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Module 6: High Caliber Nutrition In The Field

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This module of Performance Nutrition will investigate the importance of adequate nutritional intake during field operations to support physical and mental performance.

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Introduction

"Patrolling is an all day process. . . You're in a hole one minute, you're out the next. . . You're always concentrating on getting from point A to point B. When you're moving out a distance of 800 meters or so, you become tired because there are a lot of hills. The terrain requires a lot of upper and lower body work, depending on the weight you're carrying. Most of the time you're too tired to eat." -MARINE CORPS STAFF SGT.

FACT

Field training and combat may be the most physically demanding work you do in the military. You need food and water to give you energy and to keep you alert for the long hours, strenuous work and extreme environmental conditions you encounter in field training. In fact, eating and drinking can be critical to your performance in the field.

CHALLENGE

Yet many military personnel ignore nutrition when in the field. Granted, it can be difficult to eat regularly in the field. But poor nutrition in the field can lead to reduced endurance, strength and concentration. You lose your edge. In combat, losing your edge could lead to injury or death, for you or your fellow troops.

This material will show you how nutrition affects your performance in the field and how you can eat for performance, even in the strenuous conditions of field exercises and combat.

KEY CONCEPT

Adequate nutritional intake is important during field operations to support physical and mental performance.

OBJECTIVES:

With this manual you can learn how to:

- ▲ Recognize the importance of adequate food and fluid intake during field operations.
- ▲ Identify appropriate food and fluid choices during field operations.
- ▲ Identify and manage key nutritional issues when training in hot, cold, and high altitude environments.

The Elements of Military Performance



What and when and how much you eat affect all of these elements.



Eating In The Field

Throughout this module are recommended food lists. Look at these lists and select which foods you would prefer to eat.

ENVIRONMENT	LISTS	PAGE
Any Extreme Environment:	Good High-Carbohydrate Snacks	6-5
Cold Environment:	What To Drink In The Cold	6-8
Hot Environments:	When Heat Takes Your Appetite	6-13
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High Altitudes:	Go Light On These High-fat Snacks In High Altitudes. <i>This is a list of foods to avoid! Which food(s) will be difficult to avoid?</i>	6-16
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Burning Energy

When you are conducting field operations, either for training or in combat, chances are you are much more active than you are in garrison. In fact, during field operations you may burn as much energy as a competitive athlete burns in an endurance event.

This chart compares the amount of energy you burn in some typical field and combat activities to the amount of energy burned in some athletic activities.

CALORIES BURNED PER MINUTE

MILITARY TRAINING	CALORIES BURNED/MIN	ATHLETIC ACTIVITY	CALORIES BURNED/MIN
Grenade throwing	6.0	Calisthenics	5.8
Litter carry w/ 178 lb person	6.7	Hunting	6.7
Forward area foxhole digging	6.8	Baseball pitcher	7.0
Carrying boxes of ammo	7.3	Nautilus	7.1
Trooping ridge position	7.3	Tennis	7.4
Forward area position digging	7.7	Walking treadmill 4 mph	7.5
Rifleman in fire fight	7.9	Canoeing, fast	7.9
Walking, 3.5 mph, 66 lb load	8.1	Soccer	8.9
Rapid marching w/rifle & pack	8.4	Football	9.0
Creeping & crawling in full gear	9.0	Skiing hard snow, mod.	9.2
Backpacking, general	9.0	Rowing machine, mod.	9.3
Loading & unloading trucks	9.0	Water skiing	9.4
Cross country skiing, 55-77 lb pack, 3 mph	10.2	Backpacking, with 11 lb load	9.9
Rock or mountain climbing	10.3	Swimming, crawl, fast	10.6
Digging trenches	10.9	Cross country skiing	10.6
Climbing hills, 44 lb load	11.4	Basketball competition	11.4
Snowshoeing, soft snow 2.5 mph	12.8	Cycling racing	12.0
Walking in loose snow, 44kg. load, 2.5 mph	20.2	Boxing, in ring, match	17.1

Note: These figures are based on the energy output of 170-lb. male. Women burn about 10% fewer calories than a man weighing the same amount, doing the same activity.

HOW EATING FOR PERFORMANCE HELPS YOU IN FIELD TRAINING ...

- ▲ Decreases fatigue.
- ▲ Increases endurance.
- ▲ Prevents dehydration.
- ▲ Maintains mental alertness.
- ▲ Reduces constipation and diarrhea.
- ▲ Reduces risk of injury.
- ▲ Helps maintain emotional stability.
- ▲ Maintains morale.
- ▲ Maintains body's defense system.
- ▲ Prevents muscle loss and maintains strength.

Vitamin & mineral pills cannot make up for a poor diet.

More Energy Than A Competitive Athlete

When you are in the field, you could be using even more energy than a competitive athlete.



