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# THE CrossFit JOURNAL

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## CrossFit and FM 21-20

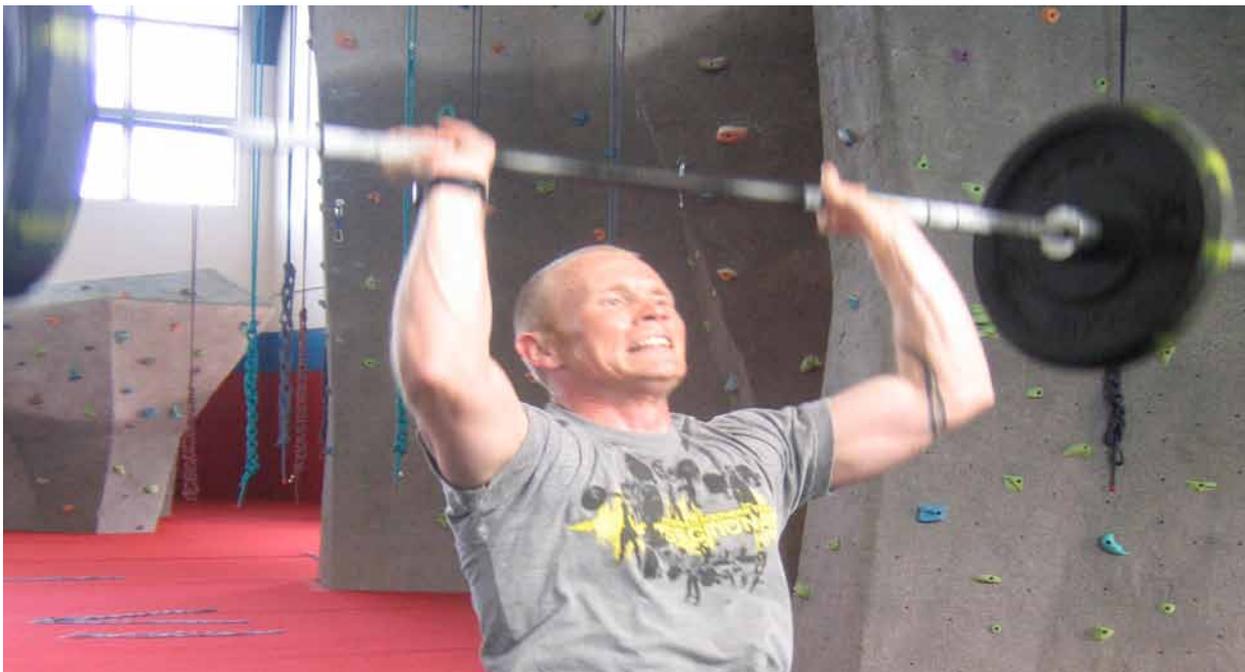
Capt. Matt McKee offers an in-depth, comprehensive evaluation of the U.S. Army physical-fitness training manual in hopes of finding out how CrossFit can help the Army produce fitter soldiers.

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By **Capt. Matt McKee**

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Courtesy of Capt. Matt McKee

Throughout my time in the Army, I have seen the Army's physical-fitness training program from several perspectives. I have seen it as a follower, as a leader and as someone responsible for its implementation. I can only describe my experience with the Army's program as frustrating. I have found that the vast majority of self-motivated leaders and soldiers have to substantially supplement their unit's physical training with additional workouts to stay at a high level of complete fitness. Too many soldiers and leaders come out of their daily morning physical training complaining of "wasted time."

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An Army special-forces team exposed me to CrossFit during my first deployment to Iraq in 2005. However, it was not until I was a commander of a cavalry troop (about 135 men) and responsible for the unit physical-fitness program that I had the understanding of CrossFit and the authority to make substantial changes. I drew heavily on CrossFit for my unit's physical-training program, and while we had successes and difficulties, I am convinced from our experience that the Army can use CrossFit to evolve its physical fitness-training program.

Before I began my research for this article, I blamed the field manual for Army physical-fitness training, FM 21-20, for the problems with the program. However, while I believe FM 21-20 (which has not been updated since 1992) is responsible for many of the problems, there is a broader range of culpability for the weaknesses in our program. CrossFit and FM 21-20 are more similar than I thought in theoretical foundation but are remarkably different in practice due to problems with the manual as well as internal issues we in the Army need to resolve. Ultimately, the training our non-commissioned officers (NCOs) receive is the only way to affect change in the Army. Until the Army breaks with non-functional exercises, changes the Army Physical Fitness Test (APFT) and provides better training to our NCO corps, we can't evolve.

I have tried to cut my own inroads for CrossFit into the Army. My first step was to change my own unit's program and convince my own soldiers about the efficacy of CrossFit. My second step was the development of a plan to purchase equipment, build obstacle courses, construct combative pits, expand room to run/ruck-march, and change policy at Fort Hood to make fitness more functional. I developed the plan at the request of the III Corps and Fort Hood commander and command sergeant major. Unfortunately, the plan was not implemented. What follows is the third step I have taken to encourage, inspire and request change to how we approach fitness in the Army. CrossFit works and speaks for itself. However, I hope this article is able to make an impact and help evolve the Army's physical-fitness training program.

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### Introduction

CrossFit's popularity and notoriety are born out of its unique ability to make people collapse in a heap of exhaustion and sweat in a matter of minutes. By now, few in the military have not heard of CrossFit or had a personal experience with it.

CrossFit appeals to men and women in the military for various reasons. Former athletes enjoy CrossFit because it restores competitiveness into their everyday lives. Challenge-seekers are never disappointed with the grueling yet relatively short workouts. Some people appreciate CrossFit's ability to provide structure and direction to their workout routine, some enjoy the team-like atmosphere of group workouts, and some like the constantly varied exercises that are a welcome relief to practitioners of monotonous routines.

CrossFit is an incredibly ambitious and holistic program. It is open-source and evolves as its community of athletes and affiliates test nutrition and exercise research to the ends of creating the optimal program. The ambition of the CrossFit community creates a segment of the fitness community that flirts with the adjective "cultish." However, CrossFit is no fad. Over 1,500 CrossFit affiliate gyms now thrive across the country, and a groundswell is lifting the conventional military (the special-operations community paved the inroads). So what does the Army need to learn from CrossFit?

CrossFit and FM 21-20, the manual for U.S. Army physical-fitness training, espouse many of the same principles. However, the differences between the two programs are significant and important for the Army to consider. Through embracing and learning from the efficacy of CrossFit, the U.S. Army can close the gap between good intentions outlined in FM 21-20 and effective practices. However, much to the chagrin of diehard CrossFitters and others frustrated with Army physical training, CrossFit is not a panacea for the challenges leaders face in preparing their soldiers for the physical rigors of combat. Furthermore, even though I am personally an avid CrossFitter, a CrossFit trainer, and a troop commander who built my unit's physical-training plan around CrossFit, I do not argue for CrossFit to completely supplant the Army's physical-training regimen. However, the Army should use CrossFit to evolve FM 21-20 into a more effective program by incorporating many of its approaches. This article will address the similarities and differences between FM 21-20 and CrossFit, the weaknesses of FM 21-20, the strengths of CrossFit, implementation of CrossFit at the small-unit level, and how the Army can use CrossFit as a catalyst to move the gears in the direction of better fitness and wellness.

The two references used for comparison are Field Manual 21-20 (*Physical Fitness Training*, Change 1, Oct. 1, 1998, published by Headquarters, Department of the Army) and the *CrossFit Level 1 Training Guide* (Version 4, published by CrossFit Inc.).

### Part 1: Foundations, Methods and Implementation

#### FM 21-20: U.S. Army Physical-Fitness Training

In the introductory chapter to Field Manual 21-20, the manual lays out the foundations of the Army physical-fitness program, defines its terms, and explains its Principles of Exercise. FM 21-20 defines fitness in a broad manner. The manual's components of "physical" fitness are cardiorespiratory endurance, muscular strength, muscular endurance, flexibility and body composition. The manual also provides another list of important physical skills, called "motor" fitness. The manual explains that the elements of "motor" fitness (speed, agility, muscle power, eye-hand coordination and eye-foot coordination) are important to a soldier's survivability in combat. The manual does not rank the components of physical or motor fitness, as it asserts, "The Army fitness program seeks to improve or maintain

all the components of physical and motor fitness ... ."The inclusion of body composition in the components of fitness implies the necessity to control a soldier's diet for optimal performance. The manual then proceeds to provide the user with guidelines for all physical-fitness programs. The Principles of Exercise, according to FM 21-20, are regularity, progression, balance, variety, specificity, recovery and overload. In the definitions of these principles, the manual advocates a program that addresses all the fitness components (regularity), encourages good nutrition (regularity), advises adequate rest (regularity), avoids specialization (balance), includes variance, and challenges a soldier to the limits of his capacity (progression, overload), in addition to other considerations.

