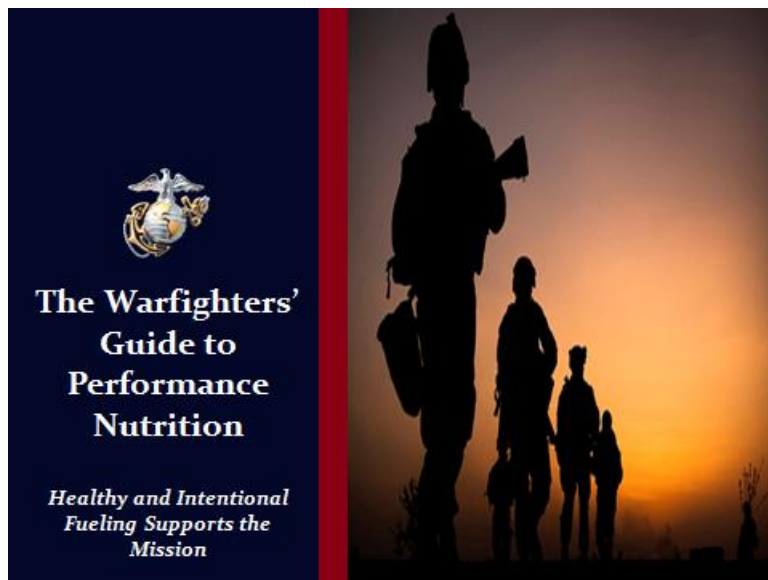


## SPEAKER NOTES FOR THE WARFIGHTERS' GUIDE TO PERFORMANCE NUTRITION

### SLIDE 1



### SLIDE 2



- USMC Fueled to Fight® program
- Macronutrient Education
- Nutrient Timing Considerations
- Performance Hydration
- Operation Supplement Safety (OPSS)

**NOTES:** Let's start with concept reinforcement that food and fueling is not to be treated or perceived as a luxury nor a reward, but an intentional effort towards nutritional fitness that will best support performance, physical fitness recovery, and a healthier warrior athlete within the Marine Corps.

### SLIDE 3



**NOTES:** This program is introduced in the mess halls to 100% of Marine Recruits and Candidates due to the fact that they are all meal card holders as are >60% of permanent personnel.

In June 2016 SECNAV released the Talent Management Initiative  
R 121505Z JUN 15 FM SECNAV WASHINGTON DC TO ALNAV

“Finally, each Service will continue to **advance nutrition efforts** to **provide** more **healthy eating options at sea** and **shore** facilities.”

### SLIDE 4



- To define a single system for product identification which enhances the Marine's ability to make *healthy choices*
- Establish a policy for color coding menu items within USMC mess halls for ease of use
- System intent:
  - Provide identifiable choices
  - NOT to prevent options



4

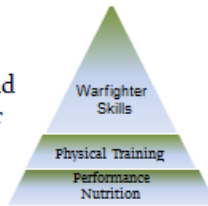
**NOTES:** This single system is a way to label foods for Marines to be able to immediately know what food choices and options are best for fueling their bodies.

The system is NOT there to dictate what every Marine eats, it's an educational tool. Marines will be able to make “informed choices” and still have all options available.

## SLIDE 5

# Fueled to Fight® Concept

- The Corps
  - Teaches Marines to locate, close with and destroy the enemy by fire and maneuver and to repel enemy's assault by fire and close combat.
- USMC Fueled to Fight®
  - Empowers and educates Marines on how to make informed fueling decisions in order to maintain a high level of performance to support the mission.
  - All foods can fit into a performance nutrition meal plan at USMC warrior athlete training tables.
  - Performance Nutrition Messaging is Key!!



5

**NOTES:** Fueled to Fight® (FTF) is a collaborative partnership between nutrition and fitness designed to optimize the health of the Marine Corps community, to ensure that active duty military are mission ready, and to enhance their physical performance.

USMC F2F Mess Hall Nutrition Education Program. The DOD sponsors a nutrition education program named "Go for Green®"; considered to be a Joint Service program. DOD's "Go for Green®" program is intended to help service members select foods, in accordance with a stoplight color-coding system, that best fuel their body and mind for optimal performance. The Marine Corps' F2F® nutrition education program exceeds the requirements of DOD's "Go for Green®" program. To date, only the Marine Corps has modified and centralized its food management information system to include nutrition analysis of food items, recipes and master menus for consistency of messaging.

The F2F® program will incorporate updates and modifications to DOD Menu Standards, United States Department of Agriculture (USDA) Dietary Guidelines, and Joint Military Medical Services Nutrition and Menu Standards for Human Performance Optimization publications.

## SLIDE 6



# System Logistics

- USMC Registered Performance Dietitians
  - Established color-coding policy (stoplight system)
  - Analyzed menu items and categorized foods
  - Considered system flexibility for both males and females
  - Ensure all Master Menus meet the Military Dietary Reference Intake (MDRI) values
  
- Mess Hall Management and Operations
  - Label menu items on serving line
  - Hang informational posters



6

**NOTES:** Program roll-out was formalized in all USMC mess halls in March 2016. Original development and messaging to the Marine Corps was initiated in July 2012.

