

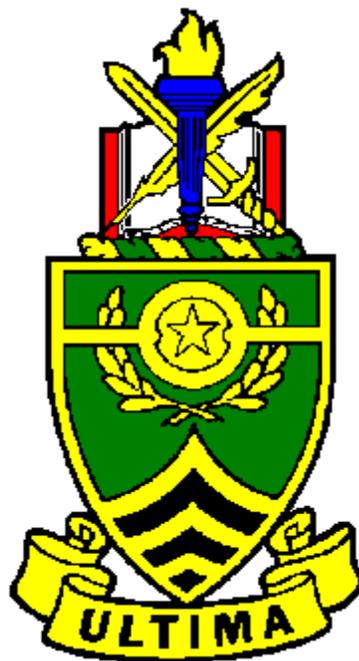
U.S. ARMY SERGEANTS MAJOR ACADEMY (ANCOC)

T424

OCT 03

IMPLEMENT A TOTAL FITNESS PROGRAM IN A PLATOON

TRAINING SUPPORT PACKAGE



TRAINING SUPPORT PACKAGE (TSP)

TSP Number / Title	T424 / IMPLEMENT A TOTAL FITNESS PROGRAM IN A PLATOON
Effective Date	01 Oct 2003
Supersedes TSP(s) / Lesson(s)	H401, Implement a Total Fitness Program in a Platoon, Oct 00.
TSP Users	600-ANCOC-TATS Advanced Noncommissioned Officer's Course
Proponent	The proponent for this document is the Sergeants Major Academy.
Improvement Comments	<p>Users are invited to send comments and suggested improvements on DA Form 2028, <i>Recommended Changes to Publications and Blank Forms</i>. Completed forms, or equivalent response, will be mailed or attached to electronic e-mail and transmitted to:</p> <p>COMDT USASMA ATTN: ATSS-DCA BLDG 11291 BIGGS FIELD FORT BLISS TX 79918-8002</p> <p>Telephone (Comm): (915) 568-8875 Telephone (DSN): 978-8875</p> <p>atss-dcd@bliss.army.mil</p>
Security Clearance / Access	Unclassified
Foreign Disclosure Restrictions	FD5. This product/publication has been reviewed by the product developers in coordination with the USASMA foreign disclosure authority. This product is releasable to students from all requesting foreign countries without restrictions.

PREFACE

Purpose

This Training Support Package provides the instructor with a standardized lesson plan for presenting instruction for:

Task Number

Task Title

Individual

03-0001.00-0027

Implement A Total Fitness Program In A Platoon

This TSP
Contains

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IMPLEMENT A TOTAL FITNESS PROGRAM IN A PLATOON
T424 / Version 1
01 Oct 2003

SECTION I. ADMINISTRATIVE DATA

All Courses Including This Lesson	<u>Course Number</u> 600-ANCOC (TATS)	<u>Version</u> 1	<u>Course Title</u> Advanced Noncommissioned Officer's Course
Task(s) Taught(*) or Supported	<u>Task Number</u> <u>Individual</u> 03-0001.00-0027 (*)	<u>Task Title</u> Implement A Total Fitness Program In A Platoon	
Reinforced Task(s)	<u>Task Number</u>	<u>Task Title</u>	
Academic Hours	The academic hours required to teach this lesson are as follows:		
		<u>Resident Hours/Methods</u>	
		2 hrs	/ Conference / Discussion
	Test	0 hrs	
	Test Review	0 hrs	
	Total Hours:	2 hrs	
Test Lesson Number	Testing (to include test review)	<u>Hours</u> 4 hrs	<u>Lesson No.</u> T403 version 1
Prerequisite Lesson(s)	<u>Lesson Number</u>	<u>Lesson Title</u>	
	None		
Clearance Access	Security Level: Unclassified Requirements: There are no clearance or access requirements for the lesson.		
Foreign Disclosure Restrictions	FD5. This product/publication has been reviewed by the product developers in coordination with the USASMA foreign disclosure authority. This product is releasable to students from all requesting foreign countries without restrictions.		

References

<u>Number</u>	<u>Title</u>	<u>Date</u>	<u>Additional Information</u>
FM 21-20	PHYSICAL FITNESS TRAINING	SEP 1992	

Student Study Assignments

Read FM 21-20, Chap 1, p 1-3 thru 1-9, and 1-11 thru 1-15; Chap 2, p 2-0, 2-3 thru 2-5, and 2-13 and 2-14; and Chap 10, p 10-1 thru 10-4; and App A.

Instructor Requirements

1:16, SFC, ANCOC graduate, ITC and SGITC qualified

Additional Support Personnel Requirements

<u>Name</u>	<u>Stu Ratio</u>	<u>Qty</u>	<u>Man Hours</u>
None			

Equipment Required for Instruction

<u>ID Name</u>	<u>Stu Ratio</u>	<u>Instr Ratio</u>	<u>Spt</u>	<u>Qty</u>	<u>Exp</u>
673000T101700 Projector, Overhead, 3M	1:16	1:1	No	1	No
559359 Screen, Projection	1:16	1:1	No	1	No

* Before Id indicates a TADSS

Materials Required**Instructor Materials:**

- Reference material and TSP with VGTs.

Student Materials:

- Pencils or pens.
- Writing paper.

Classroom, Training Area, and Range Requirements

GEN INSTRUCT BLDG (CLASSROOM SIZE 40X40 PER 16 STU)

Ammunition Requirements

<u>Id</u>	<u>Name</u>	<u>Exp</u>	<u>Stu Ratio</u>	<u>Instr Ratio</u>	<u>Spt Qty</u>
	None				

Instructional Guidance

NOTE: Before presenting this lesson, instructors must thoroughly prepare by studying this lesson and identified reference material.

Before class--

- Issue all recoverable materials NLT three days prior to class.
- Read all TSP materials.
- Assign Student Discussion Leader at least three days prior to the date of the class as shown on the training schedule.

During class--

- Facilitate the small group process IAW TSP.

After class--

- Collect all recoverable material.
 - Report any TSP discrepancies to the Senior Small Group Leader.
 - Conduct After Action Review for this TSP.
-

Proponent Lesson Plan Approvals

<u>Name</u>	<u>Rank</u>	<u>Position</u>	<u>Date</u>
Evans, Larry D.	GS09	Training Specialist	
Eichman, Guy A.	MSG	Chief, BNCOC/ANCOC	
Lawson, Brian H.	SGM	Chief, NCOES	
Mays, Albert J.	SGM	Chief, CDDD	

SECTION II. INTRODUCTION

Method of Instruction: Conference / Discussion
 Technique of Delivery: Small Group Instruction (SGI)
 Instructor to Student Ratio is: 1:16
 Time of Instruction: 5 mins
 Media: VGT-1

Motivator

Physical fitness provides a foundation for combat readiness and must be an integral part of every soldier's life. Unit readiness begins with the physical fitness of soldiers and the noncommissioned officers and officers who lead them.

Physical fitness means different things to different people. No other military proficiency is as great a combat multiplier as physical fitness. During this block of instruction, we will break down the implementation of a platoon physical training (PT) program step by step. This should give you a good idea of how to develop and implement an effective PT program in your platoon to help improve your combat effectiveness.

Terminal Learning Objective

NOTE: Inform the students of the following Terminal Learning Objective requirements.

At the completion of this lesson, you [the student] will:

Action:	Implement a total fitness program in a platoon.
Conditions:	As a platoon sergeant in a classroom environment and given FM 21-20.
Standards:	Implement a total fitness program in a platoon IAW FM 21-20, Chap 1, 2, 10, and App A.

Safety Requirements

None

Risk Assessment Level

Low

Environmental Considerations

NOTE: It is the responsibility of all soldiers and DA civilians to protect the environment from damage.
None

Evaluation

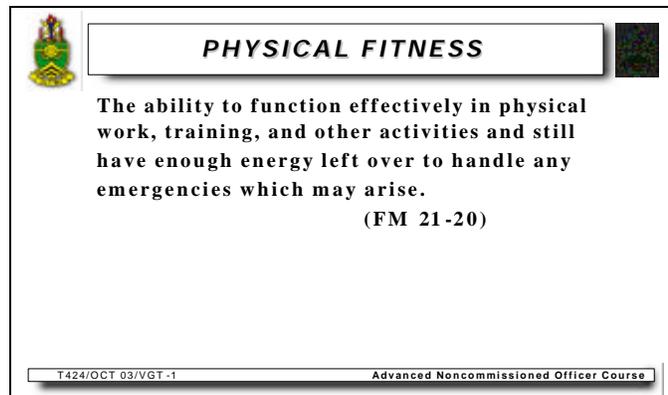
At the end of this course of instruction, you will take a written, objective examination. This will test learning objectives from this lesson. You must correctly answer at least 70 percent of the questions to receive a GO. A GO is a graduation requirement.

Instructional Lead-In

Improving soldiers' physical fitness is one of the best ways to increase performance on the battlefield. In this lesson you will build on your existing knowledge and learn how to implement a platoon physical fitness program.

NOTE: Ask students how they would define physical fitness. Discuss their definitions, then ensure you cover the FM 21-20 definition.

FM 21-20 defines physical fitness as the ability to function effectively in physical work, training, and other activities and still have enough energy left over to handle any emergencies which may arise.

SHOW VGT-1, PHYSICAL FITNESS**REMOVE VGT-1**

A more generic and functional definition is the ability to meet life's present and future physical demands. A present demand on a soldier is to successfully accomplish the most physically demanding tasks required to perform his/her unit mission. A future demand is to live a long healthy life that is free from disease and disability.

SECTION III. PRESENTATION

NOTE: Inform the students of the Enabling Learning Objective requirements.

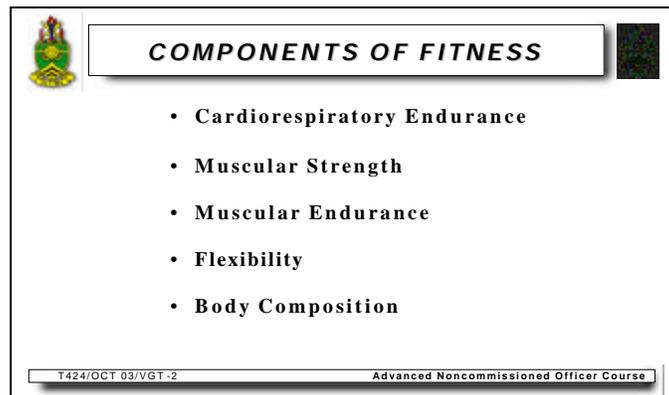
A. ENABLING LEARNING OBJECTIVE

ACTION:	Describe the components of fitness.
CONDITIONS:	As a platoon sergeant in a classroom environment and given FM 21-20.
STANDARDS:	Described the components of fitness IAW FM 21-20, Chap 1, p 1-3 and 1-4, and Chap 2, p 2-0.

1. Learning Step / Activity 1. Components of Physical Fitness
Method of Instruction: Conference / Discussion
Technique of Delivery: Small Group Instruction
Instructor to Student Ratio is: 1:16
Time of Instruction: 10 mins
Media: VGT-2 and VGT-3

Now that we know the definition of physical fitness, let's look at its components.

SHOW VGT-2, COMPONENTS OF FITNESS



FM 21-20, Chap 1, p 1-3

Cardio-respiratory endurance:

FM 21-20 defines cardiorespiratory fitness as the efficiency at which the body delivers nutrients and oxygen to the working muscles and removes waste products. We sometimes refer to Cardiorespiratory (CR) fitness as CR endurance, aerobic fitness, or aerobic capacity and measure it by VO₂ max. This is the maximal amount of oxygen used by the body during a continuous bout of exhaustive aerobic exercise.

Activities best suited for improving CR endurance are: running, cycling, swimming, walking, hiking, road marching, cross-country skiing, skating, aerobic dance and various aerobic exercise machines (stair master, health rider, life cycle and Nordic track). Intensity inversely relates to the duration of activity usually monitored by calculating an appropriate training heart rate zone. Individuals perform pulse checks periodically throughout workouts to maintain exercise intensity in the zone.

Muscular strength:

FM 21-20 defines muscular strength as the greatest amount of force a muscle or muscle group can exert in one movement. You can most accurately measure muscular strength by lifting a weight for a one repetition maximum. A safer method is to lift less weight for more repetitions to temporary muscle failure (the inability to complete another correct repetition), then estimate your one repetition maximum using the handout provided. We usually do training at an intensity of 3-7 repetitions to temporary muscle failure.

Activities may include training with equipment (free weights, machines or elastic bands), lifting objects used in soldiering or recreation and lastly moving your own body weight as in climbing.

Muscular endurance:

FM 21-20 defines muscular endurance as the ability of a muscle or muscle group to perform repeated movements with moderate resistance for a given period of time. Muscular endurance is associated with the muscles used in various cardiorespiratory fitness training activities. Exercises involving repeated movements with a percentage of your body weight, such as: push-ups, sit-ups and other calisthenics require muscular endurance. Training is performed using timed sets of exercises or the time required to perform 12 or more repetitions of each exercise. Training is designed to accomplish gains in both muscular strength and muscular endurance by performing 8-12 repetitions to temporary muscle failure for specific muscle groups.

Flexibility:

FM 21-20 defines flexibility as the range of movement at a joint or series of joints and their associated muscles. There is no one method to assess total-body flexibility. FM 21-20 lists assessments to measure the range of motion of different joints. Regular performance of slow, gradual static stretching exercises (holding each stretch for 30 seconds or longer) is a safe method to improve flexibility.

Body composition:

FM 21-20 defines body composition as the relative amounts of lean body mass, which includes muscle and bone, compared to the amount of fat. AR 600-9 describes in detail the procedures for measuring and maintaining body composition. Practicing good nutritional habits and training the other four components appropriately will usually be effective in maintaining good body composition.

Improving the first three components of fitness listed above will have a positive impact on body composition and will result in less fat. Excessive body fat detracts from the other fitness components, reduces performance, detracts from appearance, and negatively affects one's health.

FM 21-20, Chap 1, p 1-3 and 1-4

Proper training to enhance the five components previously mentioned will lead to a higher level of physical fitness. Now let's look at motor fitness, the key element that bridges the gap between physical fitness and combat readiness.

QUESTION: What are the factors of motor fitness?

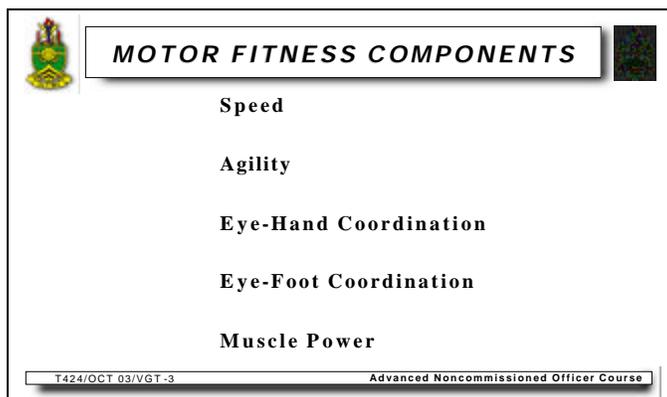
ANSWER: The factors of motor fitness are speed, agility, muscle power, eye-hand coordination, and eye-foot coordination.

Ref: FM 21-20, Chap 1, p 1-3

NOTE: Briefly discuss each bullet on the VGT.

REMOVE VGT 2

SHOW VGT-3, MOTOR FITNESS COMPONENTS



Ref: FM 21-20, Chapter 1, p 1-3

Factors such as speed, agility, muscle power, eye-hand coordination, and eye-foot coordination are components of “motor” fitness. These factors affect a soldier’s survivability on the battlefield. Appropriate training can improve these factors within the limits of each soldier’s potential. The Army’s fitness program seeks to improve or maintain all the components of physical and motor fitness through sound, progressive, mission-specific physical training for individuals and units.

REMOVE VGT-3

CHECK ON LEARNING: Conduct a check on learning and summarize the ELO.

QUESTION: What are the five components of fitness?

ANSWER: The five components of fitness are cardiorespiratory (CR) endurance, muscular strength, muscular endurance, flexibility, and body composition.

Ref: FM 21-20, Chap 1, p 1-3

QUESTION: What activities are best suited for cardiorespiratory (CR) endurance?