The manual uses a chapter each on providing guidelines for cardiorespiratory, muscular-endurance, muscular-strength and flexibility training. For each type of training, the manual uses the terms frequency, intensity, time and type (FITT) to provide a mechanism for evaluating and developing training plans. In discussing cardiorespiratory training, FM 21-20 uses a soldier's training heart rate (THR) as the primary measurement of intensity in such exercise but also mentions perceived exertion as an alternate method. The types of cardiorespiratory exercise include running, rowing, biking, road-marching, swimming and others. The manual recommends three major types of training for cardiorespiratory exercise: ability group, interval and fartlek. (The manual highly discourages group pacing, such as unit formation running, for units with soldiers of different abilities.)

Next, the manual broaches muscular-endurance and strength training. The differentiation between muscular-strength and muscular-endurance training is determined by the intensity of the exercise. In FM 21-20, intensity is the number of repetitions of an exercise. Muscular strength is considered 3-7 repetitions, muscular endurance 12-plus repetitions, and muscular strength and endurance 8-12 repetitions. The exercises for muscular-fitness training are vast in number and type but include everything from squats, bench presses and deadlifts to biceps curls, heel raises, neck extensions and shoulder shrugs. Last, the manual addresses flexibility. Flexibility includes static stretching, passive stretching, proprioceptive neuromuscular facilitation (PNF) stretching and ballistic stretching. The manual emphasizes the importance of a warm-up, a cool-down and stretching to increase efficiency and reduce the prospect of injury.

The manual also covers body composition (a component of its definition of fitness), nutrition, circuit training, obstacle courses, competitive fitness activities, and several considerations for leaders developing a unit physical-fitness program (to include injuries and environmental effects). The chapter on nutrition is an elucidation of the USDA food pyramid. The manual advocates foods rich in carbohydrates—such as pasta, rice, whole-wheat bread and potatoes—for optimal performance. The manual's principles of nutrition are:

1. Eat a variety of foods.
2. Maintain a desirable body weight.
3. Avoid excess dietary fat.
4. Avoid too much sugar.

5. Eat foods with adequate starch and fiber.
6. Avoid too much sodium.
7. Drink alcoholic beverages in moderation.
8. Know the nutrition principles.

The manual concludes the nutrition discussion by addressing the importance of hydration.

Circuit training receives special attention for its ability to simultaneously challenge multiple components of physical and motor fitness. It is the only type of training presented in the manual that can address such a broad range of fitness components. While FM 21-20 acknowledges that unit sports can develop several types of motor fitness, it cautions the use of competitive fitness activities as anything but a supplement to a unit fitness-training plan. However, the manual makes clear the multitude of advantages to competitive fitness activities outside the development of physical capacity and the "tremendous positive influence" on a unit. According to FM 21-20, competitive fitness activities " ... help develop assets that are vital to combat effectiveness. These include team spirit, the will to win, confidence, toughness, aggressiveness, and teamwork."

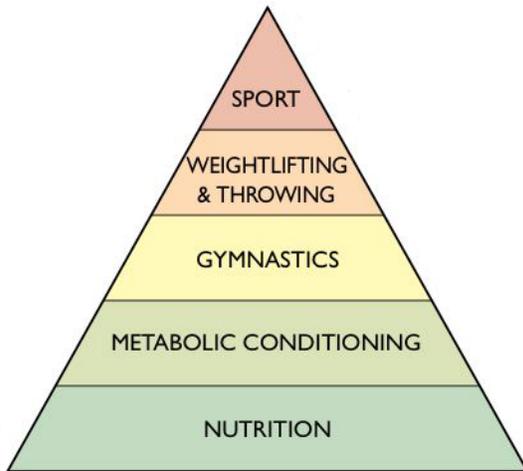
### **CrossFit: Constantly Varied, High-Intensity Functional Movement**

CrossFit is a holistic approach to fitness and wellness. CrossFit aims to develop general physical preparedness (GPP) in its athletes—readiness to face the "unknown and unknowable." In other words, CrossFit athletes strive to develop a wide range of physical skills through constantly varied, high-intensity, functional movement and avoid specializing the way a sport-specific athlete would train. CrossFit uses 10 physical skills to define fitness: cardiovascular/respiratory endurance, stamina, strength, flexibility, power, speed, coordination, agility, balance and accuracy. Using efficacy alone to measure progress, CrossFit is an evolutionary program and challenges its community to find the solution to optimal GPP. In implementation, CrossFit harnesses competition, quantitative measurement and clear standards of movement to create the "sport of fitness." CrossFit is holistic because it establishes nutrition as its foundation in its endeavor to create the fittest human in the world (tested through the CrossFit Games, held annually since 2007 in California). The intended result of the CrossFit program is a healthy human capable of taking on life's physical challenges in a state of high fitness or "super-wellness." The CrossFit foundations for nutrition and exercise are depicted in the triangle chart below:

**Chart 1: CrossFit Foundational Pyramid**

CrossFit asserts that the exercises lower in the pyramid are by nature foundational to the exercises higher in the pyramid, and nutrition is the foundation for everything. Exercises higher in the pyramid tend to require more skill. Metabolic-conditioning exercises are running, biking, rowing and jump rope. Gymnastics are body-weight

Courtesy of CrossFit Inc.



movements such as jumps, pull-ups, push-ups, dips, air squats (squats without weight), rope climbs, handstand push-ups, sit-ups and others. Weightlifting movements are deadlifts, cleans, presses, bench presses, buddy carries, tire flips, clean and jerks, etc.

CrossFit workouts are described as “constantly varied, high-intensity functional movement.” Essential to CrossFit exercises are their functionality and applicability to movements in everyday life. Functional movements force the development of core strength and do not isolate certain muscle groups. For example, deadlifts, or the act of picking an object off the ground, engage the entire posterior chain of muscles (hamstrings, lower back, etc.) and require core stabilization to maintain lumbar rigidity. In contrast, heel raises, an isolation exercise that by itself does not have a real-world application, challenge the calf muscles alone.

Also key to CrossFit is how it defines intensity. Intensity is not a qualitative assessment but is based on average power. Average power is work over time, or force over a distance in a certain time:

**Power = Force x Distance / Time, with Force x Distance = Work**

Although the equation harkens back to high-school physics, it can be easily understood without math. It takes a certain amount of force to move a 135-lb. barbell from the ground to over an athlete’s head. The distance is the amount the barbell moved. The time is how long it took the athlete to complete the movement. Therefore, intensity, or power, is not subjective; instead, it can be measured exactly. CrossFit does not ask athletes to calculate their power output for each workout, but the more power an athlete can generate over time is directly correlated to his level of fitness. Intensity in CrossFit is the independent variable most associated with progression, or favorable adaption to exercise.

CrossFit provides a simplified explanation of its approach through its World Class Fitness in 100 Words.

**Table 1: CrossFit’s World Class Fitness in 100 Words**

CrossFit takes a strong stand on its athletes placing nutrition at the forefront of their training. In direct contrast to the USDA food guidelines, CrossFit advocates the Zone Diet (developed by Dr. Barry Sears), the Paelolithic Diet (see Dr. Loren Cordain) or a mix of both. The CrossFit nutritional approach is summarized above in Table 1 but follows some

**World-Class Fitness in 100 Words:**

- *Eat meat and vegetables, nuts and seeds, some fruit, little starch and no sugar. Keep intake to levels that will support exercise but not body fat.*
- *Practice and train major lifts: Deadlift, clean, squat, presses, C&J, and snatch. Similarly, master the basics of gymnastics: pull-ups, dips, rope climb, push-ups, sit-ups, presses to handstand, pirouettes, flips, splits, and holds. Bike, run, swim, row, etc, hard and fast.*
- *Five or six days per week mix these elements in as many combinations and patterns as creativity will allow. Routine is the enemy. Keep workouts short and intense.*
- *Regularly learn and play new sports.*

Courtesy of CrossFit Inc.

more specific guidelines. CrossFit’s nutritional guidelines highly discourage the intake of breads, cereals and grains and instead encourage the intake of low-glycemic carbohydrates, which should compose 40 percent of the athlete’s caloric load. In addition, CrossFit advises healthy fats compose 30 percent of an athlete’s caloric load. The remaining calories should be a product of lean meats. CrossFit advocates its nutritional model not only for purposes of optimal athletic performance but also for the long-term health of its athletes.

