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Physical Training for the Modern Battlefield:
Are We Tough Enough?

by
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Fort Leavenworth, Kansas

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ABSTRACT

PHYSICAL TRAINING FOR THE MODERN BATTLEFIELD: ARE WE TOUGH ENOUGH? by Major Mark Phillip Hertling, USA, 52 pages.

The individual soldier's physical and mental preparation for battle are arguably two of the most important factors considered when deciding whether a force is ready for commitment to combat. While many believe technological advances reduce the need for intense physical preparation in peacetime, others believe heightened physical readiness will delay the onset of fatigue and will contribute to enhanced mental resolve of the force when committed. Does the centrally controlled, aerobic-intensive, test-oriented physical training program currently used by our army give us the best methods for preparing the army for the eventualities of combat?

This monograph shows the implications of what is possible: it analyzes some of the physiological and psychological demands of combat; it investigates historical examples of commanders who, with a vision of how they would fight, properly prepared their units for the specific physical aspects of the battles; and it outlines the current methods used by the Soviet Union in preparing their soldiers for the stresses of war. With this as a background, the current methods of physical training used by the United States Army are critiqued.

The conclusions show changes must be made in our physical training programs if we are to meet the demands imposed by the Airland Battle Doctrine and divisional contingency missions. These conclusions are: the army must deemphasize the current three-event PT test as a measure of physical readiness; researchers employed at various "in-place" agencies must combine their efforts and assist commanders in the field in their preparation of soldiers for the contingency missions; based on research, physical training of the soldier for the contingencies must be specific; the Master Fitness Trainer Course, in order to better train unit specialists, should be expanded; and, emphasis of our physical training should be switched to "readiness" versus "fitness." Only by the incorporation of these techniques can we hope to become combat ready.

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CHAPTER 1

INTRODUCTION

Exertions must be practiced, and the mind must be made even more familiar with them than the body. When exceptional efforts are required of him in war, the recruit is apt to think that they result from mistakes, miscalculations and confusion at the top. In consequence, his morale is doubly depressed. If maneuvers prepare him for exertion, this will not occur.<1>

Airland Battle doctrine will only be successful if leaders place emphasis on establishing unit cohesion and developing quality soldiers trained for conflict. Indeed, FM 100-5 states that the chaos of combat will place a high premium on the training and team spirit of soldiers and their units: "Well-trained, physically fit soldiers in cohesive units [must] retain the qualities of tenacity and aggressiveness."<2>

Our next war will be intense, furious, physically demanding, and emotionally stressful. Technology and doctrine, applied correctly, will give US Army forces the advantage on the battlefield. But if the soldier is not given the most current, scientific, and fundamentally sound training available the advances in technology and doctrine will be meaningless.

This study examines one aspect of the preparation of our force. The salient question posed is whether the physical training techniques currently employed are the best for meeting the physical and mental stresses we expect to meet in the Airland Battle.

By investigating the physiological contributors to fatigue and fear, I will identify the factors that should be considered when designing physical training programs for a combat force. Historical examples of how physical training contributed to the success, and in a few cases, failures of commanders and armies will be presented and analyzed. The study also outlines and compares the current physical readiness doctrine and training programs of both the Soviet Union and the U.S. Army. Finally, this monograph will assess the value of our current training and suggest ways that may enable our army to better meet the demands of future conflict.

CHAPTER 2

PHYSIOLOGY OF FEAR AND FATIGUE

The individual soldier's physical and mental readiness for combat are arguably the two most important factors when deciding whether a force is prepared for battle. What makes a physically "ready" soldier? Will this physical readiness translate to "mental toughness" when a unit is committed to battle? These two questions have concerned leaders for centuries, and a variety of training methods have been employed in an attempt to gain physical and mental superiority on the battlefield. Understanding the stresses of combat, what causes these stresses, and how they may be altered must be important considerations before establishing a physical training or readiness doctrine.

While Clausewitz, Ardant DuPicq and other theorists and historians have described the physical exhaustion of soldiers on the battlefield, S.L.A. Marshall was the first to notice an unmistakable yet rarely discussed relationship between the similar effects of fatigue and fear. In discussing the similarities with a psychiatrist friend and some staff biologists at the University of Michigan in 1948, Marshall learned that there may be biochemical reasons for the fact that soldiers could march away from a battle with greater speed, alacrity and less feelings of fatigue than they would experience marching toward a battle.<3>

While Marshall's observation may seem obvious to any soldier who has experienced combat--soldiers want to get out of harm's way much more than they want to proceed to a potential fight--the physiological elements involved in his conclusion raise a flag to the leader who is training soldiers for combat. The question which must be addressed is how this physiological resultant of the "fear factor" may be reduced or nullified through adequate physical training. As Marshall notes, there is a radical difference between the weight-carrying ability of a soldier on a march who is only concerned about putting one foot in front of another and the same soldier's physical limits when he finds himself in a fight.<4>

Gaining an understanding of the causes and results of physical fatigue should be the first step in designing a physical training doctrine. While fitness mavens lead us to believe that cardiovascular efficiency is the most important aspect of physical readiness, fatigue physiology lists many factors which may disrupt the body's ability for performing at its maximum. Most physiological research concerning fatigue focuses on three general areas: the neuromuscular junction, the contractile mechanism of the muscle, and the central nervous system.<5>

There is strong evidence that a main cause of fatigue is failure at the junction between the nerve and the muscle performing the work.<6> This concept for the cause of fatigue postulates that the depletion of a chemical transmitter (acetylcholine) at the site of the neuromuscular junction will

cause the muscles to weaken and then eventually fail.

Physiologists believe intense physical training results in an increased production of acetylcholine as a neurotransmitter for the muscles being used. Additionally, with training there is a decrease in the other chemical transmitters which inhibit the increased production of acetylcholine within each neuromuscular junction.<7> Training the muscles needed for combat using specific physical exercises will postpone the onset of fatigue during battle.

The failure of the contractile mechanism within the muscular system is another factor influencing the onset of fatigue.<8> Lack of oxygen and an inadequate blood flow, caused by the inefficiency of the lungs and heart, is only one of four reasons researchers have found as a cause of fatigue in this area. If muscles have depleted glycogen stores (caused by a lack of training in "short-burst" activities) or if the muscles do not produce adequate chemicals (Adenosine Tri-phosphate (ATP) and Phosphocreatine (PC) for use in the phosphagen energy system) needed for activities requiring stamina, then fatigue occurs. The point is this: Physical training must address the preparation of the contractile mechanism across the entire spectrum of the energy systems involved. Long distance running alone will not train all the energy systems needed in combat.