▲ DURATION

You could burn more energy because you are active longer. You may be on the go 12, 14, even more hours in a day in the field, with little time for rest and recovery.

Most athletes, on the other hand, train and compete for only several hours a day. A marathon runner runs for two or three hours. A grand tour bicyclist rides from one to eight hours in a day. An Olympic decathlon competitor may compete all day, but only for short periods, with some rest between events.

And, unlike the athlete who competes one day at a time, you are working long hours in the field for days at a time.

▲ DIFFERENT TYPES OF ACTIVITIES

During a day in the field you probably perform a range of activities. Most athletes do only one type of activity.

Sometimes you are doing several types of activities at the same time —

Endurance ...Continuous walking, patrolling, road marching, cross country skiing, underwater swimming.

Short bursts of high intensity activity...running, airborne jump, mortar assembly, emergency medical assistance, hand to hand combat.

Strength activity ...Carrying a mortar, lifting ammunition, bearing a stretcher, emergency vehicle repair, lifting supplies.

▲ LOAD BEARING

You could be walking or even running with a weapon and a full load ... 50 or more pounds of extra weight. You burn more energy when you carry additional weight.

Olympic hurdlers, on the other hand, don't compete with packs on their backs. A marathoner doesn't carry a weapon across the finish line.

▲ EXTREME ENVIRONMENTS

In the kind of extreme environments you often encounter in the field or in combat — heat, cold, and high altitude — you burn more energy than you do in temperate environments. In a day of mountain training, you burn more calories than a world class cyclist in the grueling Tour de France bicycle race.

WORK LIKE AN ATHLETE, EAT LIKE AN ATHLETE

You've already seen that you can work as hard as an athlete when you are in the field. The same factors that are required for top athletic performance are needed for top military performance.

Athletes need training, conditioning, and motivation to win. You need training, conditioning, and motivation to perform your best.

Athletes are also discovering that nutrition is critical to athletic training and performance. It's the same for you in military training and field operations.

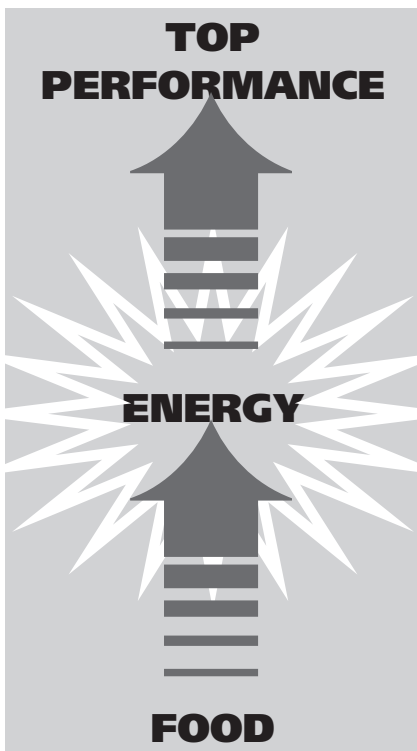
What and how much you eat and drink can mean the difference between top performance and struggling to complete a mission. In extreme cases, these could mean the difference between life and death.

Basics Of Performance Eating

These rules of thumb are the basics of a performance diet recommended for athletes. They can help you achieve top performance in military training and combat.

RULE OF THUMB	WHY	FOR TOP PERFORMANCE
EAT THE RIGHT AMOUNT OF FOOD	<i>Food gives you energy. Not enough food = fatigue. Too much food = unwanted pounds.</i>	Balance food intake and physical activity ... energy in, energy out.
LOTS OF CARBOHYDRATES	<i>Energy nutrient for a quick start, short bursts of energy and the long haul. Prevents fatigue by maintaining blood sugar and filling energy-giving glycogen stores.</i>	55-70% of your calories — 400-500 grams a day - should be carbohydrate.
ADEQUATE PROTEIN	<i>Builds and repairs muscles and tissue. Needed to heal wounds and fight infections.</i>	Total daily protein intake should be 12- 15% of calories, or 60-150 grams.
LOTS OF FLUIDS	<i>Prevents dehydration, which reduces physical and mental performance.</i>	Drink frequently, at least 4-6 quart canteens a day.
NOT TOO MUCH FAT	<i>Burned for energy, but slow to kick in. Body stores plenty of fat. Too much fat fills you up before you get enough carbohydrate, your premium energy nutrient.</i>	If you get 400-500 grams of carbohydrates in the field, 30-35% of calories from fat (amount of fat in rations) is OK.
VITAMINS AND MINERALS	<i>The spark plugs in your engine, they keep body functions running smoothly.</i>	Eat a variety of foods. Operational rations provide adequate quantities of vitamins and minerals if you eat all components.

Field Operations: You Need To Eat More Food



- ▲ Food gives you energy.
- ▲ The more energy you burn, the more food you need.