ANSWER: Activities that are best suited for improving CR endurance are: running, cycling, swimming, walking, hiking, road marching, cross-country skiing, skating, aerobic dancing and using various aerobic exercise machines (stair master, health rider, life cycle and Nordic track).

Ref: FM 21-20, Chap 2, p 2-0

B. ENABLING LEARNING OBJECTIVE

ACTION:	Describe the principles of exercise.
CONDITIONS:	As a platoon sergeant in a classroom environment and given FM 21-20.
STANDARDS:	Described the principles of exercise IAW FM 21-20, Chap 1, p 1-4 thru 1-7, and p 2-3 thru 2-5.

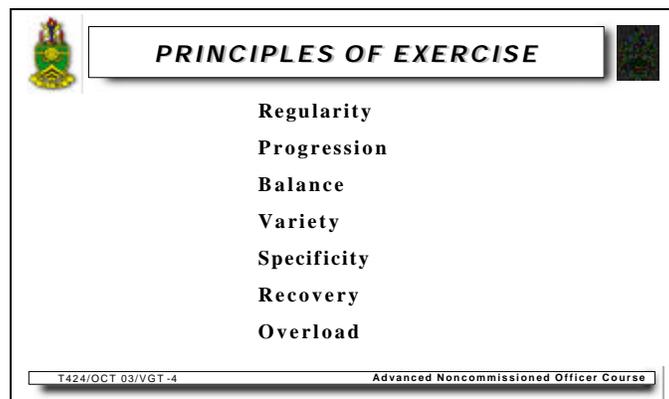
1. Learning Step / Activity 1. Principles of Exercise
 Method of Instruction: Conference / Discussion
 Technique of Delivery: Small Group Instruction
 Instructor to Student Ratio is: 1:16
 Time of Instruction: 15 mins
 Media: VGT-4 and VGT-5

Principles of Exercise:

During challenging physical fitness training we walk a tightrope, balancing between training hard and avoiding injuries. FM 21-20, Chap 1, p 1-4 describes seven principles of exercise that set parameters to help achieve balance while walking on the physical fitness training tightrope. Let’s discuss each principle listed on this next VGT.

NOTE: Show the bullets one at a time and briefly discuss each one.

SHOW VGT-4, PRINCIPLES OF EXERCISE



Ref: FM 21-20, Chap 1, p 1-4

Regularity is key to achieving a training effect. Soldiers should exercise each of the first four fitness components at least three times per week. Infrequent exercise can do more harm than good. Regularity is also important in resting, sleeping and following a good diet.

Progression is the goal of most training programs; however, we must be patient with the rate of our improvement. The intensity and/or duration of exercise must gradually increase to safely improve our fitness levels.

Balance is necessary for a program to be effective. Include activities that develop all components of fitness and involve the entire body (not just legs, chest, abdomen or arms). Don't overemphasize any one component or body part while neglecting others.

Variety in the activities scheduled for physical fitness training reduces boredom and increases motivation and progress.

Specificity is what makes units differ in their physical fitness program design. Units must gear training for the particular improvement desired. If you want to improve in your road marching ability, you need to practice road marching.

Recovery is time allowed between challenging workouts, where the body rests, rebuilds, and responds by becoming bigger, stronger, faster, and/or more fatigue resistant. Rest and sleep are also an important part of recovery. If you place great physical demands upon your body and you don't provide it with adequate rest, then you won't see optimal results and may possibly set yourself up for an injury. You should follow a hard day of training with an easier day. Another way to permit recovery is to alternate the muscle groups exercised each day. Recovery periods between sets and exercises during a given workout must be adequate for performing a quality exercise.

Overload is the key to making a workout a worthwhile effort. Each exercise session must exceed the normal demand placed on the body in order to bring about a positive training effect.

REMOVE VGT-4

FITT Factors:

QUESTION: What are the FITT Factors?

ANSWER: Frequency, intensity, time, and type.

Ref: FM 21-20, Chap 1, p 1-4

SHOW VGT-5, FITT FACTORS

FITT FACTORS

- **F**requency
- **I**ntensity
- **T**ime
- **T**ype

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FM 21-20, Chap 1, p 1-4 thru 1-7

NOTE: FITT Factors -- frequency, intensity, time, and type of exercise govern how you can safely and appropriately prescribe exercise for optimal improvement.

Frequency: AR 350-15 specifies that we conduct a vigorous physical fitness training program 3 to 5 times per week. For optimal results, commanders must strive to conduct 5 days of physical training per week. Ideally, at least three exercise sessions for CR fitness, muscle endurance, muscle strength, and flexibility should be performed each week to improve fitness levels.

Intensity: Training at the right intensity is the biggest problem in unit programs. The intensity should vary with each type of exercise. Exercise for CR development must be strenuous enough to elevate the heart rate to be between 60 and 90 percent of the heart rate reserve (HRR). FM 21-20, Chap 2, p 2-3 thru 2-5 explains the calculation of percent HRR.

For muscle strength endurance, intensity refers to the percentage of the maximum resistance used for a given exercise. When determining intensity in a strength-training program, it is easier to refer to a “repetition maximum” or “RM.” For example, a 10-RM is the maximum weight that an individual can correctly lift 10 times.

Time: Like intensity, the time spent exercising depends on the type of exercise. In order to improve cardiorespiratory endurance, you must use 20 to 30 continuous minutes of intense exercise.

For muscular endurance and strength, exercise time equates to the number of repetitions done. For the average soldier, 8 to 12 repetitions with enough resistance to cause muscle failure improves both muscle endurance and strength. As soldiers progress, they will make better strength gains by doing two or three sets of each resistance exercise.

Hold flexibility exercises or stretches for varying times depending on the objective of the session.

Type: Type refers to the kind of exercise performed. When choosing the type, the commander should consider the principle of specificity. Chapters 2, 3, and 4 of FM 21-20 discuss various types of CR, muscular strength, and flexibility exercises. The basic rule is that to improve performance, one must practice the particular exercise, activity, or skill he wants to improve.

NOTE: Figure 1-1 in FM 21-20 reflects how the FITT Factors apply to prescribing exercise for each of the first four components of fitness.

REMOVE VGT-5

CHECK ON LEARNING: Conduct a check on learning and summarize the ELO.

QUESTION: What are the FITT factors?

ANSWER: The FITT Factors are frequency, intensity, time, and type.

Ref: FM 21-20, Chap 1, p 1-4 thru 1-7

QUESTION: For muscle strength, what does exercise time equate to?

ANSWER: For muscular endurance and strength, exercise time equates to the number of repetitions done.

Ref: FM 21-20, Chap1, p 1-6

C. ENABLING LEARNING OBJECTIVE

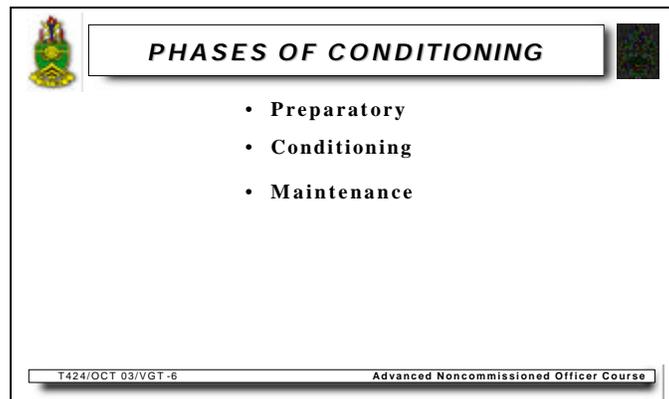
ACTION:	Describe the phases of fitness conditioning.
CONDITIONS:	As a platoon sergeant in a classroom environment and given FM 21-20.
STANDARDS:	Described the phases of fitness conditioning IAW FM 21-20, Chap 1, p 1-7 thru 1-9.

1. Learning Step / Activity 1. Phases of Conditioning
Method of Instruction: Conference / Discussion
Technique of Delivery: Small Group Instruction
Instructor to Student Ratio is: 1:16
Time of Instruction: 5 mins
Media: VGT-6

Phases of Conditioning:

Not all soldiers in the unit are at the same physical fitness level, nor are they able to train at the same intensity. FM 21-20 describes three phases of fitness conditioning: preparatory, conditioning, and maintenance. The starting phases for different units or individuals vary depending on their age, fitness levels, and previous physical activity. Young, healthy soldiers may be able to start with the conditioning phase, while those who have been exercising regularly may already be in the maintenance phase. Factors such as extended field training, leave time, and illness can cause soldiers to drop from a maintenance to a conditioning phase. Persons who have not been active, especially those over 40 years old, should start with the preparatory phase. Many soldiers who fall into this category may be recovering from illness, injury, or pregnancy. Most units will have soldiers in all three phases of training at the same time.

SHOW VGT 6, PHASES OF CONDITIONING



Ref: FM 21-20, Chap 1, p 1-7

The **preparatory phase** helps both the cardiorespiratory and muscular systems get used to exercise, preparing the body to handle the conditioning phase. The workload in the beginning must be moderate. To achieve planned increases in frequency, intensity, and time, progression from a lower to a higher level of fitness should be followed.

To reach the desired level of fitness, soldiers must increase the amount of exercise and/or the workout intensity as their strength and/or endurance increases.

The **conditioning phase** ends when a soldier is physically mission-capable and all personal and unit fitness goals have been achieved.

The **maintenance phase** sustains the high level of fitness achieved in the conditioning phase. The emphasis is no longer on progression. A well-designed 45-60 minute workout (including warm-up and cool-down) at the right intensity three times a week is enough to maintain almost any appropriate level of physical fitness. Maintaining an optimal level of fitness should become part of every soldier's lifestyle.

REMOVE VGT-6

CHECK ON LEARNING: Conduct a check on learning and summarize the ELO.

QUESTION: What are the three phases of fitness conditioning?

ANSWER: The three phases of fitness conditioning are preparatory phase, conditioning phase, and the maintenance phase.

Ref: FM 21-20, Chap 1, p 1-7 thru 1-9

D. ENABLING LEARNING OBJECTIVE

ACTION:	Identify the seven-step planning process.
CONDITIONS:	As a platoon sergeant in a classroom environment and given FM 21-20.
STANDARDS:	Identified the seven-step planning process in unit program development IAW the unit Commanders guidance and FM 21-20, Chap 10, p 10-1 thru 10-4.

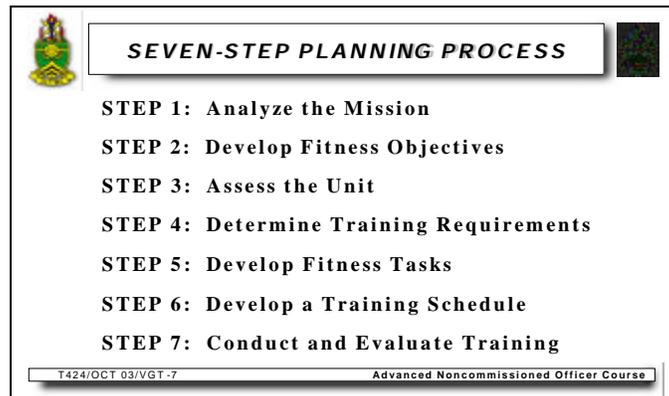
1. Learning Step / Activity 1. Seven-Step Planning Process
Method of Instruction: Conference / Discussion
Technique of Delivery: Small Group Instruction
Instructor to Student Ratio is: 1:16
Time of Instruction: 15 mins
Media: VGT-7 and VGT-8

Seven-Step Planning Process:

What connection is there between our wartime mission and our level of physical fitness? Across the war fighting spectrum from Combat Arms, Combat Support, and Combat Service Support, there are a wide variety of conditions that can affect our ability to fight our nation's conflicts. There are jobs in the Army that often remove us from concerns of direct fire on the modern battlefield. Desert Shield and Desert Storm, for example, had many supporting forces that were offset from the direct line of fire. How did the soldiers' level of fitness affect their performance in support units?

You may have seen cooks set up casualty collection points and triage sites. You may have seen supply clerks pulling TOC security while digging deliberate fighting positions. You may have seen transportation soldiers react to direct fire when their convoy got ambushed. You may have seen finance soldiers at D-main react to indirect fire during SCUD alerts. Helicopter pilots and crew chiefs may turn into infantrymen during escape and evasion following downed aircraft procedures. When we analyze our wartime mission we must keep in mind the physical demands of day-to-day activities and include physical preparation for battlefield contingencies as well. They should, therefore, plan wisely to minimize injuries and accidents. You do this by following the seven step planning process.

SHOW VGT-7, SEVEN-STEP PLANNING PROCESS



Ref: FM 21-20, Chap 10, p 10-1 thru 10-3

Analyze the Mission:

Wartime Mission: In order to identify the most demanding physical requirements of your mission, you must start with your unit's Mission Essential Task List (METL). This list defines critical organizational tasks necessary for tactical, strategic, and theater level mission accomplishment. For example, Infantry Company: Assault, Defend.

ARTEP/MTP: Squad and Platoon EX-EVALS, Company EDREs, ARTEP exercises, JRTC and NTC rotations all provide excellent assessments of your unit's level of physical performance.

NCO experience is the backbone of the Army; the insight and experience of noncommissioned officers provide a good platform of knowledge on what physical training is effective for units, and what is not.

NOTE: Ask students what their deployment experiences have been in reference to physical fitness. Discuss the NCO experiences in the classroom.

Develop Fitness Objectives:

Based on your mission analysis, you and your commander must identify specific fitness objectives that will drive your unit physical fitness program. A clearly defined objective clarifies the commander's desired end state regarding physical fitness. You will develop several fitness objectives for your platoon. These objectives must correspond with your METL. Your unit mission will drive your fitness objectives.

Assess the Unit:

For these objectives to be effective, you must have performance measures that act as benchmarks on the path of attaining your objectives. Performance measures must be measurable and quantifiable.

Identify current fitness level. With the training objectives established, the commander and the MFT are ready to find the unit's current fitness level and measure it against the desired level. An effective way to measure the current level is to utilize current physical training assessment tools in your unit such as the APFT, 4 or 5-mile run requirements, road-march requirements, rope climb, obstacle course, etc.

Test standardized performance measures. The most basic performance measure at your disposal is the APFT. In addition to using the assessment criteria provided by the APFT, you should encourage your commander to approve the assessment criteria provided by more battle focus drills. Some (examples) could be a timed squad litter carry over a specified distance, a timed fireman's carry with an equal size soldier over a set distance, a timed obstacle course, road-march and/or run requirement, a standardized individual shuttle run using a set number of 81mm mortar rounds over a set distance, etc. It's important to standardize your assessment techniques and evaluate all soldiers in an equitable manner. When conducting another assessment 4-8 weeks from now, ensure that your assessment techniques remain standardized to facilitate quantifiable results of your unit's level of physical performance.

Determine Training Requirements:

Identify strengths and weaknesses. The results of your initial assessment will drive the way you choose to train in the future. You will be able to emphasize your unit's weaknesses and train specifically to improve them, using the techniques taught to you in this block of instruction. Consider the adjustments to your training plan in accordance with the principles of exercise. Your assessment will help you determine the type of training or training events that will comprise your PT schedule.

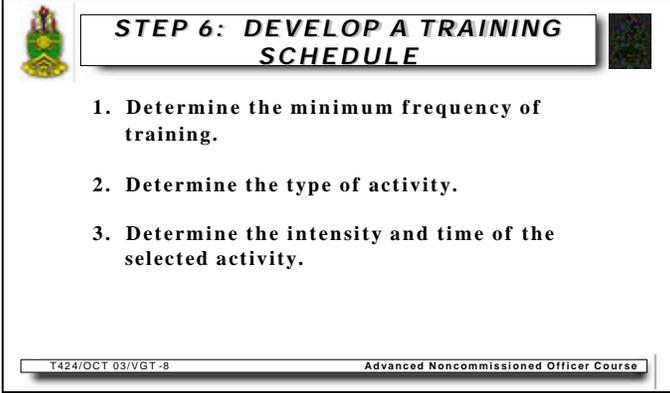
Once determined, the commander reviews training requirements for higher headquarters' long and short-range training plans to identify training events and allocations of resources which will affect near-term planning.

Develop Fitness Tasks:

Fitness tasks establish priorities, frequencies, and the sequence for training requirements. These priorities need adjustments for real world constraints before they become a part of the training plan. The essential elements of fitness tasks consists of four groups: collective tasks, individual tasks, leader tasks, and resources required for training.