Many similarities may have jumped out to the reader about FM 21-20 and the CrossFit approach to health and wellness, but the approaches diverge at critical junctures. What follows is a comparison between the two programs.

**Foundations: FM 21-20 vs. CrossFit**

Are FM 21-20 and CrossFit trying to create the same athlete? A marathon runner, for example, who specifies in long-distance endurance running, does not concern himself with muscular strength. However, we know that muscular strength is essential to the job of all soldiers in the Army (especially combat-arms soldiers). Therefore, it is important to know whether FM 21-20 and CrossFit even have the same goals. If they do not endeavor to create the same athlete, then it is fruitless to compare the programs. Table 2 below is a comparison of the FM 21-20 and CrossFit definitions of fitness.

FM 21-20 Classification	FM 21-20	CrossFit
<b>Physical Fitness</b>	Cardiorespiratory Endurance	Cardiovascular/Respiratory Endurance
	Muscular Strength	Strength
	Muscular Endurance	Stamina
	Flexibility	Flexibility
	Body Composition	Accuracy
<b>Motor Fitness</b>	Speed	Speed
	Agility	Agility
	Muscle Power	Power
	Eye-Hand Coordination	Coordination
	Eye-Foot Coordination	Balance

**Table 2: FM 21-20’s Components of Fitness vs. CrossFit’s 10 Physical Skills**

Although FM 21-20 divides fitness into two components, physical and motor, the table above shows that the two programs’ definitions are almost exactly the same. Although FM 21-20 does not mention “balance” specifically like CrossFit, it does mention its importance later in the manual when discussing the positive benefits of unit sports. Most importantly, FM 21-20 does not prioritize any aspect of fitness and emphasizes the importance of all the components and their applicability to combat. CrossFit attempts to achieve a similar balance between all elements of its definition of fitness. The ideal FM 21-20 soldier and CrossFit athlete share the same description: a man or woman who is good at everything but specializes in nothing. Therefore, FM 21-20 and CrossFit aim to create the same kind of athlete.

The two programs’ definitions of fitness are remarkably similar, but what about their methods? FM 21-20 uses its “Principles of Exercise” to provide guidelines to the Army about physical-training methods. For purposes of comparison, the CrossFit “principles” do not perfectly mirror those in FM 21-20, but in Table 3 below selected CrossFit principles from its *Level 1 Training Guide* appear next to their counterparts in FM 21-20.

Principles of Exercise (FM 21-20)		Selected CrossFit Principles (from Level 1 Training Guide)
<b>Regularity</b>	To achieve a training effect, a person must exercise often. 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.	CrossFit trainers have found that a 3-days-on, 1-day-off program is the most effective; athletes must be prepared for any contingency, so they must train with a broad range of stimuli; nutrition is the foundation for the program.
<b>Progression</b>	The intensity (how hard) and/or duration (how long) of exercise must gradually increase to improve the level of fitness.	All CrossFit workouts are universally scalable, allowing athletes to progress indefinitely by achieving faster times, more repetitions, and/or more weight; intensity, defined as power output, is the key to maximizing favorable adaptation to exercise.
<b>Balance</b>	To be effective, a program should include activities that address all the fitness components, because overemphasizing any one of them may hurt the others.	CrossFit shuns specificity and aims for general physical preparedness (GPP), never sacrificing one element of fitness or energy pathway for another.
<b>Variety</b>	Providing a variety of activities reduces boredom and increases motivation and progress.	Workouts are highly varied to prepare an athlete for any possible physical contingency; CrossFit is the "sport of fitness," tackling boredom and motivation with competition and a team-like atmosphere.
<b>Specificity</b>	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.	Specificity is avoided in CrossFit, and its training with elite athletes has revealed that fixing physical imbalances helps prevent injury and improve performance in sport-specific activity.
<b>Recovery</b>	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 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.	Recovery is an important aspect of the training regimen and key to maximizing work and power in future workouts.
<b>Overload</b>	The workload of each exercise session must exceed the normal demands placed on the body in order to bring about a training effect.	High neuroendocrine response is essential to CrossFit workouts, achieved through heavy-load weight training, short rest between sets, high heart rates, high-intensity training, and/or short rest intervals.

**Table 3: FM 21-20 Principles of Exercise vs. Selected CrossFit Principles**

The table above again shows the large amount of similarity between the two programs in their stated principles and foundations. Four of the principles in FM 21-20 are not exactly controversial. The fitness and health community generally accepts FM 21-20's reasoning on regularity, progression, recovery and overload. Furthermore, FM 21-20 and CrossFit generally agree on balance. It is in specificity and variety that FM 21-20 and CrossFit begin to diverge.

Variety and specificity could be contradictory if they were not used in different contexts. FM 21-20 cites variety as a principle for purposes of maintaining soldier motivation. CrossFit training uses variety to ensure balance between the 10 physical skills listed in its definition of fitness. Variety in CrossFit prepares athletes for the "unknown and unknowable." Variety in FM 21-20 challenges leaders to avoid repetitive and monotonous workouts. FM 21-20 includes specificity

because it argues that there is no better way to train a movement than to do the movement itself. The manual uses running as the example, stating that if a soldier has a goal to improve running (a cardiorespiratory-endurance movement), then the best way to reach that goal is to run (as opposed to using another CrossFit endurance movement such as swimming). CrossFit trainers wouldn't necessarily disagree with this statement. However, where CrossFit differs is that it reserves specificity for sport-specific athletes. CrossFit asserts that the variety and balance of physical skills trained in CrossFit workouts will maintain an athlete's ability to perform well (but not optimally) in all movements life requires. In addition, CrossFit challenges its athletes to attack the "chinks in their athletic armor," or to train movements that threaten the balance between the 10 physical skills. Depending on the importance placed on balance vs. specificity, FM 21-20 and CrossFit could be advocating the same thing.

The last foundational concept of FM 21-20 and CrossFit is nutrition. Here the programs differ in significant ways. The differences are not without controversy, but a large body of scientific evidence is stacking up against the diet advocated by FM 21-20. The inclusion of high-glycemic carbohydrates such as grains, breads, cereals, rice and potatoes is strongly discouraged by CrossFit but advocated by FM 21-20 and the USDA Food Pyramid.

(*Good Calories, Bad Calories* by Gary Taubes is an excellent and thorough analysis of the science that led to the current USDA recommendations, and it also presents the body of evidence that contradicts the USDA's recommendations. See also *Enter the Zone* by Dr. Barry Sears or *The Paleo Diet* by Dr. Loren Cordain.)

In Table 4 below, the differences are clear.

FM 21-20 Principles of Nutrition	CrossFit Nutrition Guidelines
<b>Eat a variety of foods:</b> Eat foods from the four basic food groups: fruit and vegetables, meats, dairy products, and breads and cereals.	Eat meat and vegetables, nuts and seeds, some fruit, little starch and no sugar. Keep intake to levels that will support exercise but not body fat.
<b>Maintain a desirable body weight:</b> Select from a low-calorie menu, and choose reduced portion sizes, no-calorie beverages and low-calorie salad dressing.	The incidence of cancers and heart disease sharply decline with a diet that is carefully limited in controlling caloric intake. The CrossFit prescription allows a reduced caloric intake and yet still provides ample nutrition for rigorous activity.
<b>Avoid excess dietary fat:</b> Fat should be 30 percent or less of total caloric intake. Limit saturated fat to less than 10 percent of calories, polyunsaturated fat to no more than 10 percent of total calories.	Fat should be predominantly monounsaturated and account for about 30 percent of your total caloric load.
<b>Avoid too much sugar:</b> Eat fruit in place of dessert. Drink unsweetened juices and beverages. Use sugar substitutes, and avoid sweetened cereal.	Carbohydrates should be predominantly low-glycemic and account for about 40 percent of your total caloric load. Excessive consumption of high-glycemic carbohydrates (rice, bread, pasta, sodas, sugar and processed foods) is the primary culprit in nutritionally caused health problems.
<b>Eat foods with adequate starch and fiber:</b> Eat whole-grain breads, cereals, and legumes. Eat fresh fruit, and use the salad bar for lunch and dinner.	
<b>Avoid too much sodium:</b> Reduce salt in recipes by 25 percent.	Avoid sodium.
<b>Drink alcoholic beverages in moderation</b>	Avoid alcoholic beverages.
<b>Know the nutrition principles:</b> Display educational materials, provide food-service personnel with training, and provide unit-training programs on nutrition.	Nutrition principles most closely follow the Paleolithic guidelines for nutrition. In other words, eat foods that support our genetic evolution.