It will take a partnership b/t USMC dietitians and mess hall management/operations for the program to be successful.

1. DoD dietitians established the single system for product identification based on a stoplight system. Using access to the dining menus, the dietitians then analyzed each menu item and categorized it based on the standards, which will discuss in a moment.
2. Mess hall management and operations will be in charge of labeling each menu item based on MCFMIS on the serving line and posting informational materials such as posters throughout each dining facility.

## SLIDE 7



# Fuel Stoplight System



- Linked with Master Menus that are intentionally designed for Marines to include nutrient density and quality.
  
- Color code designation requires an examination of each food as a whole, including additives, degree of processing, and nutrient values.
  - **GREEN - Engage At Will:** These foods are great choices for overall health, physical and mental performance.
  - **YELLOW - Well Aimed Shots:** These foods should be consumed occasionally because they are higher in total fat and saturated fat.
  - **RED - Check Fire:** Limit the intake of these foods because they are the highest in unhealthy fat and may decrease performance.



7




**NOTES:** USMC is in the business of developing a completely fit and trained Marine to which nutrition plays a part.

Program “color-coding” criteria is completed at the headquarters level by our warfighter and performance dietitian.

Each color category serves a purpose and even the RED food components serve a purpose and can balance caloric needs for some Marines.

**SLIDE 8**

 **Program Criteria**

	Green 	Yellow 	Red 
<b>Overall Nutrition Quality</b>	Least processed Wholesome, nutrient dense High fiber Low in added sugar Healthy fats	Moderate processed Low in fiber Added sugar or artificial sweeteners Low quality fats	More processed Lower quality nutrients Added sugar Excess fat and/or trans fat Fried foods
<b>Nutrient Specific:</b> <b>FATS</b>	55% of calories from total fat and 25% of calories from saturated fat  Foods with 25% calories from fat are considered healthier (it varies from unsaturated fat, including omega-3 fatty acids)	11-40% of calories from total fat and 11-25% of calories from saturated fat  Some fats can be consumed daily with close attention to portion size	55% of calories from total fat and 50% of calories from saturated fat  Trans fats are not authorized in dining facilities and must be avoided Saturated fats
<b>Nutrient Specific:</b> <b>CARBOHYDRATES</b>	Higher in fiber containing >5 grams of fiber  Most foods that have <10 grams of added sugar	Most products made with white or refined flour or other refined grains  Non-naturally occurring fibers (malt, chicky root, polydextrose, maltodextrin)	Low in fiber containing <2 grams  Most foods that contain >10 grams of added sugar
<b>Nutrient Specific:</b> <b>PROTEIN</b>	Plant-based proteins is almost always considered healthier  Lentils, oats of animal based proteins is considered healthier based on the amount and type of fat it contains	Highly processed plant proteins such as soy protein isolate  Lean cuts based on percentage of fat	Highly processed meats and meat products  Piled animal proteins or cuts with visible fat
<b>Other Specific:</b> <b>ADDITIVES</b>	5% artificial sweeteners  Naturally occurring foods generally do not have additives	Artificial sweeteners, including sucralose (Splenda), aspartame (Equal), saccharin (Sweet'N Low®), stevia (Splenda®)	Trans fats  Artificial colors are usually a marker of a highly processed food


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**NOTES:** Remind audience what color coding is:

- \*This criteria will guide the Marine Corps “training table” concept for performance fueling.
- \*Quick, simple guide to choose higher density quality foods
- \*Structured systemic program

USMC is moving in a very positive direction with performance fueling.

**SLIDE 9**

 **Macronutrient Education**



## SLIDE 10



### 80/20 Rule

- Each meal and snack is an opportunity to fuel your body optimally.
- Choose the foods that are best for you 80% of the time.
- Incorporate some of those foods that may not be the best, but are your favorites, 20% of the time.
- All foods can fit into a nutritional fitness plan.

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**NOTES:** Ask the audience if “I never told you to have one of your favorite foods again, what would you do/how would you feel?”

Our job is to give guidance and provide variety, but not dictate exact foods. This program is the shaping the beginning of some Marine careers and it must be realistic and effective.

## SLIDE 11




### Total Calories

- Marines need to consume adequate Calories to support high-intensity or long-duration training.
- This is often overlooked as there seems to be a priority placed on protein consumption rather than overall Calories.
- Inadequate Calories can result in loss of muscle mass, loss of bone density and an increased risk of fatigue, illness, injuries and poor recovery.

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**NOTES:** It is imperative that the full time to consume the meal is provided if the nutrition and full caloric load is available at the meal “training table”.

## SLIDE 12



# Macronutrients and Food Sources

The 3 macronutrients:

Carbohydrate = Fuel      Protein = Build      Fat = Energy Density

	Carbohydrate	Protein	Fat
Fruit	x		
Bread/Cereal	x	x	
Milk	x	x	x
Meats/Fish		x	x
Poultry		x	x
Fats/Oils			x

12

**NOTES:** Use this slide as a guide to emphasize that no one food group should be eliminated and can be potentially detrimental.  
Don't dismiss, if a Marine states they are hungry – they are in control of their physiological cues the body needs fuel.

