21st Century Military Nutrition: Considerations & Approaches

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## Abstract

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Overview

- Problem / Military Requirement
- Considerations for Developing Effective Approaches
- Concept to optimize Warrior Nutrition
- Prototype Research
- Conclusions
REQUIRED JFHP CAPABILITY:
Provide a Healthy and Fit Force

The ability to provide and enhance a healthy and fit force throughout the continuum from accession to veteran includes:

◆ optimizing health/fitness of peacetime forces
◆ maintaining health/fitness of deployed forces
◆ Ensuring physical and mental health [reset] of redeployed SMs

Joint Force Health Protection Concept of Operations
v 0.9, July 07
Developed by OSD (Health Affairs)

Enabler:
Nutrition programs to promote eating behavior by Warriors that establish and maintain a health & fitness over a lifetime
USARIEM Military Nutrition Research Program

Nutritional Optimization of Health & Performance
- macro/micro-nutrient requirements
- supplements & bioactive foods
- meal timing, feeding plans, menus, nutrient delivery systems

Operational Ration Testing & Evaluation
- nutrient composition
- physiological
- cognitive
- sensory

Healthy Weight Management
- risk factors & behaviors
- interventions

Nutrition Science For Force Health Protection
Feeding the Force in the “Real World”

Operational Rations

Public / Private Dining  Garrison Dining  Group Rations  Individual Rations

Unconstrained  Constrained

Meal, Ready to Eat
Meal, Cold Weather/ LRP

UGR– B: Canned & Dehydrated Foods
UGR-H&S: Heat and serve ration
UGR-A: Heat & Serve+ Fresh, Perishable foods
US Armed Forces - a Large, Diverse Population

One Size Doesn’t Fit All!

Total Armed Services: 1,417,157
- Army: 525,482
- Navy: 331,383
- Marine Corps: 190,651
- Air Force: 327,589
- DoD Total: 1,375,105
- Coast Guard: 42,052

(~15%)
“It’s not nutrition until it’s eaten”
COL Dave Schnakenberg

Nutrient Factors
- Macronutrients
- Micronutrients
- Bioactive Components

Non-Nutrient Factors
- Food associated
- Individual associated
- Environmental

Nutritional Value

Dietary Quality

Food Preferences & Consumption

Health is not often the chief motive for young men to change eating behavior – 
(vigor, appearance performance)

Meiselman & MacFie, 1996
Factors Determining Food Consumption

◆ Food
  - Portion size
  - Acceptances, Liking, Preferences*
  - Perceptions (appearance, labels, packaging, origins)
  - Presentation (temperature, utensils, dishes)
  - Variety, monotony, sensory specific satiety

◆ Individual
  - Age, sex, cultural influences
  - Expectations* (marketing, education influence)
  - Attitudes (neophobia, involvement, dietary restraint)
  - Commensality (non-obese vs. obese)
  - Food and Mood/Emotion

◆ Environment
  - Location
  - Time of Day (meal appropriateness, snacks, presentation)
  - Choice
  - Ambiance (comfort)
  - Convenience & access (effort, time)
  - Price, value

Meiselman & MacFie, 1996
Promoting Healthy Eating Behavior - Civilian Cafeteria Research

◆ Nutrient Content Manipulation of ad lib diet (minimal effect?)
  
  - Jayhawk Observed Eating Trial (Donnelly et al., Obesity. 2008)
    ✗ In 305 sedentary normal & overweight men & women, reduced fat diets only effective in weight loss when energy intake was reduced

◆ Ad lib food choice can be manipulated (for the better?)

    ✗ Educational displays
    ✗ Price subsidies for “healthy” selections
  - NIH-funded Cafeteria Study (Lowe, et. al., unpublished ongoing project)
    ✗ Detailed food labeling
    ✗ Greater number “healthy” selections
    ✗ Price subsidies for reduced energy density items
    ✗ Verbal prompts by food servers to encourage fruit selection
  - "Sargent Choice" at Boston University – anecdotal reports
    ✗ Logo label of line of “healthy” food choices throughout DFACs

Why are french fries & hotdogs cheaper than salad?
Evolve garrison DFACs into state-of-art centers

*Its not just slinging hash*

- Military Dietitian Directed
- Provide and/or promote consumption of the most healthy diet tailored for Warriors, their families and the garrison community.
- Apply best practices in nutrition science, nutrition education, nutrition therapy, counseling and intervention.
- Holistic community/environmental support for changing behavior to optimize health/fitness.
- Supports needs and goals of garrison MTFs, units, schools, and community.
Promoting Healthy Eating Behaviors

The 21st Century Warrior Nutrition Center

Cafeteria Interventions
- nutritional content
- promote/optimize healthy food choice

Education / Resources
support for Warriors, their family & entire garrison community

Evolve DFACs
“focal point” for nutrition care, education & health promotion at each base
Modifying Serving Practices in Military DFACs to Enhance Healthy Nutrition

◆ 10 DFACs that serve 300 Warriors per meal
  • Cluster (group) randomized controlled trials, partial cross-over
    - Intervention (n=5) - month 1-12
    - Control (n=5) - no change month 1-6, “Fresh Start month 7-12

◆ Intervention
  • Dietary Guidelines for Americans 2005 (fresh fruits, vegetables, whole-grains, fiber, reduced fat/sugar content alternatives, lean cooking methods).
  • Presentation, placement changes in food service
  • Nutrition labeling and education materials posted

◆ Measurements
  • Ad lib food selections & intake, demographics & satisfaction ratings
  • Lunch (225 volunteers) at months 0 (baseline), 6 & 12.
  • Digital photography quantitative & qualitative nutritional assessment of food selected and consumed.
  • Outcomes
    - Primary - % kilocalories intake from fat
    - Secondary - % carbohydrate and protein intake, food selection, fruit & vegetable servings, total kilocalories food intake.
21st Century Research Challenge

Nutritional Optimization

Evolution of DFACs Validation of Efficacious Strategies

Modification of Warrior Eating Behavior for Health & Performance

Integrated & Holistic Support for Warriors to sustain healthy lifestyle
21st Century Warrior Nutrition programs to establish and maintain optimal fitness are likely to be most effective by promoting long-term change in Warrior eating behavior within a holistic, environmental approach consistent with healthy lifestyle.

Evolving current garrison DFACs into state-of-the-art nutrition centers, under direction of military dietitians offer a means of integrating nutrition science, medical care, fitness training and wellness promotion throughout the Warrior community.

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