**Table 4: FM 21-20 Principles of Nutrition vs. CrossFit Nutrition Guidelines**

### Methods: FM 21-20 vs. CrossFit

When examining the methods in FM 21-20 and comparing them to CrossFit workouts, it is again surprising to find more similarities than differences. Throughout FM 21-20, the manual discourages the use of training that takes a cookie-cutter approach. No two soldiers have the same physical capacity, and training must challenge the weakest and the strongest soldier or the training does not comply with two key principles: intensity and progression. FM 21-20 addresses this dilemma many times throughout the manual and provides methods to target the problem. In Chapter 1, FM 21-20 states, "Training time is wasted by ... insufficient training intensity ... (and) extreme formality that usually emphasizes form over substance. An example would be too many unit runs at slow paces ... ." Later in the same chapter, the manual states, "Holding a fit soldier back by making him run at a slow, unit-run pace ... hurts his morale and violates the principle of training to challenge (or intensity)." In Chapter 2, FM 21-20 explains, "Unfortunately, too many soldiers are not challenged enough by the intensity or duration of the unit run, and they do not receive a training benefit."

OK, so FM 21-20 is making a clear case against cardiorespiratory training that does not challenge soldiers of different capabilities, but what about muscular strength and endurance training? In Chapter 3, the manual advocates the use of "timed sets" in muscular strength and endurance training for the same effect:

"The use of timed sets, unlike exercises performed in cadence or for a specific number of repetitions, helps to ensure that each soldier does as many repetitions of an exercise as possible within a period of time. It does not hold back the more capable performer by restricting the number of repetitions he may do. Instead, soldiers at all levels of fitness can individually do the number of repetitions they are capable of and thereby be sure they obtain an adequate training stimulus."

FM 21-20 provides another method to target intensity, among other training principles. The manual devotes an entire chapter to circuit training. Circuit training is performed as a "free circuit" (movement to next station upon completion of a number of tasks) or "fixed circuit" (movement to next station on a time interval). FM 21-20 states, "Circuits are designed to provide exercise to groups of soldiers at intensities which suit each person's fitness level." As evidenced above, maintaining adequate training intensity is a major concern in FM 21-20.

FM 21-20 provides several methods to prevent training imbalances: ability group runs, interval training, timed sets and circuit training. These methods are, in fact, at the heart of CrossFit training.

Swim meets provide an easy analogy to CrossFit workouts. The event is a 400-meter freestyle swim with six swimmers competing. The swimmers race against each other and against their own past times for personal records. Perhaps some swimmers are even racing against the league record. No matter what the goal of each swimmer (to win the race, to beat a previous time, to set a record), each will leave the race physically and mentally taxed. Take the same swim meet. Now make the same swimmers swim as many laps as they can in 20 minutes. In between each lap they must perform the maximum amount of pull-ups possible before letting go of the bar. The winner of the race is determined not only by the number of laps completed but also by the number of pull-ups performed. This race is now a modified version of a long-used CrossFit workout called Nicole. The point: everyone competes and everyone pushes themselves to the limits of his or her own abilities, but everyone is also doing the workout together.

CrossFit workouts have the same general approach as the modified swim race. Everyone gives maximum effort, and the rules of the game don't limit the physical output of each athlete. If an athlete can perform the tasks faster, then he or she achieves a faster time. If the athlete can perform more tasks in a set amount of time, than he or she achieves a higher score, or more repetitions. The rules of the workout may dictate the use of a specific exercise, and that exercise must be executed with the full range of motion (think of a backstroke swim race—the swimmers must use the specified stroke and are disqualified for deviation). However, in CrossFit, if someone cannot perform an exercise due to lack of capacity, the athlete can "scale" the workout to fit his or her needs, as long as the workout is still functional, varied and intense.

Scaling is modification of the movement, time or repetitions in a workout to achieve an effect similar to that produced by the original workout. For example, if one of the swimmers had a shoulder injury, she could kick the lengths of the pool and perform 40 lunges after each lap instead of maximum pull-ups. Good form is also extremely important. Good form in workouts is safe, and good form allows for greater efficiency. If an athlete cannot maintain good form due to lack of physical capacity, workouts are scalable to account for this. In addition, athletes exercise in

a team-like atmosphere that fosters competition, and slower or weaker athletes do not slow the rest of the “team” down. All participants are challenged to their maximum capacity.

Very simply, in terms of FM 21-20, CrossFit is circuit training, interval training and timed sets. The *CrossFit Level 1 Training Guide* states, “. . . at CrossFit we work exclusively with compound movements and shorter high-intensity cardiovascular sessions.” Depending on perspective and the context of comparison, CrossFit workouts could be considered a subset of FM 21-20 methods, or CrossFit could be considered an advanced refinement of FM 21-20 by using some of the manual’s methods more effectively. No matter the perspective, nearly all CrossFit workouts fall within the methods and guidelines of FM 21-20, but not vice versa. It is important to understand this difference.

### How the Two Programs Are Very Different

Despite their virtually identical definitions of fitness, similarity in exercise principles and use of like training methods, the Army physical-training program outlined in FM 21-20 and CrossFit have some distinct differences. The major differences are CrossFit’s use of functional movement, anaerobic cardiovascular endurance training and quantitative measurement. In addition, CrossFit has a stronger focus on the balance of the 10 physical skills.

It would seem that all physical training in FM 21-20 should have a direct application to the function of a soldier in his or her job. However, an examination of the exercises in the manual’s discussion of muscular strength, muscular endurance and calisthenics exercises reveals a large amount of isolation movements that are non-functional or have little application to real-world activities. In contrast, CrossFit focuses entirely on functional movement. Functional movements are movements that are found in everyday activities, such as sitting down or putting a piece of luggage into an airplane’s overhead compartment. Functional movements are compound, multi-joint movements that can have an enormous effect on core strength and neuroendocrine response. Below is a list of muscular-fitness and calisthenics exercises advocated by FM 21-20. Non-functional and isolation movements are in bold:

Muscular Strength and Endurance Exercises		Calisthenics Exercises	
<b>Abdominal crunch</b>	<b>Neck flexion</b>	<b>Bend and reach</b>	Push-up
<b>Abdominal twist</b>	Overhead press	<b>Cross-country skier</b>	<b>Side-straddle hop</b>
<b>Back Extension</b>	Parallel-bar dip	<b>Flutter kick</b>	Sit-up
Bench press	Pull-up	High jumper	<b>Ski jump</b>
Bent-leg deadlift	<b>Seated row</b>	<b>Knee bender</b>	Squat bender
<b>Bent-over row</b>	<b>Shoulder shrug</b>	Lunger	<b>Supine bicycle</b>
<b>Biceps curl</b>	Single-leg squat	<b>Mule kick</b>	<b>The engine</b>
<b>Heel raise</b>	Sit-up	Parallel-bar dip	<b>The swimmer</b>
<b>Lat pull-down</b> or pull-up	Split squat	Pull-up	
<b>Leg curl</b>	Squat		
<b>Leg extension</b>	<b>Toe raise</b>		
<b>Leg press</b> or squat	<b>Triceps extension</b>		
<b>Leg raises</b>	<b>Wrist curl</b>		
<b>Neck extension</b>			

**Table 5: FM 21-20 Muscular-Fitness and Calisthenics Exercises (non-functional in bold)**

In Table 5, the non-functional movements outnumber the functional. In fact, almost two-thirds of the exercises listed above are non-functional. CrossFit does not hold the position that non-functional movements are “bad” or will not make an athlete strong, per se. Instead, CrossFit advocates that given limited training time, functional movements are more efficient at eliciting the desired response in an athlete’s body, training multiple muscle groups simultaneously, and having an extremely positive effect on core fitness.

