27	46	45	50	43	63	31	48
			36	54	10.0	42	22	45	28	40	46	45	42	62	30	47
			34	52			21	42			47	40	41	61	29	45
		32	50			20	40			48	35	40	60	28	44	
						19	37					39	58	27	42	
						18	35					38	57	26	41	
												37	56	25	39	
Poor			30	47	9.75	38	17	32					24	38	16	26
			28	44	9.5	34	16	30					23	36	15	24
			26	41	9.25	30	15	27	29	34	49	30	22	35	14	23
	6	38	24	38	9.0	26	14	25	30	28	50	25	21	33	13	21
	5	32	22	35	8.75	22	13	22	31	22	51	20	20	32		
	4	26	20	32			12	20	32	16	52	15	19	30		
			18	29			11	17					18	29		
		16	26			10	15					17	27			
Very Poor			14	23	8.5	18	9	12					12	20	5	9
			12	20	8.25	14	8	10					11	18	4	8
	3	20	10	17	8.0	10	7	7	33	10	53	10	10	17	3	6
	2	14	8	14	7.75	7	6	5	34	4	54	5	9	15	2	5
	1	8	6	11	7.5	3	5	2	35	0	55	0	8	14	1	3
			4	8			U-4	0					7	12		
		2	5									6	11			

Fig. 100

## PHYSICAL EFFICIENCY SCORE CARD

Age..... Weight.....

Height..... Date Entered Army.....

## TEST BATTERY

Event	First Test		Second Test		Event	Third Test		Fourth Test	
	Raw Score	Points	Raw Score	Points		Raw Score	Points	Raw Score	Points
Pullups					Pullups				
Burpee 20					Burpee 20				
Squat Jump					Squat Jump				
Pushups					Pushups				
100 Yd. Pick-a-back					100 Yd. Pick-a-back				
Situps					Situps				
300 Yd. Run					300 Yd. Run				
TOTAL SCORE					TOTAL SCORE				
DATE					DATE				

(Obverse)

## PERFORMANCE STANDARDS

Event	Average Soldier	Parachute Trooper
Pullups	8	11
Burpee 20	10.5	12
Squat Jump	32	40
Pushups	23	33
100 Yd. Pick-a-back	26 sec.	23 sec.
Situps	33	70
300 Yd. Run	46 sec.	43 sec.

## TOTAL SCORE

Very Poor..... 113 points or less  
 Poor..... 114 to 246 points  
 Average..... 247 to 444 points  
 Good..... 445 to 600 points  
 Excellent..... 601 points and over

NAME.....  
 (Last Name) (First Name) (Please Print)

SERIAL NUMBER.....

UNIT.....  
 Co. or Bty. Bn. Reg. Div.

PHYSICAL EFFICIENCY TEST

SCHOOL FOR SPECIAL SERVICE

Army Service Forces  
 Lexington, Virginia

(Reverse)



**PHYSICAL FITNESS PROFILES.**—Physical fitness profiles serve as a further motivating device. In addition, they provide a record of each man's physical status over a period of time and reveal clearly his progress. Every company commander should have a physical fitness profile for every man in his organization. The raw score which each man makes on each test is encircled. Lines are then drawn from circle to circle. For the first test, a pencil should be used and different colored pencils employed for the subsequent tests. The profiles might be used for test score cards, but if this is done, care must be exercised that the cards are not torn or bent.

**PHYSICAL FITNESS PROFILE**

NAME \_\_\_\_\_ AGE \_\_\_\_\_ WEIGHT \_\_\_\_\_ HEIGHT \_\_\_\_\_

Date: First Test \_\_\_\_\_ Second Test \_\_\_\_\_ Third Test \_\_\_\_\_ Fourth Test \_\_\_\_\_

(Score with pencil) (Score with red pencil) (Blue pencil) (Ink)