Finally, recent research has indicated that the central nervous system (CNS) plays a major role in the onset of muscular fatigue.<10> Although the exact mechanism of how the

CNS affects the onset of fatigue is not known, physiologists believe the disturbances occurring within the body's internal environment are signaled back to the brain via sensory nerves. The brain sends out inhibitory signals to the nerve cells in the motor system, resulting in a declining muscular work output.<11> Physiologists E. Asmussen and B. Mazin have conducted numerous experiments on "diversion mentality," which postulates that by shifting the mind from the activity being performed through imagery techniques or progressive relaxation the onset of fatigue will be delayed.<12> Techniques involving mental exercises are available which significantly reduced the onset of fatigue, and these techniques may be beneficial in training soldiers for combat.

Understanding the physiological effects of fear on the body is as important as determining the physiological factors of fatigue when designing a physical readiness doctrine. Fear, one of the higher forms of battle stress the body is forced to withstand, has a unique way of affecting the internal environment. Increased heart rate, increased muscular tension, increased blood sugar levels, and increased brain firing to the degree that sensory perception is altered are all results of the high stress caused by fear. Researchers believe the cause of all these effects is a massive dumping of adrenocorticotropin hormone (ACTH), and therefore an increase in the steroid known as cortisol and the amino acid known as adrenaline, into the blood stream as a reaction to fear or a sudden stressful situation.<13>

The adrenaline response is rapid and often beneficial in a "fight or flight" situation, but the cortisol response to fear affects the body over a much longer period of time and will be detrimental to the soldier's performance. Because it is an amino acid, adrenoline is already being digested within the blood stream a few seconds after a stressful event occurs. But cortisol, based on the rugged steroid cholesterol, can remain in the blood stream for hours fatiguing the body by maintaining a higher heart rate and increased muscular and mental tensions.

Physiologists are convinced that cortisol secretion cannot be controlled through physical training.<14> A trained athlete will have the same responses to fear and anxiety that an untrained person will have. But some psychologists have found that they can decrease the levels of cortisol secretion by attacking the way the mind reacts to the stress stimuli. In stressful situations, if trained in relaxation techniques, athletes are able to lower their fears and reduce the amount of ACTH in the bloodstream.<15> The results of this training--called the trophotropic response--results in decreased heart and respiration rates, lower blood pressure and arterial lactic acid levels, and the relaxation of the "mental faculties."

Proper physical conditioning will prepare soldiers for the fatigue experienced in combat. Training induces physiological changes in almost every system of the body and is influenced by the frequency, duration, and the intensity of the training

program. But the effects are specific to the types of training performed and the type of training program used.<16> In order to be most effective, physical training must be specific to those tasks that the soldier is expected to perform in combat. A program based on extensive aerobic activity may help the corporate executive maintain his fitness level, keep his weight down and stave off a heart attack, but jogging only provides a cardiovascular fitness base and will have little influence on someone who needs stamina or short bursts of energy in a combat situation. The physiological factors I have presented have a foundation in the General Adaptation to Stress (GAS) theory presented by Hans Selye.<17> The body adapts only to those stresses placed upon it. In training soldiers for combat we must realize that intense specific exercises, rather than the "maintenance" of physical fitness, will best prepare soldiers for battle.

There are also techniques that will assist soldiers in preparing for the fear and anxiety they will meet on the battlefield. In the past, it was believed that simply preparing physically in "battle inoculation" exercises for the demands of combat was enough to give the soldiers a degree of "mental toughness."<18> While this does help in adapting the soldier for combat stresses, recent experiments, using mental relaxation and progressive imagery techniques may give the soldier useful techniques for reducing the stress associated with fear and thereby help him perform better in combat situations.<19>

CHAPTER 3

DEMANDING COMMANDERS

Yet his victories were won rather by sweat than blood, by skillful maneuvering rather than sheer, hard fighting. Solicitous as he was of the comfort of his men, he had no hesitation, when the opportunity was ripe, of taxing their powers to the utmost. The marches which strewn the wayside with the footsore and the weaklings won his battles.<20>

A recent historical study conducted at the U.S. Military Academy found a high correlation between success in combat and the physical conditioning and health of the combat leader in charge of the unit. <21> Successful leaders, firmly in control of their units and recognized as such, were almost always physically fit in the sense of being conditioned for strenuous exertions.<22> The positive self-image of the leader, says this study, was always translated to the soldiers of the command. In units where the commander was fit for performing the physically demanding tasks associated with combat, the soldiers also had a high degree of physical readiness and could usually overcome the minor illnesses and "battle fatigue" associated with less physically ready units.<23>

While the West Point study stresses the importance of fitness in successful combat units, it gives few adequate examples of commanders relating their physical readiness goals to their soldiers through the medium of specific training programs. Have leaders in the past, either knowingly or unknowingly, developed training programs which have prepared soldiers for the physiological and psychological stresses

addressed in Chapter Two of this paper? There are examples from both the far-distant and recent past which show how intense, strenuous, and specific physical training was instrumental in preparing soldiers for the physical and mental demands of combat. Leaders from Suvorov to "Iron Mike" Malone give vivid examples of how proper and specific physical training of the soldier adds immeasurably to the combat effectiveness of the fighting force.

After taking command of the Suzdal Regiment in 1762, Alexander Suvorov began developing new tactical methods based on the prevailing consideration of speed. He was obsessed with the idea of quickness.<24> While many tacticians of the day believed speed to be correlated with disorder and lack of adequate support, Suvorov felt deeply that speed, especially unexpected quickness, would only multiply the effectiveness of any tactical maneuver. He soon realized, however, that he could not expect agility until his men were adequately conditioned through training.