REMOVE VGT-7

SHOW VGT-8, STEP 6: DEVELOP A TRAINING SCHEDULE



STEP 6: DEVELOP A TRAINING SCHEDULE

1. Determine the minimum frequency of training.
2. Determine the type of activity.
3. Determine the intensity and time of the selected activity.

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Ref: FM 21-20, Chap 10, p 10-2

Develop a Training Schedule:

Pay particular attention when developing your training schedule. It is imperative that your four-week physical training schedule be realistic. The planning process is the first of three steps designed to help you develop a deliberate and well thought-out training program to improve the physical performance of your platoon.

The fitness training schedule results from your near-term planning. You must emphasize the development of all the fitness components and follow the principles of exercise and FITT factors. The training schedule shows the order, intensity, and duration of activities for PT.

There are three distinct steps in planning daily physical training activities. They are as follows:

1. Determine the minimum frequency of training. Ideally it should include three cardiorespiratory and three muscular conditioning sessions each week.
2. Determine the type of activity. This depends on the specific purpose of the training session.
3. Determine the intensity and time of selected activity. Each activity period should include a warm-up, a workout that develops cardiorespiratory fitness and/or muscular endurance and strength, and a cool down.

At the end of a well-planned and executed PT session, all soldiers should feel physically stressed. They should also understand the objective of the training session and how it will help them improve their fitness levels.

REMOVE VGT-8

Conduct and Evaluate Training:

The final step is to conduct and evaluate training. The key to evaluating training is to determine if the training the unit is conducting will result in improvements in physical conditioning. If not, the training needs revision. Leaders should not let PT that is all form and little substance sidetrack them. Such training defeats the concept of objective-based training and results in little benefit to soldiers.

CHECK ON LEARNING: Conduct a check on learning and summarize the ELO.

QUESTION: What are the seven steps in the seven-step planning process?

ANSWER: The seven steps are: (1) Analyze the mission, (2) Develop fitness objectives, (3) Assess the unit, (4) Determine training requirements, (5) Develop fitness tasks, (6) Develop a training schedule, and (7) Conduct and evaluate training.

Ref: FM 21-20, Chap 10, p 10-1 thru 10-4

QUESTION: What are the three distinct steps in planning daily physical training activities?

ANSWER: The three distinct steps in planning daily physical training activities are: (1) Determine the minimum frequency of training, (2) Determine the type of activity, and (3) Determine the intensity and time of selected activity. (FM 21-20, Chap 10, p 10-3)

Break: TIME: 00:50 to 01:00

E. ENABLING LEARNING OBJECTIVE

ACTION:	Discuss the four-week training schedule/month 2 using the seven principles of exercise.
CONDITIONS:	As a platoon sergeant in a classroom environment and given FM 21-20.
STANDARDS:	Understand the four-week training schedule using the seven principles of exercise IAW FM 21-20, Chap 1 and 10.

- Learning Step / Activity 1. Develop a Training Schedule
 Method of Instruction: Conference / Discussion
 Technique of Delivery: Small Group Instruction
 Instructor to Student Ratio is: 1:16
 Time of Instruction: 20 mins
 Media: VGT-9 and VGT-10

To ensure the program is sound, you must justify your training events in accordance with the seven principles of exercise that we have been talking about. Training geared specifically toward your performance requirements will justify the principle of specificity in your program.

Some battle-focused examples of mission specific PT are as follows: road marching, cross country runs, flak vest PT, log drills, rope climbing, individual movement techniques, litter relays, buddy carries, water can PT, obstacle and confidence courses, etc.

The aforementioned examples help us manipulate the amount of training effect desired for given training events. These tools allow us to train soldiers with low risk of injury. It also provides leaders with a broad base of techniques to improve soldiers' physical performance.

SHOW VGT 9, FOUR-WEEK TRAINING SCHEDULE/MONTH 2

 FOUR-WEEK TRAINING SCHEDULE/MONTH 2 						
SUN	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SAT
	A: Confidence Obstacle Course D: 90 Min I: 70-90% MHR/ TMF	A: Ability Group Run D: 2 miles I: 70% MHR	A: Push-up/Sit-up Improvement D: 45 Min I: TMF	A: Road March D: 2 hours I: 6 miles @ 20 min/mile w/ 30 lb ruck, weapon, LCE, softcap	A: Individual Movement Tech. Circuit D: 60 Min I: 80% MHR/ TMF	
	A: TOC Equip Circuit D: 50 Min I: TMF/80% MHR	A: Ability Group Run D: 3 Miles I: 75% MHR w/100 Push-ups and Sit-ups	A: Sandbag Circuit D: 60 Min I: TMF/70% MHR	A: Aquatic Calisthenics D: 45 Min I: 70-90% MHR	A: Weight Training for Performance D: 75 Min I: TMF	
	A: Ability Group Run D: 3 miles I: 75-90% MHR w/ 150 Push-ups and Sit-ups	A: Bayonet Assault Course I: 80-90% MHR/ TMF BDU + Boots	A: 1000m Swim D: 45 Min I: 70-90% MHR	A: Litter Relays D: 60 Min I: 70-90% MHR/ TMF BDU + Boots	A: Cross Country Run D: 40 Min I: 70% MHR BDU w/ athletic footwear of choice	
	A: Log Drills D: 60 Min I: TMF (Anaerobic power)	A: Interval Training D: 60 Min I: As per 2 Mile Run Breakdown 4 X 400m with Flexibility Improve. Training	A: Rifle Drills B: 60 Min I: TMF/70% MHR	A: Road March D: 105 min I: 6 miles @ 17.5 min/mile w/ 30lb ruck, weapon, LCE, softcap	A: Single Station Machine Circuit to Music D: 60 Min I: TMF/80% MHR	
T424/OCT 03/VGT-9			Advanced Noncommissioned Officer Course			

NOTE: Use VGT-9 to brief the Four-Week Training Schedule. If needed, make a copy of slide as a handout.

This example will give you an idea of what your schedule should look like. It also shows that the second month of this unit's physical training program is aggressive. It is very battle-focused and challenging, and it offers a lot of variety. From this calendar, I will show you three examples of justification. This should clarify any misunderstandings in justifying a PT program.

MSE overload occurs in Week 2 during the TOC equipment circuit, sandbag circuit, and weight training session since each event achieves Temporary muscle failure (TMF). Following the FITT factors, MSE training occurs three times per week, intensity is at TMF, vary the type of training, and training time is never less than 50 minutes.

During the four-week training period, Ability Group Runs progress from 2 miles at 70 percent MHR in Week 1, to 3 miles at 75 percent MHR during Week 2, to 3 miles at 75-80 percent during Week 3. The peak of progression during this four-week training period occurs in week four with interval training which participants will execute with THR between 70 and 90 percent MHR (intermittently).

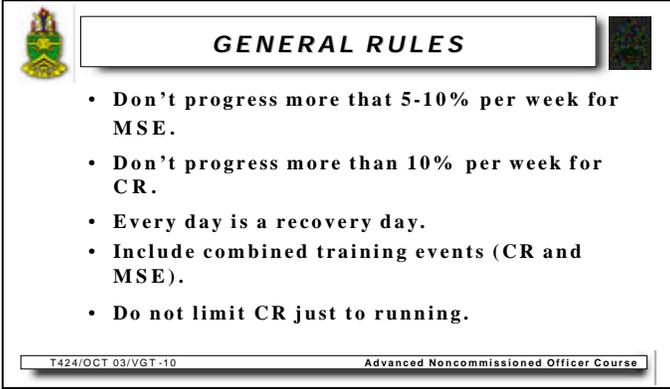
To be effective, a program should include activities that address all the fitness components, since overemphasizing any one of them may hurt the others. Don't forget to incorporate all three types of stretching (static, passive, and PNF) and to stretch all muscle groups. For example, week 4 interval training involves FLEX improvement. Balanced lower body stretching on this day will include hip flexor and gluteus maximus, quadriceps and hamstrings, gastrocnemius/soleus and anterior tibialis.

REMOVE VGT-9

The following General Rules will assist you while developing your training calendar:

1. Don't progress more than 5-10 percent per week for MSE.
2. Don't progress more than 10 percent per week for CR (time or distance).
3. Every day is a recovery day (from the previous day's training events).
4. Include combined training events that incorporate both CR and MSE.
5. Don't limit CR to just running.

SHOW VGT-10, GENERAL RULES



The slide features the Canadian coat of arms on the left and a title box containing the text "GENERAL RULES". Below the title, there is a bulleted list of five rules. At the bottom, a footer bar contains the text "T424/OCT 03/VGT-10" on the left and "Advanced Noncommissioned Officer Course" on the right.

- Don't progress more than 5-10% per week for MSE.
- Don't progress more than 10% per week for CR.
- Every day is a recovery day.
- Include combined training events (CR and MSE).
- Do not limit CR just to running.

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Ref: FM 21-20

NOTE: Leave VGT-10 up for a few minutes to allow students to copy down information. (If necessary)

REMOVE VGT-10

We have discussed the seven-step planning process, development of the unit/platoon training program and the justification of the principles of exercise IAW the four-week training schedule. Design the process to improve performance in your platoon for each soldier. However, we did not account for the performance of your injured, overweight, pregnant, and newly assigned soldiers. In addition we did not address the retraining of your APFT failures.

CHECK ON LEARNING: Conduct a check on learning and summarize the ELO.

QUESTION: How can balance be effective when developing a training program?

ANSWER: To be effective, a program should include activities that address all the fitness components.

Ref: FM 21-20, Chap 1, p 1-4

F. ENABLING LEARNING OBJECTIVE

ACTION:	Describe training programs for soldiers in identified special populations.
CONDITIONS:	As a platoon sergeant in a classroom environment and given FM 21-20.
STANDARDS:	Describe training programs for soldiers in identified special populations IAW FM 21-20, Chap 1, p 1-11 thru 1-15; Chap 2, p 2-13 and 2-14; and App A.

1. Learning Step / Activity 1. Special Population PT Program
Method of Instruction: Conference / Discussion
Technique of Delivery: Small Group Instruction
Instructor to Student Ratio is: 1:16
Time of Instruction: 20 mins
Media: VGT-11 thru VGT-16

Special Population PT Program:

NOTE: Ask students what type of soldiers fall into the Special Population PT Program. Wait for response then show VGT-11.

SHOW VGT-11, SPECIAL POPULATIONS



FM 21-20, Chap 1, p 1-11 thru 1-15

As leaders, you must be able to recognize the unique conditions of soldiers who fall into these categories and devise a PT plan that accommodates their limitations. Using the various training techniques learned in this lesson, you must customize PT plans for the following special populations:

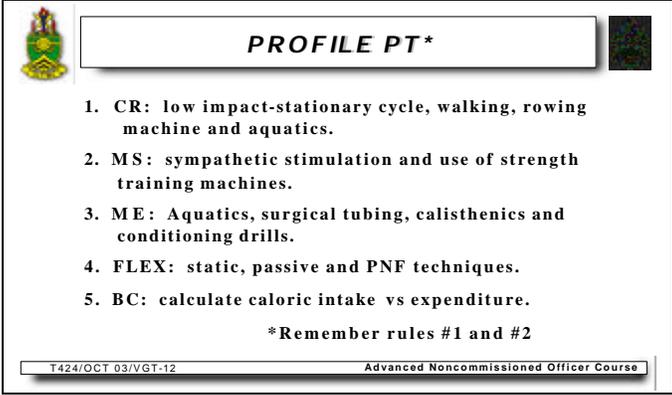
- 1 Profile PT
- 2 Overweight Soldier PT
- 3 APFT Failure PT
- 4 Recent Arrival PT
- 5 Pregnant Soldier PT

REMOVE VGT-11

There are some general rules that will drive how we train our special populations. These rules will affect our exercise prescription and training techniques during PT. The Army does not mean these rules to insult anyone's intelligence. Emphasis should be placed on them to ensure that you do not exceed your level of expertise.

Profile PT:

SHOW VGT-12, PROFILE PT



PROFILE PT*

1. **CR:** low impact-stationary cycle, walking, rowing machine and aquatics.
2. **MS:** sympathetic stimulation and use of strength training machines.
3. **ME:** Aquatics, surgical tubing, calisthenics and conditioning drills.
4. **FLEX:** static, passive and PNF techniques.
5. **BC:** calculate caloric intake vs expenditure.

*Remember rules #1 and #2

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1. CR: Achieve low impact training by using a stationary bike, stair master, rowing machine, treadmill, and participating in walking and aquatic activities.

2. MS: You may incorporate a variety of muscular strength training techniques into the profiled soldiers training program. One general rule is exercise the opposite to generate sympathetic stimulation of muscle groups. For instance if the left leg has ~~the~~ injury, utilize strength training machines to work the muscle groups of the right leg. Strength training machines eliminate stabilization of the weight as required in free weight training. This reduces the chance of causing further injury. This also ~~pro~~vides the soldier with a controlled environment during PT.

3. ME: You may employ aquatics, surgical tubing exercises, ~~fre~~ body-weight exercises (knee bender, lunge, crunch, pushup, pull-up and parallel bar dip) and some of the rehabilitative exercise prescribed by orthopedic medical personnel. If you need more information about helping a soldier rehabilitate, remember rule #1, You are not a doctor. Try to get that soldier in to see a physical therapist or sports medicine doctor.

4. **FLEX:** It is imperative that your profiled soldiers continue stretching non-injured areas to maintain and improve flexibility. Don't forget to use static, passive and PNF stretching techniques in accordance with the soldier's physical limitations.

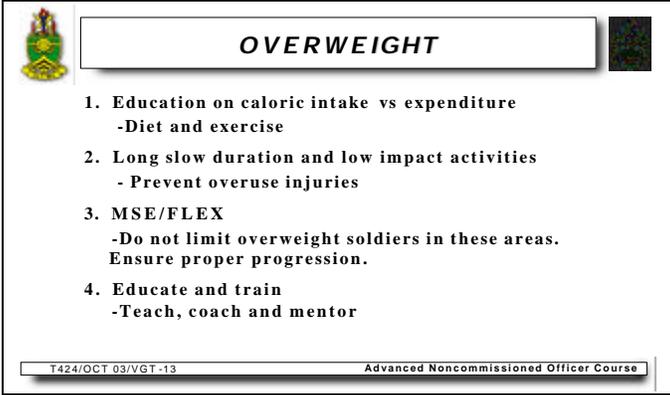
5. **BODY COMP:** Injured soldiers will have a tendency to gain weight due to a reduced caloric expenditure. As a leader, you don't want your job to become more difficult by having to manage injured soldiers who are now on the Weight Control Program. You prevent this by using the tools learned earlier in this lesson. Teach the soldier about eating right, and the significance of caloric expenditure. Prescribe some activities for the soldier's recreational time, encouraging additional caloric expenditure such as walking, bike riding, or swimming. Have the soldier keep a food log and accompany him to the dining facility on occasion to educate him on food choices.

We just covered a lot of techniques and material that apply to the profiled soldier. That is the same model and train of thought that we should apply to the other special populations. In most cases, there is a lot of overlap in training these special populations. In other words, what works for profiles will most likely work for overweight soldiers as well, with certain specific differences, which I will point out for you as we go along.

REMOVE VGT-12

Overweight:

SHOW VGT-13, OVERWEIGHT



OVERWEIGHT

1. **Education on caloric intake vs expenditure**
-Diet and exercise
2. **Long slow duration and low impact activities**
- Prevent overuse injuries
3. **MSE/FLEX**
-Do not limit overweight soldiers in these areas.
Ensure proper progression.
4. **Educate and train**
-Teach, coach and mentor

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Diet and Exercise:

All of the 4 General Rules apply to the overweight soldier. The overweight soldier needs help with diet and exercise. It is best to try to educate the soldier on better food choices and concepts of caloric intake vs. caloric expenditure. A food log will reveal what his/her eating habits are at home or in the barracks as well. These techniques address the most important aspect of this soldier's training plan regarding body composition.

Activities: Whenever possible, allow this soldier to train with his/her unit. You may incorporate additional PT but ensure you don't violate recovery time. This may result in overuse injuries. An overweight soldier with shin splints will be an even greater challenge. You may incorporate all of the low impact CR training events from Profile PT such as stationary bike, stair master, treadmill, walking, rowing machine and aquatics for the overweight soldier. The soldier best burns fat after the 30-minute mark of long slow continuous exercise. Just be sure not to violate recovery and do not cause further injury to the soldier. The key is to train at a lower intensity for a longer duration for optimal fat loss.