So, if you are more active during field training and combat than you are in garrison, you need to eat more in the field.

Yet studies show that troops in the field and in combat eat 20 to 40 percent less than they need. This means that, in many cases, troops are not eating enough to give them the energy they need for their increased activity.

Not eating enough can lead to rapid weight loss, which can hurt physical and mental performance. Rapidly losing as little as two percent of your weight — that would be only 3.5 pounds for a

170-pound man — can slow you down and decrease your endurance and mental alertness. Your risk of injury and making a bad judgment are increased.

When you lose weight rapidly, you also lose muscle and other important tissues. That means you are losing strength, which is vital to performance.

If you severely deprive yourself of calories, you can lose your motivation and become depressed. In a survival situation, depression can be life-threatening.

Food also gives you valuable fluids. You lose fluids during rapid weight loss, which can dehydrate you and hurt your performance.

**OVERHEARD IN THE FIELD:
WHY SOME PEOPLE DON'T
EAT DURING FIELD
OPERATIONS ...**

"No time to eat."

"I want to lose weight."

"Don't like the food."

"Too tired to eat."

"I'd rather sleep."

"Too hot to eat."

"Too nervous to eat."

*"I want to get constipated so I
don't have to go to the
bathroom."*

Eating the amount and kind of foods you need for top performance can be difficult in the field. In combat, it can be even harder. But realizing how important nutrition is for performance may help you overcome the barriers to eating a performance diet in the field.

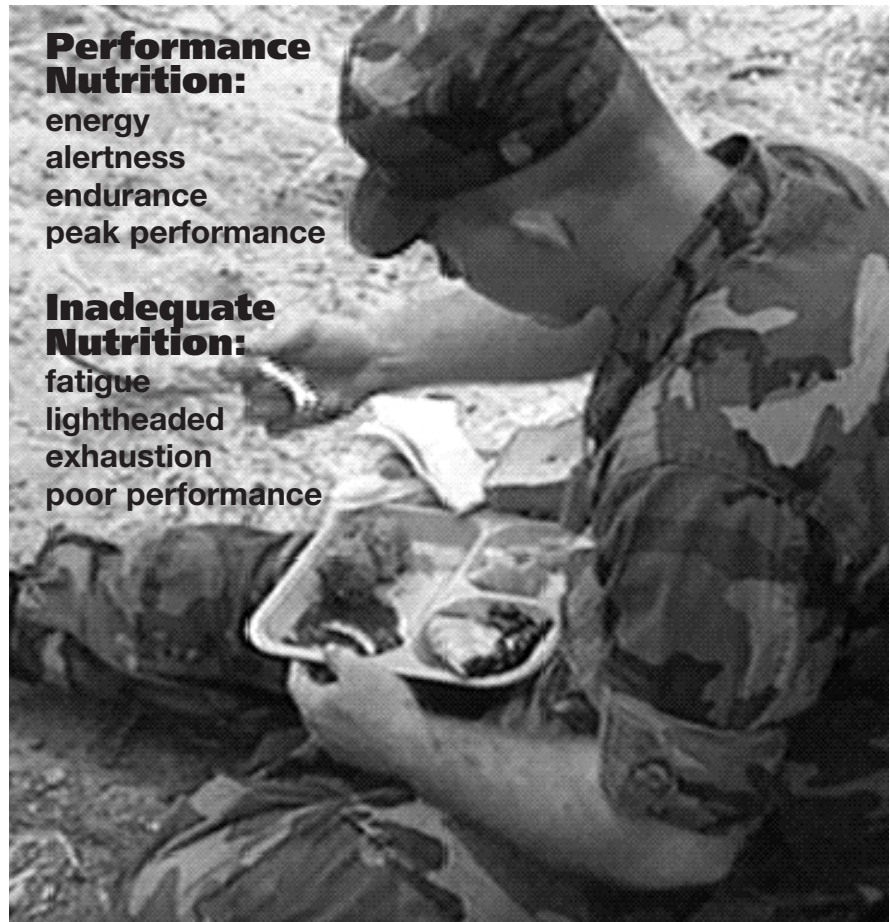
**GOOD
HIGH-CARBOHYDRATE
SNACKS**

CRACKERS
COOKIE BARS
BREAD
GRANOLA BARS
CANNED FRUIT
FRUIT NEWTONS
BAGELS
CEREAL
JUICE
INSTANT NOODLES
HOT CHOCOLATE

*Grapefruit,
while a wonderful food,
does not increase
the rate that
your body burns fat.*

**Don't Use Field Exercises As A Weight
Loss Exercise**

Most rapid weight loss is water loss. You'll probably regain it as soon as you're out of the field. If you want to diet, moderately decrease calories and fat. Go slow, be patient, and make it a permanent weight loss.