The next major difference between FM 21-20 and CrossFit is the use of anaerobic cardiovascular training. Anaerobic cardiovascular training is the use of short-burst movements in rapid succession, interval training or a mix of both. CrossFit advocates the use of anaerobic training because, unlike aerobic training (low-power output over a long period of time), excessive aerobic training leads to a decrease in anaerobic capacity. However, the reverse is not true (anaerobic training does not adversely affect aerobic capacity). CrossFit asserts that properly structured anaerobic training can be used to develop a high level of aerobic fitness. In fact, CrossFit Endurance, or the application of this principle to endurance training, has grown in popularity among athletes who want to participate in endurance activities without the strength, power and speed losses that occur as a result of strictly training aerobically. CrossFit Endurance programming also cites a reduced injury rate with anaerobic cardiovascular training. So where do ability group runs (AGRs) fit in? The CrossFit version of an AGR would be a 4-mile run for time, where soldiers of similar ability could run together but would compete in order to achieve the fastest time. Or, CrossFit Endurance uses tempo runs, where soldiers each run to a percentage of perceived exertion. Perceived exertion is echoed in FM 21-20 as a secondary means to measure intensity (secondary to measuring heart rate).

An important aspect of CrossFit is the constant quantitative measurement occurring during every workout. FM 21-20 does not include this concept. In CrossFit, nearly every workout has a "score." These scores are the fuel for the competition in the workouts but also let athletes closely measure their progression. After every workout, there is immediate feedback to the athlete based on his score relative to other athletes or the athlete's previous time, number, etc. In essence, CrossFit workouts are like taking an APFT that measures different capacities every day.

Additionally, the definition of intensity differs significantly between the two programs. In FM 21-20, intensity is defined in muscular-fitness training as the number of repetitions and in cardiorespiratory training as training heart rate or perceived exertion. In CrossFit, intensity is the average power an athlete generates, and every CrossFit workout is high intensity. FM 21-20 does not provide any guidance beyond repetitions for muscular-fitness exercise, and without an associated time component, the difference in intensity between the programs is severe. The intensity in CrossFit workouts is from fast, constant work or fast

work at a specified interval. For metabolic conditioning (cardiovascular endurance) CrossFit does not use training heart rate, but CrossFit Endurance does make use of rate of perceived exertion (RPE).

Lastly, CrossFit is much more aggressive about maintaining balance between the 10 physical skills than FM 21-20 is about balancing its components of physical and motor fitness. FM 21-20's inclusion of balance, variety and specificity in its Principles of Exercise seems contradictory, but instead it is just confusing. The separation of physical and motor fitness further confuses the prioritization. Throughout the manual, FM 21-20 emphasizes the balance between cardiorespiratory endurance, muscular strength and muscular endurance. The discussion of "balance" in the Principles of Exercise, the sample outline of a physical training program using the FITT factors, the chapter on muscular fitness, and the chapter on developing the unit program all carry the same theme: balance between muscular strength, muscular endurance and cardiorespiratory endurance, with little mention of speed, agility, power or coordination. In addition, FM 21-20's strong focus on balance between muscular-strength, muscular-endurance, and cardiorespiratory-endurance training leaves little room for discussion on balancing the actual exercises to ensure a well-rounded soldier. This unique dynamic paired with isolation and non-functional movement leads to a singular focus on improving APFT event exercises, a topic I will expand on later.

### Where FM 21-20 Falls Short

The Army published FM 21-20 for the entire Army, but the manual acknowledges the need for units to tailor physical training to their mission-essential task lists. All specialties in the Army can benefit from integrating CrossFit into their physical-training plans. The deployments in support of Operation Iraqi Freedom and Operation Enduring Freedom blurred the lines between the military occupational specialties. A larger percentage of the Army needs to be concerned with effective physical training than prior to 9/11. Therefore, although the below observations, criticisms and recommendations are written with combat-arms soldiers in mind, they are applicable to any unit that will experience physical demands in the execution of its mission.

Casual observation of units along Battalion Avenue on Fort Hood serves as an example of the gap between the good intentions of FM 21-20 and good practices. Low-intensity,

group-paced workouts are ubiquitous and waste massive amounts of soldier time. Poor physical training is not simply the fault of bad leadership, lack of creativity or poor unit culture. Gyms are packed following the hours of physical training with soldiers and leaders who consider their unit's physical training a waste of time. Planning good physical training and ensuring that leaders are challenging their soldiers is ultimately a commander's responsibility. However, certain cultural norms and practices need to be eradicated, and FM 21-20 must assume the responsibility for the manifestation of its doctrine. There are six critical weaknesses in FM 21-20:

1. Lack of emphasis on functional movement.
2. Lack of balance between fitness components.
3. cursory guidance on muscular-fitness training.
4. Failure to acknowledge the scarcity of muscular-strength equipment.
5. Training to the test.
6. Insufficient examples of good workouts to achieve intensity.

### 1. Functional Movement

Almost two-thirds of the movements listed under "muscular fitness" in Table 5 are non-functional or isolation movements. Soldiers need to spend their limited training time on exercises that have a direct application to their job responsibilities. Soldiers run short distances with heavy loads, pick up heavy objects, scale walls, fight hand-to-hand, climb and ruck-march. These activities require superior control over the body (gymnastics) and the ability move, support and throw heavy objects (weightlifting). Time should not be spent on exercises like abdominal crunches, biceps curls, leg presses or mule kicks. Instead, time should be spent on deadlifts, overhead presses and squats.

### 2. Fitness Component Balance

Fitness component balance goes beyond striking a balance between muscular endurance, power, cardiorespiratory endurance, speed, etc. Balance also must include balance between the muscle groups to create the all-around soldier FM 21-20 endeavors to build. FM 21-20 needs to describe its prototype: the well-balanced soldier. Units can then use limited specificity to build a soldier for their mission. Specificity, as a Principle of Exercise, gives justification to imbalanced physical programs when combat-arms soldiers need to have a wide variety of physical skills.

### 3. cursory Guidance on Muscular Fitness

The manual and the Army's aversion to multi-joint and more functional movement likely stems from limited knowledge and familiarity with these movements. However, even with the functional movements that FM 21-20 does include, there is a paucity of explanation on the correct form of the movements. For example, the manual's explanation of the squat is limited to: feet shoulder-width apart, hold weight on shoulders, bend the knees until tops of thighs are parallel with ground, keep head and shoulders upright, and keep back straight. Anyone familiar with a squat knows that not only is executing the squat with the above form easier said than done, but there are also several more important form considerations not included above that an athlete must adhere to in order to execute the movement safely.

### 4. Scarcity of Muscular-Strength Equipment

FM 21-20 does not reflect the reality of Army physical training. Units rarely use weightlifting equipment during physical-training hours. It is uncommon for units to own weightlifting equipment, gyms are overcrowded during physical-fitness hours, and post or unit policies often restrict the use of gyms during physical-fitness hours. FM 21-20's partner resistance exercises are simply insufficient to provide the intensity and overload necessary to make progression in strength and power. The result is often that units abandon muscular-strength training altogether. In addition, the example unit plans included in FM 21-20 violate the principles of regularity and balance when it comes to muscular strength. The sample 12-week plans in the manual don't allow for any significant strength progression with the exception of push-ups and sit-ups. Soldier creativity aside, FM 21-20 needs to provide realistic ideas and guidance to units that are deployed or have little access to the standard barbells, plates, dumbbells and machines. In at least one Center for Army Lessons Learned (CALL) handbook about small-unit operations in Afghanistan, it provides ideas for exercises with a duffel bag. Apart from the fact that the techniques look strikingly similar to CrossFit, it is a good start.

(The CALL manual in this reference is Unclassified FOUO [For Official Use Only] but can be found by authorized military personnel through the Center for Army Lessons Learned Web site.)

## 5. Training to the Test (the APFT)

The APFT contributes to monotonous, poorly balanced programs such as Monday: run, Tuesday: push-up/sit-up improvement, Wednesday: run, Thursday: push-up/sit-up improvement, and Friday: run. And why shouldn't units focus on APFT skills? The APFT has the power to make for a good Non-Commissioned Officer Evaluation Report (NCOER) bullet, identify one unit from another, stop promotion and separate soldiers from service. Furthermore, FM 21-20 uses specificity to argue that the best way to improve a physical skill is to train the physical skill. It is not difficult to see why units focus exclusively on APFT skills. Put bluntly, if units want to make an assessment of their soldiers' physical readiness for combat, they need to develop a test apart from the APFT. Many units have already moved in this direction, but it ultimately places leaders in difficult positions to fight a culture that FM 21-20 created to prepare their soldiers for combat. The Army physical-fitness culture should not be simply another antiquated Army custom company-level commanders have to struggle against.