## SLIDE 13



# Carbohydrates

- Main Sources: breads, cereals, grains, beans, fruit, vegetables
- Supply blood glucose, liver and muscle glycogen, decreases protein catabolism
- Think brown and found close to the ground – Best choices have >3g of fiber
- 3-4.5 grams per pound body weight for intake



### The Top 5 Grains



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**NOTES:** 6 – 10 gm/kg (2.7 – 4.5 gm/lb)

Needed pre-workout

Liver glycogen

Blood glucose

Decreases protein catabolism

Required post-workout for recovery

Replenishes liver and muscle glycogen

## SLIDE 14

# Protein

- Main Sources: lean meats, low fat dairy, eggs, beans/legumes
- Slows glycogen depletion, builds muscle, maintains immune system
- Protein needs increase with activity
- Never will more than 1g per pound for health or muscle gains be necessary



### The Top 5 Proteins



14

**NOTES:** 1.2 – 1.7 gm/kg (0.5 – 0.8 gm/lb) bodyweight  
Recommended pre-workout  
Slows glycogen depletion  
Required post-workout for recovery  
Repairs muscle

## SLIDE 15

# Fats or Lipids

- Main Sources: olive oil, canola oil, flax, nuts/seeds, avocado, tuna, salmon
- Healthy fats provide energy, help regulate blood sugar, improve cholesterol, and keep you feeling full.
- Omega-3 fatty acids improve cognition, decrease inflammation, and enhance heart health. Natural sources have an increased bioavailability.
- Try to get one serving of healthy fat per meal



### The Top 5 Fats



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**NOTES:** Tip of your thumb is one serving size.  
20 – 35% of total energy intake or 1.0 – 1.5 gm/kg BW/day.  
Energy source  
Provides essential fatty acids  
Carries fat soluble vitamins



## SLIDE 16



# Vitamins and Minerals

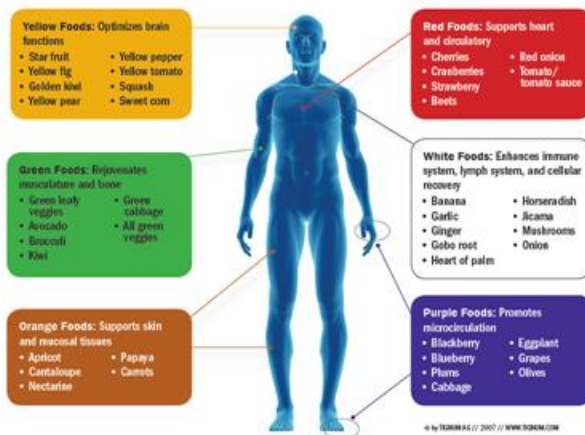
- Best Food Sources: fruits, vegetables, whole grains, beans, dairy, fish, eggs, nuts and seeds
- **The darker in color the more vitamins and minerals a food contains**
- No one food provides all the nutrients one needs
- **Variety is Key!**
  - Provides Antioxidants and Phytochemicals
  - Required for oxygen transfer and delivery
  - Required for tissue repair
  - Supports growth and development
  - Needed for many metabolic processes

16

## SLIDE 17




# Restorative Nutrition




17

**NOTES:** Variety is key!

SLIDE 18

 **Meal Guidance**

For maximum physical and mental performance,  
at every meal,  
eat carbohydrates, protein and drink milk.


	<b>Carbohydrates</b> = Fruits & vegetables, low fat milk/yogurt/soy milk, whole grain bread, pasta, cereal, oatmeal, beans, peas, corn, potatoes.	<b>Protein</b> = Low fat milk, yogurt, cottage cheese, & cheese, lean meats, eggs, fish & poultry, beans, nuts, and seeds, whole grains, soy products.
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\*Choose 100% WHOLE WHEAT OR WHOLE GRAIN products.

18

**NOTES:** This visual can be used as a general guide for instructors, cadre, leadership, who oversee Marine dining and would like to provide input. The leader's job is to enforce balance and variety and try to avoid specific food guidance. The Marine will select foods that are desirable and psychologically pleasing to them for strategic fueling.

SLIDE 19

 **Nutrient Timing Considerations**



## SLIDE 20



# Nutrition Science Support

- Meals/snacks are designed for versatility and practical application for a large population
  - Resupply nutrients for the next training event
  - Provide carbohydrates to maintain blood glucose and glycogen levels
  - Maximize nutrient absorption without physiological overload
  - Stress of entry-level training environment reduces nutrient absorption
  - Match body's ability to absorb nutrients with body's demand for fuel
  - Provided as needed based on timing and intensity requirements
- Optimize the absorption in the gut microbiome with the consideration of the impact of stress in Warfighter training
- Leverage the timing strategy for caloric distribution
- Practical application that supports a demanding training environment en masse

Goal: Enhance performance and resilience of the Warfighter

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**NOTES:** Not haphazard or luck, but a strategic component to training.