Quick marches became Suvorov's means of instilling speed and confidence in his men. In all types of weather and conditions his men would be marched repeatedly over prohibitive terrain to areas where they would then conduct maneuvers.<25> Where obstacles could not be found the Russian commander had them created, even to the point of constructing obstacle courses within his own camp.<26> While there were practical considerations for this type of training during the 1700's, it is obvious that Suvorov also found it important to instill in

his men a degree of confidence in their abilities to do things no other army in the world could achieve. Suvorov was preparing them for the specifics of the battles he believed they would fight.

Suvorov would not always plan the training exercises of the day, but instead he would often march his soldiers to a maneuver area and suddenly point to an imaginary enemy and order an attack.<27> In using this method he was training his soldiers for the unexpectedness of war. A sudden storming of the mountain-top monastery in Suzdal brought a stern counselling from Catherine, but this impetuosity indicates the lengths he would often go to see his men physically prepared for the demands of combat.<28> There are also unique anecdotes which show Suvorov preparing his men for the mental stresses of war. During training, and even later on the field of battle, Suvorov would explain to the soldiers what they were expected to do and why before they were to do it. "Soldiers like being trained hard," he would tell his subordinates, "if they see how it relates to the things they will do in battle."<29> It is interesting to note that in the Swiss campaigns, Devil's Bridge, Rosstock and Panix when his troops were exhausted by cold, hunger and the extreme stresses of combat in mountainous country, the Suzdal Regiment "threw themselves into battle, stormed impregnable heights projecting over precipices and--conquered."<30>

Eventually the training methods of Suvorov would be used by another great Russian commander, Mikhail Dragomirov. In the

1860's Dragomirov popularized one of Suvorov's favorite maxims: "Train the troops to do only what is necessary in combat."<31> Dragomirov firmly held the conviction that war was a constant struggle involving living forces embraced in two realms, the physical and the moral. His goal, much like Suvorov's, was training his soldiers to be versatile warriors and not marching marionettes. The training programs he developed--bayonet drills, speed marching, obstacle courses--trained his men for what he felt would be the way they would be expected to react in combat.

Though there is no indication of his knowing the results of Suvorov's training methods or the physical demands placed on the men who served with Dragomirov, Stonewall Jackson seems to be a disciple of both of these Russian leaders. Jackson, through his speed of maneuver, created fear in the hearts of his enemy. McClellan reportedly once wrote to Halleck that he did not like Jackson's movements because he would suddenly appear where least expected.<32>

When Jackson first took command of what was later to be known as the "Stonewall Brigade," he was amazed at their lack of training, physical abilities and hardiness. Both officers and enlisted had to begin their training as recruits, and intense speed marches and movement through the wilderness made up their drill.<33> While this seven hours per day of intense physical exertion taxed his men's enthusiasm as well as their energies, Jackson knew that conquering the Blue Ridges of

Virginia in training would prepare his Brigade for any test of combat. He was correct.

Although Jackson no longer commanded the brigade in the autumn and early winter of 1861, General Loring's division, of which the brigade was now a part, was involved in some of the most demanding operations at the start of the Civil War. These forces marched through the Shenandoah under appalling weather conditions at speeds which continually placed the Federal forces off guard. Toward the end of the campaign, Loring's soldiers were exhausted and "so discontented as to be untrustworthy."<34> All the units, that is, except the Stonewall Brigade. At Romney, while Loring's division succumbed to fatigue, the Brigade trained by Jackson was still staunch.<35> The discipline and hardiness instilled by tough drill and physical training was visible, and their constitution was hardened at seeing their training pay off in battle.

Moving forward nearly one hundred years we find two American commanders in World War II who were advocates of Jackson's specific training philosophy. Lucian Truscott and Terry Allen, division commanders in the European theater, both had read Henderson's work on Jackson and both employed Jackson's philosophy in training their soldiers--Truscott even carried a copy of Henderson's work during the campaign in southern France.<36>

Before describing the training programs of Allen and Truscott for their specified type of fighting, a summary of their physical background is an interesting sidelight. Both

were polo players, and while Truscott gained fame in the sport as part of the Army team, Allen was actually the better player. Truscott had a four-goal handicap; Allen represented the United States in the Brussel's Olympics in 1920 (two years after receiving three serious battle wounds as a Captain in World War I).<37> Both men had a passion for physical activity, and each believed soldiers who were physically prepared for the mission were the best prepared for combat.

The "Truscott Trot" was legendary during World War II, and stemmed from Truscott's belief that the ordinary infantryman was no different from the elite commando forces who were made to endure strenuous physical training.<38> Truscott taught his soldiers to ignore the Army regulation speed of 2 1/2 miles per hour and instead march five miles the first hour, four miles in each of the next two hours, and 3 1/2 miles per hour for the remainder of a march lasting 30 miles. He also trained the soldiers in other mountain-specific techniques: mountain walking and running techniques, night and day operations in mountains, and numerous rope climbing skills.<39> This pre-invasion mountain training paid off in Italy where in five days, after fierce fighting in Agrigento, the 3d Infantry Division marched 100 miles to Palermo. This campaign is a classic for its speed and success.

During Operation DRAGOON, Truscott was trusted with a mission which was remarkably conceived and flawlessly executed. While French forces were given the mission of securing the port cities of Marseille and Toulon, Patch gave Truscott's VI Corps

the mission of leading troops in a rapid advance inland through the mountains of southern France. Truscott had been chosen for this eventual pursuit operation because he had a cavalryman's passion for mobility and his reputation for training his soldiers in the Truscott trot "made him the perfect choice for a pursuit of the beaten German Nineteenth Army."<40> In Sicily and France the men under Truscott's command collected seven Congressional Medals of Honor, and they were driven forward so hard and so fast that Fifth Army maps were constantly showing, according to Mark Clark, an "embarrassing bulge" wherever Truscott was fighting.<41>

Allen, on the other hand, trained his men as specialists in night fighting technique by concentrating on the demanding physical training which this type of fighting entailed. The Field Manuals of the day stressed short and direct approaches over easily identifiable terrain to limited objectives in the darkness. Allen, however, trained his men with long night speed marches, and employed them by making long and circuitous marches over rough terrain in order to close with the enemy before first light. When asked why, Allen simply stated that by taking the longer route around the enemy he could maximally disrupt the enemy while keeping his own costs down.<42> When he was Commander of the 1st Infantry in North Africa, and later when commanding the 104th Infantry in Europe, Corps and Army Commanders relied on Allen's trained night fighters to lead the way in the attack.