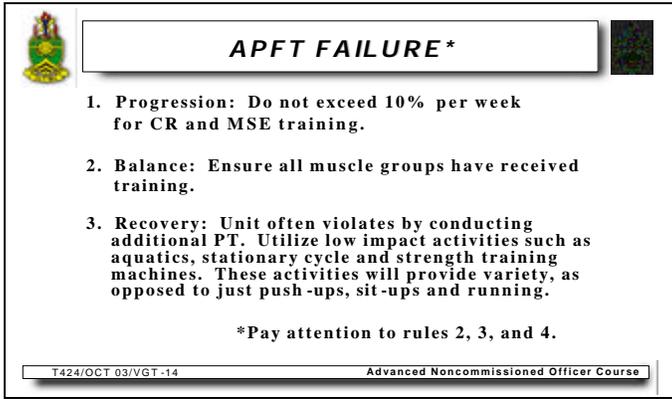
MS, ME, FLEX: For Muscular Strength, Muscular Endurance and Flexibility Training, the overweight soldier, normally, is able to train without limits. Just ensure that the soldier adheres to the principle of progression.

Educate and Train: The overweight soldier won't solve his/her problem with a 30-day crash diet. The soldier needs to modify his/her eating and exercise habits. Modifying one's lifestyle in this manner is best done in increments with proper mentoring and education. Nutrition and exercise seminars in the unit may serve as excellent preventive measures for soldiers who are borderline weight control violators.

REMOVE VGT-13

APFT Failures:

SHOW VGT-14, APFT FAILURES



The slide features the Army crest on the left and a dark square on the right. The title 'APFT FAILURE *' is centered in a white box. Below the title are three numbered points. At the bottom, there is a footer with the text 'T424/OCT 03/VGT-14' and 'Advanced Noncommissioned Officer Course'.

APFT FAILURE *

- 1. Progression:** Do not exceed 10% per week for CR and MSE training.
- 2. Balance:** Ensure all muscle groups have received training.
- 3. Recovery:** Unit often violates by conducting additional PT. Utilize low impact activities such as aquatics, stationary cycle and strength training machines. These activities will provide variety, as opposed to just push-ups, sit-ups and running.

*Pay attention to rules 2, 3, and 4.

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Train with your platoon, do not make additional PT punitive and do not cause further injury. If you pay special attention to these three of the four rules previously mentioned, your APFT failure training should be very successful. In many cases, APFT failures are new soldiers, and soldiers who are very close to their maximum weight. This group encompasses four out of six possible special populations combined into one.

Progression, Balance, and Recovery: Pay special attention to these three principles of exercise when training APFT failures. Progress at a rate that does not exceed 5 percent per week for MSE and 10 percent per week for CR. Identify balance to ensure you train the entire body (push and pull muscle groups) for better total performance. You will usually violate recovery doing both, regular PT and special population PT.

To prevent this, pay attention to high impact vs. low impact exercises and utilize aquatics, rowing machines, stationary bikes, and strength training machine circuits to add variety. Tailor the exercises to permit recovery in the muscle groups stressed during the push-up, sit-up, and 2-mile run improvement sessions.

Too many times we have seen an APFT failure do additional PT that consists of a short fast run with push-up and sit-up improvement at 1630 in the afternoon.

That morning the soldier ran four miles and did push-up and sit-up improvement with his squad.

What does that kind of training accomplish? As leaders, you must conduct this training smarter. More is not always better.

Performing high-quality training tailored toward your goals once per day is a better approach than doing additional high-volume training that may lead to overuse injuries.

REMOVE VGT-14

Recent Arrival:

Who is a recent arrival? Generally the soldier who is arriving to your unit fresh out of Basic and AIT constitutes the new soldier population. These soldiers are facing a host of new conditions relating to physical performance. Acclimatization to altitude, temperature, humidity, etc. may take 2-4 weeks. The new soldier may have deconditioned between AIT and arrival at his/her new duty station. The new soldier's threshold level of physical performance may be well below the minimum threshold of his gaining unit.

The soldier may be a borderline APFT performer, borderline overweight, and not accustomed to the demand placed on the lower extremities during a normal duty day.

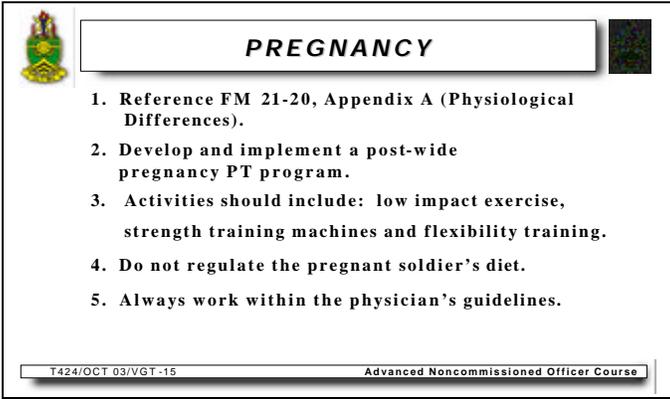
Our interest is not to pamper the US Army soldier. We want soldiers to develop into healthy combat multipliers as opposed to non-mission-capable liabilities in the unit. There is a smarter way to approach PT with this special population.

Progression is the key to developing the recent arrival. Gradually increase numbers of repetitions, resistance, distance, and intensity. Start slow and easy for at least a week in order to develop muscle memory. Many soldiers will arrive at your unit unable to perform correct push-ups. Don't be negative, just focus on gradually improving their performance in accordance with the seven principles of exercise. New soldiers may be susceptible to lower extremity overuse injuries. Avoid prolonged high impact training at first. By gradually increasing the high impact performance, the soldiers' bones and tendons will strengthen and accommodate the physical demands. If you increase too quickly, the bones and/or tendons may become injured resulting in shin splints, stress fractures, strains and sprains.

Exercise prescription for Recent Arrival PT will mirror the physical demands expected at unit level. The key difference is that the intensity will be minimal during the first week and gradually increased over the next three weeks. In many cases that amount of time is not realistic, but the principles remain the same. Try not to allow APFT performance to dominate the new soldier's physical training program. Pay attention to the principle of balance.

Pregnancy:

SHOW VGT-15, PREGNANCY



PREGNANCY

1. Reference FM 21-20, Appendix A (Physiological Differences).
2. Develop and implement a post-wide pregnancy PT program.
3. Activities should include: low impact exercise, strength training machines and flexibility training.
4. Do not regulate the pregnant soldier's diet.
5. Always work within the physician's guidelines.

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You are not a doctor. Doctors are usually very specific when writing the exercise prescription for a pregnant soldier. Work within those limitations for the benefit of the soldier and the fetus. If you don't understand the doctor's guidance, consult the command for the doctors' clarification.

Refer to Appendix A in FM 21-20, physiological differences between the sexes. This section will help orient you to the differences between the male and female gender with reference to physical performance. It also briefly addresses concerns to benefit the pregnant soldier.

Many installations are consolidating pregnancy PT with very effective programs. Your Company or Battalion may have a consolidated pregnancy program already established. There are some general exercise prescriptions that apply to the pregnant soldier in accordance with the doctor's orders.

CR should generally consist of low-impact exercises depending on the stage of pregnancy. Walking, treadmill, stationary bike, low impact aerobics and aquatics are some examples.

MS and ME should generally consist of strength training machines and/or calisthenics that do not pose a threat of injury to the fetus. Strength training machines are a good modality of exercise due to the elimination of stabilizing muscle groups.

FLEX. Flexibility maintenance is an important element for the soldier during pregnancy. It's one element you should not ignore. Carrying the additional weight will increase demands on the lower back and legs and keeping these areas limber will help relieve tension and may prevent injuries.

BODY COMP. Do not try to regulate a soldier's diet while she is pregnant.

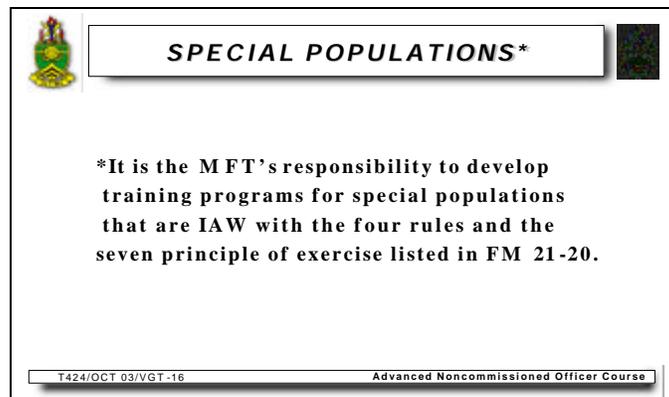
Remember, always work within the physician's guidelines.

REMOVE VGT-15

Rules Revisited:

Remember the four rules: You are not a doctor, do not cause further injury, do not make additional PT punitive, and train with your unit when possible. Your job as a leader is to prescribe exercise that benefits the soldier and improves performance.

SHOW VGT-16, SPECIAL POPULATIONS



Generally the Company Master Fitness Trainer will develop the physical training program for the special population. As a leader you are responsible to know how to develop PT programs for special populations in accordance with the four rules mentioned above and the seven principles of exercise.

REMOVE VGT-16

CHECK ON LEARNING: Conduct a check on learning and summarize the ELO.

QUESTION: How can soldier's who have a "no running" profile continue with CR improvement?

ANSWER: Soldier's can achieve low impact training by using a stationary bike, stair master, rowing machine, treadmill, walking, and aquatics.

Ref: FM 21-20, Chap 2, p 2-13 and 2-14

SECTION IV. SUMMARY

Method of Instruction: <u>Conference / Discussion</u>
Technique of Delivery: <u>Small Group Instruction (SGI)</u>
Instructor to Student Ratio is: <u>1:16</u>
Time of Instruction: <u>10 mins</u>
Media: <u>None</u>

Check on Learning

Determine if the students have learned the material presented by soliciting student questions and explanations. Ask the students questions and correct misunderstandings.

QUESTION: What are the principles of exercise?

ANSWER: Regularity, progression, balance, variety, specificity, recover, and overload.

Ref: FM 21-20, Chap 1, p 1-4

QUESTION: What are the seven steps in the planning process of the fitness program?

ANSWER: 1) Analyze the Mission 2) Develop Fitness Objectives 3) Assess the Unit 4) Determine Training Requirements 5) Develop Fitness Tasks 6) Develop a Training Schedule 7) Conduct and Evaluate Training.

Ref: FM 21-20, Chap 10, p 10-1 and 10-4

QUESTION: What are the different groups of soldiers that may need a special PT program?

ANSWER: Those soldiers who have a medical profile, are overweight, fail the APFT, and recent arrivals.

Ref: FM 21-20, Chap 1, p 1-11 and 1-12

**Review /
Summarize
Lesson**

During this lesson we have covered the information necessary to implement a total fitness program in your platoon. By using the components of fitness, principles of exercise, phases of fitness conditioning and seven step planning process, you can now develop your own program for your platoon. Don't forget to check with you Company Master Fitness trainer first. He or she may have some helpful suggestion to get you started and let you know if there is an existing program for the special population soldiers.

SECTION V. STUDENT EVALUATION

**Testing
Requirements**

NOTE: Describe how the student must demonstrate accomplishment of the TLO. Refer student to the Student Evaluation Plan.

At the end of this course of instruction, you will take a written, objective examination. This will test learning objectives from this lesson. You must correctly answer at least 70 percent of the questions to receive a GO. A GO is a graduation requirement.

**Feedback
Requirements**

NOTE: Feedback is essential to effective learning. Provide remedial training as needed.

Enabling Learning Objective A

Learning Step 1

VGT-1, Physical Fitness



PHYSICAL FITNESS



The ability to function effectively in physical work, training, and other activities and still have enough energy left over to handle any emergencies which may arise.

(FM 21-20)



COMPONENTS OF FITNESS



- **Cardiorespiratory Endurance**
- **Muscular Strength**
- **Muscular Endurance**
- **Flexibility**
- **Body Composition**

Enabling Learning Objective B

Learning Step 1

VGT-3, Motor Fitness Components



MOTOR FITNESS COMPONENTS



Speed

Agility

Eye-Hand Coordination

Eye-Foot Coordination

Muscle Power

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PRINCIPLES OF EXERCISE



Regularity

Progression

Balance

Variety

Specificity

Recovery

Overload



FITT FACTORS



- **Frequency**
- **Intensity**
- **Time**
- **Type**

Enabling Learning Objective C

Learning Step 1

VGT-6, Phases of Conditioning



PHASES OF CONDITIONING



- **Preparatory**
- **Conditioning**
- **Maintenance**

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Enabling Learning Objective D

Learning Step 1

VGT-7, Seven-Step Planning Process



SEVEN-STEP PLANNING PROCESS



STEP 1: Analyze the Mission

STEP 2: Develop Fitness Objectives

STEP 3: Assess the Unit

STEP 4: Determine Training Requirements

STEP 5: Develop Fitness Tasks

STEP 6: Develop a Training Schedule

STEP 7: Conduct and Evaluate Training

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STEP 6: DEVELOP A TRAINING SCHEDULE



- 1. Determine the minimum frequency of training.**
- 2. Determine the type of activity.**
- 3. Determine the intensity and time of the selected activity.**

Enabling Learning Objective E

Learning Step 1

VGT-9, Four Week Training Schedule

<div style="display: flex; justify-content: space-between; align-items: center;">  <div style="text-align: center;"> <h2 style="margin: 0;">FOUR-WEEK TRAINING SCHEDULE/MONTH 2</h2> </div>  </div>						
SUN	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SAT
	A: Confidence Obstacle Course D: 90 Min I: 70-90% MHR/ TMF	A: Ability Group Run D: 2 miles I: 70% MHR	A: Push-up/Sit-up Improvement D: 45 Min I: TMF	A: Road March D: 2 hours I: 6 miles @ 20 min/mile w/ 30 lb ruck, weapon, LCE, softcap	A: Individual Movement Tech. Circuit D: 40 Min I: 80% MHR/ TMF	
	A: TOC Equip Circuit D: 50 Min I: TMF/80% MHR	A: Ability Group Run D: 3 Miles I: 75% MHR w/100 Push-ups and Sit-ups	A: Sandbag Circuit D: 60 Min I: TMF/70% MHR	A: Aquatic Calisthenics D: 45 Min I: 70-90% MHR	A: Weight Training for Performance D: 75 Min I: TMF	
	A: Ability Group Run D: 3 miles I: 75-80% MHR w/ 150 Push-ups and Sit-ups	A: Bayonet Assault Course I: 80-90% MHR/ TMF BDU + Boots	A: 1000m Swim D: 45 Min I: 70-90% MHR	A: Litter Relays D: 60 Min I: 70-90% MHR/ TMF BDU + Boots	A: Cross Country Run D: 40 Min I: 70% MHR BDU w/ athletic footwear of choice	
	A: Log Drills D: 60 Min I: TMF (Anaerobic power)	A: Interval Training D: 60 Min I: As per 2 Mile Run Breakdown 5 X 400m with Flexibility Improve. Training	A: Rifle Drills B: 60 Min I: TMF/70% MHR	A: Road March D: 105 min I: 6 miles @ 17.5 min/mile w/ 30lb ruck, weapon, LCE, softcap	A: Single Station Machine Circuit to Music D: 60 Min I: TMF/80% MHR	

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GENERAL RULES



- **Don't progress more than 5-10% per week for MSE.**
- **Don't progress more than 10% per week for CR.**
- **Every day is a recovery day.**
- **Include combined training events (CR and MSE).**
- **Do not limit CR just to running.**

Enabling Learning Objective F

Learning Step 1

VGT-11, Special Populations



SPECIAL POPULATIONS



- **Medical Profile**
 - Injury
 - Pregnancy
- **Overweight**
- **APFT Failure**
- **Recent Arrivals**

T424/OCT 03/VGT-11

Advanced Noncommissioned Officer Course



PROFILE PT*



- 1. CR: low impact-stationary cycle, walking, rowing machine and aquatics.**
- 2. MS: sympathetic stimulation and use of strength training machines.**
- 3. ME: Aquatics, surgical tubing, calisthenics and conditioning drills.**
- 4. FLEX: static, passive and PNF techniques.**
- 5. BC: calculate caloric intake vs expenditure.**

***Remember rules #1 and #2**



OVERWEIGHT



- 1. Education on caloric intake vs expenditure**
 - Diet and exercise**
- 2. Long slow duration and low impact activities**
 - Prevent overuse injuries**
- 3. MSE/FLEX**
 - Do not limit overweight soldiers in these areas.**
 - Ensure proper progression.**
- 4. Educate and train**
 - Teach, coach and mentor**



APFT FAILURE*



- 1. Progression: Do not exceed 10% per week for CR and MSE training.**
- 2. Balance: Ensure all muscle groups have received training.**
- 3. Recovery: Unit often violates by conducting additional PT. Utilize low impact activities such as aquatics, stationary cycle and strength training machines. These activities will provide variety, as opposed to just push-ups, sit-ups and running.**

***Pay attention to rules 2, 3, and 4.**



PREGNANCY



- 1. Reference FM 21-20, Appendix A (Physiological Differences).**
- 2. Develop and implement a post-wide pregnancy PT program.**
- 3. Activities should include: low impact exercise, strength training machines and flexibility training.**
- 4. Do not regulate the pregnant soldier's diet.**
- 5. Always work within the physician's guidelines.**



SPECIAL POPULATIONS*



***It is the MFT's responsibility to develop training programs for special populations that are IAW with the four rules and the seven principle of exercise listed in FM 21-20.**

Appendix B Test(s) and Test Solution(s) (N/A)

Appendix C Practical Exercises and Solutions (N/A)

HANDOUTS FOR LESSON 1: T424 version 1

**This Appendix
Contains**

This appendix contains the items listed in this table--

Title/Synopsis	Pages
SH-1, Advance Sheet	SH-1-1
SH-2, Extracted Material from FM 21-20	SH-2-1

Student Handout 1

Advance Sheet

Lesson Hours This lesson consists of two hours of conference/discussion.