**Performance
Nutrition:**
energy
alertness
endurance
peak performance

**Inadequate
Nutrition:**
fatigue
lightheaded
exhaustion
poor performance

Lots Of Carbohydrates

Carbohydrate is the premium energy nutrient. For top performance, at least 55-60% of your calories — or a minimum of 400 grams per day — should come from carbohydrate.

Carbohydrates are stored in your muscles and liver as glycogen. Glycogen gives you instant energy for short burst activities such as running across a field with a full load. It also gives you endurance energy for things like forced marches and patrolling. Adequate carbohydrate also will prevent you from using precious body protein for energy.

Glycogen runs low after about two hours of continuous activity. That's when you can begin to feel lightheaded, tired or even run out of energy altogether, the way marathon runners do when they "hit the wall."

Eat carbohydrates frequently to keep your energy supply going. Complex carbohydrates in foods such as bread, cereal, energy bars, potatoes, crackers, rice, and noodles are the best source of carbohydrate.

Without adequate carbohydrates, your blood sugar goes down, which can cause decreased mental alertness. You have trouble making decisions.

When you don't eat enough carbohydrates, your glycogen levels go down. You become fatigued and increase your risk of injury.

Fat. Okay, But ...

You need to eat some fat. Body fat burns as energy. It also helps keep you warm in cold weather.

But eating too much fat can fill you up before you get enough carbohydrate, your primary energy nutrient. Since fat from food is easily stored as body fat, excess fat can slow you down when it adds unwanted pounds.

In some extreme environments high-fat foods cause stomach discomfort, which hurts performance.

Don't feed your fat cells when it's your carbohydrate stores that need refueling. Avoid high-fat snacks in the field. Rations supply a good balance of carbohydrate and fat to give you the energy you need.

What To Drink In The Cold

Best

Water
Cocoa - warms you, has carbohydrates, is lower in caffeine than coffee.

Okay, but not as good

Coffee and other caffeinated beverages - caffeine increases sleeping difficulty and urination, which increases body water loss and leads to dehydration.

Not good

Alcohol - Alcohol does not warm you up. It does just the opposite. It lowers your body temperature. It also slows your reaction time and decreases mental alertness.

Military Rations Are Good Performance Meals

- ▲ They give you the most nutrition in the smallest package.
- ▲ They are made with real foods.
- ▲ Some ration components are fortified with added nutrients. That means when you eat a variety of ration components you can meet your performance needs during field operations.
- ▲ They are not high-fat - By military standards they contain no more than 35% of calories as fat. This is a greater percentage of fat than is recommended for less active times, but you may need more fat in the field to get the calories you need.
- ▲ They require little or no preparation.
- ▲ They are packaged to retain their wholesomeness and nutrition for long periods of storage.
- ▲ They use special packaging rather than preservatives for long shelf life.
- ▲ Ration developers continually improve and test new rations based on feedback from the field.



IF YOU CAN'T EAT THE WHOLE RATION ...

One meal in a non-restricted operational ration contains 1200 to 1300 calories. To meet energy needs in the field, most people should eat all three meals.

Tips

If you can't or don't want to eat all of the food in the rations ...

- ▲ Eat some of each component to get a balance of nutrients.
- ▲ Eat the high carbohydrate items first.
- ▲ Save unopened dry snack items to eat when you're on the move.

NOTE FOR WOMEN

An entire ration may have more calories than many women need to maintain body weight during field exercises. Share your ration with another person if the entire ration is too much for you. Be sure to eat some of each component to get all of the important nutrients.

*“Fortified” foods
have some added vitamins & minerals,
but they do not have all the nutrients you need.*

Fluids

DRINK, DRINK, DRINK

Water is your most critical performance nutrient. Not drinking enough water dehydrates you — dries you out. Remember, if you fall out because you didn't drink enough, someone else has to pick up the slack.

When you are physically active, your body loses water more quickly than it does when you are sitting at a desk. You can become dehydrated at any temperature, regardless of how physically fit you are, but you are at even greater risk of dehydration in extreme climates.

Losing weight in the field often means you are losing water. You can lose several pounds of water in a short time doing heavy physical work.

The chart below shows you how dehydration can affect you. Even mild dehydration can reduce your physical and mental performance. Dehydration can lead to heat exhaustion and heat stroke. Severe dehydration can kill you.

TO AVOID DEHYDRATION

DRINK cool, plain water. Water is emptied from the stomach faster than other fluids.

DRINK even if you're not thirsty. By the time you're feeling thirsty, you are already dehydrated.

DRINK frequently to maintain your body's water. Drink at least 4 canteens of water a day.

BEFORE ACTIVITY- Drink 1 — 2 1/2 cups cool water before you start any physical activity.