## SLIDE 21



# Phases of Timing

- The timing of “when” nutrients are consumed is just as critical as “what” nutrients are consumed.
- The timing of nutrients should be viewed as three very distinct phases:
  - Recovery or maintenance.
  - Exercise when energy stores are being depleted.
  - The refueling interval (RFI), or critical period after exercise.

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## SLIDE 22



### Phases of Timing

- During exercise the environment is “catabolic” so that energy can be delivered to the working muscles.
- After exercise the environments must become “anabolic,” so the process of recovery, restoring and building up what was lost begins.
- Thus, immediately after exercise, when glycogen stores are low and muscle protein synthesis are suppressed, is the critical time to provide what the body or muscle needs: CHO with a small amount of protein.

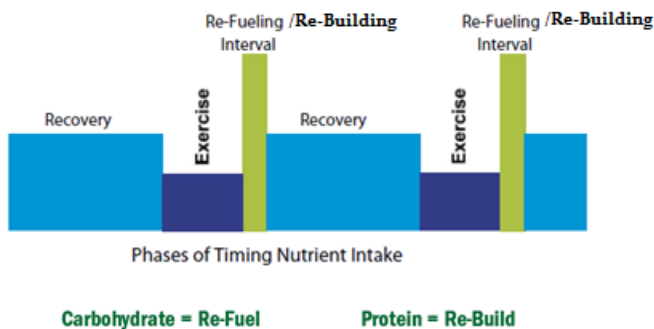
22

**NOTES:** Catabolic phase: Insulin, an important hormone for promoting muscle protein synthesis, is not released during exercise because it is not needed.  
Anabolic phase: Insulin release must be stimulated. Ingestion of CHO stimulates “insulin.” Insulin promotes the uptake of glucose into glycogen stores in preparation for the next training event.

## SLIDE 23



### Timing of Nutrient Intake



23

SLIDE 24

## Post Exercise Nutrition Supplement

- PENS was implemented via 2011 TECOM message.
- This provision is recommended for individuals engaged in rigorous physical training and targeted for training cycle events where a recovery fuel was validated.
- Timing of this nutrient bar is paramount within 30-45 mins after exercise which is the most critical time for recovery.
  - Based on strong evidence from numerous studies
  - Comprised of a ~4:1 ratio of CHO:PRO




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**NOTES:** RFI – refueling interval mentioned earlier in this section  
PENS is the concept and Clif/Luna bars are the product used today.

SLIDE 25

### AN ATHLETE'S GUIDE TO EVERYDAY NUTRIENT TIMING

Pre-Workout Fueling	During Exercise	Post-Workout Refueling	Daily Fueling
<p><b>WHY</b> To fuel up for the body's next challenge.</p> <p><b>WHAT</b> High-carbohydrate snack of 200-300 calories</p> <p><b>WHEN</b> 30-60 minutes prior</p>	<p><b>WHY</b> To replace sweat loss and provide carbs to maintain blood sugar levels</p> <p><b>WHAT</b> Sports drinks that contain sodium, potassium, glucose, and fructose</p> <p><b>WHEN</b> During exercise up to one hour: 3-8 oz of water every 15-20 min During exercise longer than one hour: 3-8 oz of sports drinks every 15-20 min</p>	<p><b>WHY</b> To replenish glycogen, restore electrolytes, replace fluid losses, and repair damaged tissues</p> <p><b>WHAT</b> 25-50 grams of carbs 20-25 grams of protein Plenty of fluids</p> <p><b>WHEN</b> Within 45 minutes after a workout</p>	<p><b>WHY</b> To support normal activities, repair damaged tissues, and promote muscle growth</p> <p><b>WHAT</b> Meals and snacks that emphasize a balanced diet of carbs, lean protein, healthy fats, and fluids – especially water</p> <p><b>WHEN</b> Throughout the remainder of the day</p>

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**NOTES:** Meals and snacks are opportunities for replenishment and refueling to increase resilience and decrease unnecessary injury as it relates to nutritional fitness.

\*\*Materials can be ordered for the installations on the Human Performance and Resource Center website.