Overview Improving soldiers' physical fitness is one of the best ways to increase performance on the battlefield. In this lesson you will build on your existing knowledge and learn how to implement a platoon physical fitness program.

Learning Objective Terminal Learning Objective (TLO).

Action:	Implement a total fitness program in a platoon.
Conditions:	As a platoon sergeant in a classroom environment and given FM 21-20.
Standards:	Implement a total fitness program in a platoon IAW FM 21-20, Chap 1, 2, 10, and App A.

- ELO A** Describe the components of fitness.
 - ELO B** Describe the principles of exercise.
 - ELO C** Describe the phases of fitness conditioning.
 - ELO D** Identify the seven-step planning process.
 - ELO E** Discuss the four-week training schedule/month 2 using the seven principles of exercise.
 - ELO F** Describe training programs for soldiers in identified special populations.
-

Assignment The student assignments for this lesson are:

- Read FM 21-20, Chap 1, p 1-3 thru 1-9, and 1-11 thru 1-15; Chap 2, p 2-0, 2-3 thru 2-5, and 2-13 and 2-14; and Chap 10, p 10-1 thru 10-4; and App A.
-

Additional Subject Area Resources None

- Bring to Class**
- Pen or pencil and writing paper.
 - Reading material list on advance sheet.
-

Student Handout 2

Extracted Material from FM 21-20

This Student Handout Contains

This student handout contains 24 pages of extracted material from the following publication:

FM 21-20, Physical Fitness Training, Sep 92

Chapter 1	p 1-3 thru 1-9, and 1-11 thru 1-15
Chapter 2	p 2-0, 2-3 thru 2-5, 2-13 and 2-14
Chapter 10	p 10-1 thru 10-4
Appendix A	A-0 and A-1

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techniques, directives, and publications and that they use them. The objective of every commander should be to incorporate the most effective methods of physical training into a balanced program. This program should result in the improved physical fitness of their soldiers and an enhanced ability to perform mission-related tasks.

MFTs can help commanders formulate sound programs that will attain their physical training goals, but commanders must know and apply the doctrine. However, since the responsibility for physical training is the commander's, programs must be based on his own training objectives. These he must develop from his evaluation of the unit's mission-essential task list (METL). Chapter 10 describes the development of the unit's program.

MASTER FITNESS TRAINERS

A Master Fitness Trainer (MFT) is a soldier who has completed either the four-week active-component, two-week reserve-component, or U.S. Military Academy's MFT course work. Although called "masters," MFTs are simply soldiers who know about all aspects of physical fitness training and how soldiers' bodies function. Most importantly, since MFTs are taught to design individual and unit programs, they should be used by commanders as special staff assistants for this purpose.

MFTs can do the following:

- Assess the physical fitness levels of individuals and units.
- Analyze the unit's mission-related tasks and develop sound fitness training programs to support those tasks.
- Train other trainers to conduct sound, safe physical training.
- Understand the structure and function of the human body, especially as it relates to exercise.

Components of Fitness

Physical fitness is the ability to function effectively in physical work, training, and other activities and still have enough energy left over to handle any emergencies which may arise.

The components of physical fitness are as follows:

- **Cardiorespiratory (CR) endurance**-the efficiency with which the body delivers oxygen and nutrients needed for muscular activity and transports waste products from the cells.
- **Muscular strength** - the greatest amount of force a muscle or muscle group can exert in a single effort.
- **Muscular endurance** - the ability of a muscle or muscle group to perform repeated movements with a sub-maximal force for extended periods of times.
- **Flexibility**-the ability to move the joints (for example, elbow, knee) or any group of joints through an entire, normal range of motion.
- **Body composition**-the amount of body fat a soldier has in comparison to his total body mass.

Improving the first three components of fitness listed above will have a positive impact on body composition and will result in less fat. Excessive body fat detracts from the other fitness components, reduces performance, detracts from appearance, and negatively affects one's health.

Factors such as speed, agility, muscle power, eye-hand coordination, and eye-foot coordination are classified as components of "motor" fitness. These factors affect a soldier's survivability on the battlefield. Appropriate training can improve these factors within the limits of each soldier's potential. The Army's fitness program seeks to improve or maintain all the components of physical and motor fitness

through sound, progressive, mission-specific physical training for individuals and units.

Principles of Exercise

Adherence to certain basic exercise principles is important for developing an effective program. The principles of exercise apply to everyone at all levels of physical training, from the Olympic-caliber athlete to the weekend jogger. They also apply to fitness training for military personnel.

These basic principles of exercise must be followed:

- **Regularity.** To achieve a training effect, a person must exercise of ten. One should strive to exercise each of the first four fitness components at least three times a week. Infrequent exercise can do more harm than good. Regularity is also important in resting, sleeping, and following a good diet.
- **Progression.** The intensity (how hard) and/or duration (how long) of exercise must gradually increase to improve the level of fitness.
- e **Balance.** To be effective, a program should include activities that address all the fitness components, since overemphasizing any one of them may hurt the others.
- **Variety.** Providing a variety of activities reduces boredom and increases motivation and progress.
- **Specificity.** Training must be geared toward specific goals. For example, soldiers become better runners if their training emphasizes running. Although swimming is great exercise, it does not improve a 2-mile-run time as much as a running program does.
- **Recovery.** A hard day of training for a given component of fitness should be followed by an easier training day or rest day for that component and/or muscle group(s) to help permit recovery. Another

way to allow recovery is to alternate the muscle groups exercised every other day, especially when training for strength and/or muscle endurance.

- **Overload.** The work load of each exercise session must exceed the normal demands placed on the body in order to bring about a training effect.

FITT Factors

Certain factors must be part of any fitness training program for it to be successful. These factors are Frequency, Intensity, Time, and Type. The acronym FITT makes it easier to remember them. (See Figure 1- 1.)

FREQUENCY

Army Regulation 350-15 specifies that vigorous physical fitness training will be conducted 3 to 5 times per week. For optimal results, commanders must strive to conduct 5 days of physical training per week. Ideally, at least three exercise sessions for CR fitness, muscle endurance, muscle strength, and flexibility should be performed each week to improve fitness levels. Thus, for example, to obtain maximum gains in muscular strength, soldiers should have at least three strength-training sessions per week. Three physical activity periods a week, however, with only one session each of cardiorespiratory, strength, and flexibility training will not improve any of these three components.

With some planning, a training program for the average soldier can be developed which provides fairly equal emphasis on all the components of physical fitness. The following training program serves as an example.

In the first week, Monday, Wednesday, and Friday are devoted to CR fitness, and Tuesday and Thursday are devoted to muscle endurance and strength. During the second week, the

Factors for a successful training program are Frequency, Intensity, Time, and Type; "FITT".

FITT Factors Applied to Physical Conditioning Program				
Cardiorespiratory Endurance	Muscular Strength	Muscular Endurance	Muscular Strength and Muscular Endurance	Flexibility
Frequency 3-5 times/week	3 times/week	3-5 times/week	3 times/week	<u>Warm-up and Cool-down:</u> Stretch before and after each exercise session <u>Developmental Stretching:</u> To improve flexibility, stretch 2-3 times/week
Intensity 60-90% HRR*	3-7 RM*	12+ RM	8-12 RM	Tension and slight discomfort, NOT PAIN
Time 20 minutes or more	The time required to do 3-7 repetitions of each exercise	The time required to do 12+ repetitions of each exercise	The time required to do 8-12 repetitions of each exercise	<u>Warm-up and Cool-down Stretches:</u> 10-15 seconds/stretch <u>Developmental Stretches:</u> 30-60 seconds/stretch
Type Running Swimming Cross-Country Skiing Rowing Bicycling Jumping Rope Walking/Hiking Stair Climbing	Free Weights Resistance Machines Partner-Resisted Exercises Body-Weight Exercises (Pushups/Situps/Pullups/Dips, etc.)		<u>Stretching:</u> Static Passive P.N.F.	
* HRR = Heart Rate Reserve * RM = Repetition Maximum				

Figure 1-1

training days are flip-flopped: muscle endurance and strength are trained on Monday, Wednesday, and Friday, and CR fitness is trained on Tuesday and Thursday. Stretching exercises are done in every training session to enhance flexibility. By training continuously in this manner, equal emphasis

can be given to developing muscular endurance and strength and to CR fitness while training five days per week.

If the unit's mission requires it, some muscular and some CR training can be done during each daily training session as long as a "hard day/recovery

day” approach is used. For example, if a unit has a hard run on Monday, Wednesday, and Friday, it may also choose to run on Tuesday and Thursday. However, on Tuesday and Thursday the intensity and/or distance/time should be reduced to allow recovery. Depending on the time available for each session and the way training sessions are conducted, all components of fitness can be developed using a three-day-per-week schedule. However, a five-day-per-week program is much better than three per week. (See Training Program in Chapter 10.)

Numerous other approaches can be taken when tailoring a fitness program to meet a unit’s mission as long as the principles of exercise are not violated. Such programs, when coupled with good nutrition, will help keep soldiers fit to win.

INTENSITY

Training at the right intensity is the biggest problem in unit programs. The intensity should vary with the type of exercise being done. Exercise for CR development must be strenuous enough to elevate the heart rate to between 60 and 90 percent of the heart rate reserve (HRR). (The calculation of percent HRR is explained in Chapter 2.) Those with low fitness levels should start exercising at a lower training heart rate (THR) of about 60 percent of HRR.

For muscular strength and endurance, intensity refers to the percentage of the maximum resistance that is used for a given exercise. When determining intensity in a strength-training program, it is easier to refer to a “repetition maximum” or “RM.” For example, a 10-RM is the maximum weight that can be correctly lifted 10 times. An 8-12 RM is the weight that can be lifted 8 to 12 times correctly. Doing an exercise “correctly” means moving the weight steadily and with proper form without getting help from

other muscle groups by jerking, bending, or twisting the body. For the average person who wants to improve both muscular strength and endurance, an 8-12 RM is best.

The person who wants to concentrate on muscular strength should use weights which let him do three to seven repetitions before his muscles fatigue. Thus, for strength development, the weight used should be a 3-7 RM. On the other hand, the person who wants to concentrate on muscular endurance should use a 12+ RM. When using a 12+ RM as the training intensity, the more repetitions performed per set, over time, the greater will be the improvement in muscular endurance. Conversely, the greater the number of repetitions performed, the smaller will be the gains in strength. For example, a person who regularly trains with a weight which lets him do 100 repetitions per exercise (a 100-RM) greatly increases his muscular endurance but minimally improves his muscular strength. (See Chapter 3 for information on resistance training.)

All exercise sessions should include stretching during the warm-up and cool-down. One should stretch so there is slight discomfort, but no pain, when the movement is taken beyond the normal range of motion. (See Chapter 4 for information on stretching.)

*All exercises sessions
should include
stretching during
the warm-up and cool-
down.*

TIME

Like intensity, the time spent exercising depends on the type of exercise being done. At least 20 to 30 continuous minutes of intense exercise must be used in order to improve cardiorespiratory endurance.

For muscular endurance and strength, exercise time equates to the number of repetitions done. For the average soldier, 8 to 12 repetitions with enough resistance to cause muscle failure improves both muscular endurance and strength. As soldiers progress, they

will make better strength gains by doing two or three sets of each resistance exercise.

Flexibility exercises or stretches should be held for varying times depending on the objective of the session. For warming-up, such as before a run, each stretch should be held for 10 to 15 seconds. To improve flexibility, it is best to do stretching during the cool-down, with each stretch held for 30 to 60 seconds. If flexibility improvement is a major goal, at least one session per week should be devoted to developing it.

TYPE

Type refers to the kind of exercise performed. When choosing the type, the commander should consider the principle of specificity. For example, to improve his soldiers' levels of CR fitness (the major fitness component in the 2-mile run), he should have them do CR types of exercises. These are discussed in Chapter 2.

Ways to train for muscular strength and endurance are addressed in Chapter 3, while Chapter 4 discusses flexibility. These chapters will help commanders design programs which are tailor-made to their soldiers' needs. The basic rule is that to improve performance, one must practice the particular exercise, activity, or skill he wants to improve. For example, to be good at push-ups, one must do push-ups. No other exercise will improve push-up performance as effectively.

Warm-up and Cool-Down

One must prepare the body before taking part in organized PT, unit sports competition, or vigorous physical activity. A warm-up may help prevent injuries and maximize performance. The warm-up increases the body's internal temperature and the heart rate. The chance of getting injured decreases when the heart, muscles,

ligaments, and tendons are properly prepared for exertion. A warm-up should include some running-in-place or slow jogging, stretching, and calisthenics. It should last five to seven minutes and should occur just before the CR or muscular endurance and strength part of the workout. After a proper warm-up, soldiers are ready for a more intense conditioning activity.

Soldiers should cool down properly after each exercise period, regardless of the type of workout. The cool-down serves to gradually slow the heart rate and helps prevent pooling of the blood in the legs and feet. During exercise, the muscles squeeze the blood through the veins. This helps return the blood to the heart. After exercise, however, the muscles relax and no longer do this, and the blood can accumulate in the legs and feet. This can cause a person to faint. A good cool-down will help avoid this possibility.

Soldiers should walk and stretch until their heart rates return to less than 100 beats per minute (BPM) and heavy sweating stops. This usually happens five to seven minutes after the conditioning session.

Phases of Fitness Conditioning

The physical fitness training program is divided into three phases: preparatory, conditioning, and maintenance. The starting phases for different units or individuals vary depending on their age, fitness levels, and previous physical activity.

Young, healthy persons may be able to start with the conditioning phase, while those who have been exercising regularly may already be in the maintenance phase. Factors such as extended field training, leave time, and illness can cause soldiers to drop from a maintenance to a conditioning phase.

Persons who have not been active, especially if they are age 40 or older, should start with the preparatory phase. Many soldiers who fall into this category may be recovering from illness or injury, or they may be just out of high school. Most units will have soldiers in all three phases of training at the same time.

PREPARATORY PHASE

The preparatory phase helps both the cardiorespiratory and muscular systems get used to exercise, preparing the body to handle the conditioning phase. The work load in the beginning must be moderate. Progression from a lower to a higher level of fitness should be achieved by gradual, planned increases in frequency, intensity, and time.