## 6. Insufficient Detail and Examples to Achieve Intensity

Although intensity is also mentioned above in the discussion of muscular-fitness exercises, FM 21-20 does not provide a sufficient amount of detail to Army leaders. In the 12-week plans included in the chapter "Developing the Unit Program," a workout looks like this (translation of abbreviations in parentheses):

ACT: PRE/PU-SU IMP (Activity: partner-resisted exercise; push-up, sit-up improvement)

INT: MF (Intensity: muscular failure due to fatigue)

DUR: 35/4 MIN (Duration: 35 minutes total, 4-minute work cycle)

This workout plan provides insufficient detail and example to an Army leader about what a challenging push-up and sit-up improvement workout looks like. FM 21-20 acknowledges that intensity is the largest challenge for any leader in developing a training program. However, in any training program, the quality is in the details. How a leader uses the 35 minutes in the above workout to achieve intensity is far and away the most important part of the plan. There are 100 ways the leader could use the 35 minutes to push his soldiers' muscle failure, and half of those are ineffective.

Unfortunately, FM 21-20 leaves the difficult art of physical training plans to soldiers with lots of creativity but little training or guidance. The result can be underwhelming.

## Where CrossFit Succeeds (and What the Army Can Learn From It)

Thus far, we have seen the immense amount of similarities between the foundations and methods of FM 21-20 and CrossFit. However, the programs diverge at critical junctures. Properly integrating the many strengths of the CrossFit program could improve the Army's approach to physical fitness but could also close the gap between good intentions and effective practices in physical training. CrossFit not only succeeds where FM 21-20 falls short, but through the evolution of its program, CrossFit has also developed several other methods the Army should learn and integrate—such as the creation of the "sport of fitness."

First, CrossFit rests on functional movement and GPP that mirror challenges in life. As described above, isolation movements are inadequate not only for their lack of relevance but also for their inability to effectively challenge the body in a limited period of time. GPP requires a balance of physical skills that CrossFit advocates. Mastery of functional movement and GPP is more important to those in the military and law-enforcement and rescue services than anyone else. Combat is the ultimate test of functional movement and GPP. Whether certain Army specialties should use specificity for purposes of their mission is a worthy question to debate, but the point is that the debate needs to occur. Nevertheless, the baseline capacity for every soldier should be functional movement and GPP. If certain units and specialties need to optimize specific capabilities, then they will benefit from physically adaptable and injury-resistant soldiers if they build from good GPP. The Army needs to aggressively pursue GPP in its doctrine, testing and practice. Functional movement should be the bedrock for all Army exercises.

Second, through its growing database of detailed workouts, training in foundational movements and strong focus on intensity, CrossFit provides the guidance to its trainers for high-quality training. Quality "programming," the equivalent CrossFit word for "training plans," is not an easy art to perfect. However, CrossFit Headquarters has developed a massive amount of workouts that have been proven excellent through efficacy alone. Also, other CrossFit trainers throughout the country are growing in number and have proven themselves to be quality programmers. Quality CrossFit workouts are effective

in developing GPP, maintain appropriate amounts of intensity throughout the workout and are scalable to any physical capacity. Additionally, through the CrossFit Level 1 Certification program, CrossFit spends considerable time on correct form for foundational movements, allowing the average person to perform those movements safely and effectively. CrossFit gives adequate explanation of the set-up, execution and common faults for each foundational movement in the literature provided to Level 1 trainees. The Army could find the same success through provision of a database of proven workouts and adequate training to its leaders (or subject-matter experts) on training plans and proper form.

Third, CrossFit has infiltrated almost every military base and outpost in Kuwait, Iraq and Afghanistan despite the lack of access to typical fitness equipment. This is in no small part due to literature in the CrossFit community about training in austere conditions and exercises with atypical equipment, and CrossFit's focus on functional movement is similarly helpful. The Army could produce more literature, give more examples and develop doctrine that is more effective and realistic than FM 21-20. Creativity from commanders and leaders at all levels will always be much more effective than doctrine in developing quality plans for unique situations, but the Army should begin with doctrine that reflects the current operational environment. Using CrossFit foundations and methods, the Army could make significant strides in this respect.

Fourth, through the concept of "universal scalability," CrossFit brings its concept of elite fitness to the obese, weak and old with success. CrossFit scares the untrained and unfit for all the wrong reasons. The untrained and unfit ought to be nervous about the difficulty of CrossFit workouts because they will be significantly challenged every time. However, effectively used, CrossFit can protect athletes against injury by correcting imbalances. CrossFit brings the realm of physical-training knowledge to the general public. The concept of universal scalability and physical-training knowledge could transform physical training for soldiers with limitations. Recently, an officer observing the physical training of soldiers in the Warrior Transition Unit at Fort Hood remarked that it was amazing how much physical training the soldiers were capable of doing. Contrast these leaders in the Warrior Transition Unit with typical "profile PT" in many units. Radically changing

profile PT would help soldiers recover from injury more quickly and allow them to continue training. For the small percentage of soldiers who find it comfortable to stay on profile to avoid training, CrossFit-inspired profile PT would not provide a refuge.

Last, perhaps CrossFit's most important achievement is its fusing of competition and fitness. CrossFit describes the union as the "sport of fitness," and the result has been the development of an incredibly strong community and a crucible (the CrossFit Games) for the fittest men and women in the world. Every workout has a score, weight or time, and athletes are encouraged to share their numbers. Competition has positive effects in addition to motivating athletes to achieve the intensity necessary for progression. CrossFit has found that competition creates bonds, vets the programming of trainers, and provides athletes tangible goals for fitness. FM 21-20 recognizes these positive benefits of competition but implies that they can only be harnessed through unit sports and specially designed unit activities. Combat is the ultimate competition and should be an integral part of the Army's culture. The fusing of fitness and competition would result in better fitness results and stronger unit internal bonds.

## Part 2: Evolution of the Army Through Absorption of CrossFit

Over the past nine years, the Army has experienced a diverse set of combat conditions that have inspired immense changes to training, changes to doctrine, creation of new doctrine, and development of a wide variety of new tactics, techniques and procedures (TTPs). However, the doctrine that provides the foundation for physical training remains unchanged since 1992. Concurrently, the Army and the American society are in a state of declining physical condition. Recently announced changes to basic training acknowledge the declining physical condition of recruits. These changes are a reflection of the declining wellness of American society at large. The diseases of civilization—such as obesity, diabetes, cardiovascular disease, hypertension and various forms cancer—wreak havoc on a population that provides the pool for potential soldiers. Thankfully, the Army is able to snag its recruits young and before most of the diseases of civilization set in. However, the volunteers for an army with numerous commitments to security around the globe are youths within a society beset with poor nutrition and sedentary lifestyles.

In Part 1 of this article, we saw a remarkable number of similarities between the foundations to the U.S. Army's

approach to physical fitness (as outlined in FM 21-20) and CrossFit. However, FM 21-20 plays a major role in creating the chasm between solid foundations and quality implementation of methods. CrossFit can be used to bridge this gap through unique application of functional movement. Physical training and wellness have become increasingly important for the Army mission and the health of its soldiers. The Army is not in a crisis, but others and I have experienced physical weakness degrading the tactical capability of a unit during combat operations. The Army has often stayed ahead of social dynamics in American society in positive ways. The Army has an opportunity to continue this tradition by directing the most disciplined, responsive and attentive portion of American society toward better wellness. The Army can use the CrossFit groundswell as a catalyst and lead its fighting force toward a better approach to wellness through evolution of policy, doctrine and culture.