DURING ACTIVITY- Drink 1-2 cups (about 1/2 a canteen) an hour or at every rest break.

DRINK more in extreme climates, especially heat and dry air.

LOOK for signs of dehydration.

POSSIBLE PERFORMANCE EFFECTS OR SYMPTOMS OF DEHYDRATION		
MILD DEHYDRATION 1-5% BODY WEIGHT LOSS	MODERATE DEHYDRATION 6-10% BODY WEIGHT LOSS	SEVERE DEHYDRATION 11-20% BODY WEIGHT LOSS
Thirst	Dizziness	Delirium
Vague discomfort	Headache	Muscle spasms
Minimized physical capacity	Weakness	Swollen tongue
Loss of appetite	Shortness of breathe	Can't swallow
Flushed skin	Tingling in limbs	Deafness
Impatience	No saliva	Dim vision
Sleepiness	Mental confusion	Shriveled skin
Difficulty concentrating	Slurred speech	Painful urination
Nausea	Inability to walk	Numb skin
Dark yellow or brown urine		Kidney failure
		Death

A DANGEROUS MYTH

"If you don't drink during physical activity, you can condition your body to go without fluids."

**Do Not
RESTRICT
Fluids!**

THE TRUTH

You cannot condition your body to go without water. Not drinking is dangerous.

Everyone can become dehydrated. World class athletes, recreational athletes, young, old, thin, overweight, muscular — everyone is at risk of becoming dehydrated when they don't drink.

Drink often. Drink before you feel thirsty. Dehydration has already set in by the time you are thirsty.

Do Not Take Salt Tablets!

Salt tablets DEHYDRATE you. They absorb valuable water and keep it from going to your muscles. The sodium and electrolytes you lose in sweat can be easily replaced with food.

Some Tactics For Performance Nutrition In The Field



- ▲ Try to eat at least **THREE TIMES A DAY**

Your energy stores run down after several hours. Restore them with food regularly. Stopping to eat also restores morale.

- ▲ **BEFORE** activity, to **BUILD UP** your glycogen stores — try to eat a meal or substantial snack 2-4 hours before heavy physical work or exercise. If you can't, eat a light high-carbohydrate snack or drink a sugar-sweetened (not artificially sweetened) beverage up to one hour before physical activity.
- ▲ **DURING** activity, to **MAINTAIN** your glycogen stores — drink a sugar-sweetened beverage base mix from your rations or eat crackers, a cookie or granola bar.
- ▲ **AFTER** heavy work or exercise, to **REPLENISH** your glycogen stores — eat a high-carbohydrate meal or snack (50-100 grams carbohydrate) within 30 minutes to two hours.
- ▲ **SNACK** when you can — Take high-carbohydrate pogy bait or save unopened snack items from rations to eat on the run.
- ▲ Eat **SOME OF EVERYTHING** served by field kitchens or in the ration to get all of the nutrients. A balance of nutrients is necessary for top performance.

- ▲ Eat whenever you **HAVE THE CHANCE**, even when you don't feel like it. Think of nutrition as a combat multiplier. Just as your weapons need ammunition and your vehicles need fuel to complete the mission, you need food to perform your best in the field.

- ▲ **DRINK FREQUENTLY**, even when you're not thirsty.

GO TO THE FIELD PREPARED

Maintain a performance diet in garrison. A regular high-carbohydrate, low-fat diet with adequate protein, vitamins and minerals will build up your nutritional fitness before you go into the field. (See "Nutrient Functions & Sources" Chart on following pages.)



FOOD SAFETY IN THE FIELD

Eating and drinking contaminated food and drink can seriously hurt your performance. In hot climates, bacteria and other organisms breed quickly and can get into food and water that is handled improperly.

That bacteria can cause diarrhea and other stomach and intestinal illnesses. Diarrhea and vomiting can cause serious, even life-threatening dehydration.

To prevent food and drink contamination in the field:

- ▲ Purify any water, ice or snow you use for drinking — even if purification takes a long time.



- ▲ Keep only purified water in your canteen.
- ▲ Mixed powdered beverage base in a cup, **NOT** in your canteen. Adding anything to your canteen interferes with the action of water purifiers. And, the sugar in the beverage base would be a food for any bacteria that gets into you canteen.
- ▲ Protect food and beverages from insects, rodents, dust and humidity.
- ▲ Assume that all native foods are contaminated and can cause stomach and intestinal problems. Fresh fruits and vegetables from underdeveloped countries can carry bacteria because they are frequently grown in soil contaminated by human feces. Always wash and peel or cook native fruits or vegetables before you eat them.
- ▲ Know how long leftovers from opened individual ration packets can be safely kept.
 - Opened wet-pack rations (entrees, fruit) should be eaten or thrown away within two hours in moderate temperatures and immediately in hot climates.
 - Opened dry components (bread, candy, cake, beverage powders) should be eaten or discarded after two days.