Initially, poorly conditioned soldiers should run, or walk if need be, three times a week at a comfortable pace that elevates their heart rate to about 60 percent HRR for 10 to 15 minutes. Recovery days should be evenly distributed throughout the week, and training should progress slowly. Soldiers should continue at this or an appropriate level until they have no undue fatigue or muscle soreness the day following the exercise. They should then lengthen their exercise session to 16 to 20 minutes and/or elevate their heart rate to about 70 percent HRR by increasing their pace. To be sure their pace is faster, they should run a known distance and try to cover it in less time. Those who feel breathless or whose heart rate rises beyond their training heart rate (THR) while running should resume walking until the heart rate returns to the correct training level. When they can handle an intensity of 70 percent HRR for 20 to 25 minutes, they should be ready for the next phase. Chapter 2 shows how to determine the THR, that is, the right training level during aerobic training.

The preparatory phase for improving muscular endurance and strength through weight training should start easily and progress gradually. Beginning weight trainers should select about 8 to 12 exercises that work all the body's major muscle groups. They should use only very light weights the first week (that is, the first two to three workouts). This is very important, as they must first learn the proper form for each exercise. Light weights will also help minimize muscle soreness and decrease the likelihood of injury to the muscles, joints, and ligaments. During the second week, they should use progressively heavier weights on each resistance exercise. By the end of the second week (four to six workouts), they should know how much weight will let them do 8 to 12 repetitions to muscle failure for each exercise. At this point the conditioning phase begins.

CONDITIONING PHASE

To reach the desired level of fitness, soldiers must increase the amount of exercise and/or the workout intensity as their strength and/or endurance increases.

To improve cardiorespiratory endurance, for example, they must increase the length of time they run. They should start with the preparatory phase and gradually increase the running time by one or two minutes each week until they can run continuously for 20 to 30 minutes. At this point, they can increase the intensity until they reach the desired level of fitness. They should train at least three times a week and take no more than two days between workouts.

For weight trainers, the conditioning phase normally begins during the third week. They should do one set of 8 to 12 repetitions for each of the selected resistance exercises. When they can do more than 12 repetitions of any exercise, they should increase the

Soldiers and units should be encouraged to progress beyond minimum requirements.

weight used on that exercise by about five percent so they can again do only 8 to 12 repetitions. This process continues throughout the conditioning phase. As long as they continue to progress and get stronger while doing only one set of each exercise, it is not necessary for them to do more than one set per exercise. When they stop making progress with one set, they should add another set on those exercises in which progress has slowed. As training progresses, they may want to increase the sets to three to help promote further increases in strength and/or muscle mass.

For maximum benefit, soldiers should do strength training three times a week with 48 hours of rest between workouts for any given muscle group. It helps to periodically do a different type of exercise for a given muscle or muscle group. This adds variety and ensures better strength development.

The conditioning phase ends when a soldier is physically mission-capable and all personal, strength-related goals and unit-fitness goals have been met.

MAINTENANCE PHASE

The maintenance phase sustains the high level of fitness achieved in the conditioning phase. The emphasis here is no longer on progression. A well-designed, 45- to 60-minute workout (including warm-up and cool-down) at the right intensity three times a week is enough to maintain almost any appropriate level of physical fitness. These workouts give soldiers time to stabilize their flexibility, CR endurance, and muscular endurance and strength. However, more frequent training may be needed to reach and maintain peak fitness levels.

Soldiers and units should always be encouraged to progress beyond minimum requirements. Maintaining an optimal level of fitness should become part of every soldier's life-style and

should be continued throughout his life.

An effective program uses a variety of activities to develop muscular endurance and strength, CR endurance, and flexibility, and to achieve good body composition. It should also promote the development of coordination as well as basic physical skills. (See Chapter 10 for guidance in constructing a unit program.)

Types of Fitness Programs

The Army has too many types of units with different missions to have one single fitness program for everyone. Therefore, only broad categories of programs and general considerations are covered here. They are classified as unit, individual, and special programs.

UNIT PROGRAMS

Unit programs must support unit missions. A single unit may require several types of programs. Some units, such as infantry companies, have generally the same types of soldiers and MOSS. On the other hand, certain combat--service-support units have many different types of soldiers, each with unique needs. Commanders can develop programs for their own unit by following the principles in this chapter. MFTs know how to help commanders develop programs for their units/soldiers.

Commanders of units composed of both men and women must also understand the physiological differences between the sexes. These are summarized in Appendix A. Although women are able to participate in the same fitness programs as men, they must work harder to perform at the same absolute level of work or exercise. The same holds true for poorly-conditioned soldiers running with well-conditioned soldiers.

To overcome this problem in the case of running, for example, the unit

TOE and TDA Units--Active Component

There are many types of units in the Army, and their missions often require different levels of fitness. TOE and TDA units must emphasize attaining and maintaining the fitness level required for the mission.

The unit's standards may exceed the Army's minimums. By regulation (AR 350-15), the unit's standards can be established by the unit's commander, based on mission requirements.

TOE and TDA Units--Reserve Components

The considerations for the active component also apply to reserve components (RCS). However, since members of RC units cannot participate together in collective physical training on a regular basis, RC unit programs must focus on the individual's fitness responsibilities and efforts. Commanders, however, must still ensure that the unit's fitness level and individual PT programs are maintained. MFTs can give valuable assistance to RC commanders and soldiers.

INDIVIDUAL PROGRAMS

There must be a positive approach to all special fitness training.

Many soldiers are assigned to duty positions that offer little opportunity to participate in collective unit PT programs. Examples are HQDA, MACOM staffs, hospitals, service school staff and faculty, recruiting, and ROTC. In such organizations, commanders must develop leadership environments that encourage and motivate soldiers to accept individual responsibility for their own physical fitness. Fitness requirements are the same for these personnel as for others. Section chiefs and individual soldiers need to use the fundamental principles and techniques outlined in this manual to help them attain and maintain a high level of physical

fitness. MFTs can help develop individual fitness programs.

SPECIAL PROGRAMS

The day-to-day unit PT program conducted for most soldiers may not be appropriate for all unit members. Some of them may not be able to exercise at the intensity or duration best suited to their needs.

At least three groups of soldiers may need special PT programs. They are as follows:

- Those who fail the APFT and do not have medical profiles.
- Those who are overweight/overfat according to AR 600-9
- Those who have either permanent or temporary medical profiles.

Leaders must also give special consideration to soldiers who are age 40 or older and to recent arrivals who cannot meet the standards of their new unit.

Special programs must be tailored to each soldier's needs, and trained, knowledgeable leaders should develop and conduct them. This training should be conducted with the unit, if this is impossible, it should at least occur at the same time.

There must be a positive approach to all special fitness training. Soldiers who lack enough upper body strength to do a given number of push-ups or enough stamina to pass the 2-mile run should not be ridiculed. Instead, their shortcomings should be assessed and the information used to develop individualized programs to help them remedy their specific shortcomings. A company-sized unit may have as many as 20 soldiers who need special attention. Only smart planning will produce good programs for all of them.

Commanders must counsel soldiers, explaining that special programs are being developed in their best interests. They must make it clear that standards

will be enforced. Next, they should coordinate closely with medical personnel to develop programs that fit the capabilities of soldiers with medical limitations. Each soldier should then begin an individualized program based on his needs.

MFTs know how to assess CR endurance, muscular strength and endurance, flexibility, and body composition. They can also develop thorough, tailor-made programs for all of a unit's special population.

APFT Failures

Although it is not the heart of the Army's physical fitness program, the APFT is the primary instrument for evaluating the fitness level of each soldier. It is structured to assess the muscular endurance of specific muscle groups and the functional capacity of the CR system.

Soldiers with reasonable levels of overall physical fitness should easily pass the APFT. Those whose fitness levels are substandard will fail. Soldiers who fail the APFT must receive special attention. Leaders should analyze their weaknesses and design programs to overcome them. For example, if the soldier is overweight, nutrition and dietary counseling may be needed along with a special exercise program. DA Pam 350-22 outlines several ways to improve a soldier's performance on each of the APFT events.

When trying to improve APFT performances, leaders must ensure that soldiers are not overloaded to the point where the fitness training becomes counterproductive. They should use ability groups for their running program and, in addition to a total-body strength-training program, should include exercises designed for push-up and sit-up improvement. When dealing with special populations, two very important principles are overload and recovery. The quality, not just the

quantity, of the workout should be emphasized. Two-a-day sessions, unless designed extremely well, can be counter-productive. More PT is not always better.

Overweight Soldiers

Designers of weight loss and physical training programs for overweight soldiers should remember this: even though exercise is the key to sensible weight loss, reducing the number of calories consumed is equally important. A combination of both actions is best.

The type of exercise the soldier does affects the amount and nature of the weight loss. Both running and walking burn about 100 calories per mile. One pound of fat contains 3,500 calories. Thus, burning one pound of fat through exercise alone requires a great deal of running or walking. On the other hand, weight lost through dieting alone includes the loss of useful muscle tissue. Those who participate in an exercise program that emphasizes the development of strength and muscular endurance, however, can actually increase their muscle mass while losing body fat. These facts help explain why exercise and good dietary practices must be combined.

Unit MFTs can help a soldier determine the specific caloric requirement he needs to safely and successfully lose excess fat. They can devise a sound, individualized plan to arrive at that reduced caloric intake. Likewise, unit MFTs can also develop training programs which will lead to fat loss without the loss of useful muscle tissue.

Generally, overweight soldiers should strive to reduce their fat weight by two pounds per week. When a soldier loses weight, either by diet or exercise or both, a large initial weight loss is not unusual. This may be due to water loss associated with the using up of the body's carbohydrate stores. Although these losses may be encouraging to the

soldier, little of this initial weight loss is due to the loss of fat.

Soldiers should be weighed under similar circumstances and at the same time each day. This helps avoid false measurements due to normal fluctuations in their body weight during the day. As a soldier develops muscular endurance and strength, lean muscle mass generally increases. Because muscle weighs more per unit of volume than fat, caution is advised in assessing his progress. Just because a soldier is not losing weight rapidly does not necessarily mean he is not losing fat. In fact, a good fitness program often results in gaining muscle mass while simultaneously losing fat weight. If there is reasonable doubt, his percentage of body fat should be determined.

Soldiers with Profiles

This manual stresses what soldiers can do while on medical profile rather than what they cannot do.

DOD Directive 1308.1 requires that, "Those personnel identified with medically limiting defects shall be placed in a physical fitness program consistent with their limitations as advised by medical authorities."

AR 350-15 states, "For individuals with limiting profiles, commanders will develop physical fitness programs in cooperation with health care personnel."

The Office of the Surgeon General has developed DA Form 3349 to ease the exchange of information between health care personnel and the units. On this form, health care personnel list, along with limitations, those activities that the profiled soldier can do to maintain his fitness level. With this information, the unit should direct profiled soldiers to participate in the activities they can do. (An example of DA Form 3349 is in Appendix B.)

All profiled soldiers should take part in as much of the regular fitness

program as they can. Appropriate activities should be substituted to replace those regular activities in which they cannot participate.

Chapter 2 describes some aerobic activities the soldier can do to maintain cardiorespiratory fitness when he cannot run. Chapter 3 shows how to strengthen each body part. Applying this information should allow some strength training to continue even when body parts are injured. The same principle applies to flexibility (Chapter 4).

Medical treatment and rehabilitation should be aimed at restoring the soldier to a suitable level of physical fitness. Such treatment should use appropriate, progressive physical activities with medical or unit supervision.

MFTs can help profiled soldiers by explaining alternative exercises and how to do them safely under the limitations of their profile. MFTs are not, however, trained to diagnose injuries or prescribe rehabilitative exercise programs. This is the domain of qualified medical personnel.

The activity levels of soldiers usually decrease while they are recovering from sickness or injury. As a result, they should pay special attention to their diets to avoid gaining body fat. This guidance becomes more important as soldiers grow older. With medical supervision, proper diet, and the right PT programs, soldiers should be able to overcome their physical profiles and quickly return to their normal routines and fitness levels.

Age as a Factor in Physical Fitness

Soldiers who are age 40 and older represent the Army's senior leadership. On the battlefield, they must lead other soldiers under conditions of severe stress. To meet this challenge

All profiled soldiers should do as much of the regular fitness program as they can, along with substitute activities.

and set a good example, these leaders must maintain and demonstrate a high level of physical fitness. Since their normal duties may be stressful but nonphysical, they must take part regularly in a physical fitness program. The need to be physically fit does not decrease with increased age.

People undergo many changes as they grow older. For example, the amount of blood the heart can pump per beat and per minute decreases during maximal exercise, as does the maximum heart rate. This lowers a person's physical ability, and performance suffers. Also, the percent of body weight composed of fat generally increases, while total muscle mass decreases. The result is that muscular strength and endurance, CR endurance, and body composition suffer. A decrease in flexibility also occurs.

Men tend to maintain their peak levels of muscular strength and endurance and CR fitness until age 30. After 30 there is a gradual decline throughout their lives. Women tend to reach their peak in physical capability shortly after puberty and then undergo a progressive decline.

Although a decline in performance normally occurs with aging, those who stay physically active do not have the same rate of decline as those who do not. Decreases in muscular strength and endurance, CR endurance, and flexibility occur to a lesser extent in those who regularly train these fitness components.

Soldiers who are fit at age 40 and continue to exercise show a lesser decrease in many of the physiological functions related to fitness than do those who seldom exercise. A trained 60-year-old, for example, may have the same level of CR fitness as a sedentary 20-year-old. In short, regular exercise can help add life to your years and years to your life.

The assessment phase of a program is especially important for those age 40 and over. However, it is not necessary or desirable to develop special fitness programs for these soldiers. Those who have been exercising regularly may continue to exercise at the same level as they did before reaching age 40. A program based on the principles of exercise and the training concepts in this manual will result in a safe, long-term conditioning program for all soldiers. Only those age 40 and over who have not been exercising regularly may need to start their exercise program at a lower level and progress more slowly than younger soldiers. Years of inactivity and possible abuse of the body cannot be corrected in a few weeks or months.

As of 1 January 1989, soldiers reaching age 40 are no longer required to get clearance from a cardiovascular screening program before taking the APFT. Only a medical profile will exempt them from taking the biannual record APFT. They must, however, have periodic physical examinations in accordance with AR 40-501 and NGR 40-501. These include screening for cardiovascular risk factors.

Evaluation

To evaluate their physical fitness and the effectiveness of their physical fitness training programs, all military personnel are tested biannually using the APFT in accordance with AR 350-15. (Refer to Chapter 14.) However, commanders may evaluate their physical fitness programs more frequently than biannually.

SCORING CATEGORIES

There are two APFT categories of testing for all military personnel Initial Entry Training (IET) and the Army Standard.

Safety is a major consideration when planning and evaluating physical training programs

IET Standard

The APFT standard for basic training is a minimum of 50 points per event and no less than 150 points overall by the end of basic training. Graduation requirements for AIT and One Station Unit Training (OSUT) require 60 points per event.

Army Standard

All other Army personnel (active and reserve) who are non-IET soldiers must attain the minimum Army standard of at least 60 points per event. To get credit for a record APFT, a medically profiled soldier must, as a minimum, complete the 2-mile run or one of the alternate aerobic events.

SAFETY

Safety is a major consideration when planning and evaluating physical training programs. Commanders must ensure that the programs do not place their soldiers at undue risk of injury or accident. They should address the following items:

- Environmental conditions (heat/cold/traction).
- Soldiers' levels of conditioning (low/high/age/sex).
- Facilities (availability/instruction/repair).
- Traffic (routes/procedures/formations).
- Emergency procedures (medical/communication/transport).

The objective of physical training in the Army is to enhance soldiers' abilities to meet the physical demands of war. Any physical training which results in numerous injuries or accidents is detrimental to this goal. As in most training, common sense must prevail. Good, sound physical training should challenge soldiers but should not place them at undue risk nor lead to situations where accidents or injuries are likely to occur.

Cardiorespiratory Fitness

Cardiorespiratory (CR) fitness, sometimes called CR endurance, aerobic fitness, or aerobic capacity, is one of the five basic components of physical fitness. CR fitness is a condition in which the body's cardiovascular (circulatory) and respiratory systems function together, especially during exercise or work, to ensure that adequate oxygen is supplied to the working muscles to produce energy. CR fitness is needed for prolonged, rhythmic use of the body's large muscle groups. A high level of CR fitness permits continuous physical activity without a decline in performance and allows for rapid recovery following fatiguing physical activity.