SLIDE 26

### AN ATHLETE'S GUIDE TO EVERYDAY NUTRIENT TIMING

Pre-Workout Fueling	Exercise Hydration	Post-Workout Refueling	Daily Fueling
<p>Choose foods low in fat and fiber to prevent digestive upset.</p> <p><b>WHAT</b></p> <ul style="list-style-type: none"> <li>• Jam*/jelly* on bread*</li> <li>• Fruit*, low-fat granola*, low-fat milk*</li> <li>• First Strike Bar**/***</li> <li>• Pudding cup* or low-fat Greek yogurt with fruit</li> <li>• Small muffin (muffin top*), low-fat milk*</li> </ul> <p><small>*IN MEAL READY TO EAT (MRE) **IN FIRST STRIKE RATION (FSR)</small></p>	<p>Weigh before and after working out; replace 16-24 oz fluid per pound lost throughout the day (not more than 12 quarts per day).</p> <p><b>WHAT</b></p> <ul style="list-style-type: none"> <li>• Water</li> <li>• Sports drinks*/**</li> </ul> <p style="text-align: center;"><i>Where do you find these foods? Anywhere!</i></p> <p style="text-align: center;"><i>Home, chow halls, even fast-food restaurants!</i></p>	<p>Choose easily digestible foods and beverages that provide electrolytes and fluids.</p> <p><b>WHAT</b></p> <ul style="list-style-type: none"> <li>• Low-fat yogurt with fruit and granola, juice</li> <li>• Chocolate milk, fruit</li> <li>• Pita with hummus, tomatoes, cucumbers, tea</li> <li>• Tuna, crackers, fruit, water</li> <li>• Pocket sandwich**, sports drink**</li> <li>• Fruit and nut mix**, sports drink**</li> <li>• Chicken fajita with tortilla, beans, salsa*, water</li> <li>• Stir-fried tofu with veggies, rice, soy milk</li> </ul>	<p>Choose lean protein (such as meat, poultry, fish, beans, nuts, or eggs), whole grains, fruits and vegetables, and low-fat dairy products.</p> <p><b>MEALS</b></p> <ul style="list-style-type: none"> <li>• Egg-white omelet with spinach and mushrooms, whole-grain bread, jam, low-fat milk*</li> <li>• Whole-wheat pita sandwich with turkey and veggies, pretzels, applesauce, low-fat milk*</li> <li>• Cheese tortellini in tomato sauce*, tossed salad, grapes, water</li> <li>• Lamb kebabs, pita, spinach, mango-yogurt beverage</li> </ul> <p><b>SNACKS</b></p> <ul style="list-style-type: none"> <li>• Yogurt or cottage cheese with fruit</li> <li>• Granola bar and milk</li> <li>• Trail mix</li> </ul>

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SLIDE 27

## Enhancement Support

- Enhancement support is provided only to Marines who are authorized to subsist at government expense.
- Beverage Support
- Fruit Support

**NOTES: Hot and Cold Beverage Support**

Hot and cold beverage support is provided to Marines engaged in rigorous outdoor activity. Units requesting support will provide insulated containers for storing and transporting beverages. Requests are provided to the Food Service Technical Representative to approve. The Contractor shall fill the containers with the requested number of hot and cold beverage support rations, and provide appropriate disposable cups in quantities sufficient to support the number of rations requested. The Contractor shall clean and sanitize the beverage containers before and after use.

**Fruit Support**

At the local TR's direction, fruit support for Recruits, Candidates and Marines in student status assigned to School of Infantry (SOI) shall be provided, two pieces of fruit per Marine who are authorized to subsist at government expense.

SLIDE 28




# Troubleshooting Tips

**TROUBLESHOOTING NUTRITION TIPS**

Problem	What should you do?	Food Sources	Result
Low energy, sluggish; easily tired	Eat foods rich in CARBOHYDRATES	Whole wheat bread, cereal, pasta, rice, peas, corn, potatoes, fruits, veggies	Carbohydrates provide fuel for muscles and brain
Muscle strains, injuries; slow to recover	Eat good food sources of PROTEIN	Chicken, fish, beef, cheese, milk, nuts, seeds, peanut butter	Faster recovery from injury; repair muscles
Trouble sustaining energy output	Eat healthy FAT sources	Nuts, seeds, peanut butter, olive oil, olives, fish, canola oil, avocado	Greater energy output; build muscle more efficiently;
Constipation	Increase FIBER in diet	Whole grain bread & cereal; beans, peas, fruits and vegetables	Relief!
Difficult maintaining body temperature; low energy	Increase IRON rich food sources	Beef, chicken, turkey, fish, spinach, kale, beans, peas, fortified breads, cereal s and juice	Greater energy; better tolerance to cold
Broken bones; stress fractures; brittle teeth	Increase CALCIUM rich foods. Increase VITAMIN D food sources.	Milk, yogurt, cheese, salmon, broccoli, kale, calcium fortified foods. Vit D fortified milk, eggs, seafood, fortified cereals	Strengthen bones and teeth; Vitamin D helps body absorb calcium and thus helps prevent fractures and bone weakness.
* Increase muscle mass	Increase CALORIES and PROTEIN rich foods	Fish, chicken, lean beef, pork, milk, eggs, cheese yogurt, peanuts, nuts/seeds, beans, lentils	Protein intake must be combined with weight training to build muscle mass.

Please note that some of these symptoms may require medical consult in addition to nutrition troubleshooting 1

SLIDE 29



## Performance Hydration



Thirst is not the first indicator the body needs water.

## SLIDE 30



### Functions of Water

- Necessary for maximum performance
- Plays a critical role in regulating body temperature
- Carries nutrients throughout the body
- Improves digestion
- Eliminates waste and toxins from the body
- Majority of muscle is comprised of water



30

**NOTES:** Water and hydration levels are critical for maximum performance. Hydration is the most limiting factor involved with physical performance. Even small amounts of dehydration will hinder performance and can give your opponent the edge.