While all of these examples give an idea of how leaders trained their soldiers for specific tasks in combat, there are a few works which also give the soldier's viewpoint of their intense physical training. In his biography, Guy Sajer gives explicit examples of training for the demands of the Russian front in World War II. Training as an infantryman for the rugged weather, terrain, and anti-tank warfare of the east, Sajer and his compatriots received sadistic treatment which their leaders felt would best prepare them physically and mentally for combat. Spending days in swamps, carrying their fellow soldiers for miles in anticipation of emergency drills, and undergoing sleep deprivation while constantly being alerted for maneuvers at strange hours were all techniques used to harden the men.<43> While the training was being conducted, Sajer and his friends could not understand its purpose. When finished, however, they realized that if they could withstand the training, they could hold up to any sort of combat. They even dreamed of becoming officers like the one who had treated them so harshly. <44>

Some American soldiers training for the war in Vietnam had similar experiences. One soldier's description of his company commander and his unit's physical training is indicative of a leader who cares about his soldiers enough to train them for the eventualities of combat:

He used to hump us 'til our bones ached; we would want to stop and eat, stop and rest, and he'd just hump us. But I give him thanks, man, because if it weren't for him driving us I'd be dead right now. Half the time I wanted to kill the bastard, and the rest of the time we loved him cause

he was that good.<45>

As a final aspect of historical example, it is interesting to compare the outcome of two units which might have been in similar situations, but because of physical preparedness the outcome was very different. The units involved are the 42 Commando in the Falklands and the 32d Infantry at Buna.

The 32d Division, a National Guard unit, arrived in Australia in May 1942 and for the next few months found training conditions unfavorable. The winter was cold and rainy and there was no opportunity to train for jungle warfare.<46> Based in Louisiana at the beginning of the year, the division moved five times before reaching their destination, and each move took approximately a month. They did not have the time, terrain, or leadership which would help them train in the specifics of jungle warfare techniques, and it was obvious when they reached the Kokoda Trail. When elements of the division tackled the Kokoda, it took them eight days of hard climbing. Since they had not trained for these challenges they were totally exhausted and not prepared for combat upon descending from the heights. It was a circumstance the planners in Australia had not considered, and the physical and mental exhaustion of this unit would hinder the operation from that moment on.<47>

The 42 Commando had a different experience going to the Falklands. They were designated as one of the forces going to the islands because they had just finished a training rotation in Norway, where the weather and bleak mountain terrain was

similar to what would be found in the Falklands. During the five-week journey from England to their first engagement on South Georgia, the "four-two" began intense physical training, instituted from the outset on their ship the "Canberra."<48> Each day bouts of intense physical training were incorporated with other training, and the physical training instructors (a soldier trained in the specifics of exercise and knowledgeable of the mission who is a valuable part of each British unit) would lead the men in preparing for the demands of battle. These marines were the fittest in the British Army, and their commanders were determined that they remained so on the long journey. One commander gave the credit for the unit's eventual success to the specialist instructors who insured physical training was conducted safely and progressively. Without the expertise of these soldiers, trained in the specifics of exercise, "much effort would have been counter-productive."<49> One of the small tasks these specialists performed was demanding that rucksacks be adjusted to individual soldier requirements; once fitted, each soldier was forced to wear his ruck for long periods of time on the ship. The commanders believed this small act made a considerable difference during their interminable moves through the mountains.<50> In the words of one commander, 42 Commando trained and later performed like Olympic athletes who were at the peak of condition.<51>

This historical analysis has shown how soldiers, trained by their leaders for the specific physical activity expected of them, will perform exceedingly well in battle. Demanding

physical training contributes to mental preparation by allowing the soldiers to experience some things he may have to do in battle. Meeting the demands of strenuous activities in training will lower mental stress anxiety levels when the soldier experiences the same demands in combat. There will still be stress anxiety when facing the unknowns of combat, but the reaction will not be as significant if the soldier is physically prepared.

These historical successes were the direct result of units being trained in what their commanders saw as the mission and the physical and mental demands of battlefield objectives. Today, with assigned contingencies for the various forces in our army, doctrine must give methods and techniques that will best prepare the force for the myriad battlefields upon which we expect to fight. In the next two chapters, U.S. and Soviet physical readiness doctrine will be examined based on their relative ability for providing guidance in training the force for the physical and mental stresses of combat.

CHAPTER 4

SOVIET READINESS

We look at the process of developing the physical qualities of the servicemen from the perspective of increasing their combat capabilities.<52>

When the Germans fought the Russians in World War II, they realized they were up against a hardy race of men who had a "close kinship with nature."<53> Indeed, the Germans found that, because of his simple nature and physical preparedness, the Russian was inured to cold and heat, all types of terrain hardship, sickness and vermin.<54> Because of these traits, the Russian soldier was considered a superior adversary prepared for the most demanding of combat circumstances. Is the Soviet soldier still this tough?

Soviet doctrine calls for intense and continuous combat operations by a large, almost totally conscript, force. In order to meet the physical demands required in such an army, the Soviets have adopted a two-stage training program--GTO (Ready for Labor and Defense) and VSK (Military Sports Program)--which prepares each individual physically for his duties in the armed forces.

The first stage is a civilian program mandating the physical education of all citizens between the ages of 10 and 60. There are five separate age groups in this program, called the Gotov k trudu i oborone or GTO; naturally, the most intensive physical education and training is centered on

draft-age youth. This program stresses preparation for the life of a soldier and requires considerable knowledge of civil defense measures.<55> GTO tests and training are conducted at secondary and higher schools much like the physical training portion of our Junior ROTC program.

In 1949, the U.S. Office of Intelligence Research noted a postwar letdown of these organizations devoted to hardening the minds and muscles of Soviet youth.<56> But by the late 1950's and early 1960's, the organizations reappeared as sports "clubs," which while preparing teen-age boys and girls for service also performed the function of a social center.<57> Not only do these clubs test Soviet youth on various military related skills, but they also have events such as ski and cross-country races, orienteering events, and 30- and 40-kilometer "volksmarches."