Nutrient Functions & Sources

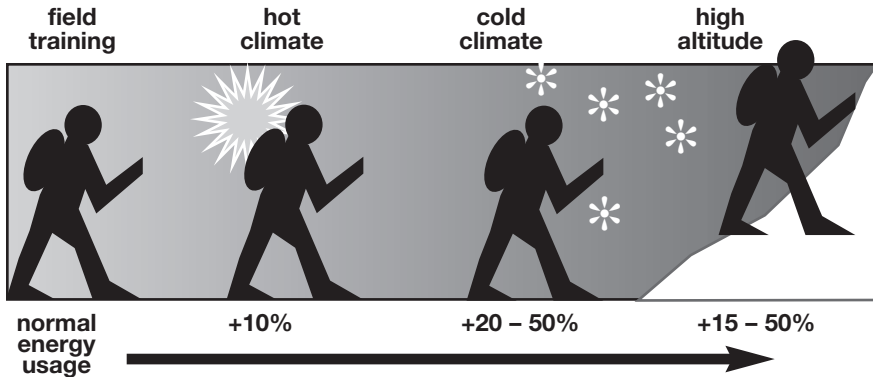
Nutrient Functions & Sources (con't)

Nutrient Functions & Sources (con't)

Tactics For Performance Nutrition In Extreme Environments

Field training in extreme environments presents special performance nutrition requirements. For one thing, in heat and cold and at high altitudes you burn more energy than you do in a temperate climate. Therefore, eat more in extreme environments to fuel your increased energy needs.

Energy Expenditure Variations



Extreme environments create other risks that performance nutrition can help you overcome.

Hot Climates

INCREASED RISKS

1. Dehydration

- ▲ Extreme heat causes your body to heat up faster, which makes you sweat more. That means you need more water to stay cool.

When you're carrying a load or working in chemical protective clothing, your water needs are even greater.

2. Rapid body weight loss

- ▲ Heat suppresses appetite, especially during the first few days of training. You may not feel like eating the amount you should to refuel the energy you are burning.

When you don't eat in the heat, you are not getting enough calories. Rapid weight loss reduces your muscle strength. You also may not be replacing the salt you lose in sweat.

Also, food is a good source of fluids. The result of not eating in hot climates can be fatigue, dehydration, heat injury, and illness.

3. Water and food-borne illness

- ▲ Heat encourages growth of germs in food and water. Illness caused by consuming contaminated food and water can lead to nausea, vomiting, diarrhea, and fever, which increase your risks of dehydration and heat injury.

WHEN HEAT TAKES YOUR APPETITE

Here are some foods that might be more appetizing in the heat. They are high in carbohydrates and low in fat. Sometimes eating a snack will get your appetite going, so you'll feel like eating more.

CRACKERS
COOKIE BARS
CANNED FRUIT
BREAD
GRANOLA BARS
JUICE
BAGELS
FRUIT NEWTONS
INSTANT NOODLES

Remember, dehydration takes away your appetite. So keep drinking.

HOT CLIMATE

PERFORMANCE NUTRITION TACTICS

THE DO'S

- ▲ DO follow work/rest cycles.
- ▲ DO drink regularly, often and before you feel thirsty.
- ▲ DO drink 10-12 quart canteens of water a day.
- ▲ DO drink up to 22 quart canteens of water a day if you're wearing chemical protective clothing in extreme heat.
- ▲ DO monitor urine color. If it is dark yellow or brown instead of pale yellow, drink more.
- ▲ DO watch for signs of dehydration in yourself and others.
- ▲ DO eat slightly more than usual.
- ▲ DO try to eat at least three meals a day.
- ▲ DO try to eat snacks between meals.
- ▲ DO eat high-carbohydrate, lowfat foods.
- ▲ DO purify water. Boil stream water for at least 10 minutes.
- ▲ DO mix beverage powders in a cup, not in your canteen.

THE DON'Ts

- ▲ DON'T restrict fluids.
- ▲ DON'T go on a diet in the field.
- ▲ DON'T drink unsterile water or ice.
- ▲ DON'T add beverage powders directly to canteen.
- ▲ DON'T skip meals.

AVOID THE FAT

Stay away from high-fat foods in hot weather. Fat is harder to digest and might suppress your appetite even more. These are not good hot-weather foods.

CANDY BARS

DOUGHNUTS

CHEESE

SNACK CAKES

SAUSAGE

JERKY

NUTS

Cold Environments

INCREASED RISKS:

1. Hypothermia

- ▲ A life threatening condition that results when your body can't make enough heat to keep you warm. Along with proper clothing and shelter, food is critical to keeping you warm.

Dehydration can make you feel even colder. It impairs your shivering response and, if you are sluggish because of dehydration, you won't want to do physical activity which generates body heat.