### **The Use of CrossFit at the Company Level**

The integration of CrossFit or use of CrossFit as a unit physical-training program is not theoretical. Several company-level and battalion-level units around the Army are using CrossFit or CrossFit concepts in their physical-training plans. I used CrossFit as the foundation for my troop's physical-training plan. The restructuring of our physical-training program was not easy for my troop and was a challenge for me as the sole subject-matter "expert" on CrossFit methods. We didn't do everything right, and the below recommendations are a result of our shortcomings as much as our success. Several of the challenges we faced were due to personnel who were resistant to change, and thus those challenges were surmountable. However, we learned that CrossFit is not a panacea for the difficult task of physically preparing soldiers for combat or a fail-proof method for achieving record scores on the APFT. Nevertheless, the integration of CrossFit had an extremely positive effect on our unit. Therefore, I am convinced that the Army can use CrossFit to improve its methods and can learn from the extremely effective and holistic program.

Our troop learned some important lessons from the use of CrossFit in our physical-training program. First, we found enormous success from the use of CrossFit workouts that required limited equipment. The workouts inspired competition, motivated our soldiers and helped the platoons come together as a team. CrossFit competition was not always every man for himself. Platoons formed teams and competed for a team score with the same positive effect from competition. Second, we achieved an

important goal in our physical training: achieving intensity for every soldier during every workout. CrossFit workouts enabled us to achieve this goal because the unit was never performing just to the level of the soldier leading the workout. Every workout inspired the individual soldier to push himself to the limit of his capacity. Third, the use of quantitative measurement was useful for platoons to gauge their progress. Even when soldiers' scores worsened for a workout from one month to the next because the troop had been in the field for several weeks, it was still useful to understand where everyone stood. For soldiers who had trouble with personal motivation, having data from past workouts was helpful because the leadership could identify a goal and push the soldier to achieve it on the next workout. Fourth, the platoons that thoroughly embraced the intent of the program, built on the troop's plan and studiously tracked their soldiers' scores in workouts not only saw a better fitness result but also better levels of motivation from across the platoon on a daily basis. In the end, CrossFit not only helped our soldiers achieve a higher level of fitness, but the fitness program also increased morale. Physical training was never a "waste of time," no matter the fitness level of the soldier.

Unfortunately, CrossFit did not fix every problem in our unit's approach to physical fitness. Good leadership (using strictly FM 21-20 methods) that is educated and motivated about fitness will be more effective than ambivalent leadership trying to implement CrossFit. Quality programming that achieves intensity, progression, balance and variety is difficult and requires constant re-evaluation. Macro and micro planning for physical-training events are a necessity, and physical training must be treated like a training event. Leaders need to use the eight-step training model. Overweight and underperforming soldiers still exist in units, no matter what program the unit uses. Our troop created a special-population PT group that had its own specially tailored CrossFit and nutrition-counseling program. However, no amount of good unit physical training can overcome lack of self-discipline in food choices and poor use of personal time. In short, the transition to using CrossFit is difficult and may require even more work on the part of leaders than using FM 21-20. CrossFit will also not solve basic leadership problems and may not fix some internal motivation problems in soldiers. However, we found that a CrossFit approach could address the above challenges more effectively than the limited guidance in FM 21-20.

Below is a list of recommendations for implementation of CrossFit at the company level:

- 1. Get trained**—Have several of your key leaders attend a CrossFit Level 1 Certification. Then, expand the base of knowledge in your unit with foundations classes at a local affiliate or a train-the-trainer program with a good local trainer.
- 2. Study up**—Because CrossFit is an open-source program, simply spending time on CrossFit.com studying form, different workouts and methodology will improve your leaders' ability to critique form and program effectively. Read Paleo/Zone literature.
- 3. Get hold of limited equipment**—Even if it's ammo cans, water jugs and sandbags, have your platoons get a stash of equipment they can use for workouts. Try beginning with an investment in dumbbells (thanks to Andy Stumpf, a CrossFit HQ trainer, for the recommendation). Sets of 35- and 55-lb. dumbbells are extremely versatile for swings, thrusters, cleans, presses, etc. When you have the money to get more equipment, Rogue Fitness and Again Faster, among others, have military-oriented CrossFit packages and are certified for GSA purchases.
- 4. Develop a database of workouts**—Quality programming is difficult and an art as much as a science. Have your leaders begin with using workouts out of a solid database at the company level. On the CrossFit.com Web site, there are a couple of great lists of body-weight workouts. Start with the body-weight workouts, then start testing some workouts with whatever equipment you can get your hands on. You must scale to maintain intensity. For example, on different occasions we had to abandon pull-ups or use assisted pull-ups on some workouts because soldiers would get stuck at the bars and lose all momentum/intensity.
- 5. Train in the foundational movements**—Create an on-ramp program for the unit. Train the unit on the foundational movements with your unit's subject-matter experts. Use the videos and resources available on CrossFit.com to supplement the training and to see "what right looks like." Practice form at the beginning of every workout.
- 6. Create benchmarks**—Choose a few workouts that test a variety of skills and will serve as your unit's benchmark workouts. Use these workouts to gauge progress across the unit. Don't hesitate to use some of the CrossFit "girls," such as Cindy, Fran, Barbara, etc.
- 7. Cycle back to workouts**—Sacrifice a little bit of constant variety to cycle back to workouts the unit did several months or weeks back (perhaps the unit's benchmarks). It gives soldiers feedback on their physical capacity, can inspire confidence in the soldiers and gives leaders a reliable gauge on how their guys are progressing.
- 8. Specialize when necessary**—Whether running two miles within a certain time is reflective of a combat-related task or simply necessary for soldiers to pass the APFT, the requirement can't be ignored. If your unit is struggling with the running portion of the APFT, attack that weakness with programming that incorporates more running. The APFT is not changing any time soon, and high APFT scores are still good for soldiers' careers. I mandated the inclusion of certain CrossFit Endurance workouts (tempo and interval training) and running into the normal CrossFit workouts as a result of our run times on the APFT. By leaning in the direction of running, you are not abandoning CrossFit; you are just tipping the balance of your GPP.
- 9. Stay strict on form**—Soldiers will cut corners with form. For the workouts where it would benefit, we split the platoon in half, where one half did the workout and the other half watched form. After the first half was done with the workout, we switched. Units have to fight against the Army culture when it comes to form. Many soldiers have an attitude born out of the APFT that you can get away with bad form.
- 10. No barbell snatches on Day 1**—No barbell snatches on Day 60, for that matter. Even if you can get hold of the equipment, I only recommend incorporating highly technical lifting into programming for soldiers who show a solid grasp on the foundational movements. This may seem obvious, but I've seen eager leaders try to throw soldiers into lifts they couldn't handle. The great thing about using dumbbells, as mentioned above, is that soldiers can do Olympic-style movements with them relatively easily. Every Army leader who is a former athlete

knows that the Army has a surprising dearth of soldiers with athletic or weightlifting experience. For some soldiers, grasping the squat and replicating it correctly the next day was challenge enough

- 11. Quarterly competitions**—The best way to reinforce your unit's fitness goals is to stage competitions for the subordinate elements in your unit to go head-to-head. This can be a competition on the unit's benchmark events but can also be special workouts that test a variety of physical skills. Our troop tried to do a competition once a quarter, and we tried to make them fun events to create a positive association with fitness. The Hero WODs resonate loudly with soldiers and help tie the workout back to the ultimate objective. Nothing is more motivating in the push through that last mile of Murph than having your soldiers consider the sacrifices of Lt. Michael Murphy, for whom the workout is named.
- 12. Educate nutrition**—Soldiers can't outwork bad nutrition. Use the CrossFit program as a catalyst for educating soldiers on healthy choices. A major strength of CrossFit is a robust discussion about good nutrition that leads to optimal performance and long-term wellness.

### CrossFit and the Army

CrossFit brings highly effective functional movements such as Olympic lifting and gymnastics to athletes who would normally never have the exposure to those technical movements. Although the more difficult movements require practice and instruction, their payoff in efficacy is worth the sacrifice. CrossFit could not supplant FM 21-20 without a body of trainers with knowledge of the movements, a body of trainers with programming experience, and unit access to limited equipment. Units find ways to fill these gaps through contracting CrossFit trainers to work with leaders from the unit, creating databases of workouts, developing flexible but clear guidance on programming, and purchasing CrossFit equipment. One leader at Fort Hood, Lt. Col. Pete Andrysiak, commander of the 20<sup>th</sup> Engineer Battalion, was a visionary for the use of CrossFit as a physical-training program. The unit contracted a top CrossFit Headquarters trainer for its leadership, transformed a motorpool bay into a CrossFit "garage gym," and began its own affiliate (Lumberjack CrossFit). The 20<sup>th</sup> Engineers' use of CrossFit is an example of the power of committed leadership to an initiative.