The skill tests in the GTO are complex, difficult, and center on military-related skills. While the standards vary according to sex and age, the events remain the same for participants aged 10 to 60: running 1000 meters on a track AND over broken terrain; being familiar with the characteristics of and throwing a 700 gram grenade; carrying a 32 kg weight on the shoulders for time a distance of 100 meters; swimming 100 meters while clothed and carrying a rifle; marching 10 kilometers in a gas mask and having knowledge of anti-gas defenses; having general knowledge of terrain (map-reading), camouflage, hand-to-hand fighting and first aid; demonstrating a knowledge of personal and unit hygiene.<58> The goal of this

program is to prepare Soviet youth for the training they will receive upon entering the military services. Individuals within each age group who meet the standards of the program wear a badge stating their qualifications in the GTO.

Although the GTO is a civilian program it is controlled by the Ministry of Defense (MOD). The Department of Preliminary Military Training at the MOD controls the GTO program and insures the program meets the needs of the military. Recently, Pravda reported that some PT problems discovered in the military had their roots in the organization of the GTO. Control was immediately restructured so that review of the program now passes through each military district headquarters and regional military commissariat down to the PT instructors at the local schools.<59>

Once inducted into the armed forces, the recruit enters the second phase of the program known as the Voyenno-sportivnyy kompleks or VSK.<60> First introduced in 1965, the VSK was designed to prepare servicemen physically and mentally for the rigors of combat and the heavy work encountered in the service. Organizational direction of the VSK comes from the Chairman of the Sports Committee of the Ministry of Defense. Guidance passes through the army in a sports "chain of command," consisting of chairmen of sports committees and chiefs of PT from the military district down to the unit (battalion or regiment) level. At the unit level the commanding officer is responsible for his unit's fitness program, but he is supported by his Sports Committee, an 11- to 13-man committee of subunit

commanders, political officers, and soldiers who are good athletes.<61>

The VSK is quite dissimilar from the training program used by U.S. Armed Forces. Primarily, the Soviets emphasize specialized exercises which are geared toward combat specialties. Each year, every soldier is tested and must know the reasons for at least two routines of free exercises from the Physical Training Manual of the Armed Forces.<62> All must be proficient in the art of unarmed combat (Samooborona bez oruzhiya--SAMBO), and all must participate in at least five official Olympic-event sports competitions and combined military contests.<63> Every serviceman must also perform the pentathlon (pullups, 100-meter dash, 3-km cross-country run, 100 meter swim and 10-km ski race) as a physical fitness test twice per year. Finally, the soldier is also tested on his particular service biathlon twice per year. These biathlons are designed according to the specific duty requirements of the different combat services.<65>

If we are to believe the monthly physical training articles in Soviet Military Review, these specified biathlons are the toughest aspects of the Soviet PT program. As an example, one part of the paratroop biathlon consists of an obstacle course. A paratrooper stands in a 10-meter tower in full combat dress with submachine gun and parachute mock-up. He steps out of the tower door on the command to start the course and slides down the cable line. During the slide, he opens his grenade pouch and throws three grenades at targets

along the ground. Before executing a parachute landing fall, he fires with blanks to clear the landing ground. Upon "landing," the soldier extracts himself, crawls through several rows of barbed-wire, runs through an obstacle course of ditches, pits, charred walls, and a water obstacle. Before reaching the finish line, the soldier negotiates a rope-bridge over a burning oil fire while shooting his weapon at targets on the other side. The soldier must do all of this within a specified time.<66>

The armored crewman biathlon is also demanding and keyed to specific tasks. In the tank driver course, the soldiers jump into a six-foot ditch, lift a 40-kg cargo from a breastwork, carry it 200-yards and back, then sprint 100-yards to a labyrinth. There they pick up ammo boxes and carry them over a demolished bridge to a stationary tank. Prior to mounting the tank they fight another soldier using hand-to-hand skills, then throw two grenades at a target 25-meters away. Finally, they mount the tank, place the ammo in the machine gun, and after charging the weapon their time for the event stops. Their performance on this obstacle course is just one input for their award of a fitness badge.<67>

These exercises are not limited to combat soldiers. Exercises using chairs, weights and expanders in an office environment is prescribed for those soldiers who are clerks and administrative officials.<68> In describing the demands placed on soldiers holding administrative jobs the Soviets point out that these "rear-echelon" soldiers must also be prepared for

participation in a fight. The Chief of Sport emphasizes that while exercise will relieve the boredom associated with these functions, the main purpose of all physical training is performance in combat.<69>

There is another difference between the VSK and the U.S. method of physical training: more pressure is placed on the Soviet soldier to participate in off-duty athletic events. Mass athletic events are carried out as part of the overall PT program during free time, days off, and even holidays.<70> Training holidays are usually turned into sports festivals since all soldiers must compete in five Olympic-style events during the year. In fulfilling VSK norms, many talented soldiers compete at the garrison and military district competitions, and the best take part in the USSR Armed Forces meets (much like our all-Army competition). Winners of these competitions are promoted to NCO and officer ranks, and it is believed they receive awards of money and material goods.<71>

Finally, the Soviets employ an incentive system of badges and grades within their PT program. The "Athlete-Serviceman" badge is awarded in two grades to those who excel in the activities of the VSK program. A gold badge is given to those who meet the first grade requirement for five consecutive years, and this badge is worn as a decoration on the military work and dress uniform. The award merits special privileges: recognition, service on the unit sports committee, and training as a coach, referee or advisor.<72>

The objective of the Soviet physical training program is combat preparation and readiness. They have looked at what their soldiers will be expected to do on the battlefield, and they have developed programs which not only train the body's energy systems, but also prepare the soldier mentally for the eventualities of combat. In a 1985 interview, the Deputy Chairmen of the Soviet Sport Committee, Colonel Marushchak, articulated the reason for the demanding physical training conducted in the Soviet Army:

Physical training is designed not only to develop strength, tenacity, agility, and speed, but also to help the servicemen adapt more readily to various conditions and enhance the men's expertise and capacity for work in combat assignments.<73>

Colonel Marushchak continues:

If a soldier runs for the first time into a burning building where hostilities are going on he will become confused. To prevent this, we create conditions approximate to real combat ones. Fighting men gain confidence in situations like these. Physical training must figure prominently in the overall combat training system...highly tenacious and fit soldiers withstand great physical and psychological loads for a long time.