When you lose heat, you lose strength and mental alertness. Losing too much body heat can lead to death.

2. Dehydration

- ▲ Even though you may not feel sweaty in a cold climate, you lose body fluid during physical activity. You also lose lots of water through your lungs when you breathe cold, dry air.

Dehydration can make you feel even colder. It reduces your appetite and impairs your shivering response.

3. Weight loss

- ▲ You might burn 20-50% more energy in the cold than you do in temperate climates. It takes extra energy to move in heavy clothing, move across snow and ice, and prepare positions in frozen ground. You also have to stay physically active or shiver to keep warm.

Not eating enough in cold climates can lead to fatigue and rapid weight loss. When you lose weight, you lose strength and critical heat-generating tissue and insulating body fat.

OVERCOME BARRIERS TO EATING IN THE COLD

Extreme cold can make it uncomfortable to prepare food and to eat. To maintain energy, it's important to eat high-carbohydrate foods regularly in the cold. Also, some fat in foods is more valuable in cold climates. It turns to body fat, which helps insulate you against the cold.

Eat warm foods. Heated food and beverages help performance in cold climates. They warm you up. A warm beverage or snack right before sleep can help you sleep more comfortably.

Don't eat unmelted, unpurified ice and snow. Eating ice and snow makes you colder, increases your risk of diarrhea, and can damage the lining of your mouth.

COLD CLIMATE

PERFORMANCE NUTRITION TACTICS

THE DO'S

- ▲ DO heat food and beverages when you can.
- ▲ DO have a warm beverage or snack before sleeping.
- ▲ DO drink more than your thirst mechanism tells you to — at least 4 quart canteens of water a day. Drink 5-6 quarts per day if activity level is high.
- ▲ DO melt and purify ice and snow before consuming.
- ▲ DO check the color of your urine for dehydration. It should be clear, pale yellow.

THE DON'Ts

- ▲ DON'T diet during cold weather training.
- ▲ DON'T try new fad diets, such as high-fat diets which are thought to be good for you in the cold. Changing your eating habits can cause stomach and intestinal problems, which hurt performance.
- ▲ DON'T have only cold food and drinks.
- ▲ DON'T eat ice or snow.
- ▲ DON'T drink alcohol. It lowers your body temperature.
- ▲ DON'T eat extra salt or salt tablets. Salt increases your need for water.

High Altitude



At high altitude you have to perform skilled movements with speed and coordination. Cold, lack of oxygen and hazardous terrain increase the physical and mental stress of altitude operations.

Nutrition is critical to performance in high altitudes. You need enough of the right kind of food and fluids to maintain your energy, quick reflexes and mental alertness.

COMMON PROBLEMS:

1. Weight loss

- ▲ High energy demands and eating difficulties often lead to weight loss during mountain training. Some of that loss is body fat. Some is lean tissue. Weight loss at altitude can be incapacitating.

Weight loss can cause fatigue; loss of strength, mental alertness and morale; and decreased tolerance to the cold. These effects of weight loss can lead to accidents and failure to accomplish your mission.

When you work hard in rugged mountain terrain, you burn between 15 and 50 percent more energy than you do at sea level. Troops in intense mountain training may use as many as 6000 calories a day.

2. Loss of appetite

- ▲ At the same time, your appetite may decrease. Especially during the first several days at altitude, acute mountain sickness can cause nausea, vomiting, headaches, and lack of appetite. It takes less food to feel full, and the altitude can dull your sense of taste.

Food preferences can change. High-fat foods, which help boost your calorie intake, may not be appetizing.

Food preparation at a high elevation is difficult. Cooking time doubles for every 5000 feet you ascend. In the cold temperatures and thin air, food starts out colder and loses heat faster.

3. Low-carbohydrate intake

- ▲ Carbohydrates are especially important at altitude. They replace glycogen, your muscle's major source of energy. Carbohydrates also need less oxygen than other nutrients to be burned for energy.

A high-carbohydrate diet can help prevent or reduce the effects of acute mountain sickness. And carbohydrates maintain your blood sugar level. Low blood sugar causes confusion, disorientation and loss of coordination, a deadly state when one wrong move could plummet you off the mountain.

If you are having trouble keeping your weight up, eat high-carbohydrate snacks rather than high-fat snacks.

HIGH ALTITUDE

PERFORMANCE NUTRITION TACTICS

THE DO's

- ▲ DO keep calorie intake high— At least 3500 calories/day.
- ▲ DO eat portions of all ration foods and plan for snacks.
- ▲ DO try to have at least one hot meal a day.
- ▲ DO eat bland, low-fat foods if you're sick
- ▲ DO drink at least 5 quart canteens of water a day.
- ▲ DO start by eating small quantities of high-carbohydrate food and building to larger portions if you have stomach problems.
- ▲ DO melt and purify snow and ice before consuming.
- ▲ DO check the color of your urine for dehydration. It should be clear, pale yellow.