Activities such as running, road marching, bicycling, swimming, cross-country skiing, rowing, stair climbing, and jumping rope place an extra demand on the cardiovascular and respiratory systems. During exercise, these systems attempt to supply oxygen to the working muscles. Most of this oxygen is used to produce energy for muscular contraction. Any activity that continuously uses large muscle groups for 20 minutes or longer taxes these systems. Because of this, a wide variety of training methods is used to improve cardiorespiratory endurance.

Physiology of Aerobic Training

Aerobic exercise uses oxygen to produce most of the body's energy needs. It also brings into play a fairly complex set of physiological events.

To provide enough energy-producing oxygen to the muscles, the following events occur:

- Greater movement of air through the lungs.
- Increased movement of oxygen from the lungs into the blood stream.
- Increased delivery of oxygen-laden blood to the working muscles by the heart's accelerated pumping action.
- Regulation of the blood vessel's size to distribute blood away from inactive tissue to working muscle.
- Greater movement of oxygen from the blood into the muscle tissue.
- Accelerated return of venous blood to the heart.

Correctly performed aerobic exercise, over time, causes positive changes in the body's CR system. These changes allow the heart and vascular systems to deliver more oxygen-rich blood to the working muscles during exercise. Also, those muscles regularly used during aerobic exercise undergo positive changes. By using more oxygen, these changes let the muscles make and use more energy during exercise and, as a result, the muscles can work longer and harder.

During maximum aerobic exercise, the trained person has an increased maximum oxygen consumption ($\dot{V}O_{2\max}$). He is better able to process oxygen and fuel and can therefore provide more energy to the working muscles.

$\dot{V}O_{2\max}$, also called aerobic capacity, is the most widely accepted single indicator of one's CR fitness level.

CR fitness is needed for prolonged, rhythmic use of the body's large muscle groups.

Percent HRR Method

A more accurate way to calculate THR is the percent HRR method. The range from 60 to 90 percent HRR is the THR range in which people should exercise to improve their CR fitness levels. If a soldier knows his general level of CR fitness, he can determine which percentage of HRR is a good starting point for him. For example, if he is in excellent physical condition, he could start at 85 percent of his HRR; if he is in reasonably good shape, at 70 percent HRR; and, if he is in poor shape, at 60 percent HRR.

Most CR workouts should be conducted with the heart rate between 70 to 75 percent HRR to attain, or maintain, an adequate level of fitness. Soldiers who have reached a high level of fitness may derive more benefit from working at a higher percentage of HRR, particularly if they cannot find more than 20 minutes for CR exercise. Exercising at any lower percentage of HRR does not give the heart, muscles, and lungs an adequate training stimulus.

Before anyone begins aerobic training, he should know his THR (the heart rate at which he needs to exercise to get a training effect).

The example below shows how to figure the THR by using the resting heart rate (RHR) and age to estimate heart rate reserve (HRR). A 20-year-old male soldier in reasonably good physical shape is the example.

STEP 1: Determine the MHR by subtracting the soldier's age from 220.

FORMULA

$$220 - \text{age} = \text{MHR} \\ (\text{GIVEN})$$

CALCULATION

$$220 - 20 = 200 \text{ BPM}$$

STEP 2: Determine the RHR in beats per minute (BPM) by counting the resting pulse for 30 seconds, and multiply the count by two. A shorter period can be used, but a 30-second count is more accurate. This count should be taken while the soldier is completely relaxed and rested. How to determine heart rate is described below. Next, determine the heart rate reserve (HRR) by subtracting the RHR from the estimated MHR. If the soldier's RHR is 69 BPM, the HRR is calculated as shown here.

FORMULA

$$\text{MHR} - \text{RHR} = \text{HRR}$$

CALCULATION

$$200 \text{ BPM} - 69 \text{ BPM} = 131 \text{ BPM}$$

STEP 3: Calculate the THR based on 70 percent of HRR (a percentage based on a good level of CR fitness).

FORMULA

$$(\% \times \text{HRR}) + \text{RHR} = \text{THR}$$

CALCULATION

$$(0.70 \times 131 \text{ BPM}) + 69 \text{ BPM} = 160.7 \text{ BPM}$$

As shown, the percentage (70 percent in this example) is converted to the decimal form (0.70) before it is multiplied by the HRR. The result is then added to the resting heart rate (RHR) to get the THR. Thus, the product obtained by multiplying 0.70 and 131 is 91.7. When 91.7 is added to the RHR of 69, a THR of 160.7 results. When the calculations produce a fraction of a heart beat, as in the example, the value is rounded off to the nearest whole number. In this case, 160.7 BPM is rounded off to give a THR of 161 BPM. In summary, a reasonably fit 20-year-old soldier with a resting heart rate of 69 BPM has a training heart rate goal of 161 BPM. To determine the RHR, or to see if one is within the THR during and right after exercise, place the tip of the third finger lightly over one of the carotid arteries in the neck. These arteries are located to the left and right of the Adam's apple. (See Figure 2-1A.) Another convenient spot from which to monitor the pulse is on the radial artery on the wrist just above the base of the thumb. (See Figure 2-1B.) Yet another way is to place the hand over the heart and count the number of heart beats. (See Figure 2-1 C.)

During aerobic exercise, the body will usually have reached a "Steady State" after five minutes of exercise, and the heart rate will have leveled off. At this time, and immediately after exercising, the soldier should monitor his heart rate.

He should count his pulse for 10 seconds, then multiply this by six to get his heart rate for one minute. This will let him determine if his training intensity is high enough to improve his CR fitness level.

For example, use the THR of 161 BPM figured above. During the 10-second period, the soldier should get a count of 27 beats ($161/6 = 26.83$ or 27) if he is exercising at the right intensity. If his pulse rate is below the THR, he must exercise harder to increase his pulse to the THR. If his pulse is above the THR, he should normally exercise at a lower intensity to reduce the pulse rate to the prescribed THR. He should count as accurately as possible, since one missed beat during the 10-second count, multiplied by six, gives an error of six BPM.

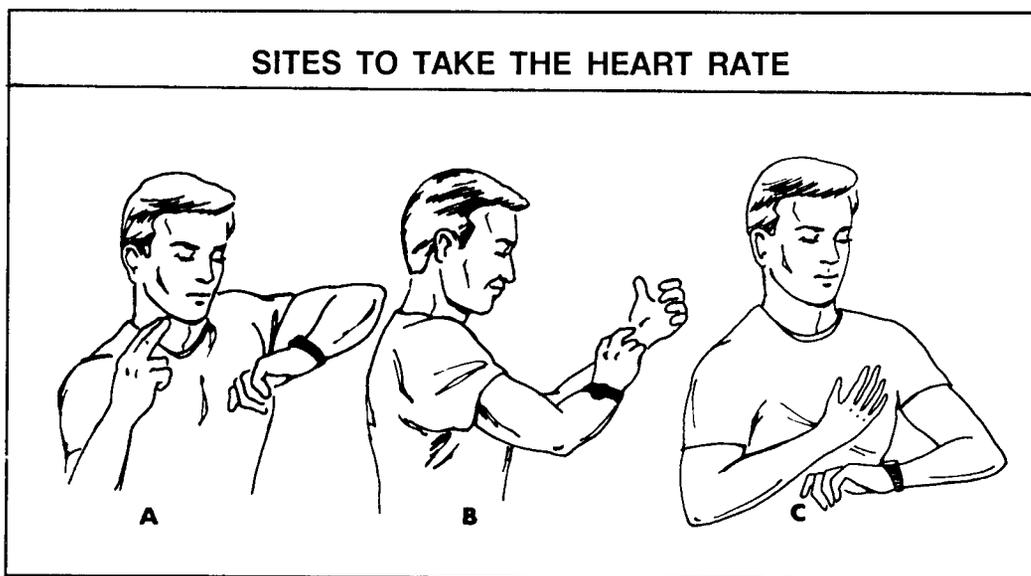


Figure 2-1

A soldier who maintains his THR throughout a 20-30-minute exercise period is doing well and can expect improvement in his CR fitness level.

A soldier who maintains his THR throughout a 20- to 30-minute exercise period is doing well and can expect improvement in his CR fitness level. He should check his exercise and post-exercise pulse rate at least once each workout. If he takes only one pulse check, he should do it five minutes into the workout.

Figure 2-2 is a chart that makes it easy to determine what a soldier's THR should be during a 10-second count. Using this figure, a soldier can easily find his own THR just by knowing his age and general fitness level. For example, a 40-year-old soldier with a low fitness level should, during aerobic

exercise, have a THR of 23 beats in 10 seconds. He can determine this from the table by locating his age and then tracking upward until he reaches the percent HRR for his fitness level. Again, those with a low fitness level should work at about 60 percent HRR and those with a good fitness level at 70 percent HRR. Those with a high level of fitness may benefit most by training at 80 to 90 percent HRR.

Another way to gauge exercise intensity is "perceived exertion." This method relies on how difficult the exercise seems to be and is described in Appendix G.

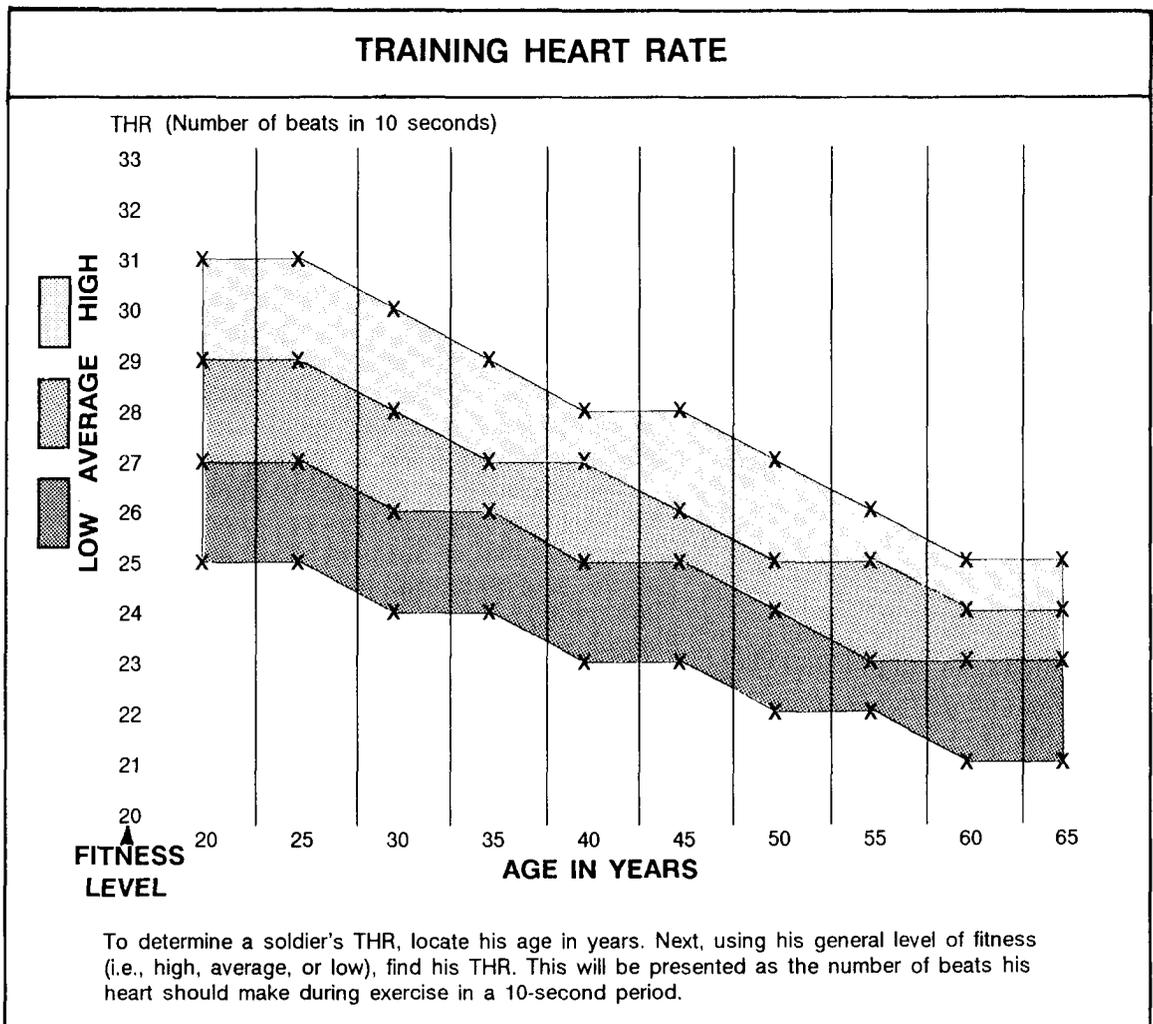


Figure 2-2

on the leg (hamstrings and quadriceps), hip (gluteal and hip flexors), low back (spinal erector), and abdominal (rectus abdominis) muscles. These two days should also include brief (2-mile) CR workouts of light to moderate intensity (65 to 75 percent HRR). On the one CR fitness day left, soldiers should take a long distance run (4 to 6 miles) at a moderate pace (70 percent HRR), an interval workout, or an aerobic circuit. They should also do some strength work of light volume and intensity. If four days are available, a road march should be added to the three-day program at least twice monthly. The speed, load, distance, and type of terrain should be varied.

If there are five days, leaders should devote two of them to muscular strength and endurance and two of them to CR fitness. One CR fitness day will use long distance runs; the other can stress more intense workouts including interval work, Fartlek running, or last-man-up running. At least two times per month, the remaining day should include a road march.

Soldiers can usually begin road-march training by carrying a total load equal to 20 percent of their body weight. This includes all clothing and equipment. However, the gender make-up and/or physical condition of a unit may require using a different starting load. Beginning distances should be between five and six miles, and the pace should be at 20 minutes per mile over flat terrain with a hard surface. Gradual increases should be made in speed, load, and distance until soldiers can do the anticipated, worst-case, mission-related scenarios without excessive difficulty or exhaustion. Units should take maintenance marches at least twice a month. Distances should vary from six to eight miles, with loads of 30 to 40 percent of body weight. The pace should be 15 to 20 minutes per mile.

Leaders must train and march with their units as much as possible.

Units should do maintenance marches at least twice a month.

A recent Army study showed that road-march training two times a month and four times a month produced similar improvements in road-marching performance. Thus, twice-monthly road marches appear to produce a favorable improvement in soldiers' abilities to road march if they are supported by a sound PT program (five days per week)

Commanders must establish realistic goals for road marching based on assigned missions. They should also allow newly assigned soldiers and those coming off extended profiles to gradually build up to the unit's fitness level before making them carry maximum loads. This can be done with ability groups.

Road marching should be integrated into all other training. Perhaps the best single way to improve load-bearing capacity is to have a regular training program which systematically increases the load and distance. It must also let the soldier regularly practice carrying heavy loads over long distances.

As much as possible, leaders at all levels must train and march with their units. This participation enhances leaders' fitness levels and improves team spirit and confidence, both vital elements in accomplishing difficult and demanding road marches.

Alternate Forms of Aerobic Exercise

Some soldiers cannot run. In such cases, they may use other activities as supplements *or* alternatives. Swimming, bicycling, and cross-country skiing are all excellent endurance exercises and are good substitutes for running. Their drawback is that they require special equipment and facilities that are not always available. As with all exercise, soldiers should start slowly and progress gradually. Those who use non-running activities to

such training may not improve running ability. To prepare a soldier for the APFT 2-mile run, there is no substitute for running.

SWIMMING

Swimming is a good alternative to running. Some advantages of swimming include the following:

- o Involvement of all the major muscle groups.
- o Body position that enhances the blood's return to the heart.
- o Partial support of body weight by the water, which minimizes lower body stress in overweight soldiers.

Swimming may be used to improve one's CR fitness level and to maintain and improve CR fitness during recovery from an injury. It is used to supplement running and develop upper body endurance and limited strength. The swimmer should start slowly with a restful stroke. After five minutes, he should stop to check his pulse, compare it with his THR and, if needed, adjust the intensity.

Compared with all the other modes of aerobic exercise presented in this manual (e.g., running, walking, cycling, cross-country skiing, rope jumping, etc.) in swimming alone, one's THR should be lower than while doing the other forms of aerobic exercise. This is because, in swimming, the heart does not beat as fast as when doing the other types of exercise at the same work rate. Thus, in order to effectively train the CR system during swimming, a soldier should set his THR about 10 bpm lower than while running. For example, a soldier whose THR while running is 150 bpm should have a THR of about 140 bpm while swimming. By modifying their THRs in this manner while swimming, soldiers will help to ensure that they are working at the proper intensity.