The purpose of the Soviet method is obvious and two-fold:

1. Fitness is gained by performing specific combat tasks after the body has received general conditioning. The onset of fatigue is delayed because the soldiers are generally conditioned for all activities, but specifically conditioned for those things which they will be expected to do in combat.

2. By performing specific combat tasks, the motor-learning of the skill is stimulated AND confusion and combat stress anxiety is reduced or eliminated during battle.

The Soviet soldier, and his Warsaw Pact ally, is trained in tough, stressful, physically-demanding tasks. The Soviet emphasis prepares the soldier, from birth, for the eventualities he will face on the battlefield. The emphasis is not exclusively on the front-line soldier; all of their troops receive specialized, specific training which helps them learn the skills they are expected to perform in demanding, fatiguing situations. Is the physical training program of the U.S. Army as combat oriented?

CHAPTER 5

U.S. FITNESS

No longer can we emphasize physical readiness during wartime and ignore it during peacetime. In spite of increased mechanization and modern weapons, physical readiness is vital to each individual soldier and to every unit within the Army. <74>

The doctrine of the Soviet army calls for intense and continuous combat operations by a conscript force; U.S. Airland Battle doctrine demands the army be prepared to meet worldwide strategic challenges from various levels of threat forces. The state of physical and mental readiness demanded by each doctrine is very similar. The programs aimed at achieving the desired level of physical and mental readiness are very different.

The United States assigns contingency missions to corps and division-sized forces throughout the world to insure our forces are prepared to meet threats presented within the range of conflict from terrorist to high-intensity combat. At all levels, doctrine demands that "rigorous, realistic training must go on continuously to assure [all units are prepared] to fight short-notice wars, campaigns and battles." <75> Is our physical training program designed to meet the challenges presented by our capstone doctrinal manual? The answer lies in the analysis of three factors in the development of our current physical training program: civilian preparation, the history of

U.S. Army fitness efforts, and the quality of current activities.

In 1945, Dr Gwendolyn Drew of the University of Pittsburgh completed a comprehensive study which showed dramatic shortcomings in our nation's ability to prepare pre-draft age youth for the inevitability of war.<76> The study was commissioned by the federal government as a result of a finding which showed 45% of all selective service registrants at the outbreak of World War II did not possess the desired physical or mental health qualities necessary for armed service. Much to the chagrin of Congress, Drew's study revealed that after every major war in our nation's history, dating to the Revolution, bills had been presented in the House and Senate seeking appropriations for military and physical training programs for non-aged (i.e., pre-draft) youth. In every instance, these post-war bills were initiated because of inadequate military fitness levels shown by the men conscripted at the start of the recently completed war. As an example, between 1918 and 1941 only one of six bills promoting military training in schools introduced into Congress was passed after debate; of twenty-four bills introduced on behalf of physical education in schools for the military, none passed.<77>

Since the early 1960's several congressional actions have addressed the physical conditioning of our nation's youth. These bills, perhaps understandably, are concerned with the health of our youth rather than preparing them for service in the armed forces. Nevertheless, our governing body's concern

with the quality of the military conscript is radically different from that of the Soviet Union.

The post-World War II army, knowing the physical conditioning of the soldier was their responsibility alone, made a concerted effort to upgrade peacetime physical fitness programs. Department of the Army organized a Physical Training School at Fort Bragg and began assigning graduates of the school to permanent duty positions down through regimental (now brigade) level.<78> The first project undertaken by this school was a rewrite of FM 21-20, the basic field manual for physical training.

The differences between the 1941 and 1946 version of FM 21-20 are the direct result of the lessons learned in World War II. In 1941 the primary purpose of physical training was "the production of a state of health and general physical fitness for the soldier."<79> This manual is pocket-sized and only 209 pages long; most of the book shows full-page pictures of various callisthenics (exercises choreographed for the army by LTC Koehler at West Point in 1919). One chapter, aimed at preparing soldiers for combat-like situations, describes swimming as a combat skill. Emphasis is placed on teaching the soldier to swim with full pack and equipment, which "will give the soldier the confidence which comes from actual experience in the water."<80> In fact, swimming is the last thing even a well-conditioned swimmer would attempt when weighted with equipment. Drownproofing techniques, such as the bob-and-travel and clothing inflation, would have prevented

most of the drownings in the various amphibious assaults in the war. Indeed, one estimation claims more people drowned attempting to swim combat loaded to the Omaha Beaches (in less than 7 feet of water) than died as a result of enemy bullets.<81>

The 1946 manual takes a different tack on physical training. There is no mention of "general health" or "fitness" as the end result of training; rather, fitness is a means to the end of giving the soldier the "strength and stamina to fight."<82> The entire manual places emphasis on the grueling physical demands presented by warfare. The manual is filled with examples of the strenuous activities which the soldier will be expected to perform in battle. These examples are followed by the components of fitness which the soldier will need to meet the demands of combat.<83> The various chapters of the manual outline techniques for developing combat readiness, and the different exercises recommended resemble specific actions used in combat. Guerrilla drills present various means of carrying wounded soldiers in combat as part of the exercise program. The "strength course" alternates bouts of combatives, log exercises, and obstacle courses which, according to the manual, should represent the various types of obstacles found on the battlefield. The swimming and water safety portion of the manual incorporates most of the valuable lessons learned from the war's amphibious operations, including techniques such as the previously mentioned bob-and-travel.<84> Finally, the manual recommends the integration of physical

training into all training, for the "rugged, tough, well-conditioned soldier has a feeling of...confidence, and is much less susceptible to the factors which undermine morale."<85>

Regular troops introduced into the Korean War seemed better physically prepared from the outset than soldiers in previous conflicts.<86> While this may be due to better training guidance within the manuals, it may also have been influenced by the training imparted from World War II-experienced leaders.<87> Nevertheless, in 1953, the fitness school at Fort Bragg was closed and most improvements in unit physical fitness programs were lost because of economic constraints introduced by President Eisenhower.<88> Replacing the school were physical fitness "conferences" held between military trainers and civilian physiology experts. Unfortunately, none of these actions placed trained physical training personnel in the field at unit level.<89> The impact of these conferences is seen in the 1957 version of FM 21-20; clearly one-fourth of the 200 pages in this throwback to 1941 are dedicated to body structure, body functioning, and physical fitness testing. Gone is the encompassing emphasis of physical and mental preparation for combat. Is the same true 30 years later?