THE DON'Ts

- ▲ DON'T diet.
- ▲ DON'T skip meals or snacks.
- ▲ DON'T force yourself to eat if you're nauseous or vomiting.
- ▲ DON'T fill up on high-fat foods.
- ▲ DON'T stop drinking to avoid urinating.
- ▲ DON'T drink unpurified snow.
- ▲ DON'T drink alcoholic beverages.

4. Dehydration

Several things can increase the risk of dehydration at high altitude:

- ▲ Increased urination caused by altitude and cold.
- ▲ Increased water loss from lungs due to cold, dry air.
- ▲ Increased water loss from diarrhea and vomiting caused by acute mountain sickness (AMS).
- ▲ Decreased fluid intake due to nausea of AMS.
- ▲ Dulled thirst mechanism at high altitude.
- ▲ High magnesium content of glacier water can cause diarrhea, adding to body water loss.
- ▲ Giardia, an intestinal parasite common in high altitude regions, causes diarrhea, which can lead to dehydration.

5. Stomach Discomfort

The decreased oxygen and loss of body fluid you experience at high altitude can slow down digestion. Slower digestion can cause gas and constipation, which further reduce appetite.

IN HIGH ALTITUDES GO FOR HIGH CARBOS, LOW FAT

For top performance at altitude, 60-70 percent of your calories should be carbohydrates. You may need to bring extra high-carbohydrate snacks to maintain this percentage. (See page 6-5 for a list of high-carbohydrate snacks.)

Avoid high-fat foods at altitude. They can cause stomach upset at high altitude, and they might fill you up before you get the carbohydrates you need.

GO LIGHT ON THESE HIGH-FAT SNACKS IN HIGH ALTITUDES

SAUSAGE
JERKY
NUTS
CANDY BARS
CHEESE
DOUGHNUTS
SNACK CAKES

IF YOU'RE SUFFERING FROM STOMACH DISCOMFORT

Stick to bland, low-fat foods.

CRACKERS
BREAD
MASHED POTATOES
RICE
CEREAL
POTATOES
PUDDING

Sip liquids frequently.

IF YOU CAN'T STAND THE THOUGHT OF EATING SOLID FOOD:

Drink hot chocolate, sweetened tea or other beverage bases from your rations. They are good sources of carbohydrates and fluids.

A high-carbohydrate, glucose-polymer "sport drink" is also good. It's easier on your stomach than some high-sugar fluids.

DON'T DRINK ALCOHOLIC BEVERAGES

Alcohol can reduce performance in several ways at high altitude. For one thing, it is burned in your body like fat. It takes more oxygen than other nutrients to be converted to energy.

Alcohol also lowers your blood sugar, which causes fatigue. And it increases water loss, increasing your risk of becoming dehydrated. It contributes to heat loss and lowers your body temperature.

Alcohol disorients you and decreases mental alertness, increasing your risk of injury.



The Nutrition Connection To Performance Power In The Field

Your physical, mental and emotional performance will never be more vital than it is during field operations. Food and water are fuel for your most important weapons — your mind and your body.

A performance diet helps athletes succeed. A performance diet can help you successfully accomplish your mission. Do everything you can to maintain your energy levels in the field.

If your job in the field is more physical than in garrison, you need to consume more calories during field operations. Field operations are not times to drastically cut back on calories.

Eat high-carbohydrate meals or snacks every three or four hours to keep your brain thinking straight and your muscles ready for action. Eat some of each ration component to get a balance of all the vitamins and minerals you need.

Drink, drink, drink — regularly and often to avoid the performance decreasing effects of dehydration. Be aware of the increased energy and water needs in extreme environments.

Nutrition: A Force Multiplier

Summary Points

- ▲ Nutrition can affect your performance during field exercises.
- ▲ In the field you may work as hard as an athlete in training.
- ▲ To maintain top performance in the field, you should eat like an athlete.
- ▲ If you burn more energy in field training than you do in garrison, you need to increase your calorie intake.
- ▲ A performance diet is high in carbohydrate, low in fat and has a balance of other nutrients, including protein and vitamins and minerals.
- ▲ Eat some of each ration component for a balanced performance diet.
- ▲ Be aware of special nutrition needs in extreme environments.
- ▲ Drink regularly and often to avoid dehydration.

Now You Are Ready To Begin!

When conducting field operations:

	Yes	No	Unsure
1. Do you perform demanding physical work or exercise 3 or more days per week?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Do you often perform prolonged physical activities day after day?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Do you want your job to be easier?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do you want to improve your performance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Do you want to feel better?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Do you want more energy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you answered yes to most of these questions, then you need Performance Nutrition!