Non-swimmers can run in waist-to chest-deep water, tread water, and do pool-side kicking for an excellent

aerobic workout. They can also do calisthenics in the water. Together these activities combine walking and running with moderate resistance work for the upper body.

For injured soldiers, swimming and aerobic water-training are excellent for improving CR fitness without placing undue stress on injured weight-bearing parts of the body.

CYCLING

Cycling is an excellent exercise for developing CR fitness. Soldiers can bicycle outdoors or on a stationary cycling machine indoors. Road cycling should be intense enough to allow the soldier to reach and maintain THR at least 30 minutes.

Soldiers can alter the cycling intensity by changing gears, adding hill work, and increasing velocity. Distance can also be increased to enhance CR fitness, but the distance covered is not as important as the amount of time spent training at THR. The intensity of a workout can be increased by increasing the resistance against the wheel or increasing the pedaling cadence (number of RPM). For interval training, the soldier can vary the speed and resistance and use periods of active recovery at low speed and/or low resistance.

WALKING

Walking is another way to develop cardiorespiratory fitness. It is enjoyable, requires no equipment, and causes few injuries. However, unless walking is done for a long time at the correct intensity, it will not produce any significant CR conditioning.

Sedentary soldiers with a low degree of fitness should begin slowly with 12 minutes of walking at a comfortable pace. The heart rate should be monitored to determine the intensity. The soldier should walk at least four times a week and add two minutes each week

Cycling should be intense enough to let the soldier reach and maintain THR at least 30 minutes.

For swimming, a soldier should set his THR at about 10 beats per minute lower than when running.

Developing the Program

The goal of the Army's physical fitness program is to improve each soldier's physical ability so he can survive and win on the battlefield. Physical fitness includes all aspects of physical performance, not just performance on the APFT. Leaders must understand the principles of exercise, the FITT factors, and know how to apply them in order to develop a sound PT program that will improve all the fitness components. To plan PT successfully, the commander and MFT must know the training management system. (See FM 25-100.)

Commanders should not be satisfied with merely meeting the minimum requirements for physical training which is having all of their soldiers pass the APFT. They must develop programs that train soldiers to maximize their physical performance. Leaders should use incentives. More importantly, they must set the example through their own participation.

The unit PT program is the commander's program. It must reflect his goals and be based on sound, scientific principles. The wise commander also uses his PT program as a basis for building team spirit and for enhancing other training activities. Tough, realistic training is good. However, leaders must be aware of the risks involved with physical training and related activities. They should, therefore, plan wisely to minimize injuries and accidents.

Steps in Planning

STEP 1: ANALYZE THE MISSION

When planning a physical fitness program, the commander must consider the type of unit and its mission. Missions vary as do the physical requirements necessary to complete them. As stated in FM 25-100, "The wartime mission drives training." A careful

analysis of the mission, coupled with the commander's intent, yields the mission-essential task list (METL) a unit must perform.

Regardless of the unit's size or mission, reasonable goals are essential. According to FM 25-100, the goals should provide a common direction for all the commander's programs and systems. An example of a goal is as follows because the exceptional physical fitness of the soldier is a critical combat-multiplier in the division, it must be our goal to ensure that our soldiers are capable of roadmarching 12 miles with a 50-pound load in less than three hours.

STEP 2: DEVELOP FITNESS OBJECTIVES

Objectives direct the unit's efforts by prescribing specific actions. The commander, as tactician, and the MFT, as physical fitness advisor, must analyze the METL and equate this to specific fitness objectives. Examples of fitness objectives are the following:

- Improve the unit's overall level of strength by ensuring that all soldiers in the unit can correctly perform at least one repetition with 50 percent of their bodyweight on the overhead press using a barbell.
- Improve the unit's average APFT score through each soldier obtaining a minimum score of 80 points on the push-up and sit-up events and 70 points on the 2-mile run.
- Decrease the number of physical training injuries by 25 percent through properly conducted training.

The commander and MFT identify and prioritize the objectives.

STEP 3: ASSESS THE UNIT

With the training objectives established, the commander and MFT are ready to find the unit's current fitness level and measure it against the desired level.

Commanders must develop programs that train soldiers to maximize their physical performance.

Giving a diagnostic APFT is one way to find the current level. Another way is to have the soldiers road march a certain distance within a set time while carrying a specified load. Any quantifiable, physically demanding, mission-essential task can be used as an assessment tool. Training records and reports, as well as any previous ARTEP, EDREs, and so forth, can also provide invaluable information.

STEP 4: DETERMINE TRAINING REQUIREMENTS

By possessing the unit's fitness capabilities and comparing them to the standards defined in training objectives, leaders can determine fitness training requirements. When, after extensive training, soldiers cannot reach the desired levels of fitness, training requirements may be too idealistic. Once training requirements are determined, the commander reviews higher headquarters' long- and short-range training plans to identify training events and allocations of resources which will affect near-term planning.

STEP 5: DEVELOP FITNESS TASKS

Fitness tasks provide the framework for accomplishing all training requirements. They identify what has to be done to correct all deficiencies and sustain all proficiencies. Fitness tasks establish priorities, frequencies, and the sequence for training requirements. They must be adjusted for real world constraints before they become a part of the training plan. The essential elements of fitness tasks can be cataloged into four groups:

- (1) Collective tasks
- (2) Individual tasks
- (3) Leader tasks
- (4) Resources required for training

Collective tasks. Collective tasks are the training activities performed by the unit. They are keyed to the unit's specific fitness objectives. An example would be to conduct training to develop strength and muscular endurance utilizing a sandbag circuit.

Individual tasks. Individual tasks are activities that an individual soldier must do to accomplish the collective training task. For example, to improve CR endurance the individual soldier must do ability-group running, road marching, Fartlek training, interval training, and calculate/monitor his THR when appropriate.

Leader tasks. Leader tasks are the specific tasks leaders must do in order for collective and individual training to take place. These will involve procuring resources, the setting up of training, education of individual soldiers, and the supervision of the actual training.

Resources. Identifying the necessary equipment, facilities, and training aids during the planning phase gives the trainer ample time to prepare for the training. The early identification and acquisition of resources is necessary to fully implement the training program. The bottom line is that training programs must be developed using resources which are available.

STEP 6: DEVELOP A TRAINING SCHEDULE

The fitness training schedule results from leaders' near-term planning. Leaders must emphasize the development of all the fitness components and follow the principles of exercise and the FITT factors. The training schedule shows the order, intensity, and duration of activities for PT. Figure 10-1 illustrates a typical PT session and its component parts.

There are three distinct steps in planning a unit's daily physical training activities. They are as follows:

1. Determine the minimum frequency of training. Ideally, it should include three cardiorespiratory and three muscular conditioning sessions each weeks. (See the FITT factors in Chapter 1.)
2. Determine the type of activity. This depends on the specific purpose of the training session. (See Figure 10-2.) For more information on this topic, see Chapters 1, 2, and 3.
3. Determine the intensity and time of the selected activity. (See the FITT factors in Chapter 1.)

Each activity period should include a warm-up, a workout that develops cardiorespiratory fitness and/or muscular endurance and strength, and a cool-down. (See Figure 10-1).

At the end of a well-planned and executed PT session, all soldiers should feel that they have been physically stressed. They should also understand the objective of the training session and how it will help them improve their fitness levels.

STEP 7: CONDUCT AND EVALUATE TRAINING

The commander and MFT now begin managing and supervising the day-to-day training. They evaluate how the training is performed by monitoring its intensity, using THR or muscle failure, along with the duration of the daily workout.

The key to evaluating training is to determine if the training being conducted will result in improvements in physical conditioning. If not, the training needs revision. Leaders should

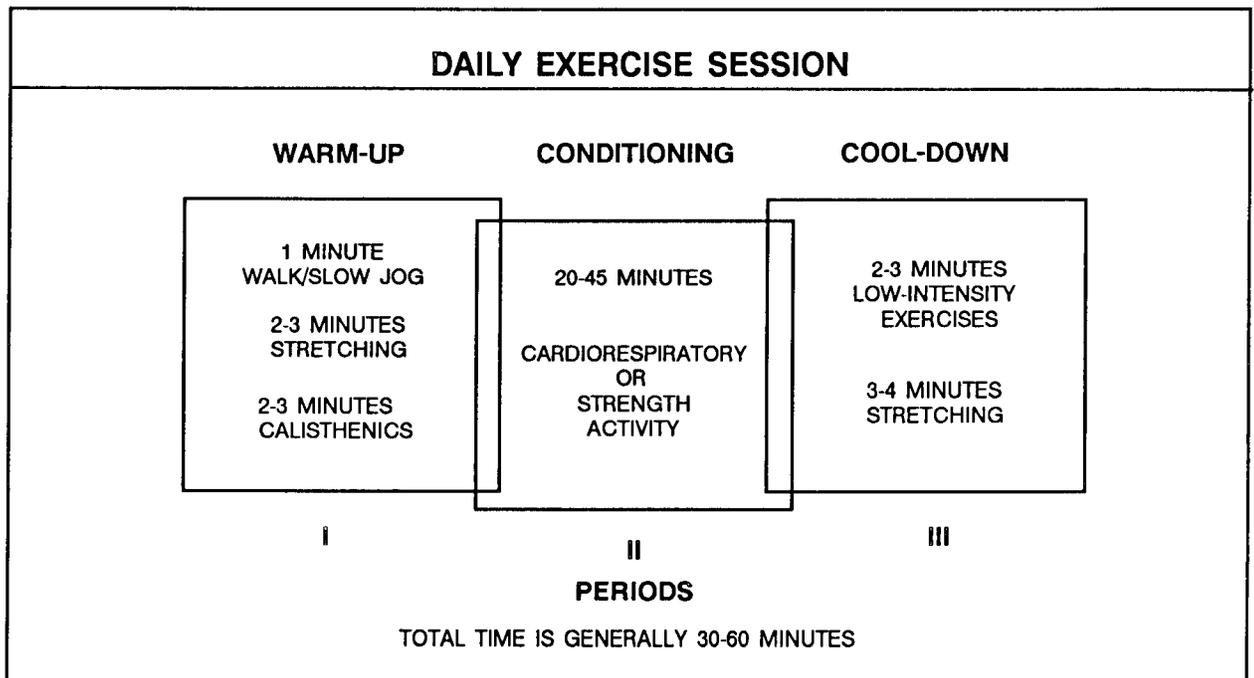


Figure 10-1

ACTIVITY SELECTION GUIDE

PURPOSE	MUSCULAR STRENGTH	MUSCULAR ENDURANCE	CARDIO-RESPIRATORY ENDURANCE	FLEXIBILITY	BODY COMPOSITION	SPEED/AGILITY	COORDINATION	TEAM-WORK	SOLDIER SKILLS
Aerobics		x	x	x	x		x		
Bicycling		x	x		x				
Circuits	x	x	x	x	x	x	x	x	x
Competitive Activities						x	x	x	x
Calisthenics		x		x		x	x		
Cross Country Skiing	x	x	x	x	x		x		
Grass/Guerrilla Drills	x	x	x		x		x		
Obstacle Courses	x	x	x		x	x	x	x	x
Partner-Resisted Exercises	x	x					x	x	
Relays		x	x		x	x	x	x	
Rifle Drills	x	x					x		x
Road Marching	x	x	x		x				x
Running		x	x		x				
Stretching				x					
Weight Training	x	x				x	x		

Figure 10-2

not be sidetracked by PT that is all form and little substance. Such training defeats the concept of objective-based training and results in little benefit to soldiers.

Education

Teaching soldiers about physical fitness is vital. It must be an ongoing effort that uses trained experts like MFTs. Soldiers must understand why the program is organized the way it is and what the basic fitness principles are. When they know why they are training in a certain way, they are more likely to wholeheartedly take part. This makes the training more effective.

Education also helps the Army develop its total fitness concept. Total fitness should be reinforced throughout each soldier's career. Classroom instruction in subjects such as principles of exercise, diet and nutrition, tobacco cessation, and stress management should be held at regular

intervals. Local "Fit to Win" coordinators (AR 600-63) can help develop classes on such subjects.

Common Errors

There are some common errors in unit programs. The most common error concerns the use of unit runs. When all soldiers must run at the same pace as with a unit run, many do not receive a training effect because they do not reach their training heart rate (THR). The least-fit soldiers of the unit may be at risk because they may be training at heart rates above their THR. Another error is exclusively using activities such as the "daily dozen." These exercises emphasize form over substance and do little to improve fitness.

Yet another error is failing to strike a balance in a PT program between CR endurance training and muscular endurance and strength training. In addition, imbalances often stem from a lack of variety in the program which

Total fitness should be reinforced throughout each soldier's career by classroom instruction.

APPENDIX A

PHYSIOLOGICAL DIFFERENCES BETWEEN THE SEXES

Soldiers vary in their physical makeup. Each body reacts differently to varying degrees of physical stress, and no two bodies react exactly the same way to the same physical stress. For everyone to get the maximum benefit from training, leaders must be aware of these differences and plan the training to provide maximum benefit for everyone. They must also be aware of the physiological differences between men and women. While leaders must require equal efforts of men and women during the training period, they must also realize that women have physiological limitations which generally preclude equal performance. The following paragraphs describe the most important physical and physiological differences between men and women.

SIZE

The average 18- year-old man is 70.2 inches tall and weighs 144.8 pounds, whereas the average woman of the same age is 64.4 inches tall and weighs 126.6 pounds. This difference in size affects the absolute amount of physical work that can be performed by men and women.

MUSCLES

Men have 50 percent greater total muscle mass, based on weight, than do women. A woman who is the same size as her male counterpart is generally only 80 percent as strong. Therefore, men usually have an advantage in strength, speed, and power over women.

FAT

Women carry about 10 percentage points more body fat than do men of the same age. Men accumulate fat primarily in the back, chest, and abdomen; women gain fat in the buttocks, arms, and thighs. Also, because the center of gravity is lower in women than in men, women must overcome more resistance in activities that require movement of the lower body.

BONES

Women have less bone mass than men, but their pelvic structure is wider. This difference gives men an advantage in running efficiency.

HEART SIZE AND RATE

The average woman's heart is 25 percent smaller than the average man's. Thus, the man's heart can pump more blood with each beat. The larger heart size contributes to the slower resting heart rate (five to eight beats a minute slower) in males. This lower rate is evident both at rest and at any given level of submaximal exercise. Thus, for any given work rate, the faster heart rate means that most women will become fatigued sooner than men.

FLEXIBILITY

Women generally are more flexible than men.

LUNGS

The lung capacity of men is 25 to 30 percent greater than that of women. This gives men still another advantage in the processing of oxygen and in doing aerobic work such as running.

RESPONSE TO HEAT

A woman's response to heat stress differs somewhat from a man's. Women sweat less, lose less heat through evaporation, and reach higher body temperatures before sweating starts. Nevertheless, women can adapt to heat stress as well as men. Regardless of gender, soldiers with a higher level of physical fitness generally better tolerate, and adapt more readily to, heat stress than do less fit soldiers.

OTHER FACTORS

Knowing the physiological differences between men and women is just the first step in planning physical training for a unit. Leaders need to understand other factors too.

Women can exercise during menstruation; it is, in fact, encouraged. However, any unusual discomfort, cramps, or pains while menstruating should be medically evaluated.

Pregnant soldiers cannot be required to exercise without a doctor's approval. Generally, pregnant women may exercise until they are close to childbirth if they follow their doctors' instructions. The Army agrees with the position of the American College of obstetricians and Gynecologists regarding exercise and pregnancy. This guidance is available from medical authorities and the U.S. Army Physical Fitness School (USAPFS). The safety and health of the mother and fetus are primary concerns when dealing with exercise programs.

Vigorous activity does not harm women's reproductive organs or cause menstrual problems. Also, physical fitness training need not damage the breasts. Properly fitted and adjusted bras, however, should be worn to avoid potential injury to unsupported breast tissue that may result from prolonged jarring during exercise.

Although female soldiers must sometimes be treated differently from males, women can reach high levels of physical performance. Leaders must use common sense to help both male and female soldiers achieve acceptable levels of fitness. For example, ability-group running alleviates gender-based differences between men and women. Unit runs, however, do not.