In 1987, army guidance for physical readiness is found in three basic documents: Army Regulation 350-15 (The Army Physical Fitness Program), Army Regulation 600-9 (The Army Weight Control Program), and the 1985 version of FM 21-20

(Physical Fitness Training). AR 350-15 demands that unit commanders "conduct physical fitness programs consistent with [the regulation], FM 21-20 and unit missions."<90> But do the manuals, regulations, and training programs of an army where the majority of trainers (battalion level and below) and soldiers no longer have war-time experience give proper guidance on physical training for the specifics of combat missions?

In the 1985 version of FM 21-20, the army emphasizes seven basic exercise principles.<91> These principles--regularity, progression, overload, balance, variety, specificity and recovery--meet with the current research on physical fitness and would, indeed, be proper guidelines for the design of a combat-related physical training program. However, the description of these principles is immediately undermined by the stated objective of the physical training program: "Improve the...components of fitness."<92> How are the results of the physical training program tested?

FM 21-20 states physical evaluation must be in accordance with the guidelines established in AR 350-15.<93> While the regulation begins by stating that the PT test "will not form the foundation for unit or individual fitness programs," it goes on to say that the PT test insures a "base level of physical fitness essential for every soldier in the Army despite MOS or duty assignment."<94> The message to unit commanders is clear: the unit's physical fitness will be directly measured by the results of the PT test, so the

principles of exercise should gear toward meeting and improving those standards. While the physical readiness posture of a unit should be measured by every mission the unit performs in training, the results of the three-event PT test and the meeting of height/weight standards are more precisely and easily measured and are, therefore, in practice, the indicator of the unit's fitness program. Since this three-event testing program drives the way the army prepares itself physically, the philosophy of training is affected by the methods we use.

The field of exercise physiology is basically divided into two areas. The first area, high intensity training, usually concerns itself with the preparation of athletes who are dedicated to a given sport. Specific training methods are designed for competitive athletes to best prepare them for their given sport or activity. The body's energy components are considered, as are the effects and demands on the cardiovascular, hormonal, and neuromuscular/motor learning centers within the human body. While intensity, frequency and duration are considerations in training athletes, the major concern of trainers and coaches is that "programs must be constructed so as to develop the specific physiological capacities required to perform a given activity."<95>

The other area, health and fitness (sometimes called "corporate fitness"), is geared toward adults who are interested in enhancing their quality of life, improving productivity, and fully enjoying their leisure time.<96> While admirable, these are not adequate goals for a force preparing

to fight a war. Unfortunately, the description of "FITT" (Frequency, Intensity, Time and Type of exercise), the basis for the majority of the programs outlined in our current Physical Fitness Training Manual which help us meet the testing demands, correlates directly with the adult health and fitness programs outlined in physical education and athletics textbooks.<97> Should we be training our soldiers to be "healthy" individuals, or should we be training our soldiers to be "athletes," preparing for a very important competition?

Lastly, our army again has a soldier fitness center, with greater research capabilities and better qualified instructors, compatible in concept to the one the army established in the late 1940's. Unfortunately, the Master Fitness Trainer Course, designed to qualify soldiers who will then instruct their fellow soldiers in the intricacies of fitness, is geared almost exclusively to the "corporate fitness" method of physical training.<98> While there is a period of instruction (three hours) geared toward "unit program development" during the 169 hour course at Fort Harrison, the practical exercise following the period usually addresses unit weaknesses on PT testing and overweight or "special population" soldiers rather than the development of combat-specific training programs.

Physical training in the Soviet Army directs individual soldiers and units toward training for combat-specific tasks. The intensely aerobic, test-oriented "corporate fitness" program of the U.S. Army prepares our soldiers and units primarily for healthy lifestyles. Unfortunately, soldier

health will be the priority issue only if the two sides never meet on the battlefield.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

There are those who pride themselves on the number of push-ups, sit-ups and chin-ups they can perform, but no one has stressed how they can carry a wounded Marine the length of the parade ground without killing him. That is what we should know and be able to do. If some want to run in their silk shorts and Addidas that's fine with me; but the Corps is going to return to Physical Readiness Training vs. physical fitness.<99>

This study has answered several questions and raised several others. Will proper and specific physical training prepare the soldier for meeting the physical and mental stresses of combat? Obviously, yes. Have physiologists, physicians and researchers delineated the energy systems, muscular demands and mental preparations necessary for the battlefield AND are there appropriate techniques and methods for meeting these demands? Again, the answer is yes. Have the Soviets recognized the demands that will be placed on their soldiers in the event of war and have they developed programs which prepare their soldiers for these demands. If we are to believe the open-source reports, such as the monthly physical training article in Soviet Military Review, the answer is a resounding yes. Is the aerobic-intensive, PT-test oriented, "corporate fitness" training program prescribed by our army best suited to prepare soldiers for the battlefield? Unfortunately, no. Can it be fixed?

Our physical readiness program can be fixed because the U.S. Army has key organizational structures already in service:

staff physiologists at the Army Fitness Center, a well-staffed research office at the U.S. Military Academy, a Master Fitness Trainer Course at Ft. Harrison, a newly-developed (but as yet, not "combat- training-oriented") Army Health Promotion Program, and, most importantly, contingency missions assigned to divisions and corps. This last piece of the structure needs to be discussed first.

Every unit in our "Total Force" army knows exactly what their priority contingency mission is in case of a war-time call-up. Some may be ear-marked for the sweltering climate of the Phillipines or Central America; others may be pointed toward a demanding desert environment; many are directed at the Central European battlefield. Each of these contingencies has specific physical and psychological demands which should be incorporated into the physical training program of the unit. However, a review of five divisional-level "Yearly Training Guidance" memoranda shows no emphasis on contingency-related physical training. While ARTEP-type tasks to be trained are outlined in detail within these training guidance memoranda, four of the five divisions put their emphasis on insuring soldiers met the standards for the bi-annual PT test when outlining their physical training goals; one division, seeking a higher level of fitness, demanded each unit to conduct a quarterly PT test.<100> Emphasis must be shifted from the PT test before physical training can become unit specific.