## SLIDE 31



### Symptoms of Dehydration

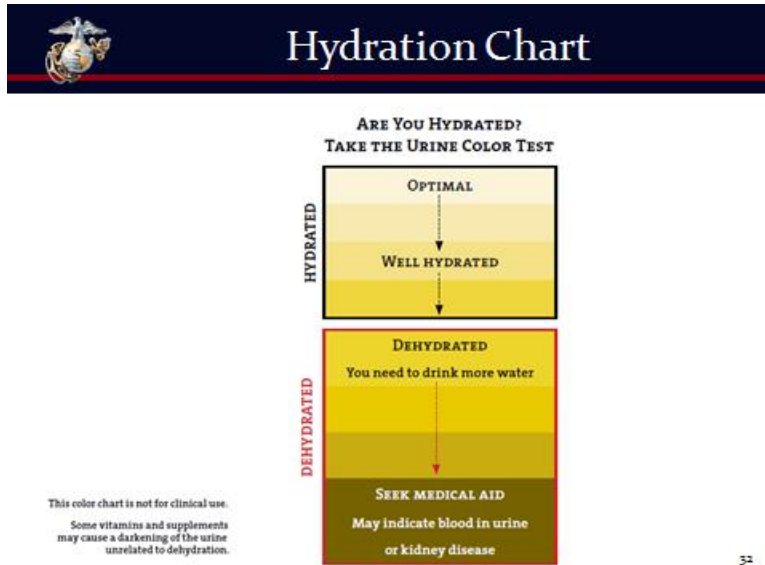
- **Moderate**
  - Thirsty
  - Headache
  - Dry Mouth
  - Dry Skin
  - Fatigue
  - Dizzy
- **Severe**
  - Chills
  - Increased Heart Rate
  - Muscle Cramps
  - Nausea/vomiting
  - Swollen stomach
  - Confusion

31

**NOTES:** Pay attention to the signs and symptoms of dehydration and stay hydrated. Severe dehydration can be life threatening.



## SLIDE 32



**NOTES:** Note for staff: Taking vit/min or dietary supplements will impact urine color.

## SLIDE 33

### Dehydration Causes Early Fatigue and Decreases Performance

- **Loss of 2% body weight can**
  - Increase Perceived Effort
  - Reduce Performance by 10 - 20%
  - 2% loss = 3.0 lbs. for 150 lb person
- **Loss of 3 - 5% body weight impairs**
  - Reaction Time
  - Judgment
  - Concentration
  - Decision Making Ability
  - Body Temperature Regulation
  - Brain Function
  - 3-5% loss = 4.5 - 7.5 lbs for 150 lb person

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**NOTES:** Just small amounts of dehydration can greatly affect performance. A 150 lb boxer with a water loss of just 3 lbs. can have reduced performance by 10 - 20% and their effort will feel harder than normal.

With a water loss of just 4½ pounds: reaction times, judgment, concentration and decision making ability are negatively affected. Temperature regulation and brain function are also impaired.

## SLIDE 34



### Water Requirement

- The first step to being well hydrated is to drink fluids and eat foods high in water content throughout the day.
- Try to drink half your body weight in fluid ounces per day.  
For example, 150 lbs / 2 = 75 fluid oz.

Half Gallon = 64 ounces

1 Gallon = 128 ounces



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**NOTES:** How much water do you need? Take your weight and divide by two. This is the number of ounces of water per day you should be drinking, NOT counting exercise. For most of you, that means between ½ and 1 gallon of water per day.

## SLIDE 35



### Water and Exercise

- With Exercise add approximately:
  - 16 ounces → 2 hours prior to exercise
  - 4-8 ounces\* → 10 minutes prior to exercise
  - 4-8 ounces\* → every 20 minutes during
  - 16-24 ounces → after exercise
- \* For most people, 1 large gulp = 1 ounce

35

**NOTES:** With exercise: Drink before, during and after training. This slide shows how much water to consume for best hydration and performance. If you weigh yourself before and after exercise, and lose weight, be sure to replace that water loss. This is an estimation of needs during exercise, to be more exact- calculate sweat rate 1 large gulp = ~ 1 oz. You can experiment and measure out exactly how many ounces your gulp is.

SLIDE 36



## Extreme Environments Considerations

- It is even more important to be aware of your fluid intake, fluid loss and electrolyte needs.
- Do NOT skip meals.
- Take time to drink.
- Maximize taste/palatability (temperature, sweetness) of your beverage.
- Minimize body water loss.
- Consider engineered food products when cramping risks are high, if you are a salty sweater, or if you are sweating more than usual.
- Leverage whole foods that are higher in sodium. (V8 juice, pickles, pretzels, adding a little extra salt to you meals).