The Army must re-examine its approach to physical readiness for combat. FM 21-20 and CrossFit seem to both espouse the necessity for GPP. Also, combat operations demand soldiers who have a broad range of physical capabilities in order to run fast, march long distances, lift heavy objects, throw objects great distances, scale great heights and fight in close quarters. The Army and individual units would benefit by asking several questions. First, they should ask, "Should we be sport- or activity-specific for certain physical skills?" In other words, are certain physical skills more important than others for certain specialties? Even if the answer is no, asking the question is worthwhile for guiding the balance in a training plan. Even if a unit determines that speed and strength are more important than stamina and cardiovascular endurance, it does not mean they must abandon CrossFit-style training. Instead, programming changes can create soldiers in the mold the unit intends. Second, they should ask, "Do we favor certain physical skills out of resource restrictions and ease of testing instead of necessity for combat? Is it possible that units tend to favor cardiovascular endurance and push-up/sit-up improvement for all the wrong reasons?" Regrettably, units that are concerned with APFT scores, cite lack of knowledge about muscular-strength training and have little access to equipment can develop cultures that favor certain skills. These skills may or may not be the most important skills for combat.

Last, they should ask, "How important is complete soldier fitness, to include health and wellness?" Recent experience in Operation Iraqi Freedom and Operation Enduring Freedom show the Army that holistic soldier "wellness" is extremely important. For the Army to address soldier wellness and create strong warriors, the time has come for the Army to change its approach to nutrition and lead a change in our wellness culture.

### The Final Salvo: Nutrition and the Army

Over the past 50 years, the American economy and culture have succeeded in substantially lowering the cost of what we eat, creating a massive surplus of highly processed, sugar-infused food; cultivating the unhealthiest population on the planet; and creating mass confusion about nutrition. The U.S. Army has been the unwilling recipient of these gifts from American culture but has made very little effort to reverse the tide of un-wellness. The Army needs to lead a change in its culture through nutrition education, resources and policy to create the world's fittest fighting force.

Society and the Army constantly surround soldiers with unhealthy choices. Soldiers are not innocent victims, however. The pace at which soldiers consume energy drinks, candy, sodas and pastries is nothing short of incredible. However, the Army as an organization does not exactly discourage these choices. In garrison, vending machines full of candy and soda line the barracks, convenience stores within walking distance of the barracks are stocked with choices that have a 99 percent chance of being unhealthy, and the installation-contracted fast-food restaurants are hardly full of smart choices. In the field, mess halls push out a cornucopia of highly processed foods in addition to their cooked meals; meals-ready-to-eat have an enormous amount of unhealthy and processed carbohydrates; and, to add salt to the wound, the Army allows men driving vehicles dubbed "gut trucks" to visit training areas, pedaling food to soldiers that might kill small children and pets. While deployed, the Army pushes huge quantities of sodas, desserts, pastries and fatty or breaded meats to outposts; massive dining facilities provide fantastic opportunities for soldiers to gorge themselves on poor choices; and meals-ready-to-eat make an encore performance.

The Army needs a multifaceted approach to help soldiers with the health choices they face. I have found through nutrition counseling and education within the units with which I have served that many soldiers crave knowledge about good food choices. Many soldiers simply can't navigate through the mixed signals from media, government publications (USDA) and diet fads. Positive unit cultures that encourage health and fitness will perpetuate themselves. Certain soldiers will always ignore education and make poor choices despite the efforts of the unit, but the Army cannot let this group of soldiers discourage education of the rest.

A culture change in the Army must occur. The Army has a plethora of methods to improve morale for soldiers enduring difficult situations, but the Army often uses junk food as a primary means. Unhealthy foods should not be used as comfort for soldiers enduring less-than-optimal conditions. The Army needs to break the association of unhealthy foods with high morale and "taking care of soldiers." In the long run, poor foods that contribute to obesity, disease and unbalanced body composition achieve exactly the opposite of the Army's short-sighted objective of improving morale. More importantly, poor food choices decrease soldier energy and reduce soldier attentiveness.

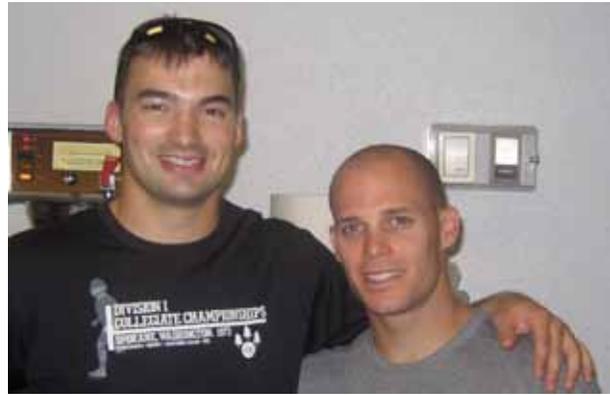
First, the Army needs to provide straightforward education to soldiers at every turn: basic training, concurrent training, and in common areas such as mess halls, barracks, gyms, and unit areas. Second, the Army needs to provide more opportunities for leaders and soldiers to receive quality education about nutrition. Nutrition education should have its own week-long certification that gives soldiers promotion points for passing knowledge-based and practical exams. Nutritionists should be available to every brigade-level unit to advise mess halls and food-distribution practices. Last, the Army should revise policies to eliminate vending machines from barracks, mandate certain numbers of nutrition SMEs for units (perhaps in conjunction with advanced fitness training), disallow "gut trucks" from accosting units trying to train, restrict the amounts of unhealthy foods pushed to units, and increase the amounts of healthy snacks available.

### Progress

The gears of progress are in motion. Military-base CrossFit affiliates exist on several different Army posts. Centurion CrossFit Fort Hood is a massive facility that is paving the way for the integration of CrossFit and CrossFit affiliates into installation fitness programs. Spearheaded by Maj. Don Clarkson and Capt. Dave Taylor, volunteer trainers from the military and hired civilian trainers run classes six days of the week at the non-profit affiliate. Maj. Gen. Grimsley, the acting senior commander at Fort Hood and a large supporter of CrossFit, has also vowed to take on some of the more difficult challenges in resources and nutrition mentioned above.

However, the fight for quality fitness programs continues. For example, senior leaders at Fort Hood have been known in the past to mandate running formations no smaller than a platoon during hours of physical training. This policy forced units to abandon aggressive cardiovascular endurance workouts. This policy was in direct contradiction to FM 21-20's strong recommendations against unit runs that do not account for differences in soldier fitness levels. FM 21-20 suggests that this type of training hurts soldier morale and does little to achieve key principles of exercise. Policies like these create negative fitness cultures that force company-level commanders to focus on creativity to avoid violating policy instead of creativity to develop solid programs that prepare soldiers for combat. Aesthetics are important in some cases to teach discipline in conventional units. However, aesthetics have little place in physical training.

Changing the Army's approach to wellness and revising the Army's physical-training methods and implementation are not simple endeavors, and I do not mean to oversimplify the bureaucratic complexity of the process. Changes would require a resurrection and modification of the Master Fitness Trainer program, research, packaging of the final product for the entire Army, resources for on-going education, equipment, policy changes, and command influence to inspire cultural change. However, these endeavors are worthwhile and would benefit the Army in ways that extend beyond soldier fitness. CrossFit provides a fantastic opportunity for the U.S. Army to learn from an incredibly effective fitness program. The Army needs to embrace and encourage the experience units are having with the use and integration of CrossFit. The Army can use momentum from the grassroots level to overcome inertia and informally test methods. The foundations and many of the methods in CrossFit are remarkably similar to FM 21-20, and the differences can only improve the evolution of the Army's physical-training programs. Supporters of both programs can and should work together to create a better product for our Army and the fitness of our soldiers.



Courtesy of Capt. Matt McKee

### About the Author

*Capt. Matt McKee is a cavalry troop commander in the 3rd Armored Cavalry Regiment (ACR) at Fort Hood, Texas. McKee deployed to Iraq several times and led various units in combat operations. He is also a certified Level 1 CrossFit and CrossFit Endurance volunteer trainer at [Centurion CrossFit Fort Hood](#). The highlight of his CrossFit career was meeting Chris Spealler, Adrian (Boz) Bozman and Coach Greg Glassman all in the same month. McKee would like to thank Maj. Don Clarkson and Capt. Dave Hortman for their assistance with this article.*