	Pullups		Surge 20		Squat Jump		Pushups		100 yd. Pick-a-Back		Situps		300 yd Run		Total Points
	Raw Score	Point Score	Raw Score	Point Score	Raw Score	Point Score	Raw Score	Point Score	Raw Score	Point Score	Raw Score	Point Score	Raw Score	Point Score	
Upper Quartile	18†	100	13-75‡	100	72‡	100	44‡	100	18	100	78‡	100	35	100	700
	17	95	13-25	94	68	95	42	95	19	94	74	92	36	95	
	16	90	13	90	64	90	40	90	20	88	70	88	37	90	
	15	85	12-75	86	60	85	38	85	21	82	66	84	38	85	
	14	80	12-5	82	56	80	36	80	22	74	62	80	39	80	
	13	75	12-25	78	52	75	34	75			58	76	40	75	
			12-	74											525
Third Quartile	12	70	11-75	70	50	72	32	70	23	70	56	74	41	70	524
	11	65	11-5	66	46	67	30	65	24	64	52	70	42	65	
	10	60	11-25	62	42	62	28	60	25	58	48	66	43	60	
	9	55	11-0	58	38	57	26	55	26	52	44	62	44	55	
			10-75	54	34	52					40	58			
											36	54			
Average	8	50	10-5	50	32	50	24	50			32	50	45	50	350
Second Quartile	7	44	10-25	44	28	44	22	43	27	46	30	47	44	45	349
	6	38	10-0	42	24	38	20	40	28	40	26	41	47	40	
	5	32	9-75	38	20	32	18	35	29	34	22	35	46	35	
	4	26	9-5	34	16	26	16	30	30	28	18	29	49	30	
			9-25	30			14	25	30-5	25	15	25	50	25	
			9-	26											175
Lowest Quartile	3	20	8-75	22	12	20	12	20	31	27	12	20	51	20	174
	2	14	8-5	18	8	14	10	15	32	16	8	14	52	15	
	1	8	8-25	14	4	8	8	10	33	10	4	8	51	10	
			8-0	10			6	5	34	4		5	54	5	
			7-75	7			4	0	35	0			55	0	
			7-5	3											

Fig. 102

**PHYSICAL EFFICIENCY COMPETITION.**—This method has been employed to stimulate interest in physical fitness and to motivate all men to improve their condition. A physical fitness tournament can be conducted within a regiment to determine the most fit company. Each company must test a predetermined percentage—say 90 per cent—of its total personnel. Unless this is done some organizations may exclude from the test those men who will pull down the average. The company average for each test and for total points is obtained. The lowest company on each event is scored one point. Each succeeding place is scored an additional point. Thus, if 12 companies were in the competition, the company with the highest average on the pullups would score 12 points for that particular event. The company with the lowest

average would score one point. The company with the highest number of points over the 8 items is the winner.

**UTILIZING TEST RECORDS.**—The test results must be used. The purpose of testing is to find out the condition of the troops and then do something about the deficiencies revealed. Too frequently the test records are filed away and no follow-up is attempted. Particular attention should be devoted to those men who are considerably below the average on any test. One method which has been employed successfully is to assign to platoon leaders the responsibility for bringing up to average those men who are below it. Much can be done in this way in off-duty time.

**FREQUENCY OF TESTING.**—The men will feel disinclined to cooperate if they are tested too frequently. A test every 8 to 12 weeks is sufficient. When the test is administered, however, it must be well done in every respect. Sloppy, careless test administration will kill the interest of the men in this type of activity. They are quick to sense the futility of putting forth their best efforts when the test is poorly administered. When it is intended to retest the men at a future date, it is advisable not to indicate the fact to the men. It has been found that some men will deliberately do poorly on the first test in order to show a greater gain on the next one.

**THE ARMY AIR FORCES PHYSICAL FITNESS TEST.**—The AAF Physical Fitness Test is designed to measure those aspects of physical fitness to be accomplished by the Physical Fitness Program, namely: Cardio-respiratory endurance, and muscular strength, power and endurance. These are the major components of organic power which constitute the physical basis for hard and long continued physical performance. They may be developed by participation in physical fitness activities which contain these constituents along with agility, speed, coordination and flexibility if participation is frequent, intense, and of long duration.

The AAF Physical Fitness Test has two specific functions:

- a. Measurement of physical fitness status and amount of improvement.
- b. Measurement of the effectiveness of the physical fitness program.

The procedures on testing schedule, administration, interpretation of results, and reports will be found in AAF Regulation No. 50-10, Training: Physical Fitness Test. Forms No. 28a, and 28b which are used in the administration of the AAF, Physical Fitness Test, are indicated below.











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