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**NOTES:** Engineered food products which provide:  
 20 to 50 milligrams of **potassium** per 8 ounces  
 12 to 24 grams of **carbohydrate** per 8 ounces  
 110 to 170 milligrams of **sodium** per 8 ounces

SLIDE 37



## Troubleshooting

Environment	Consideration	Hydration Recommendations
Dry Extreme Heat	The extreme dry heat greatly increases the risk for dehydration and heat injury.	Suggested Fluid Intake: 5-12 liters/day Tips: Sweat rates can be reduced by working at night. During daylight hours, sweating rates can be reduced by covering the skin with light, vapor-permeable clothing. If and when possible, drink COLD water and sports drinks.
Hot and Humid	Relative humidity can increase water requirements independent of temperature. The humidity makes the evaporation of sweat off the skin difficult, which decreases the body's ability to cool itself. This increases the risk for dehydration and heat exhaustion. Excessive sweating can also cause a large loss of electrolytes, specifically sodium and potassium.	Suggested Fluid Intake: Up to as needs of Extreme Dry Heat Tips: If and when possible, drink COLD water and sports drinks.
Altitude	Altitude presents a greater risk of dehydration. More fluid is lost through urine output and breathing. Layers of clothing may cause increased sweating with little evaporation. The elevation causes one to feel less thirsty.	Suggested Fluid Intake: 4-6 liters/day Tips: Drinking small quantities of fluid frequently results in less urine production than drinking large quantities of fluid less frequently.
Altitude and Cold	The addition of cold to altitude can cause greater risk for dehydration because of the sweat losses that occur in insulated clothing, low rates of fluid ingestion, and concerns of having to remove clothing to urinate.	Suggested Fluid Intake: 5-7.5 liters/day Tips: Make sure to consider the ventilation of clothing to allow for sweating to dissipate heat. Drinking small quantities of fluid frequently results in less urine production than drinking large quantities of fluid less frequently. If and when possible consume hot fluids, tea, chicken/vegetable broth.

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## SLIDE 38



### Endurance Events (> 60 minutes)

- Use sports drinks during exercise for hydration, glucose and electrolytes
- Can improve endurance performance
  - Carbohydrate (6-8%)
  - Potassium (K)
  - Sodium (Na)
  - Water
- Powerade, Gatorade (CHO)
- MILK (CHO & PRO)
- Sports drinks are NOT energy drinks
- Energy drinks are NOT good recovery drinks



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**NOTES:** Sports Drinks are NOT energy drinks; Energy Drinks are NOT good recovery drinks. If your training requires over 60 minutes of exercise, sports drinks may be beneficial.

## SLIDE 39



### Sports Drinks

- Do NOT dilute sport's drinks
- What to look for:
  - 20 to 50 milligrams of **potassium** per 8 ounces
  - 12 to 24 grams of **carbohydrate** per 8 ounces
  - 110 to 170 milligrams of **sodium** per 8 ounces



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## SLIDE 40



# Overhydration?

- No more than 12 quarts (1 canteen = 1 quart)/day
- Hyponatremia – low sodium level in the blood
- Adequate salt exists at USMC training table meals
- Master menus meet the MDRI sodium requirement

40

**NOTES:** Athletes likely to experience a sodium imbalance caused by extreme sodium loss are slow marathoners, triathletes, and weekend warriors who may have a higher sweat loss and therefore a sodium loss than their fit counterparts.

## SLIDE 41



# Rhabdomyo-what?

- Rhabdomyolysis: Rapid breakdown (lysis) of skeletal muscle (rhabdomyo) due to injury to muscle tissue.
- Destroys muscle tissue and can lead to kidney failure.
- What increases your chances?
  - Eccentric movements
  - Ego – Doing more than your body can handle
  - Heat
  - Dehydration
  - Over-exertion – Heavy weight, fast-paced

**"Rhabdomyolysis**  
is the breakdown of muscle fibers resulting in the release of muscle fiber contents (myoglobin) into the bloodstream."

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## SLIDE 42



### What to look for?

- Muscle pain
- Weakness
- Range of motion deficits
- Muscle tenderness (doughy feeling)
- Parathesis (pins and needles)
- Absence of deep tendon reflexes
- Redness
- Edema/swelling
- Ecchymosis (bruising)



## SLIDE 43



### Prevention

- Know your body and its limits.
- Continually work on improvement by setting new and higher training stimuli.
- Do not ramp up training too fast.
- Smart training is the only way to strengthen muscles and the body as a whole, thus reducing the risk of this disease.
- Health always comes first!

## SLIDE 44



## SLIDE 45



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**NOTES:** A dietary supplement is a product taken by mouth with one or more "dietary ingredients" which include: vitamins, minerals, herbs or other botanicals, amino acids, or other substances found in the human diet, such as enzymes.

The Food and Drug Administration (FDA) has no comprehensive list of supplements on the market and is only responsible for post market surveillance.

Supplements have to be proven to cause harm before they can be removed from the market. No proof of quality or efficacy is required before a supplement can be sold.

Energy drinks, are extremely common among service members of all ages, can contain excess calories, sugars, caffeine and other stimulants. Too much caffeine can lead to increased anxiety, upset stomach, shakiness, headaches, and sleep issues. Excessive caffeine use can cause medical problems such as high blood pressure, irregular heartbeat, and possibly seizures. Energy drinks are not the same as sports beverages and should never be used for hydration or a meal replacement.