The responsibilities of DCSOPS, DCSPERS and the Army Fitness Center now come into the spotlight. Staff

physiologists at Fort Harrison must investigate and develop "packets" for each contingency mission. These "packets " would describe special environmental characteristics of the mission area (e.g., how best to prepare the soldier for the physical requirements of the desert, mountain warfare, cold weather climates, jungles, etc) and how the assigned unit could best train (and test?) to overcome the physical aspects of their particular battlefield. Additionally, these staff physiologists, working in conjunction with the research and testing offices of the Department of Physical Education at the U.S. Military Academy, could develop testing procedures or sample tests for individual soldier tasks and unit tasks, which could then be woven into a form of qualification test.<101> At the division level, this qualification on specific contingency physical skills might make up only one or two parts of a three-part requirement for the award of a qualification badge; scoring a certain number of points on the yearly PT test might be the other qualification. For non-divisional (TDA, school) situations, the bi-annual PT test may remain the only form of testing.

To succeed, the program as I have described it demands a decentralized approach by the units. How will division commanders know if their soldiers are preparing properly for the physical demands of their contingencies, and how can they develop specific "tests" for their units and soldiers? One technique would be to increase the Master Fitness Trainer (MFT) Course to five weeks instead of four. The additional week

would be used for "unit program development" based on contingencies and specific soldier task described through the unit mission. In the last week of the MFTC, all soldiers from like units with similar missions (e.g., 3d Infantry, 1st Armored, 2 ACR) would explore the physical training needs for their specific ARTEP requirements: river crossing (drownproofing, clothing inflation techniques), dietary changes necessitated by cold climates (need for increased caloric intake, greater sugar requirement), muscle and energy system needs for specific missions (humping 155 artillery rounds, continuous sprinting from an M2 to fighting positions), and perhaps imagery and relaxation techniques before a fight (more on this later). The possibilities are limitless; and, students at MFTC can contribute to the army's knowledge in this environment by letting soldiers from other divisions know the "tricks" their unit has developed for given problems.

The DCSPER Army Health Program Initiative, placed in Army Regulation format in October, 1987, sets the stage for some other reforms. With its substance abuse, anti-smoking, stress management and weight control taxonomy, this program "bureaucratizes" the corporate fitness methods discussed earlier in this paper; however, the program does provide a process for getting all physiological and psychological "players" into a combined committee. The master fitness trainers already play a major role in the Health Promotion Program. By further incorporating commanders, G3 planners and trainers, and other key leaders involved in physical training

on the program's committee, the combat readiness goals, as well as the fitness goals, of the organization will be better planned and executed.

One final recommendation must be made. Preparation for the emotional stresses of combat must fall, at least partially, within the realm of physical training for combat. If physical preparation for combat is a commander's responsibility, so, too, is emotional preparation. Stress inoculation and stress tolerance correlates positively with demanding physical training; there are specific methods which may be incorporated into the physical training manuals, the master fitness course, and the unit health programs that will enable the soldier to perform better in peacetime and live longer in war. Mental relaxation and progressive imagery, used successfully by high-level athletes in subduing the physiological reaction to "pre-competition jitters," has been incorporated in limited military situations.<102> It is time for the army to use these techniques in training and in preparation for combat.

The Army must get tough. While we should still look askance at the overweight NCO or the officer who can't climb a flight of stairs without becoming winded, our emphasis should be readjusted to evaluate the soldier's ability to perform his assigned mission on the next battlefield. If he fatigues carrying the light pack a few miles in training, he will certainly become a casualty when marching toward the guns weighted with his combat load. If she hasn't been exposed to

strenuous muscular fatigue in physical training, she certainly won't be able to emplace signal cable as the TOC displaces numerous times. If the NCO can't swim and he's assigned to a unit where river crossings are likely, be prepared for a leadership casualty. If the tank gunner has never been close to an artillery shell exploding and doesn't know how to deal with it, don't count on peak performance from a multi-million dollar gun system. If we, as an army, don't subject ourselves to more physical and emotional stress than two minutes worth of pushups and situps and a 20 minute jog around the post, our best technology and doctrine may be wasted.

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85. Ibid., p. 3.

86. Vilcoq, op. cit., p. 6.

87. Books by World War II leaders such as Matthew Ridgeway and Chesty Puller show the emphasis placed on the physical preparation of soldiers for the Korean War.

88. Vilcoq, op. cit., p. 5.

89. Ibid.

3. Army Regulation 350-15, The Army Physical Fitness Program, Washington: Department of the Army, 1985), p. 3. Emphasis on "unit missions" is my own.
1. FM 21-20, Physical Fitness Training, 1985 version, p. 1-2.
2. Ibid.
3. Ibid., p. 1-7.
4. AR 350-15, op. cit., p. 5.
5. Fox and Mathews, op. cit., p. 324.
6. Ibid., p. 396.
7. The first five chapters of FM 21-20 (1985) are nearly a reprint of the "Exercising for Health and Fitness" chapter of Fox and Mathews excellent and oft-quoted textbook used by most graduate schools in teaching exercise physiology.
8. Program of Instruction, Master Fitness Trainers Course, Ft. Ben Harrison, Indiana, 1987, p. 6.
9. Associated Press Dispatch, "New Commandant Talks to His Marines," Kansas City Star, 5 October 1987, p. 3, columns 1-3. General Alfred Gray, since becoming the 29th Commandant of the Marine Corps, has repeatedly stressed the need to return to combat specific tasks in physical readiness training.
10. It would be unfair to name the divisions investigated. However, independent research shows any interested party the total disregard for directed physical or psychological training for contingency missions in most, if not all, of our active-duty divisions.
11. Telephone conversation with Colonel Robert Tetu, Director, US Army Fitness Center, Fort Harrison, 30 September 1987. Colonel Tetu stated the recent emphasis has been on developing strength training and road march programs for our light divisions (the 7th and 10th Infantry) and critical physical tasks for individual soldiers in some MOS's. While this is admirable, and probably time-sensitive due to the politicalization of light division missions, these programs must be expanded for all of the army.
12. As described in an earlier footnote, Mr. Dennis Forbes of the US Military Academy used various mental relaxation techniques in preparing tankers for the successful run at the Canadian Cup Trophy in Europe. Combining relaxation skills with "battle inoculation" training would decrease or eliminate many of the fears caused by sensory input (noise, light, smells, etc) found on the battlefield.

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