## It Is Always Better To Use FOOD!

### Supplements:

- Are not FDA regulated – No Government testing required
- Are expensive
- Often don't work
- Don't come close to what whole food offers

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**NOTES:** Definition of a supplement: a product that is taken by mouth that contains a “dietary ingredient” intended to supplement the diet.

-Supplements are vitamins, minerals, herbs, botanicals, amino acids, protein powder, enzymes, organ tissues, gland tissues, or secretions.

-NO GOVERNMENT TESTING REQUIRED.

-Supplements are not banned until AFTER reports of illness, liver damage, heart problems, and death have occurred

-No online buying – Don't know what you are getting and may pop positive on drug test

Ephedra banned due to severe illness and death

Hydroycut banned due to liver damage

Tyrtophan banned due to contaminant in processing that caused severe illness

Note: we tend to be a gullible society, easier to take a pill/powder

Bioavailability of said nutrient is higher and more recognizable in real food sources.





## Be Smart.....

- Use well-known brands
- Know that there is no guarantee of quality, purity, composition, safety, or effectiveness of dietary supplements.
- Take only the recommended dose
- Avoid ordering supplements on the Internet, especially banned supplements!

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**NOTES:** Supplement do not undergo the same level of testing and scrutiny as do drugs.  
A multi-vitamin mineral supplement can be taken for added insurance, but a pill will never take the place of whole food and is missing many healthy components.  
Whey protein can be taken after a workout, but you can simply eat a food high in protein with some carbs for a lot less money (i.e. chocolate milk.)  
Small amounts of caffeine can increase alertness. (Does not apply to entry level environments where caffeine is not provided)  
Take in recommended doses. More is not better.  
Always check with your doctor or registered dietitian before taking supplements



## Regulation of DS in the United States:

### BOTTOMLINE:

- FDA has “post-market” responsibility to ensure compliance with regulations.
- DS do not require pre-market approval.
- Many DS contain banned or harmful substances not declared on the label.
- **Understand some supplements may cause a positive result on a urinalysis.**

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### **NOTES:** Dietary Supplement Guidelines.

If an adequate eating plan is followed, dietary supplements are not needed. Whole foods are superior to supplements and should be consumed as the first option.

(1) Eat regular meals and snacks (don't skip meals).

(2) Get 7-8 hours of sleep.

(3) Be active throughout the day.

(4) Limit caffeine intake. Whole food sources are a powerhouse of ingredients that promote energy, muscle growth, weight loss, and enhanced libido while providing antioxidants, phytochemicals (anti-cancer agents), and natural sources of vitamins, minerals, proteins, amino acids and fiber.

It is always better to use food because supplements:

(1) Are not tested or approved by the FDA prior to market.

(2) Often are unnecessary.

(3) Can be dangerous.

(4) Can be expensive.

SLIDE 49

## Guidelines for Evaluating DS

- What is in it?
- Does the label conform to FDA rules?
- Is it the right stuff?
- Is it safe?
- Does it make sense?
- Does it work?
- Does it reach its target?
- What other sources exist?
- Why take it?



High Risk Supplement List can be found at:  
<http://hprc-online.org/dietary-supplements>

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**NOTES:** If you decide to use a supplement:

- (1) Use well-known brands.
- (2) Take no more than the recommended serving size.
- (3) Look for evidence of third-party testing on the label.

Third-party testing ensures:

- (1) What's on the label is inside the bottle.
- (2) Quality of manufacturing.

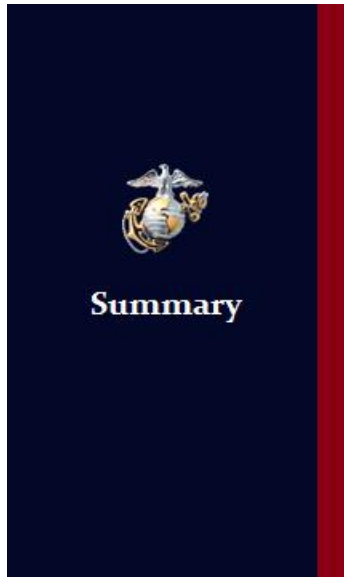
SLIDE 50

## Where can I find more info?



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## SLIDE 51



Every Marine needs to focus on nutritional fitness the same way as physical fitness.

## SLIDE 52



- USMC Fueled to Fight® program
- Macronutrient Education
- Nutrient Timing Considerations
- Performance Hydration
- Operation Supplement Safety (OPSS)

## SLIDE 53



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## SLIDE 54



### Installation Resource

- SEMPERFIT Health Promotion Professionals
- Offices are located at each installation's main fitness center.
- <http://usmc-mccs.org/services/fitness/health-promotion/>

### NOTES:

#### OTHER SERVICES INCLUDE:

Tobacco cessation  
Injury prevention  
Sexual health and responsibility  
Weight management  
Chronic diseases  
Physical activity  
Nutrition  
OPSS



*Questions??*